Program-Level Assessment: Annual Report

Program: Aeronautics – Concentrations in Aviation Management and Flight Science	Department: Aviation Science
Degree or Certificate Level: Bachelor of Science	College/School: Parks College of Engineering, Aviation and Technology
Date (Month/Year): July 2021	Primary Assessment Contact: Stephen G. Magoc

In what year was the data upon which this report is based collected? August 2020 – May 2021

In what year was the program's assessment plan most recently reviewed/updated? 2020

1. Student Learning Outcomes

Which of the program's student learning outcomes were assessed in this annual assessment cycle?

G. Assess contemporary issues.
H. Use the techniques, skills, and modern technology necessary for professional practice.
I. Assess the national and international aviation environment.
J. Apply pertinent knowledge in identifying and solving problems.
K. Apply knowledge of business sustainability to aviation issues.

2. Assessment Methods: Student Artifacts

Which student artifacts were used to determine if students achieved this outcome? Please identify the course(s) in which these artifacts were collected. Clarify if any such courses were offered a) online, b) at the Madrid campus, or c) at any other off-campus location.

Student artifacts to be used will include, but are not limited to the following:

- Assignments
- Quizzes
- Tests

Student artifacts will be collected from all courses.

G. Assess contemporary issues.
ASCI 4250 Professional Ethics and Standards (Hybrid and Online)
ASCI 4013 Jet Flying Techniques I Laboratory (In-person)
ASCI 4023 Jet Flying Techniques II Laboratory (In-person)
ASCI 4450 Aviation Law (Hybrid and Online)
ASCI 4650 Economics of Air Transportation (Hybrid and Online)
ASCI 4900 Senior Seminar (Hybrid)
FSCI 2250 Instrument Flight Foundations (Developed)
FSCI2550 Flight 4 (In-person)
FSCI 2650 Navigation Foundations (Hybrid)
FSCI 3550 Flight 5 (In-person)
FSCI 3700 Principles of Flight Instruction (Hybrid)
FSCI 3750 Flight 6 (In-person)

H. Use the techniques, skills, and modern technology necessary for professional practice.
ASCI 4012 Jet Flying Techniques I (In-person Flex)
ASCI 4013 Jet Flying Techniques I Laboratory (In-person)
ASCI 4022 Jet Flying Techniques II (In-person, Flex)
ASCI 4023 Jet Flying Techniques II Laboratory (In-person)
ASCI 4650 Economics of Air Transportation (Hybrid ad Online)

ASCI 4800 International Aviation (Hybrid and Online)
ASCI 4900 Senior Seminar (Hybrid)
FSCI 2250 Instrument Flight Foundations (Developed)
FSCI2550 Flight 4 (In-person)
FSCI 2650 Navigation Foundations (Hybrid)
FSCI 3550 Flight 5 (In-person)
FSCI 3700 Principles of Flight Instruction (Hybrid)
FSCI 3750 Flight 6 (In-person)

I. Assess the national and international aviation environment.
ASCI 4050 Human Factors (Achieved)
ASCI 4012 Jet Flying Techniques I (In-person Flex)
ASCI 4013 Jet Flying Techniques I Laboratory (In-person)
ASCI 4022 Jet Flying Techniques II (In-person, Flex)
ASCI 4023 Jet Flying Techniques II Laboratory (In-person)
ASCI 4450 Aviation Law (Achieved)
ASCI 4650 Economics of Air Transportation (Hybrid and Online)
ASCI 4800 International Aviation (Hybrid and Online)
ASCI 4900 Senior Seminar (Hybrid)

J. Apply pertinent knowledge in identifying and solving problems.
ASCI 4050 Human Factors (Hybrid and Online)
ASCI 4012 Jet Flying Techniques I (In-person Flex)
ASCI 4013 Jet Flying Techniques I Laboratory (In-person)
ASCI 4022 Jet Flying Techniques II (In-person, Flex)
ASCI 4023 Jet Flying Techniques II Laboratory (In-person)
ASCI 4250 Professional Ethics and Standards (Hybrid and Online)
ASCI 4350 Team Resource Management (Hybrid)
ASCI 4650 Economics of Air Transportation (Hybrid and Online)
ASCI 4800 International Aviation (Hybrid and Online)
ASCI 4900 Senior Seminar (Hybrid)
FSCI 2250 Instrument Flight Foundations (Developed)
FSCI2550 Flight 4 (In-person)
FSCI 2650 Navigation Foundations (Hybrid)
FSCI 3550 Flight 5 (In-person)
FSCI 3700 Principles of Flight Instruction (Hybrid)
FSCI 3750 Flight 6 (In-person)

K. Apply knowledge of business sustainability to aviation issues.
ASCI 3100 Air Carrier Operations (Hybrid and Online)
ASCI 4250 Professional Ethics and Standards (Hybrid and Online)
ASCI 4650 Economics of Air Transportation (Hybrid and Online)

3. Assessment Methods: Evaluation Process

What process was used to evaluate the student artifacts, and by whom? Please identify the tools(s) (e.g., a rubric) used in the process and include them in/with this report.

The department faculty (Drs. Stephen Belt, Terrence Kelly and Gajapriya Tamilselvan, and Mr. Stephen Magoc) met to discuss the results and findings of student artifacts. The department faculty used course assessment forms and examples of student artifacts in the evaluation.

See Appendix A for the course assessment forms used for the evaluation of the courses and artifacts.

4. Data/Results

What were the results of the assessment of the learning outcomes? Please be specific. Does achievement differ by teaching modality (e.g., online vs. face-to-face) or on-ground location (e.g., STL campus, Madrid campus, other off-campus site)?

G. Assess contemporary issues. The result of the assessment of this student learning outcome is that the graduates of the program's concentration meet the student learning outcome objectives. The result of the assessment does not differ by teaching modality.

H. Use the techniques, skills, and modern technology necessary for professional practice. The result of the assessment is that the graduates of the program's concentrations are not meeting the requirements of the student learning outcome objective. The only modality for the flight training courses is in-person. The flight training course outcomes are not at a sufficient level of passing during oral exams and stage checks. The areas involved in the failures can be covered more closely by the fight instruction staff. This will be stressed during new-hire standardization and at routine staff meetings.

I. Assess the national and international aviation environment. The result of the assessment of this student learning outcome is that the graduates of the program's concentration meet the student learning outcome objectives. The result of the assessment does not differ by teaching modality.

J. Apply pertinent knowledge in identifying and solving problems. The result of the assessment is that the graduates of the program's concentrations are not meeting the requirements of the student learning outcome objective. The only modality for the flight training courses is in-person. The flight training course outcomes are not at a sufficient level of passing during oral exams and stage checks. The areas involved in the failures can be covered more closely by the fight instruction staff. This will be stressed during new-hire standardization and at routine staff meetings.

K. Apply knowledge of business sustainability to aviation issues. The result of the assessment of this student learning outcome is that the graduates of the program's concentration meet the student learning outcome objectives. The result of the assessment does not differ by teaching modality.

5. Findings: Interpretations & Conclusions

What have you learned from these results? What does the data tell you?

The department has learned that the students of the program are meeting certain student learning objectives and not doing so in others. The department needs to work harder in the areas where students do not meet the objectives. This will take additional measures to be included in academic courses and flight training courses. The department will work to implement and assess the measures needed to ensure that the students will be able to meet the student learning objectives in the future.

6. Closing the Loop: Dissemination and Use of Current Assessment Findings

A. When and how did your program faculty share and discuss these results and findings from this cycle of assessment?

The department faculty and the assistant chief instructor met twice during this cycle (01-14-2021 and 06-25-2021) to discuss the abilities of the students to meet the student learning outcomes. The first meeting in January 2021 was to assess the following student learning outcomes:

- G. Assess contemporary issues.
- H. Use the techniques, skills, and modern technology necessary for professional practice.
- I. Assess the national and international aviation environment.

The second meeting in July 2021 was to assess the following student learning outcomes:

- J. Apply pertinent knowledge in identifying and solving problems.
- K. Apply knowledge of business sustainability to aviation issues.

B. How specifically have you decided to use findings to improve teaching and learning in your program? For example, perhaps you've initiated one or more of the following:

Changes to the Curriculum or Pedagogies	• Course content • Teaching techniques • Improvements in technology • Prerequisites	• Course sequence • New courses • Deletion of courses • Changes in frequency or scheduling of course offerings
Changes to the Assessment Plan	• Student learning outcomes • Student artifacts collected • Evaluation process	• Evaluation tools (e.g., rubrics) • Data collection methods • Frequency of data collection

Please describe the actions you are taking as a result of the findings.

The actions being taken are to improve upon the course content and teaching techniques, particularly in the flight courses.

If no changes are being made, please explain why.

N/A.

7. Closing the Loop: Review of Previous Assessment Findings and Changes

A. What is at least one change your program has implemented in recent years as a result of assessment data?

For the SLO's that did not sufficiently meet expectations in the 2018-2019 cycle, the department faculty discussed how to best make the programmatic changes. The department faculty determined that it would implement the following changes and continue the assessment process to determine whether the changes being implemented were effective during the 2020-2021 cycle:

- H. Use the techniques, skills, and modern technology necessary for professional practice.

The department implemented a course project in the ASCI 4050 Human Factors course to focus on identifying available technology and providing an extensive narrative on its application.

- I. Asses the national and international aviation environment.

The department implemented international routes in the ASCI 4022 Jet Flying Techniques II course and in the ASCI 4023 Jet Flying Techniques II Laboratory courses.

- K. Apply knowledge of business sustainability to aviation issues.

The department implemented the following:

  - Establish a set of specific guidelines for teams' decision logs with details of data collection required.
  - The student team management audit will include a more comprehensive report of the findings/results for each airline team.

B. How has this change/have these changes been assessed?

The department implemented the changes and assessed the impact of these changes during the 2020-2021 assessment cycle.

C. What were the findings of the assessment?

- H. Use the techniques, skills, and modern technology necessary for professional practice.

The department did not implement a course project in the ASCI 4050 Human Factors course; therefore, the department was not able to close the loop on this proposed change. Implementation of the course project will occur in the fall 2021 semester and assessed after that.

- Asses the national and international aviation environment.

The department implemented international routes in the ASCI 4022 Jet Flying Techniques II course and in the ASCI 4023 Jet Flying Techniques II Laboratory courses.

- K. Apply knowledge of business sustainability to aviation issues.

The department implemented the following:

- Establish a set of specific guidelines for teams' decision logs with details of data collection required.

The student team management audit will include a more comprehensive report of the findings/results for each airline team.

D. How do you plan to (continue to) use this information moving forward?

The department will continue to monitor the student learning outcomes to determine if over time the changes that were implemented continue to assist with students achieving the desired outcomes.

IMPORTANT: Please submit any assessment tools and/or revised/updated assessment plans along with this report.

Appendix A

Department of Aviation Science

2020-2021 Undergraduate Program Assessment Course Assessment Forms

The following pages contain the course forms and evidence used in the 2020-2021 assessment of the following Student Learning Outcomes.

FALL 2020 (Assessment meeting held 01-14-2021)

G. Assess contemporary issues.
H. Use the techniques, skills, and modern technology necessary for professional practice.
I. Assess the national and international aviation environment.

SPRING 2021 (Assessment Meeting Held 06-25-2021)

J. Apply pertinent knowledge in identifying and solving problems.
K. Apply knowledge of business sustainability to aviation issues.

Course Assessment Form

Course: ASCI 1010 Professional Orientation
Semester Taught: Fall 2020
Number of Students in Course: 50

Student Learning Outcome Assessed	Assessment Results: (Indicate what % of class achieved a minimum 70%)	Benchmark achieved? (Benchmark: 80% of students will score a minimum of 70% = "C")
E. Communicate effectively using both written and oral communication skills.	Using both the written and oral communications skills assignments, 100% of the students achieved a minimum of 70% in this course.	Based on the final grades issued in this course, 100% of the students in this course achieved this benchmark.
G. Assess contemporary issues.	The course uses readings from "Aviation Daily" (part of Aviation Week and Space Technology) to assess contemporary issues. Quiz scores reveal the following percentage of the students achieved a minimum of 70%: Quiz 1 – 100%; Quiz 2 – 98%; and Quiz 3 – 98%. Group presentation scores of contemporary issues reveal that 100% of the students achieved the minimum of 70%.	Based on the final grades issued in this course, 100% of the students in this course achieved this benchmark.

Course Assessment (Intended Use of Results)
The following will be used for recommendations to improve the quality of course delivery based on assessment results. These recommendations may include prerequisite change; changing course outline and adding more topics; adding a third assessment; changing the course sequence, etc.

E. COMMUNICATE EFFECTIVELY USING WRITTEN AND ORAL COMMUNICATION SKILLS

As the course benchmarks have been exceeded, at this time the instructor recommends continuing to use current teaching methodologies for the course and does not recommend taking any actions intending to improve the quality of the course and/or continue to allow the students to increase their ability to communicate effectively using written and oral communication skills.

G. ASSESS CONTEMPORARY ISSUES

As the course benchmarks have been exceeded, at this time the instructor recommends continuing to use current teaching methodologies for the course and does not recommend taking any actions intending to improve the quality of the course and/or continue to allow the students to increase their ability to to assess contemporary Issues.

**Attach description of assignment used for assessment and samples of student work.*

Individual Student Performance (3)

ASCI 1010 Fall 2019 for Student #1

GRADE INFORMATION

Item	Grade
Weighted Total	-
Total	255.00
External Midterm Grade.	A
External Final Grade	A
Quiz 1 on Aviation Daily Articles	10.00
Personal Reflection Paper	5.00
Resume	10.00
Quiz 2 on Aviation Daily Articles	10.00
Respondus Practice Test - Requires Respondus Lockdown Browser	10.00
Extra Credit Spkr Ser 1	-
Quiz 3 on Aviation Daily Articles	9.00
ASCI 1010 Test 1	82.00
Extra Credit Spkr Ser 2	-
Group Presentation	25.00
Extra Credit Spkr Ser 3	-
ASCI 1010 Final Exam Fall 2020	94.00

ASCI 1010 Fall 2019 for Student #2

GRADE INFORMATION

Item	
Weighted Total	-
Total	259.50
External Midterm Grade.	A
External Final Grade	A
Quiz 1 on Aviation Daily Articles	9.00
Personal Reflection Paper	5.00
Resume	10.00
Quiz 2 on Aviation Daily Articles	10.00
Respondus Practice Test - Requires Respondus Lockdown Browser	10.00
Extra Credit Spkr Ser 1	5.00
Quiz 3 on Aviation Daily Articles	9.00
ASCI 1010 Test 1	91.50
Extra Credit Spkr Ser 2	-
Group Presentation	25.00
Extra Credit Spkr Ser 3	-
ASCI 1010 Final Exam Fall 2020	85.00

ASCI 1010 Fall 2019 for Student #3

GRADE INFORMATION

Item	Grade
Weighted Total	-
Total	285.00
External Midterm Grade.	A
External Final Grade	A
Quiz 1 on Aviation Daily Articles	10.00
Personal Reflection Paper	5.00
Resume	10.00
Quiz 2 on Aviation Daily Articles	10.00
Respondus Practice Test - Requires Respondus Lockdown Browser	10.00
Extra Credit Spkr Ser 1	5.00
Quiz 3 on Aviation Daily Articles	9.00
ASCI 1010 Test 1	99.00
Extra Credit Spkr Ser 2	5.00
Group Presentation	25.00
Extra Credit Spkr Ser 3	-
ASCI 1010 Final Exam Fall 2020	97.00

Class Performance on Assignments and Tests (Including Extra Credit Assignments)

Quiz 1 on Aviation Daily Articles (Test)

1. Column

   Quiz 1 on Aviation Daily Articles (Test)
2. Points Possible

   10
3. Description

STATISTICS

Count	48
Minimum Value	7.00
Maximum Value	10.00
Range	3.00
Average	9.58333
Median	10.00
Standard Deviation	0.81223
Variance	0.65972

STATUS DISTRIBUTION

Null	2
In Progress	0
Needs Grading	0
Exempt	0

GRADE DISTRIBUTION

Greater than 100	0
90 - 100	44
80 - 89	1
70 - 79	3
60 - 69	0
50 - 59	0
40 - 49	0
30 - 39	0
20 - 29	0
10 - 19	0
0 - 9	0
Less than 0	0

Personal Reflection Paper

1. Column

   Personal Reflection Paper ()

2. Points Possible

   5

3. Description

STATISTICS

Count	50
Minimum Value	5.00
Maximum Value	5.00
Range	0.00
Average	5.00
Median	5.00
Standard Deviation	0.00
Variance	0.00

STATUS DISTRIBUTION

Null	0
In Progress	0
Needs Grading	0
Exempt	0

GRADE DISTRIBUTION

Greater than 100	0
90 - 100	50
80 - 89	0
70 - 79	0
60 - 69	0
50 - 59	0
40 - 49	0
30 - 39	0
20 - 29	0
10 - 19	0
0 - 9	0
Less than 0	0

Résumé

1. Column

   Resume ()

2. Points Possible

   10

3. Description

STATISTICS

Count	45
Minimum Value	5.00
Maximum Value	10.00
Range	5.00
Average	9.88888
Median	10.00
Standard Deviation	0.73702
Variance	0.5432

STATUS DISTRIBUTION

Null	5
In Progress	0
Needs Grading	0
Exempt	0

GRADE DISTRIBUTION

Greater than 100	0
90 - 100	44
80 - 89	0
70 - 79	0
60 - 69	0
50 - 59	1
40 - 49	0
30 - 39	0
20 - 29	0
10 - 19	0
0 - 9	0
Less than 0	0

Quiz 2 on Aviation Daily Articles (Test)

1. Column

   Quiz 2 on Aviation Daily Articles (Test)
2. Points Possible

   10
3. Description

STATISTICS

Count	46
Minimum Value	6.25
Maximum Value	10.00
Range	3.75
Average	9.59239
Median	10.00
Standard Deviation	0.7397
Variance	0.54717

STATUS DISTRIBUTION

Null	4
In Progress	0
Needs Grading	0
Exempt	0

GRADE DISTRIBUTION

Greater than 100	0
90 - 100	33
80 - 89	12
70 - 79	0
60 - 69	1
50 - 59	0
40 - 49	0
30 - 39	0
20 - 29	0
10 - 19	0
0 - 9	0
Less than 0	0

Respondus Practice Test - Requires Respondus Lockdown Browser (Test)

1. Column

   Respondus Practice Test - Requires Respondus Lockdown Browser (Test)
2. Points Possible

   10
3. Description

STATISTICS

Count	42
Minimum Value	10.00
Maximum Value	10.00
Range	0.00
Average	10.00
Median	10.00
Standard Deviation	0.00
Variance	0.00

STATUS DISTRIBUTION

Null	7
In Progress	1
Needs Grading	0
Exempt	0

GRADE DISTRIBUTION

Greater than 100	0
90 – 100	42
80 – 89	0
70 – 79	0
60 – 69	0
50 – 59	0
40 – 49	0
30 – 39	0
20 – 29	0
10 – 19	0
0 – 9	0
Less than 0	0

Extra Credit Spkr Ser 1

1. Column

   Extra Credit Spkr Ser 1 ()
2. Points Possible

   5
3. Description

STATISTICS

Count	7
Minimum Value	5.00
Maximum Value	5.00
Range	0.00
Average	5.00
Median	5.00
Standard Deviation	0.00
Variance	0.00

STATUS DISTRIBUTION

Null	43
In Progress	0
Needs Grading	0
Exempt	0

GRADE DISTRIBUTION

Greater than 100	0
90 – 100	7
80 – 89	0
70 – 79	0
60 – 69	0
50 – 59	0
40 – 49	0
30 – 39	0
20 – 29	0
10 – 19	0
0 – 9	0
Less than 0	0

Quiz 3 on Aviation Daily Articles (Test)

1. Column

   Quiz 3 on Aviation Daily Articles (Test)
2. Points Possible

   10
3. Description

STATISTICS

Count	44
Minimum Value	7.00
Maximum Value	10.00
Range	3.00
Average	9.40909
Median	9.50
Standard Deviation	0.68484
Variance	0.469

STATUS DISTRIBUTION

Null	6
In Progress	0
Needs Grading	0
Exempt	0

GRADE DISTRIBUTION

Greater than 100	0
90 – 100	41
80 – 89	2
70 – 79	1
60 – 69	0
50 – 59	0
40 – 49	0
30 – 39	0
20 – 29	0
10 – 19	0
0 – 9	0
Less than 0	0

ASCI 1010 Test 1 (Test)

1. Column

   ASCI 1010 Test 1 (Test)
2. Points Possible

   104
3. Description

STATISTICS

Count	50
Minimum Value	72.50
Maximum Value	104.00
Range	31.50
Average	93.46
Median	95.75
Standard Deviation	7.52916
Variance	56.68839

STATUS DISTRIBUTION

Null	0
In Progress	0
Needs Grading	1
Exempt	0

GRADE DISTRIBUTION

Greater than 100	0
90 – 100	31
80 – 89	12
70 – 79	6
60 – 69	1
50 – 59	0
40 – 49	0
30 – 39	0
20 – 29	0
10 – 19	0
0 – 9	0
Less than 0	0

Extra Credit Spkr Ser 2

1. Column

   Extra Credit Spkr Ser 2 ()
2. Points Possible

   5
3. Description

   Extra Credit for Attending the October 22, 2020 Speaker Series

STATISTICS

Count	7
Minimum Value	5.00
Maximum Value	5.00
Range	0.00
Average	5.00
Median	5.00
Standard Deviation	0.00
Variance	0.00

STATUS DISTRIBUTION

Null	43
In Progress	0
Needs Grading	0
Exempt	0

GRADE DISTRIBUTION

Greater than 100	0
90 – 100	7
80 – 89	0
70 – 79	0
60 – 69	0
50 – 59	0
40 – 49	0
30 – 39	0
20 – 29	0
10 – 19	0
0 – 9	0
Less than 0	0

Group Presentation

1. Column

   Group Presentation ()
2. Points Possible

   25
3. Description

STATISTICS

Count	50
Minimum Value	10.00
Maximum Value	25.00
Range	15.00
Average	24.70
Median	25.00
Standard Deviation	2.10
Variance	4.41

STATUS DISTRIBUTION

Null	0
In Progress	0
Needs Grading	0
Exempt	0

GRADE DISTRIBUTION

Greater than 100	0
90 – 100	49
80 – 89	0
70 – 79	0
60 – 69	0
50 – 59	0
40 – 49	1
30 – 39	0
20 – 29	0
10 – 19	0
0 – 9	0
Less than 0	0

ASCI 1010 Final Exam Fall 2020 (Test)

1. Column

   ASCI 1010 Final Exam Fall 2020 (Test)
2. Points Possible

   104
3. Description

STATISTICS

Count	50
Minimum Value	68.50
Maximum Value	104.00
Range	35.50
Average	90.27
Median	92.50
Standard Deviation	8.54705
Variance	73.05209

STATUS DISTRIBUTION

Null	0
In Progress	0
Needs Grading	0
Exempt	0

GRADE DISTRIBUTION

Greater than 100	0
90 – 100	23
80 – 89	15
70 – 79	10
60 – 69	2
50 – 59	0
40 – 49	0
30 – 39	0
20 – 29	0
10 – 19	0
0 – 9	0
Less than 0	0

Class TOTAL Performance on Assignments and Tests (Including Extra Credit Assignments)

Total

1. Column

   Total
2. Points Possible

   303 (may vary by student)
3. Description

   The unweighted sum of all grades for a user.

STATISTICS

Count	50
Minimum Value	79.04676%
Maximum Value	97.93165%
Range	18.88489
Average	90.86447%
Median	92.10069%
Standard Deviation	5.05182
Variance	25.52097

STATUS DISTRIBUTION

Null	0
In Progress	0
Needs Grading	0
Exempt	0

GRADE DISTRIBUTION

Greater than 100	0
90 – 100	31
80 – 89	18
70 – 79	1
60 – 69	0
50 – 59	0
40 – 49	0
30 – 39	0
20 – 29	0
10 – 19	0
0 – 9	0
Less than 0	0

External Final Grade

1. Column

   External Final Grade ()

2. Points Possible

   100

3. Description

   This column should be used to send your Final grades from the Blackboard Grade Center to your Banner grades entry sheet.

STATISTICS

Count	50
Minimum Value	81.50
Maximum Value	95.00
Range	13.50
Average	93.59
Median	95.00
Standard Deviation	3.42445
Variance	11.7269

STATUS DISTRIBUTION

Null	0
In Progress	0
Needs Grading	0
Exempt	0

GRADE DISTRIBUTION

A+	0
A	41
A-	3
B+	2
B	2
B-	2
C+	0
C	0
C-	0
D+	0
D	0
D-	0
F	0

Quiz 1 on Aviation Daily Articles

Points: 1

Question

Which European agency announced that it may cut its air traffic outlook for September due to the COVID-19 restrictions in Europe?

Answer

A.

European Aviation Safety Agency.

B.

European Commission.

C.

Eurocontrol.

Points: 1

Question

The European agency noted in question #1 stated that traffic to which part of the globe flown to by European airlines was now stable after previous growth?

Answer

A.

Mediterranean destinations.

B.

U.S. destinations.

C.

Middle Eastern destinations.

Points: 1

Question

Which European airline cut September and October capacity by 20%?

Answer

A.

EasyJet.

B.

Ryanair.

C.

Air France.

Points: 1

Question	Which European nation as removed France, the Netherlands and Spain from its list of “safe travel corridors?”
Answer	A. Germany. B. The United Kingdom. C. Austria.

Points: 1

Question	Which U.S. airline has announced plans to drop service to 15 small and mid-sized cities following the expiration of the Payroll Support Program (PSP)?
Answer	A. Southwest Airlines. B. United Airlines. C. American Airlines.

Points: 1

Question	The 15 cities proposed to be cut by the airline noted in question #5 is served by what type of flying?
Answer	A. Regional air carriers. B. Legacy air carriers. C. International air carriers.

Points: 1

Question	Airbus is looking at what type of fuel to meet its commitment of bringing an aircraft with net-zero carbon emissions by 2035?
Answer	A. Electric powered. B. Alternative fuels. C. Hydrogen fuel.

Points: 1

Question	Which of the following aircraft pairs is Airbus planning to use to start the market of using the fuel identified in question #7?
Answer	A. ATR 42 and De Havilland Canada Dash 8. B. Boeing 737 and 757. C. Airbus A350 and Embraer Regional Jet.

Points: 1

Question	The European Aviation Safety Agency plans to start test flights of which aircraft on September 7,
Answer	Airbus A380 Irkut MC-21-300. Boeing 737 Max.

Points: 1

Question	Which aviation agency began test flights of the aircraft in question # 9 on August 26, 2020 out of Boeing Field?
Answer	A. FAA. B. EASA. C. Transport Canada.

Student Personal Reflection Paper

[redacted]
Mr. Magoc
ASCI 1010 Professional Orientation
3 September 2020

Transitioning from a senior in high school to a freshman in college is very different. While you are in high school you live at home under your parents' roof with their rules and support, but in college you are responsible for everything. You have to make sure you make time for your meals and budget your time wisely. Most importantly you have to decide what you want for your future, which is a big life changing decision. The path you choose now could be the path you follow for the rest of your life. Going into the flight science field, I feel as if I have chosen the correct field and am excited to continue with this career. Being able to fly makes me excited and I think that picking aviation has given me a career I will enjoy for life.

In order to be successful in my freshman year I am going to need to stay focused and have a positive mindset. It is important that I do all of my assignments on time. I must also be present in every class whether it is via Zoom or in person. Lastly, I have to make sure I participate and speak up when I am confused. Intense studying and putting forth monumental effort is necessary. There is a challenging semester ahead of me, but I am determined to achieve my goals.

For my freshman year I have many plans and goals that I wish to achieve. One of those goals is earning my Medallion for the Micah Learning Community. To receive that medallion, I must attend two faculty events, two community events, and complete community service. This is important to me because, if I am able to do this every year, I will receive a medallion to proudly wear at graduation as a memento of my years as a member of the Micah community.

Another goal of mine is to get my private pilot's license within my freshman year. I hope I can stay on track and no conflicts will get in the way. One uncontrollable conflict, Covid-19, could change all of that though. That leads me to want to stay safe and follow the rules so we can stay at school in person learning as long as possible. I know that I will personally be following all the guidelines to have a safe and in person freshman year.

In order to achieve my goals, I must consistently have good grades. I know that I will need to focus and put in the time to achieve them. I will have to pay attention in my classes, listen to my teachers, and follow what my flight instructor says. I have to have the determination to achieve all of these so I can not only receive a good grade but also earn the ratings I need to be a certified pilot as a member of the aviation field.

After I graduate from Saint Louis University, Parks College, I hope to be able to find a job that will help improve my aviation career and eventually lead me to commercial airlines. Becoming a flight instructor is a career I have considered, as it would help me earn my hours to continue on in the process. Commercial pilots need to have 1,000 hours of flight experience so in five years I anticipate having earned that licensure. Hopefully my student loans will have been paid off in that time period as well. In the next ten years I hope to find the person I want to spend the rest of my life with. I see myself with a husband and hopefully at some point several children. However, I don’t see children in the next ten years quite yet. Having a family to share my life with while having my dream job as a commercial pilot truly would be a dream come true. Working hard and staying focused in the present will help me accomplish my dreams in the long run.

Student Résumé

[redacted]

PROFILE

Freshman studying Science in Aeronautics with a Concentration in Flight Science. Strong work ethic, dedicated to studying aviation, and willing to learn.

EDUCATION

Carmel Catholic High School, Mundelein IL May 2020

- Kairos Group Leader
- Varsity Cross Country athlete-Four years-Co-captain of girl’s team
- Varsity Track Athlete-Two years
- Basketball Player-School League and Summer League
- Soccer Player-Both through school and club team traveling to multiple states in the midwest

Universidad de Salamanca, Salamanca, Spain July 2018

Saint Louis University, St. Louis, MO May 2024

<u>Bachelor of Science in Aeronautics, Concentration in Flight Science</u>

WORK EXPERIENCE

Lifeguard, Mundelein Park District, Mundelein, IL Summer 2018 - 2019

- Watched over patrons ready to rescue individuals in case of an emergency-CPR and First Aid Certified

Nanny/ Child Care/ House Sitting, Arlington Heights, IL January 2015 - Present

- Provide tutoring, crafts, and supervision of children
- Watched homes, brought in mail/packages, and pets for vacationing families
- Numerous references available from many repeat clients

COMMUNITY SERVICE

Emmaus House, Lake Zurich, IL July 2014 - Present

- Prepared meals for the needy
- Organized groceries
- Served food and cleaned work area

Feed My Starving Children, Libertyville, IL August 2016 - Present

- Packed food for children across the world suffering from starvation
- Helped in the warehouse

SKILLS

- Hard-working and dedicated
- Excellent time management and organizational skills
- Good communication and interpersonal skills

Language: Moderate Spanish

Certification: Student Pilot

Quiz 2 on Aviation Daily Articles

Points: 1.25

Question Which of the following US airlines reported that it will furlough more than 16,000 workers on Oct. 1, 2020?

Answer

✔ A. United Airlines.

B. American Airlines.

C. Ryanair

Points: 1.25

Question What US aid supplement is expiring prior to Oct. 1 that was funding labor costs for the air carrier noted in Question #1?

Answer

A. Social Security.

✔ B. CARES Act Payroll Support Program.

C. Pandemic Unemployment Insurance.

Points: 1.25

Question The active global air transport fleet is predicted to be what size in 2020 as compared to 2019?

Answer

A. 10% larger.

B. 25% smaller.

✔ C. 10% smaller.

Points: 1.25

Question	Which type of global air travel is expected to out-pace international air traffic?
Answer	A. Cargo traffic. ✔ B. Domestic and regional. C. On-demand air taxi.

Points: 1.25

Question	Which company is increasing the A-321 passenger to freighter conversion due to an increase in demand for cargo capacity?
Answer	✔ ST Engineering. Boeing. LMI Aerospace.

Points: 1.25

Question	What has caused the increase in air cargo capacity noted in Question # 5?
Answer	✔ A. Coronavirus pandemic. B. Tariffs imposed by the US and South Africa. C. Lack of a bilateral air service agreement between the two nations.

Points: 1.25

Question	Which aircraft manufacturer recently received the first internationally recognized type certificate for an electric-powered aircraft?
Answer	A. Ampaire. ✓ B. Pipistrel. C. Eviation.

Points: 1.25

Question	Which of the following certifying agencies certified the aircraft produced by the manufacturer noted in Question 7?
Answer	A. Federal Aviation Administration (FAA). B. Australian Aviation Safety Bureau (AASB). ✓ C. European Aviation Safety Agency (EASA).

Quiz 3 on Aviation Daily Articles

Points: 1

Question According to the article concerning autonomous air vehicles, small, civilian Unmanned Aerial Vehicles (UAVs) weigh:

Answer

A.
15 lbs. or less.

B.
Under 55 lbs.

C.
Between 55 lbs. and 100 lbs.

Points: 1

Question Which UAV system will absorb the air-taxi routes and air traffic management within and around cities?

Answer

A.
Advanced air mobility (AAM).

B.
Urban air mobility.

Points: 1

Question NASA's vision for the AAM is to:

Answer

A.
Provide safe, sustainable, accessible and affordable aviation for local and intraregional missions.

B.
Provide transportation of passengers and cargo as well as aerial work missions.

C.
Provide service of about a 50-mile radius in rural or urban areas, as well as missions up to a few h

D.
All of the above.

Points: 1

Question

Which of the following universities published a paper detailing that in several parts of the U.S. there is simply no more physical space to build new transportation infrastructure?

Answer

A.

University of Southern California.

B.

Rose-Hulman institute of Technology.

C.

Embry Riddle Aeronautical University.

✔

D.

Stanford University.

Points: 1

Question

A U.S. Congressional report revealed that which aircraft manufacturer did not modify the aircraft's design or pilot training to prevent aircraft accidents?

Answer

A.

Airbus.

B.

Aerospatiale.

✔

C.

Boeing.

Points: 1

Question	What was used by the aircraft manufacturer noted in question 5 to categorize MCAS-related hazard assessment and the 10=second time period to respond to a stabilizer runaw
Answer	Simulator tests.

Points: 1

Question	India's government is attempting to sell which of its flag carriers?
Answer	✔ A. Air India. B. IndiGo. C. SpiceJet.

Points: 1

Question	Which of the following were cited as being a reason for India wanting to sell the air carrier noted in question #7?
Answer	A. Massive financial liabilities. B. High costs. C. Strong competition from local LLCs. ✔ D. All of the above.

Points: 1

Question	According to a poll of aerospace suppliers, the aviation system's inventory levels won't normalize until when?
Answer	A.

	1st quarter of 2022.
	B. Second half of 2021.
	C. First half of 2024.

Points: 1

Question	In the article about stable business activity, what did Ken Herbert note what would be the driver for supplier demand in 2022-2025?
Answer	Economically driven.

ASCI 1010 – TEST 1

Question Who made the first successful manned, powered flight?

Answer

Orville Wright.

Wilbur Wright.

Charles Taylor.

Question On what date was the first successful manned, powered flight accomplished?

Answer

December 17, 1897.

December 17, 1903.

December 17, 1909.

Question Where was the first successful manned, powered flight accomplished?

Answer

Dayton, Ohio,

Kitty Hawk, North Carolina.

Wichita, Kansas.

Question Who accomplished what was the first successful international flight?

Answer

Louis Bleriot.

Calbraith Rodgers.

Charles Lindbergh.

Question Who accomplished the first transcontintental flight across the U.S.?

Answer

Oliver Parks.

Calbraith Rodgers.

Charles Lindbergh.

Question Who successfully completed the first successful solo non-stop trans-Atlantic flight?

Answer	Oliver Parks. Calbraith Rodgers. ✔ Charles Lindbergh.

Question	In what year was the first successful solo non-stop trans-Atlantic flight accomplished?
Answer	1930. 1924. ✔ 1927.

Question	What is normally regarded as the airplane's first practical use?
Answer	✔ Airmail. Public transportation. Air freight.

Question	Who is considered the "Father of Airmail" in the United States?
Answer	Charles Lindbergh. ✔ Otto Praeger. Earl Ovington.

Question	Which government legislation was passed that set airmail rates and the level of cash subsidies to be paid to companies that carried the mail, in response to objections by the railroad industry about losing business to airmail service?
Answer	✔ Airmail Act of 1925. Railroad Competition Act of 1925. Civil Aeronautics Act of 1938.

Question	The Civil Aeronautics Act of 1938 transferred the federal civil aviation responsibilities from the Commerce Department to which new independent agency?

Answer	Federal Aviation Administration. ✔ Civil Aeronautics Authority. Department of Transportation.

Question	The Civil Aeronautics Act of 1938 made which of the following responsible for the investigation of aircraft accidents?
Answer	The Civil Aeronautics Authority. The Administrator of Aviation. ✔ The Safety Board.

Question	The 1940 Amendment to the Civil Aeronautics Act created which of the following and charged it with being responsible for exercising legislative and judicial authority over civil aviation, maintaining executive control of the economics of the air carrier industry, and with the investigation of aircraft accidents?
Answer	✔ The Civil Aeronautics Board. The Federal Aviation Administration. The Department of Transportation.

Question	The Federal Aviation Act of 1958 created which independent agency and gave it the responsi navigation and air traffic control?
Answer	✔ Federal Aviation Agency. Civil Aeronautics Authority. Department of Transportation.

Question	Which government legislation created what we know today as the Federal Aviation Administra
Answer	Federal Airport Act of 1946. Airport and Airway Act of 1970. ✔ Department of Transportation Act of 1966.
Answer	Federal Airport Act of 1946. Airport and Airway Act of 1970. ✔

	Department of Transportation Act of 1966.
Question	Which U.S. government legislation removed most government controls from the U.S. commercial aviation industry?
Answer	✔ Airline Deregulation Act of 1978. Department of Transportation Act of 1966. Airport and Airway Act of 1970.
Question	Which government organization is charged with protecting all transportation modes from terrorism and other criminal threats?
Answer	Federal Bureau of Investigation. ✔ Transportation Security Administration. Department of Transportation.
Question	The Federal Aviation Administration (FAA) is an agency of which department of the U.S. government?
Answer	Department of Homeland Security. ✔ Department of Transportation. National Transportation Safety Board.
Question	What is the name of the Federal Aviation Administration's policy that is designed to better me National Airspace System?
Answer	✔ NextGen. Open Skies. Airline Deregulation Act of 1978.
Question	Which of the following pieces of U.S. legislation was mandated with the intent of placing great issues as aging aircraft structures and human factors affecting safety?
Answer	The Airline Deregulation Act of 1978. The Department of Transportation Act of 1966. ✔

	The Aviation Safety Research Act of 1988.

Question	Which of the following Federal Aviation Administration's initiatives uses aircraft transponders a traffic controllers and pilots with the aircraft's precise position in the sky to help to keep aircraf
Answer	System Wide Information Management (SWIM). ✔ Automatic Dependent Surveillance-Broadcast (ADS-B). NAS Voice Switch (NVS).

Question	Which of the following types of aircraft dominate the U.S. civil aircraft fleet?
Answer	Large jet air carrier aircraft. Military aircraft. ✔ General aviation aircraft.

Question	Aviation is found in which "title" of the Code of Federal Regulations?
Answer	Title 10. ✔ Title 14. Title 18.

Question	What is the name of the document published daily by the U.S. federal government that is use corrections, or deletions of existing federal regulations?
Answer	✔ The Federal Register. The Washington Post. The U.S. Daily Federal Regulation Update.

Question	The name of the force that opposes the weight of an aircraft in flight is:
Answer	Drag. Thrust. ✔ Lift.

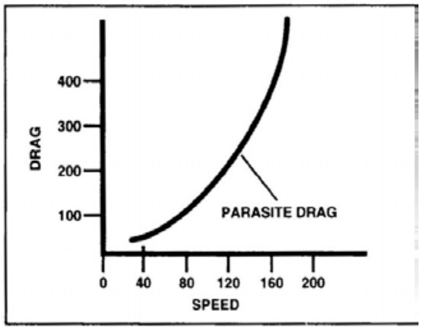
Question	The physical principle upon which the air flowing over an airfoil creates lift to be generated is:
Answer	✓ Bernoulli's Principle. Causality Principle. Momentum Conservation Principle.

Question	The general term used to denote a resistance to airflow over an airfoil or other aircraft surface
Answer	✓ Drag. Thrust. Weight.

Question	The force acting on the body that is in the opposite direction of the direction of flight is known
Answer	✓ Induced drag. Parasite drag. Structural drag.

Question	The term used to denote the combined effects of pressure drag and skin friction drag is:
Answer	✓ Parasite drag. Structural drag. Induced drag.

Question	Refer to the figure. The graph provides which of the following relationships between airspeed and the parasite drag developed on an aircraft?



Answer	The amount of parasite drag on the aircraft decreases with increases in airspeed. The amount of parasite drag on the aircraft remains constant with increases in airspeed. ✔ The amount of parasite drag on the aircraft increases with increases in airspeed.

Question	The distance required for an aircraft to transition from ground operation to flight operation is known as:
Answer	Best rate of climb distance. Rate of lift distance. ✔ Takeoff distance.

Question	The term used to denote the most altitude that an aircraft can gain in a given amount of time is:
Answer	Best angle of climb. ✔ Best rate of climb. Best time of climb.

Question	The time that an aircraft can remain in flight on a known amount of fuel on board the aircraft is known as:
Answer	Total range. ✔ Endurance. Cruise efficiency.

Question	An aircraft's longitudinal, lateral and vertical axes all pass through and move about the aircraft's
Answer	✔ Center of gravity (CG). Center of pitch (CP). Center of rotation (CR).

Question	Which part of the aircraft is used to provide directional stability during operation of the aircraft in flight?
Answer	The rudder assembly. The elevator assembly. ✔ The vertical stabilizer assembly.

Question	An aircraft wing design that incorporates an upward angle of the aircraft's wing for lateral stability when the aircraft rolls laterally is known as:
Answer	✔ Dihedral. Anhedral.

Question	The transition from ground operation to flight operation is referred to as:
Answer	Best rate of climb. ✔ Takeoff. Best angle of climb.

Question	The aircraft performance parameter which gives the most altitude for a given horizontal distance covered is referred to as:
Answer	Takeoff distance. Best rate of climb. ✔ Best angle of climb.

Question	The majority of today's modern aircraft utilize which component to provide for a zero control force to be required by the pilot to maintain a steady flight attitude?
Answer	The differential aileron control system. ✔ The trim tab assembly. The horizontal tail assembly.

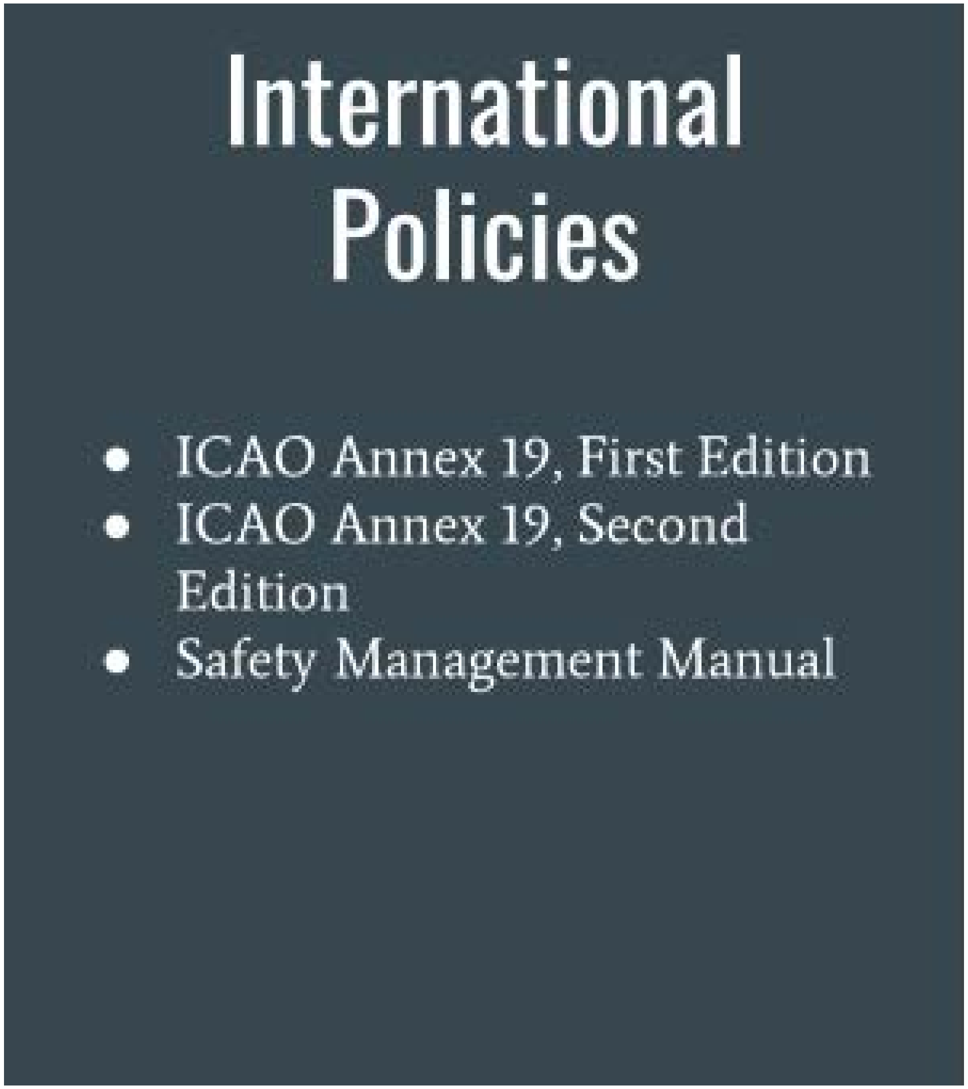
Question	**Extra Credit - worth up to 4 additional points.** The invention and development of the aircraft led to a variety of ways in which mankind has changed economically, socially and politically. Choose one of these aspects of changes and briefly describe how the changes in that aspect have affected mankind in the 100+ years of the aviation industry.
Answer	

ASCI 1010 – Fall 2019 Course Evidence

Student Group Presentation

Safety policy, safety risk management, safety ensurance, and safety promotion all contribute to the Safety Management System in their own individual ways. Each of us will touch on one of these branches. The primary goals of all of these branches is to promote safety in the aviation industry and enforce regulations pertaining to safety.

Safety Policy uses numerous methods to promote safety in the industry. These methods consists of establishing safety objectives, define methods, processes and structure to the industry, establish clarity in safety management, improves and builds upon existing procedures, and establish cooperation and communication within the industry. Allen Stolzer and John Goglia, authors of the book *Safety Management Systems in Aviation* define safety policy as, “procedures in place that explicitly describe responsibility, authority, accountability, and exceptions. Most importantly, safety must be a core value for the organization” (Stolzer & Goglia 2015, p.g. 29).



The first set of policies placed are international policies. ICAO Annex 19, First Edition is designed in order to address risks associated with safety, manage and support infrastructure and regulatory developments, reinforce the state’s role in safety at the state level, and stress the importance of safety in aviation.

ICAO Annex 19, Second Edition is similar to the Annex 19 first edition, it is only an amended and updated version of Annex 19 and succeeds the first. Lastly, the Safety Management Manual is used as a source of information and guidance for safety management.

National Policies

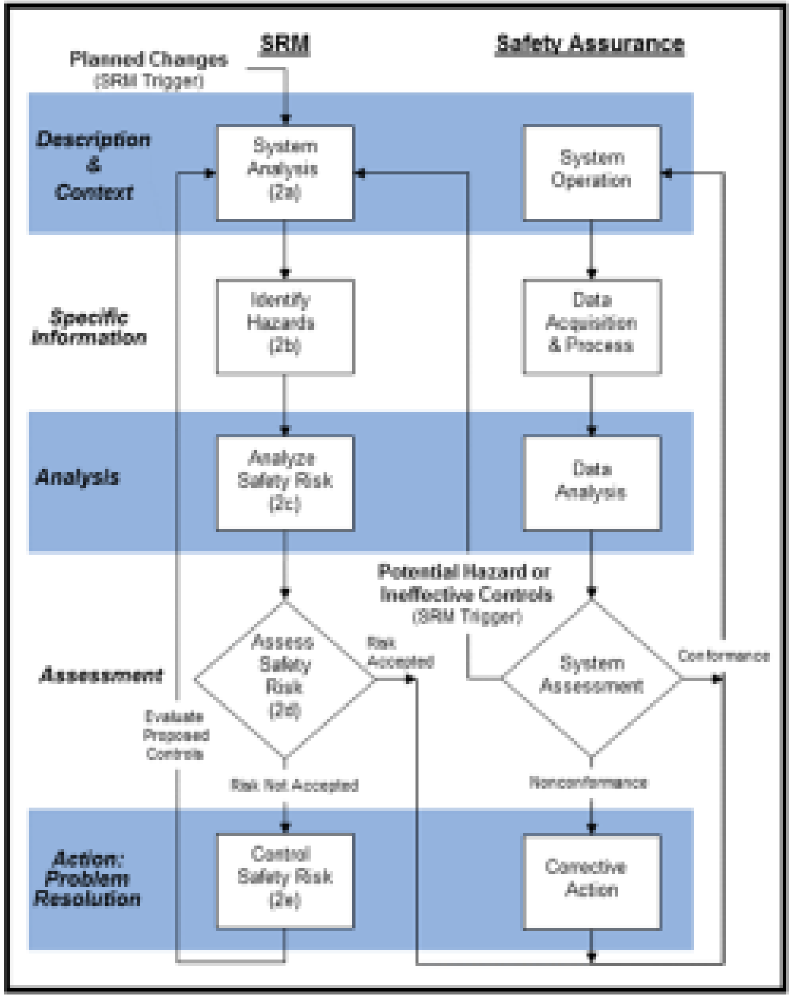
- Order 8000.369B (Safety Management Systems)
- Order 8040.4 (Safety Risk Management Policy)
- Order VS 8000.367B (Safety management System requirements)

These policies are in place in the United States. Order 8000.396B (Safety Management Systems) establishes requirements and policies for the FAA. The FAA states the order, “is intended to help FAA organizations incorporate SMS and/or International Civil Aviation Organization (ICAO) State Safety Program (SSP) requirements into their organizations”. Order 8040.4 establishes requirements and criteria for how to conduct Safety Risk Management in the FAA. Order VS 8000.367 provides requirements that must be met by Aviation Safety services and offices that support of Safety Management Systems. It also address safety for and an approach to improving safety.

AC 120-92B provides information for title 14 in the Code of Federal Regulations (CFR) part 121, where air carriers are required to use and implement safety management systems. It lists requirements, regulations, and methods for implementing safety.

Safety Risk Management

- Establishes common terms and processes used to analyze, assess, mitigate, and accept safety risk in the aerospace system
- Examination of the factors that increase or decrease the likelihood



System Analysis

- Purpose: of the system analysis step is to understand and describe the system to the extent necessary to identify potential hazards
- Comprehensive approach
- Identify issues and changes
- What they affect and what is affected

Initial Safety Risk Level	Safety Risk Acceptance Responsibility **
High Risk	Associate Administrators of LOBs; Assistant Administrators of Staff Offices; ATO Chief Operating Officer***
Medium Risk	The appropriate management officials within the stakeholder organizations who have the positional responsibility and authority for the issue or change being assessed****
Low Risk	Per LOB/Staff Office Guidance for Safety Risk Acceptance

RISK ASSESSMENT MATRIX

SEVERITY / PROBABILITY	Catastrophic (1)	Critical (2)	Marginal (3)	Negligible (4)
Frequent (A)	High	High	Serious	Medium
Probable (B)	High	High	Serious	Medium
Occasional (C)	High	Serious	Medium	Low
Remote (D)	Serious	Medium	Medium	Low
Improbable (E)	Medium	Medium	Medium	Low
Eliminated (F)	Eliminated			

Identify Hazards and Safety Risk

- Hazard: a condition that could foreseeably cause or contribute to an aircraft accident
- Safety Risk: determine the initial safety risk associated with the effects of each identified hazard

(1) Ambient environment (physical conditions, weather, etc.);

(2) Equipment (hardware and software);

(3) External services (contract support, electric, telephone lines, etc.);

(4) Human-machine interface;

(5) Human operators;

(6) Maintenance procedures;

The Safety Assurance System (SAS) is the Federal Aviation Administration's (FAA's) oversight tool to perform certification, surveillance, and continued operational safety. SAS includes policy, processes, and associated software that Flight Standards Service (FS) uses to capture data when conducting oversight. SAS is not a separate safety standard and does not impose additional requirements on certificate holders. SAS helps accomplish the following objectives.

- Standardizes the work being accomplished across FS
- Improves consistency and collaboration between FAA and industry
- Helps FAA Aviation Safety Inspectors (ASIs) determine risk-based, data-supported oversight decisions
- Determines hazard identification and risk assessment strategies to formulate surveillance plans and where to focus FAA resources
- Provides the standardized protocols to evaluate whether Certificate Holder operations are in compliance with regulations

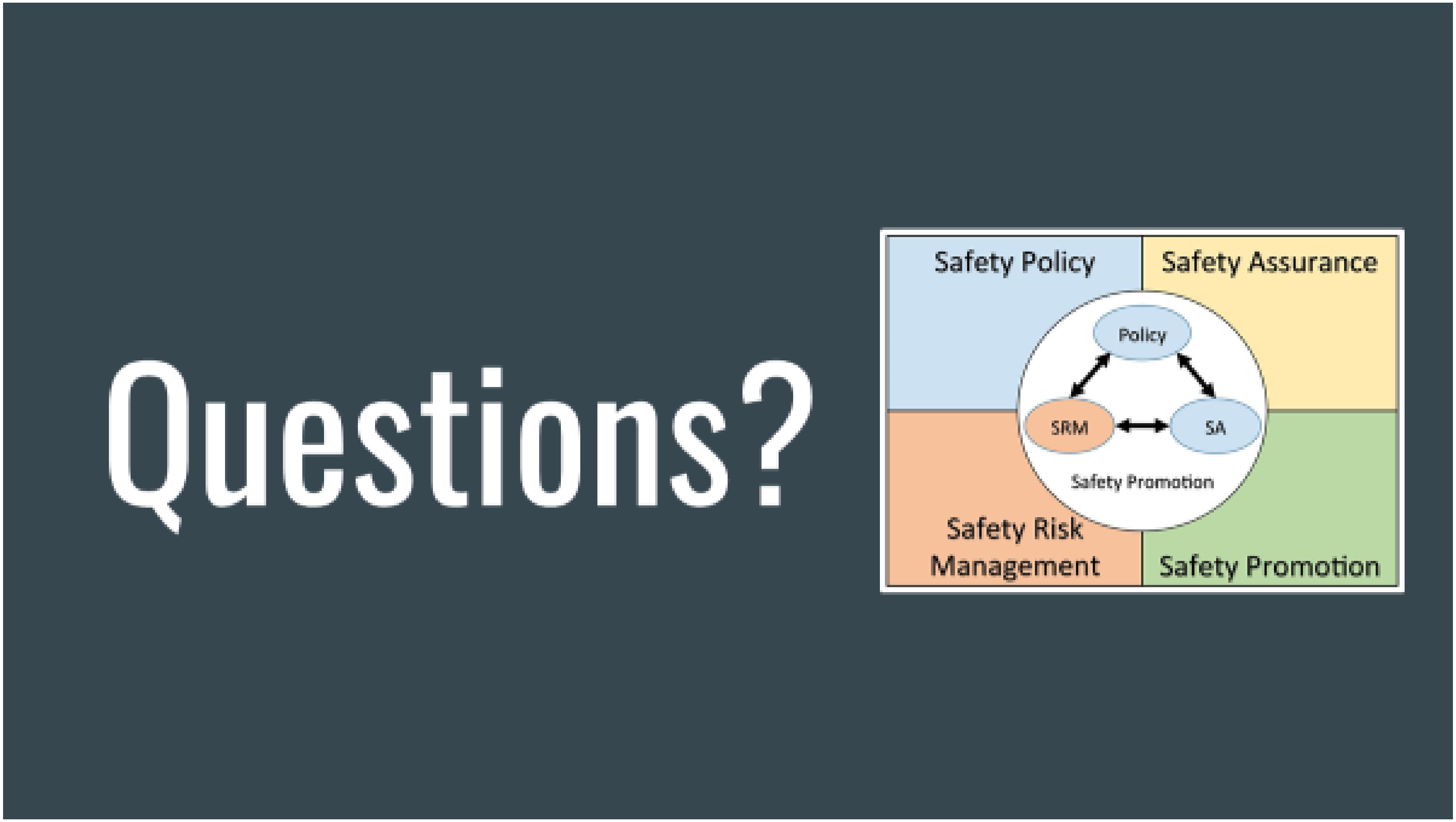
Under SAS our primary responsibilities are:

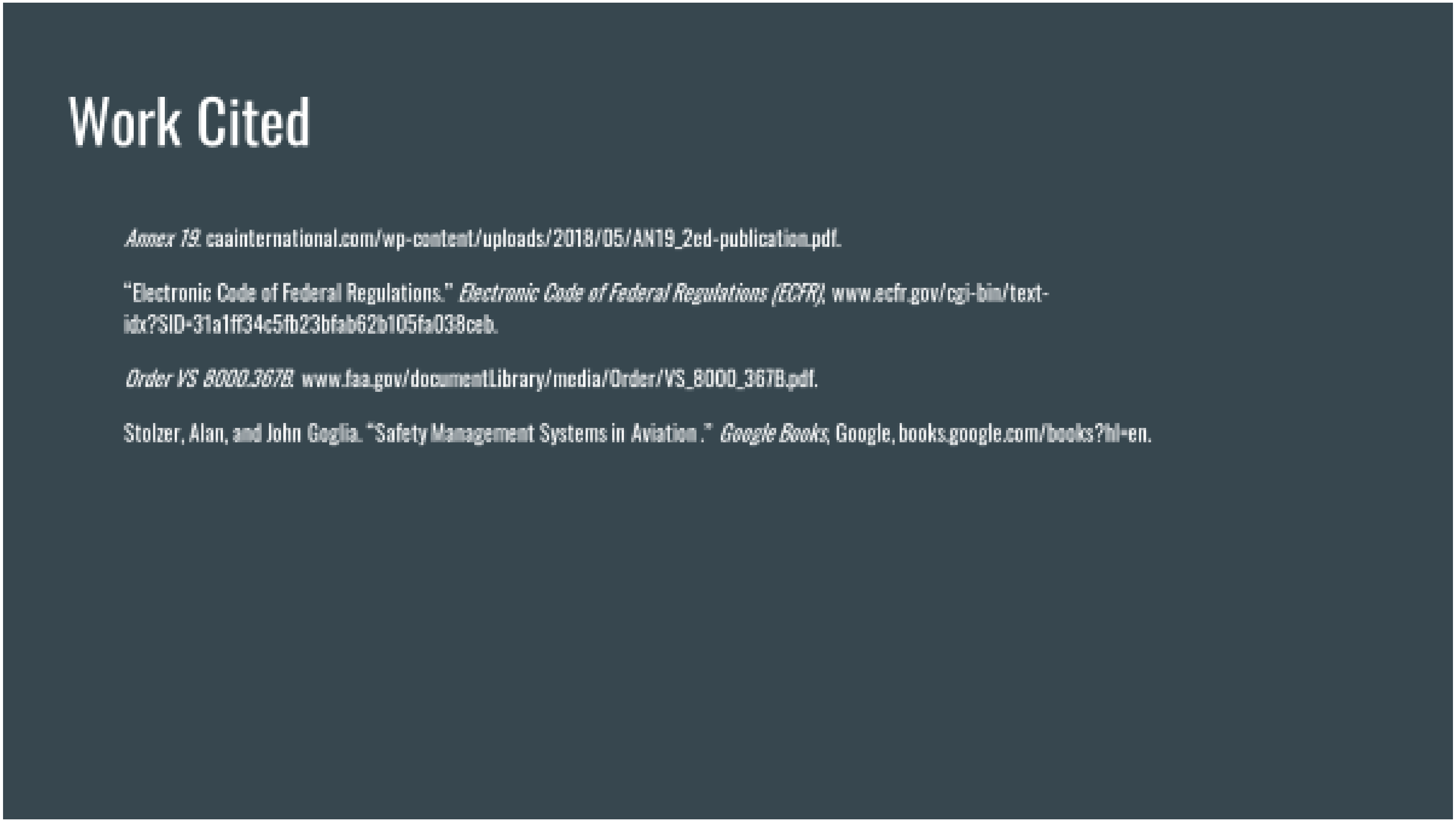
- Verify an applicant can operate safety and comply with regulations and standards before issuing a certificate and approving or accepting programs.
- Conduct periodic reviews to verify that a certificate holder continues to meet regulatory requirements when the environment changes: and
- Validate the performance of a certificate holder's approved and accepted programs for the purpose of Continued Operational Safety (COS).

The goal of system safety is to optimize safety by the identification of hazards within an environment and to eliminate or control their associated risk. We do this by performing Design Assessments (DA) and Performance Assessments (PA) based on system safety principles. Certificate holders fulfill their responsibilities by designing operations systems that manage hazard-related risks and by providing service with the highest degree of safety in the public interest.

- Element Design Assessments (EDAs) are used to ensure a certificate holder's or applicant's operating systems are designed to comply with the intent of regulations and system safety.
- Performance Assessments (PA) are used to determine if the certificate holder's or applicant's operating systems are producing the intended results, as well as to confirm the certificate holder's or applicant's risk assessment is occurring through their monitoring process and they are taking appropriate corrective action when needed. This includes mitigation or control of hazards and risks and the ability to detect latent, systemic failures that may occur over time or due to subtle environmental changes.

1. Includes training, communication, and other actions to create a positive safety culture within all levels of the workforce
    a. Safety promotion activities within the SMS framework include:
        i. Providing SMS training
        ii. Advocating/strengthening a positive safety culture
        iii. System and safety communication and awareness
        iv. Matching competency requirements to system requirements
        v. Disseminating safety lessons learned
    b. Everyone has a role in promoting safety


Questions?
Safety Policy
Safety Assurance
Policy
SRM
SA
Safety Promotion
Safety Risk Management
Safety Promotion



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ASCI 1010 – Final Exam

Points: 2.5

Question What is the purpose of a bilateral air service agreement?

Answer

The agreement is between two airlines of two different countries which allows each airline to operate in the other country.

The agreement is between two nations that will allow only designated airlines of each country to fly in and out of those countries carrying passengers and/or cargo.

The agreement is between multiple countries that allows for unlimited airlines of the various countries to operate as they wish between all the countries that are signatory to the agreement.

Points: 2.5

Question Which of the Freedoms of the Air are guaranteed freedoms or rights per the International Civil Aviation Organization?

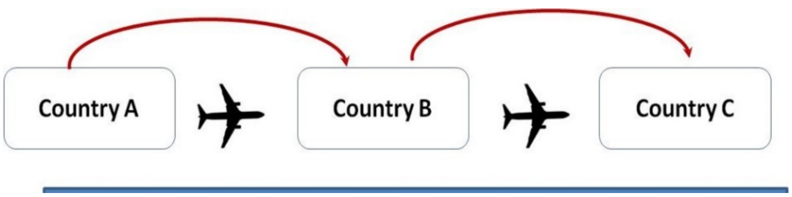
Answer

Freedoms 1 through 5.

Freedoms 6 through 9.

Points: 2.5

Question Refer to the figure. The figure denotes Freedom of the Air that is the right granted by one State to another State to put down and to take on, traffic coming from or destined to a third State. Which Freedom of the Air is this?



Answer

The 3rd Freedom of the Air.

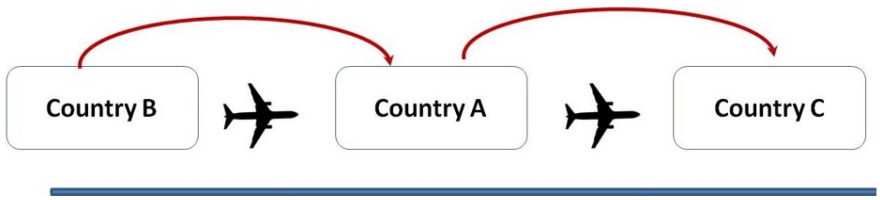
The 5th Freedom of the Air.

The 7th Freedom of the Air.

Points: 2.5

Question

Refer to the figure. The figure denotes the Freedom of the Air that gives the right of transporting, via the home State of the carrier, traffic moving between two other States. Which Freedom of the Air is this?



Answer

The 2nd Freedom of the Air.

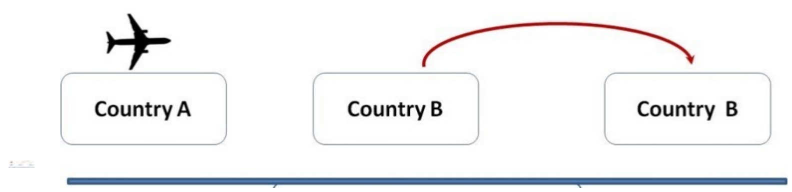
The 4th Freedom of the Air.

The 6th Freedom of the Air.

Points: 2.5

Question

Refer to the figure. The figure denotes the freedom of the air that gives the right of transporting cabotage traffic of the granting State on a service performed entirely within the territory of the granting State, which is known as "stand-alone cabotage." Which Freedom of the Air is this?



Answer

The 8th freedom of the air.

The 7th freedom of the air.

The 9th freedom of the air.

Points: 2.5

Question

Which of the following is not considered to be a major structural component of an aircraft?

Answer	✔ The avionics installed in the aircraft. The wings of the aircraft. The empennage of the aircraft.

Points: 2.5

Question	An aircraft's wing that requires no external struts or bracing is referred to as which type of wing?
Answer	✔ Cantilever wing. Semi-cantilever wing. Fully cambered wing.

Points: 2.5

Question	Which internal wing component is the principal structural assembly of the wing?
Answer	The rib. The stringer. ✔ The spar.

Points: 2.5

Question	Which internal wing component is used to give the wing its cambered shape and assist in transmitting loads to the principal structural member of the wing?
Answer	✔ The rib. The stinger. The spar.

Points: 2.5

Question	The name of the component used to house the aircraft's powerplant and reduce aerodynamic drag is referred to as:

Answer	Cowling. Nacelle. Both A and B.

Points: **2.5**

Question	The ailerons, elevators and rudder are considered to be which type of flight control system?
Answer	Auxiliary flight controls. Primary flight controls. Secondary flight controls.

Points: **2.5**

Question	What is another name for an aircraft landing gear configuration that incorporates a nose wheel assembly instead of a tail wheel assembly?
Answer	Conventional configuration. Tricycle configuration.

Points: **2.5**

Question	The purpose of designing an aircraft with retractable landing gear is to:
Answer	Allow the aircraft to be landed on its belly in the event of a failure of the landing gear system. Eliminate drag which is detrimental to performance and efficiency. To make the appearance of the aircraft more visually appealing.

Points: **2.5**

Question	A typical battery which cannot be recharged after discharging is known as a:
Answer	Primary cell.

Secondary cell.

Points: 2.5

Question	An electrical generating device that is found in the tail section of most modern jet transport category aircraft is the:
Answer	Ground power unit. ✔ Auxiliary power unit. Ram air turbine unit.

Points: 2.5

Question	Aircraft hydraulic systems belong to which of the following types of systems?
Answer	✔ Fluid power systems. Lubrication systems. Pneumatic power systems.

Points: 2.5

Question	Which of the following systems is used to by modern day transport category aircraft to decelerate the aircraft after landing?
Answer	✔ The multi-disc brake system. The single disc brake system. The parachute braking system.

Points: 2.5

Question	Which of the following devices is used on a typical small aircraft to warn the pilot of an impending loss of lift due to a high angle of attack of the wing?
Answer	✔ The stall warning system. The position system.

The gyroscopic instrument system.

Points: 2.5

Question What is the purpose of a fuel quantity indicating system?

Answer

To provide the pilot with information about the quantity of fuel on board the aircraft.

To allow the pilot to directionally control the aircraft.

To reduce the clutter of several instruments built into one instrument.

Points: 2.5

Question Which system is used to automatically actuate the aircraft's flight control surfaces to maintain a commanded altitude and heading?

Answer

The gyro signal input system.

The control surface feedback signal system.

The autopilot system.

Points: 2.5

Question Which of the following anti-icing systems is typically used with an aircraft's pitot tube systems?

Answer

Electrical anti-icing.

Chemical anti-icing.

Thermal anti-icing.

Points: 2.5

Question Which of the following anti-icing systems utilizes hot compressed air to prevent ice from forming on the leading-edge surfaces of wings?

Answer

Electric anti-icing system.

Thermal anti-icing system.

Chemical anti-icing system.

Points: 2.5

Question To aid in identifying the avgas in an aircraft as AVGAS 100LL, the fuel is dyed which color?

Answer

Red.

✔ Blue.

Green.

Points: 2.5

Question An aircraft main battery that can be recharged is known as a:

Answer

Primary cell.

✔ Secondary cell.

Points: 2.5

Question Which type of electrical system is used in most ff today's small, general aviation aircraft?

Answer

Alternating current (AC) electrical system.

Direct current (DC) electrical system.

✔ Alternating current (AC) electrical system rectified to a DC electrical system.

Points: 2.5

Question Which type of electrical system is used as the primary electrical power source on large transport category aircraft?

Answer

✔ Alternating current (AC) electrical system.

Direct current (DC) electrical system.

Points: 2.5

Question What is the name of the force that propels an aircraft through the air?

Answer

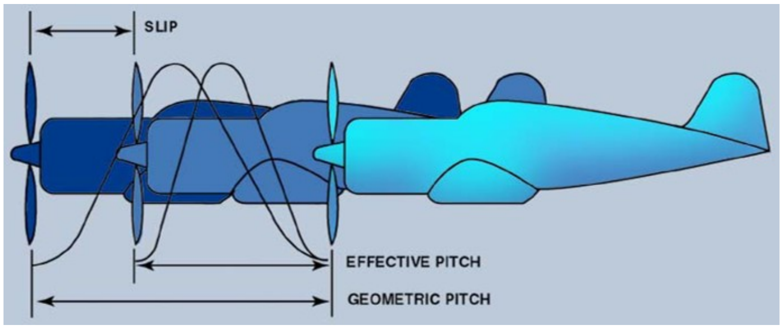
Lift.

Drag.

✓ Thrust.

Points: 2.5

Question Refer to the figure. The theoretical distance a propeller moves in one revolution if it is 100% efficient is referred to as:



Answer

Slip.

Actual distance.

✓ Geometric distance.

Points: 2.5

Question A tractor propeller is mounted:

Answer

✓ At the front of the aircraft.

At the rear of the aircraft.

Points: 2.5

Question The basic operating principle of a heat engine creating power to be used as thrust in a typical aircraft engine is:

Answer

Fuel is converted into heat energy which is converted into mechanical energy.

Fuel is converted into mechanical energy.

Fuel is converted into mechanical energy which is converted into heat energy.

Points: 2.5

Question An aircraft reciprocating engine operates on which of the following operating cycles?

Answer

Otto Cycle.

Brayton Cycle.

Points: 2.5

Question Which classification of reciprocating engine cylinder arrangement is the predominant type in use in general aviation today?

Answer

Radial.

V-type.

Horizontally opposed.

Points: 2.5

Question Which of the following are used to note the amount of thrust that can be created by a turbine engine?

Answer

Brake horsepower.

Pounds of thrust.

Points: 2.5

Question	Which system is designed to supply air to the engine so that when fuel is added, combustion can take place?
Answer	Exhaust system. ✔ Induction system. Lubrication system.

Points: 2.5

Question	Why are different types of AVGAS color-coded?
Answer	To aid in determining the price paid at the dispensing pump. To aid in identifying the fuel manufacturer. ✔ To aid in identifying the correct octane rating of fuel to put into the aircraft's fuel tanks.

Points: 2.5

Question	An aircraft gas turbine engine operates on which of the following operating cycles?
Answer	Otto Cycle. ✔ Brayton Cycle.

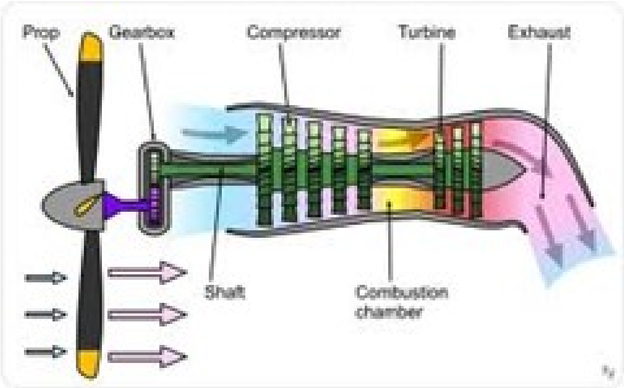
Points: 2.5

Question	The gas pressure developed in a typical turbojet engine is used to turn which component of the engine, which will simultaneously rotate the compressor?
Answer	The exhaust nozzle. ✔ The turbine blades. The combustor.

Points: 2.5

Question

Refer to the figure. Which component of the direct-drive turboprop engine provides the higher amount of thrust during operation?



Answer

Exhaust gas pressure.

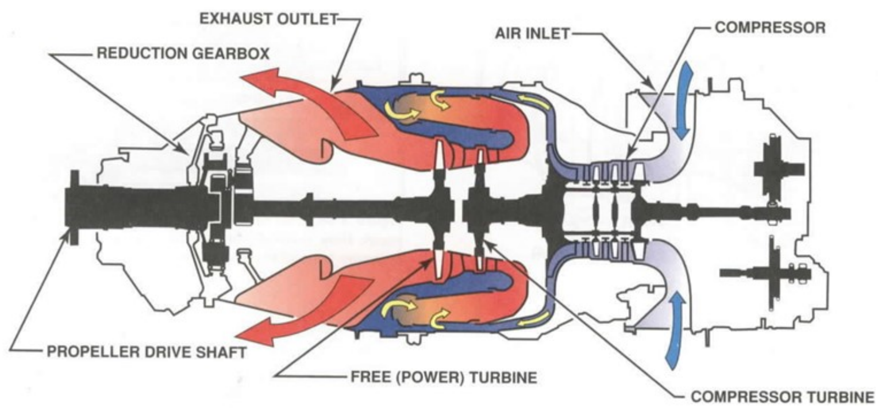
Compressor.

Propeller.

Points: 2.5

Question

Refer to the figure. Which engine component is used to provide the rotational force to the reduction gearbox and propeller?



Answer

The compressor turbine.

The compressor.

✔ The power (free) turbine.

Points: 2.5

Question Which type of turbine engine is typically used in applications such as helicopters and auxiliary power units (APU's)?

Answer

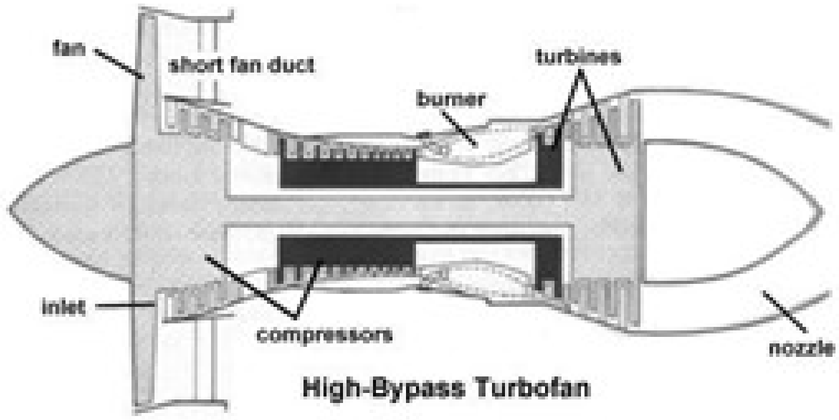
✔ Turboshaft engine.

Turbojet engine.

Turbofan engine.

Points: 4

Question Refer to the figure. Extra Credit, worth up to 4 additional points. Briefly describe the meaning of a turbofan engine having a bypass ratio of 6:1; and identify the airpath that provides most of the engine’s thrust output.


fan
short fan duct
turbines
burner
inlet
compressors
nozzle
High-Bypass Turbofan

Undergraduate Course Assessment Form

Course: ASCI 1300 Aviation Weather
Semester Taught: Fall 2020
Number of Students in Course: 50

Student Learning Outcome Assessed	Assessment Results: (Indicate what % of class achieved a minimum 70%)	Benchmark achieved? (Benchmark: 80% of students will score a minimum of 70% = "C")
A. Apply mathematics, science and applied science to aviation related disciplines.	96%	Yes
B. Analyze and interpret data.	96%	Yes
H. Use the techniques, skills and modern technology necessary for professional practice.	96%	Yes

Course Assessment (Intended Use of Results)
The following will be used for recommendations to improve the quality of course delivery based on assessment results. These recommendations may include prerequisite change; changing course outline and adding more topics; adding a third assessment; changing the course sequence, etc.

**Attach description of assignment used for assessment and samples of student work.*

ACN 1531789

[redacted]

ACN 1531789

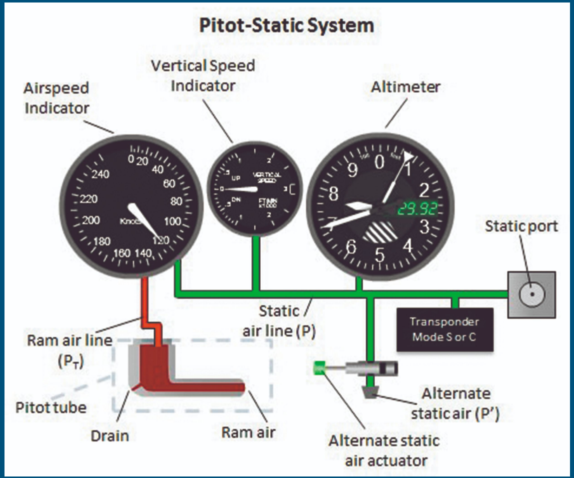
- ❖ Aircraft Type: Cessna 182 Skylane
- ❖ Departed as a Visual Flight Rules (VFR) cross country flight.
  - ➢ While en route the ceiling transitioned to completely overcast below the pilot.
  - ➢ Pilot was not IFR rated or equipped.
  - ➢ Possible icing conditions were present.
  - ➢ ATC talked the pilot through the clouds to a safe landing.

Effect of Clouds on the Pilot

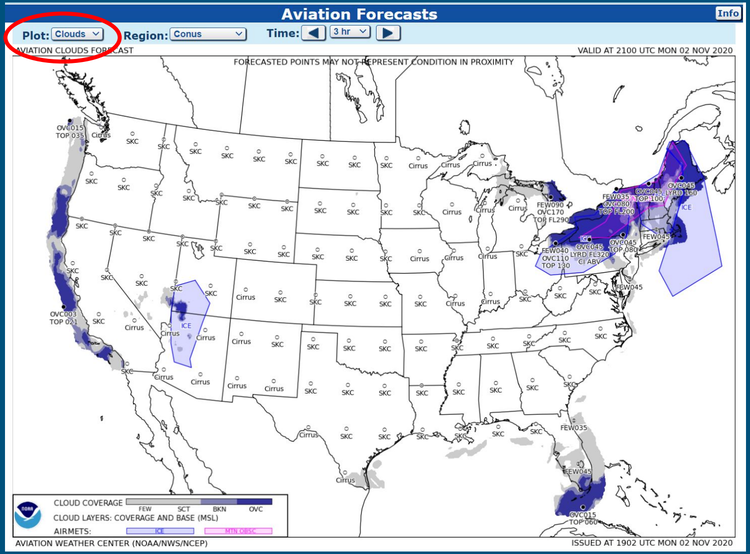
- VFR flight is dependent on seeing the horizon and the ground/landmarks
  - When these visual cues are taken away, the pilot could experience spatial disorientation
- Spatial Disorientation
  - Define as: The inability of a pilot to correctly interpret aircraft attitude, altitude or airspeed in relation to the Earth or other points of reference.

Icing

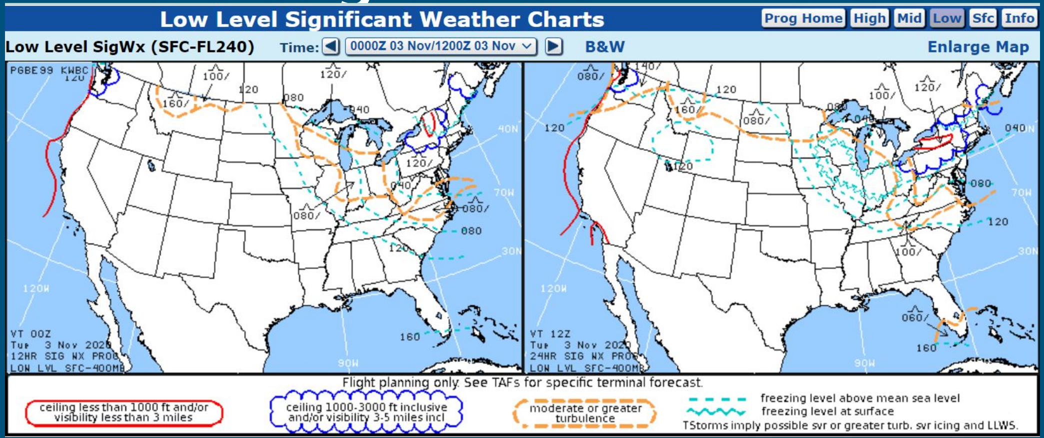
- ❖ ATC informed the pilot that during the descent through the clouds, icing conditions were possible.
- ❖ Icing is extremely harmful to aircraft as it can
  - ➢ Reduce lift because smooth airflow over the wings becomes disrupted
  - ➢ Increase weight
  - ➢ Block equipment such as pitot-static ports, resulting in incorrect instrument readings.
- ❖ For icing to occur, there needs to be two things
  - ➢ Visual moisture
  - ➢ Temperatures below the freezing point



Tools to Predict Cloud Coverage



- ❖ Graphical Forecasts for Aviation (Clouds)



- ❖ Prognostic Charts
  - ➢ LLSW charts can cover from the SFC-FL240 and give the pilot information on the ceiling, visibility, and freezing levels

- ❖ Before departing, look at TAF's and METARS <u>along your intended route of flight</u>, not just at your departure and destination.
- ❖ PIREP's

Aviation Weather
Parks College of Engineering, Aviation and Technology
Fall 2020

Final Project: NASA ASRS Report Assessment

To complete this assignment, students will find a NASA ASRS report where the primary factor contributing to the error was Weather. Students will write a short report about why the incident occurred, the weather associated with the incident, how a pilot can anticipate the weather which caused the problem, and how to avoid such errors in the future. Students will also prepare a short presentation (2-4 minutes) on their report, and share this in class, in front of their colleagues.

Students who are attending the class remotely or from foreign countries will still be required to present their findings to the class. This can be accomplished over Zoom, and you will be able to share your screen with the rest of the class.

Students will conduct a search of the ASRS database. In conducting this search, students will select 'Weather' as the Primary Factor. Students will also use the ASRS search function to limit results to 'Part 91' Flight Rules. This will pull reports only from general aviation, and exclude those reports from airlines, charter operators, military flight operations, and other flight operations that are not directly relevant to the type of flying that students are currently engaged in.

Due Dates:

1. 10/27/20, 9:29 AM CDT - submit your chosen ASRS report, date of occurrence, aircraft type, and a short summary in a PDF document on Blackboard.
2. 11/2/20, 11:59 PM CST - submit your completed assignment (short essay and powerpoint presentation) in PDF formats via Blackboard

Aviation Weather
Parks College of Engineering, Aviation and Technology
Fall 2020

Short Essay Format Requirements

1. Times New Roman, 12-pt., double spaced
2. Title should be the ACN, centered in **bold**, at the top of the page
3. 400-700 words

Short Essay Content Requirements

Answer the following questions:

1. What occurred? Provide a detailed description.
2. What was the weather phenomenon? Describe the weather occurrence using your knowledge of weather theory from our class.
3. How could this situation be avoided in the future? Use your knowledge of aviation weather products and preflight planning to describe how you might avoid this type of occurrence in the future.

As with any writing assignment, please consider proper grammar, punctuation and spelling. Please include a short introduction and conclusion at the beginning and end of your assignment.

Presentation Requirements:

1. 2-4 minute presentation
2. Create a short powerpoint presentation
3. Present your essay in an oral format to the class

[redacted]

Aviation Weather ASRS Short Essay

Due: November 2, 2020

ACN 1531789

Flying in visual flight rules conditions, weather minimums, specifically separation from clouds, is essential for safe flight. For my report, I have selected ACN 1531789, which was filed in April of 2018 by the pilot of a Cessna Skylane 182 after he departed VFR, and got stuck above an overcast layer of clouds without an instrument rating or an IFR equipped plane.

In ACN 1531789, the pilot departed on a VFR flight with more than 4 hours of usable fuel with an overcast layer at 4,000 feet MSL. Shortly after departure, the pilot set his cruise altitude to 3,300 MSL and contacted approach control to request flight following. The pilot was informed that he could not be picked up on radar unless he climbed to 5,500 feet MSL. Approach control advised the pilot to set his transponder to VFR 1200 and climb to 5,500 feet MSL when able. Slightly north of the pilots position, he found a scattered layer of clouds allowing him to climb to 5,500 feet MSL, got flight following, and was given a squawk. While en route, however, the cloud layer had transitioned to completely overcast below the pilot and his passenger. The pilot was handed off to the next controller, and requested assistance in finding a hole in the clouds. In hopes of finding a hole, he requested to fly further west to find a scattered layer. However, he was advised by ATC that the ceilings ranged from 1,200-1,500 feet MSL and was asked if he was IFR qualified and equipped, which the pilot was neither. The only navigational equipment he had onboarded was ForeFlight on his iPad, and a Garmin 250XL and at this point he had 1.5 hours of usable fuel remaining. As a result, the controller classified the pilot as an emergency, and would talk him through a descent through the clouds. Due to the temperature aloft being just above the freezing point, the pilot was also advised of possible icing conditions during the descent. With instruction of reductions in power and usage of flaps, the controller was able to talk the pilot down to an uneventful, safe landing.

Flying VFR, clouds present significant safety hazards for not only the pilot, but other air traffic in the area. By getting caught above or in an overcast layer of clouds, visual cues are taken away, possibly resulting in spatial disorientation, which significantly compromises the safety of passengers, crew, cargo and other aircraft alike. Furthermore, flying through a cloud layer like this presents the hazard of icing conditions as well because the temperature is low enough where the visual moisture can freeze onto the airplane's surfaces. If ice did build up during this incident, a multitude of problems could have been presented to the pilot such as a decrease in lift because the smooth airflow over the wings would get disrupted, additional weight due to ice build up, and incorrect pitot-static instrument readings due to blockages.

After closely reading this report, it seemed like the pilot was surprised that the overcast layer transitioned at the rate it did which could possibly be the consequence of not getting the proper weather briefings before departure. To avoid instances like this in the future, it is essential that the pilot obtains all weather information relating to the flight which falls under CFR 91.103 "Preflight Action". To assess the cloud coverage in the area and throughout the route of flight, the pilot needs to closely examine weather products whether it be by getting a weather briefing on ForeFlight, calling the weather briefer, or using AviationWeather.gov. Specifically, the pilot should have paid closer attention to TAF's, Prognostic charts, and Graphical Forecasts for Aviation (clouds) along his intended route which would help the pilot identify locations to avoid based on clouds layers and their altitudes. By analyzing these weather products, pilots would have a sufficient amount of information in order to make confident, safe decisions which would help in avoiding incidents similar to this one.

Clouds present numerous hazards which can ultimately compromise safety if not dealt with properly. Before departure, it is essential that the pilot determines and is able to anticipate cloud coverage along their route of flight in order to plan accordingly and avoid situations similar to what occurred in ACN 1531789. By getting a proper weather briefing and knowing your piloting abilities through your ratings and setting personal minimums, pilots will be able to make calculated go or no go decisions which would help avoid incidents like this.

[redacted]
Aviation Weather
Due: October 27, 2020

1. ASRS Report number: 1531789
2. Date: April 2018
3. Aircraft Type: Cessna Skylane 182
4. Summary: A pilot departed the airport with an overcast layer at approximately 4000 ft MSL and set cruise altitude to 3300 ft MSL. Shortly after departure, he contacted approach control to request Flight Following, and they requested him to climb to 5500 MSL in order to be picked up on radar, but couldn't climb due to clouds and remained VFR with transponder code of 1200. Eventually, the pilot was able to get to 5500 ft MSL, but the overcast layer dropped while en route resulting in him being stuck above the overcast layer without an instrument rating.

Undergraduate Course Assessment Form

Course: ASCI 2200 Concepts in Aerodynamics
Semester Taught: Fall 2020
Number of Students in Course: 37

Student Learning Outcome Assessed	Assessment Results: (Indicate what % of class achieved a minimum 70%)	Benchmark achieved? (Benchmark: 80% of students will score a minimum of 70% = "C")
A. Apply mathematics, science, and applied sciences to aviation-related disciplines.	32 of 37 (86%) students scored 70% or above on an assignment requiring an understand of some of the science surrounding flight.	Achieved
B. Analyze and interpret data.	31 of 37 (84%) students scored 70% or above on an assignment requiring the analysis and use of data,	Achieved
H. Use the techniques, skills, and modern technology necessary for professional practice.	34 of 37 (92%) students scored 70% or higher on an assignment requiring the calculation of lift using the Bernoulli Equation, a calculator and proper mathematical operations.	Achieved

Course Assessment (Intended Use of Results)
The following will be used for recommendations to improve the quality of course delivery based on assessment results. These recommendations may include prerequisite change; changing course outline and adding more topics; adding a third assessment; changing the course sequence, etc.

86% of the students enrolled in ASCI 2200 achieved a score of 70% or better on an assignment that leverages an understanding of the physical sciences and their application to flight. Upon reflection, this one assignment does not require the use of mathematics, although the course is replete with mathematical applications and use. In the next iteration of this course, I plan to use an alternative assignment that in addition to testing knowledge of the physical sciences but will also require a demonstration of mathematical ability.

84% of the students enrolled in ASCI 2200 achieved a score of 70% or better on an assignment that required a number of calculations including the use of tables and charts. Dynamic pressure values were calculated for both a stationary object and an aircraft. I am satisfied with the ability of the class to analyze and interpret data.

**Attach description of assignment used for assessment and samples of student work.*

92% of students scored 70% or higher on an assignment requiring the calculation of lift using the Bernoulli Equation, a calculator, and proper mathematical operations. I question whether this assessment meets the intent of Student Learning Outcome H. In the strictest sense it does, however I think better examples are available across the curriculum. I plan to discuss the topic in the assessment meeting to see if a consensus will consider removing SLO H from the Aerodynamics course.

Student Learning Outcomes Evidence

SLO A Example 1
Describe the best ways for aircraft designers to minimize parasite drag (include a discussion of the three types of parasite drag discussed in class).
The three types of parasite drag are form, interference, and skin friction drag. Form drag is essentially the drag associated with the shape of the aircraft moving through a fluid. Interference drag is the mixing of airflows between the different components of the airframe. Skin friction drag is the drag that is between the surface of the aircraft surfaces and the air flowing over it, at the microscopic level, even surfaces that appear smooth are never a hundred percent smooth. The best ways to minimize interference drag is make the aircraft as streamlined as possible, you can also minimize the convergence of angles of the different aircraft components. In order to minimize skin friction drag, aircraft designers will try and make the surface as smooth as possible. To minimize form drag, you can make the aircraft components more streamlined in shape and also create a smaller frontal area for the aircraft.

Describe three ways to minimize induced drag.
One way to minimize induced drag is have an aircraft (wings) with a higher aspect ratio which would lower induced drag compared to wings with a high aspect ratio. Another way to minimize drag is by increasing your airspeed. Lastly, induced drag is inversely proportional to density, so the lower your altitude, the lower your induced drag is going to be.

Describe how a four-stroke engine operates.
The four-stroke cycle is the intake, compression, combustion, and the exhaust. The intake stroke is where the fuel air mixture is mixed before it enters the cylinder. The compression phase is where the fuel and air mixture is compressed by the cylinder. The combustion phase is when the spark plugs ignite that fuel and air mixture and the cylinder is pushed down. Then the exhaust phase is when that burned fuel and air mixture is expelled from the cylinder.

Differentiate how a gas turbine engine produces thrust.
A gas turbine engine produces thrust by first allowing air to flow into the inlet via a pressure differential. The air is then compressed through the compressor section of the engine. The rotors of the compressor accelerates the flow of air to the rearward section of the engine. The pressure is being boosted within the compressor. Fuel injectors inject the fuel and ignite it with the air in the combustion chamber (fuel and air mixture). This causes a rapid expansion of the fuel and air mixture and it speeds up. Then the

turbine at the middle to end of the engine
extracts the energy from that fuel and air mixture. At the tail end of the engine, the diameter of engine gets smaller and the velocity of the airflow becomes even faster as it is expelled outwards. A force that is pushed rearward will push the plane forward, equal and opposite reaction. That is how a gas turbine engine produces thrust.

Describe the factors that influence the performance of a DA-20.
The factors that influence performance for a DA-20 would be the temperature and the density of the air. A cold day would offer great performance since the air molecules are more dense versus a hot day where performance would be negatively affected because there are less air molecules in the air. On a cold day with the more dense air, more air can be brought into the engine and likewise, more air can allow for more airflow over the wings causing more lift. You would expect a fast climb out rate on takeoff. Density also affects the planes performance, density altitude is the pressure altitude corrected for nonstandard temperature. Density altitude will give you an idea of how the aircraft will perform, if you have a lower density altitude then the aircraft will perform better and visa versa, if the density altitude is higher then the aircraft will perform worse.

SLO A Example 2
Describe the best ways for aircraft designers to minimize parasite drag (include a discussion of the three types of parasite drag discussed in class).
The three types of parasite drag include form drag, interference drag, and skin-friction drag. Form drag, as the name may suggest, is drag caused by the overall shape (or form) of the aircraft and its relationship with the opposing relative wind. It is the most apparent type of parasite drag, as any object moving through a fluid will encounter resistance, and the object's shape will determine how much or how little resistance the object experiences. Form drag can be minimized by attempting to streamline the overall shape of the aircraft and designing the empennage, fuselage, wings, etc. to encounter the least amount of air resistance. Interference drag is produced by the differing angles and attachment sites of different parts of the plane to its fuselage. For example, the angles at the connection sites of the wings, landing gear, propeller, etc. to the overall base shape of the plane creates drag as more points of resistance encounter the oncoming air. Interference drag can be reduced by mitigating the amount of opposing angles and offshoots at the different connection points of the plane. The interference drag of the landing gear, more specifically, can be reduced entirely with planes that have retractable landing gear; the gear retracts into the belly of the fuselage, and the air-resistant intersections of the gear is eliminated. Lastly, skin-friction drag is the result of an aircraft's surface not being entirely smooth on the molecular level. No matter how smooth a surface may seem, it is actually quite rigid and drag-producing on the smaller scale. Skin-friction drag can be reduced by making the skin of the aircraft as smooth as possible and ensuring that no extra skin-friction—such as dirt, bugs, ice, etc.—is added to the outside surfaces of the plane.

Describe three ways to minimize induced drag.
Induced drag, to be concise, is a byproduct of lift. It occurs when an airfoil produces any type of lift; air,

is it flows over the wing, tends to flow and rotate inward due to the higher pressure under the wing flowing up and inward toward the decreased air pressure at the top of the wing. This phenomenon is visually seen and represented by wingtip vortices, which flow outward and upward around the ends of wings. Induced drag is most apparent and affective when a plane is heavy, slow, clean, and has a low aspect ratio of the winds. Thus, induced drag can be minimized by first making the aircraft as light as possible for its desired function. Secondly, increasing the airspeed capability of the plane will inherently reduce induced drag, as induced drag decreases as airspeed increases (unlike parasite drag). Next, increasing the aspect ratio, or the relationship between the wingspan and chord line of the wings, can reduce induced drag. A glider with wide, thin wings will ultimately produce less induced drag and fewer wingtip vortices than a plan that has thick, small-wingspan wings. Lastly, to mitigate wingtip vortices, and therefore induced drag, many aircraft use winglets at the tips of the wings to quell the inward rotative airflow up and around the wings.

Describe how a four-stroke engine operates.   A four-stroke engine operates in a calculated, four-stroke cycle that coordinates the motion of the engine piston and energy of the fuel-air mixture to turn the attached crankshaft. The four "strokes," as the name suggests, include: intake, compression, combustion, and exhaust. The intake stroke brings the fuel-air mixture into the engine cylinder as the piston moves downward. Then, the compression stroke squeezes the mixture at the top of the cylinder as the piston moves back upward and encloses the space within the cylinder. Once the mixture has been compressed, the spark plugs—powered by the electromagnetic energy from the magnetos—ignites the fuel-air mixture in the combustion stroke of the cycle. This explosive ignition propels the piston back down. Lastly, the final stroke expels the exhaust as the piston shoots back up and pushes the gaseous residue out of the engine cylinder. Thus, to put it simply, the four strokes push the engine pistons down, up, down, and up again with each stroke, and this combined reciprocating motion of the pistons spins the crankshaft and therefore propellers.

Differentiate how a gas turbine engine produces thrust.   While a piston engine rotates a propeller crankshaft to produce thrust, a gas turbine engine essentially produces brute, explosive force to propel high speed, high performance aircraft through the air. The layered blades of the turbine squeeze and compress the air through the engine so tightly that it explodes backward when ignited to produce exhaustive thrust out of the end of the engine. The powerful force of this thrust is directed directly rearward to accelerate the plane forward. It's quite different than propeller thrust that produces backward force with the individual propeller blades.

Describe the factors that influence the performance of a DA-20. Many factors influence the performance of a DA-20. First of all, a DA-20 is not considered to be a very high-performance aircraft, but it does have a handful of qualities that influence its performance as an effective, quality training aircraft. In terms of parasite and induced drag, which affect all aircraft through air resistance, a DA-20 has more apparent causes for parasite drag versus induced. While the plane's form and fuselage is itself shaped similarly to a wing and is therefore relatively streamlined, it is affected by interference drag in that it has sharp angles connecting the wings, landing gear, and horizontal stabilizer to the plane. On the flip side, a DA-

20 is an extremely light aircraft and has a decent aspect ratio, so its induced drag is relatively minimal. These factors influence the DA-20's performance in all phases of flight, especially takeoff, climb, descent, and landing. Like all aircraft performances, outside factors such as temperature, air pressure, air density, etc. influence the DA-20. High air pressure/density and cold temperatures are ideal for the DA-20 in that thicker, denser, high-molecule air interacts with the wings and engine intake. Lastly, since the DA-20 is so light, the location of its center of gravity is extremely influential in performance. From personal experience, as I weigh more than the average person, it is relatively easy to overload the plane and its CG with another person in a light training aircraft. A forward CG will increase the DA-20s stability and reduce its performance, while an aft CG will do the opposite.

SLO A Example 3

Describe the best ways for aircraft designers to minimize parasite drag (include a discussion of the three types of parasite drag discussed in class).

Aircraft encounter two types of drag, with parasitic drag being one of these types.

Parasitic drag pertains to how an aircraft interacts with the air around it, except for induced drag, which is the drag associated with the creation of lift. Air is a fluid and aircraft are solid objects moving through this fluid. Simply put, drag is a consequence of the interaction between an aircraft and the surrounding atmosphere.

There are three types of parasitic drag, including: form drag, friction drag (also known as viscous drag), and interference drag. Form drag is the best place to start in explaining parasitic drag in my point of view. In my perspective of parasite drag, I like to imagine how airflow over an aircraft would move and how the aircraft is interacting with this airflow. Form drag could be seen as the beginning and end of parasite drag in some
ways. The shape/profile of an object is important in form drag, such as the leading edge of a wing, and the wake that is left behind as air leaves the trailing edge of that airfoil contributes to form drag. As an object moves through the air, it creates a wake. A shape such as a flat plate is going to have a much larger wake than a streamlined object because the air it is in contact with is essentially forced over the object rather than along its profile. The more streamlined an object is, the longer the flow of the air will interact with the object as it
moves along its surface. This is exactly what you want in reducing form drag, it is imperative to have an object that is streamlined in shape rather than one that is jagged in profile to encourage air flowing over the surface to stay within the boundary layer. This will allow the air to stay in a laminar flow and stay connected to the object's surface, which will ultimately reduce the size of the wake that is created behind the object. As the air passes over an object such an aircraft, it will eventually begin to lose kinetic energy and start to separate from the aircraft's wetted surface, no longer in the laminar flow that is associated with the boundary layer. The air that has left the surface is turbulent and creates a subsequent wake behind the aircraft. This turbulence and the wake
caused by this turbulent air as it leaves the boundary layer due to a loss of kinetic energy results in form drag.

The best strategies in the mitigation of form drag would include: streamlining the object that is moving

through the air, reducing the size of the frontal area of the object to better encourage air to flow along the shape of the object rather than against it, and to reduce the speed of the object. Reducing the speed of an aircraft is particularly important in the mitigation of parasite drag, as it this type of drag increases exponentially with
speed.Friction drag can also be referred to as viscous drag. This is because friction drag is caused due to the viscosity of the air that is flowing over the airfoil. Viscosity can be identified as a fluid's tendency to resist flow. This means that the more viscous a fluid is, the more it will resist flowing. Friction is connected to viscosity. It is caused by the shear stress of the fluid as it interacts with an object moving through it. Shear stress is caused
by the interaction between a fluid and the object it is flowing over. The level of a fluid's viscosity can be interpreted using Reynolds number, which describes an object's tendency to flow with either a laminar or turbulent motion. The lower the Reynolds number, the lower the viscosity of a fluid. The higher the Reynolds number, the higher the viscosity of a fluid. This relationship means that laminar flow is generally associated
with a low Reynolds number and turbulent flow is associated with a high Reynolds number. Friction drag and form drag have a relationship with one another. The wake that is left behind an object, which is one of the aspects of form drag, is caused due to an aircraft's interaction with air in which shear stress causes friction. Air acts as a fluid,
which means that it has a viscosity, albeit it is quite a low viscosity. Even so, friction will begin to slow down any air that passes over an airfoil, causing the air to lose kinetic energy. As this airflow loses kinetic energy, it will begin to change from a laminar flow in the boundary layer to a turbulent flow as it separates from the surface in the transition area. This turbulent air will then cause a wake behind the airfoil. The mitigation of friction drag involves essentially decreasing the aircraft's interaction with airflow or, at the very least, minimizing friction itself. This means that you want to have as smooth as a surface as possible and for that surface to be clean. You
also want the wetted surface of an aircraft to be minimized. If your wetted surface is smaller, then that means that there is simply less aircraft interacting with the air around it. You also want the air to be as low of a viscosity as possible. That means flying higher to get a lower air density would be beneficial. It is also important to delay the transition point where the air slows down enough to start to transition into turbulent flow for as long as possible so this air can continue to stay energized and flow over the wing efficiently. If this air slows down too much, it will begin to pile up and create a thicker boundary layer, which in turn will create even more friction.
The last form of parasitic drag, interference drag, has to do with the interaction of converging airflows. In places where the components of an aircraft connect such as the place where the wing and the fuselage are attached, the stream of air going over these two components will interact with one another. When these flow paths mix with one another, it will result in turbulence. This turbulence will result in more friction and in turn will cause more drag. To mitigate this type of drag, the angle between the two components should be as great as possible. This will allow the air flowing over each component to have enough room to pass by each other with minimal convergence. It is also helpful to utilize fairings to assist in guiding this converging airflow rather than having it remain turbulent with no path to be directed. So, essentially, interference drag is best minimized if there is a gradual merge between the

various flow streams rather than an abrupt convergence between them at any point.

Describe three ways to minimize induced drag.
Simply described, induced drag is all drag that is not parasitic. Induced drag has two main principles that cause it. The first is the rearward tilt of the lift vector and the second is the shear that is caused by the vortices that flow off the wing which are caused by the difference in pressure from the top and bottom of the wing. As for the mitigation of induced drag, it is important to consider the weight of the aircraft. The aircraft needs to
produce more lift to keep itself up in the air as it gets heavier. Weight is exponential in increasing induced drag, so it is beneficial in the mitigation of this type of drag to keep the aircraft as light as possible. A higher aspect ratio also helps mitigate induced drag. This is because a higher aspect ratio requires less angle of attack to create the same coefficient of lift as another wing with a lower aspect ratio. Even so, when increasing the aspect ratio of an aircraft by extending the wing, it is important to consider the weight you will be adding. Another way to minimize induced drag is to increase the aircraft's speed. The faster an aircraft is moving, the more airflow it has over its wings. If you do not change the angle of attack of the wing while increasing speed, you are increasing the
airflow over the wings without increasing lift and induced drag will be mitigated.

Describe how a four-stroke engine operates.
A four-stroke engine is a type of reciprocating engine that has, as the name implies, four strokes of motion in its operation. The first stroke is intake in which the fuel and air mixture flows into the cylinder, then the next stage is the compression of this fuel air mixture. Once this mixture is compressed, it is ignited by the spark plugs. The fuel and air mixture combusts and expands, causing the piston to move outwards. The combustion that causes the movement of the piston is the third stage. The last or forth stage of a four-stroke engine is exhaust, where the piston moves back inwards and pushes the previously combusted fumes out of the cylinder so there will be space for a new fuel/air mixture to flow back into the cylinder to eventually be ignited.

Differentiate how a gas turbine engine produces thrust.
A gas turbine engine intakes air through the inlet and into a compressor that consists of rotors and stators. As the air passes through this compressor, its pressure increases. This compressed air is then mixed with fuel and ignited in the combustion chamber. This air is then forced through a turbine as it expands and the turbine is turned, which creates a rotation that turns the compressor blades. The combusted air is then essentially shot out of the rearward end of the engine as exhaust at a very high velocity. A gas turbine engine is simpler to understand in my opinion than a reciprocating engine. If you can understand what is happening to the air flowing through the engine in each section, it is easier to visualize than trying to understand how each piston moves in a reciprocating engine. You also do not have to worry about understanding how power is changed from a piston's motion to a crankshaft to the propeller with a gas turbine engine. Rather, the exhaust directly creates thrust out of the back of the engine.

Describe the factors that influence the performance of a DA-20
As a DA-20 flies, it encounters parasitic and induced drag. Parasitic drag is caused by the interaction of air flowing over the aircraft and as the aircraft speeds up, it is going to encounter more parasitic drag. Induced drag is caused by the lift that is created by the aircraft and is increased at slower speeds. The DA-20 produces very little thrust, though, because of its tiny rubber band-powered engine so it is not very fast. This means that the designers of the DA-20 put an emphasis in the importance of reducing induced drag. This is evident in the Diamond's construction in that it is very light being composite rather than metal. It also has a decently high aspect ratio compared to something like a Cessna 172. The DA-20 has an aspect ratio of around 10 while a Skyhawk has a ratio of 7.32.
The Diamond also has a twist at the end of its wingtips to reduce wingtip vortices. The DA-20 also has fixed landing gear rather than retractable ones because at the speed the aircraft is flying, it would not be beneficial enough in reducing parasitic drag for the weight increase that would be associated in utilizing retractable gear. Even so, the
DA-20 is not as slow as something such as a Cessna 150, so it has optional wheel fairings. Our aircraft at Parks do not have wheel fairings, though, mainly because students would probably end up damaging them while practicing landings. The DA-20 is a fairly well-designed aircraft in my opinion because it was made to not only lessen the induced drag associated with its slower flight characteristics but was also designed with parasitic drag in mind. Being composite, it could be made to be far more streamlined than traditionally built metal aircraft which are squarer in shape. Also, in the pursuit of reducing weight, the aircraft could be made lighter due to the composite
material it is made out of, which allows the aircraft to utilize a smaller engine than something such as a 172S without compromising on its power to weight ratio. For instance, the 172S has a rate of climb at sea level of around 730 fpm with a larger engine, while a DA-20 has a rate of climb at sea level of around 830 fpm. Even so, it is important to understand that the DA-20 is certainly smaller and can carry fewer people, so comparing it to a 172S is not necessarily a perfect comparison, but I believe making this comparison helps somewhat illustrate the performance of the DA-20 versus more traditionally built training aircraft. The design of the DA-20 certainly stands out amongst its competitors, and while it may be a small and frankly weird little plane at times, it definitely has a construction that has performance in mind.

SLO B Example 1

Homework Assignment #1

A roadside billboard is placed along a highway in Colorado. The dimensions of the billboard include a width of 50ft and a height of 20 ft. The highway is in the mountains at an altitude of 5,000 ft. The prevailing winds in the area can reach as high as 60 miles per hour.

When these high wind conditions exist, what is the load on the face of the billboard?

$$E_k = \tfrac{1}{2} m v^2$$
$$= \tfrac{1}{2}\left(2.0482 \tfrac{\text{lbs sec}^2}{\text{ft}^4}\right)(60\text{mph})$$
$$= \tfrac{1}{2}\left(2.0482 \tfrac{\text{lbs sec}^2}{\text{ft}^4}\right)(88\text{fps})^2$$
$$E_k = 7.93 \tfrac{\text{lbs}}{\text{ft}^2}$$

$$p = f/a$$
$$f = (50 \cdot 20)\left(7.93 \tfrac{\text{lbs}}{\text{ft}^2}\right)$$
$$f = 1000\,\text{ft}^2\left(7.93 \tfrac{\text{lbs}}{\text{ft}^2}\right)$$
$$f = 7{,}930.63 \text{ lbs}$$

Homework Assignment #2

The frontal area of a particular airplane includes wingspan of 40 ft. (not including the fuselage area) and a maximum thickness of 2.75 ft. The fuselage has an average width of 6 ft. with a height of 6 ft. The aircraft is flying at 7,500 ft. at a speed of 90 miles per hour. Based on the information provided what is the force produced by the relative wind on the aircraft?

$$E_k = \tfrac{1}{2} m v^2$$
$$= \tfrac{1}{2}(1.8975\text{E-}3)(90\text{mph} = 132\text{fps})^2$$
$$E_k = 16.53 \tfrac{\text{lbs}}{\text{ft}^2}$$

$$p = f/a$$
$$f = \left(16.53 \tfrac{\text{lbs}}{\text{ft}^2}\right)\left((6\text{ft} \cdot 6\text{ft}) + (40 \cdot 2.75\text{ft})\right)$$
$$f = 2{,}413 \text{ lbs.}$$

SLO B Example 2

Homework #1 10-8-2020 Holden Strickland

1\. Billboard dimensions - 50ft x 20ft
altitude - 5,000ft
density at 5000ft: 2.0482×10^{-3} lbs sec/ft
billboard SA: 1,000 ft^2
wind velocity 60mph → 88 ft/sec

$$E_k = \tfrac{1}{2} m v^2$$
$$E_k = \tfrac{1}{2}(2.0482 \times 10^{-3} \text{ lbs sec}^2/\text{ft})(88 \text{ ft/sec})$$
$$E_k = 7.9306364 \text{ lbs/ft}$$
$$F = DA \quad F = (7.9306304 \text{ lbs/ft})(1.00\text{ft}) = \boxed{7931 \text{ lbs}}$$

2\. Wing SA: 40ft x 2.75ft = 110 ft^2
Fuselage SA = 6ft x 6ft = 36 ft^2
density at 7500ft = 1.8975×10^{-3} lbs sec/ft
windspeed: 90 → 132 ft/sec

$$E_k = \tfrac{1}{2} m v^2$$
$$E_k = \tfrac{1}{2}(1.8975 \times 10^{-3} \text{ lbs sec/ft})(132 \text{ ft/sec})$$
$$E_k = 16.53102 \text{ lbs/ft}$$
$$F = DA$$
$$F = (16.53102 \text{ lbs/ft}^2)(110\text{ft}^2 + 36\text{ft}^2)$$
$$F = \boxed{2414 \text{ lbs/in}^2}$$

SLO B Example 3

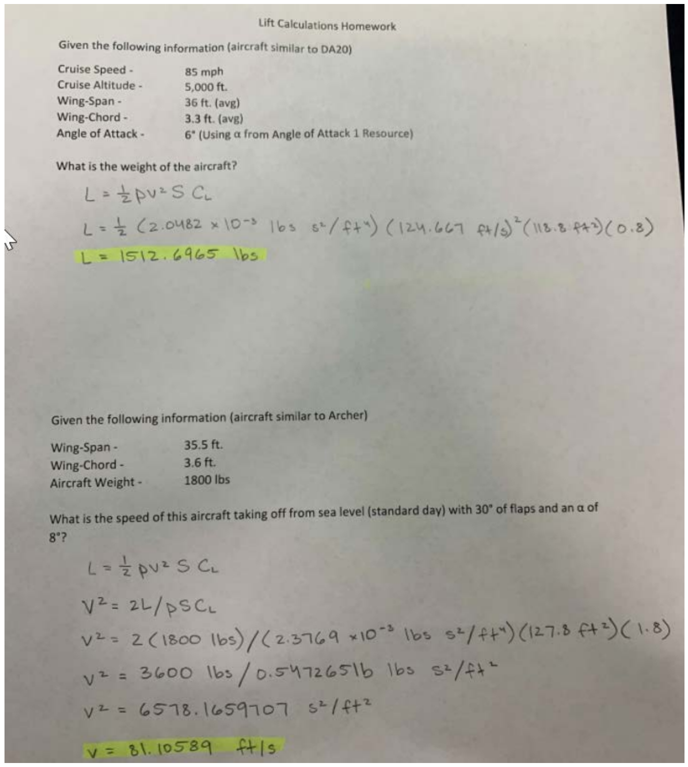
Homework Assignment #1
A roadside billboard is placed along a highway in Colorado. The dimensions of the billboard include a width of 50ft and a height of 20 ft. The highway is in the mountains at an altitude of 5,000 ft. The prevailing winds in the area can reach as high as 60 miles per hour.
When these high wind conditions exist, what is the load on the face of the billboard?

F=PA
$E_k = ½mv^2$
A = 50ft*20ft = 1,000ft^2
60mph 3600 seconds in an hour 5280ft per mile 60mi/h*5280ft/1mi*1h/3600s = 88ft/s
Density at 5000' = 2.0482 x 10^{-3} lbs sec^2/ft^4
½(2.0482 x 10^{-3} lbs sec^2/ ft^4)(88ft/sec)^2 = 7.9306304 lbs/ft^2
(7.9306304 lbs/ft^2)(1,000ft^2) = 7930.6304 lbs

Homework Assignment #2
The frontal area of a particular airplane includes wingspan of 40 ft. (not including the fuselage area) and a maximum thickness of 2.75 ft. The fuselage has an average width of 6 ft. with a height of 6 ft. The aircraft is flying at 7,500 ft. at a speed of 90 miles per hour. Based on the information provided what is the force produced by the relative wind on the aircraft?

F=PA
$E_k = ½mv^2$
A=40ft*2.75ft+6ft*6ft= 146ft^2
90mph 3600 seconds in an hour 5280ft per mile 90mi/h*5280ft/1mi*1h/3600s=132ft/s
Density at 7500' = 1.8975 x 10^{-3} lbs sec^2/ft^4
½(1.8975 x 10^{-3} lbs sec^2/ ft^4)(132ft/sec)^2 = 16.53102 lbs/ft^2
(16.53102 lbs/ft^2)(146ft^2) = 2413.52892 lbs

SLO H Example 1



Lift Calculations Homework

Given the following information (aircraft similar to DA20)

Cruise Speed -	85 mph
Cruise Altitude -	5,000 ft.
Wing-Span -	36 ft. (avg)
Wing-Chord -	3.3 ft. (avg)
Angle of Attack -	6° (Using α from Angle of Attack 1 Resource)

What is the weight of the aircraft?

$L = \frac{1}{2} \rho v^2 S C_L$

$L = \frac{1}{2} (2.0482 \times 10^{-3} \text{ lbs s}^2/\text{ft}^4)(124.667 \text{ ft/s})^2 (118.8 \text{ ft}^2)(0.8)$

$L = 1512.6965 \text{ lbs}$

Given the following information (aircraft similar to Archer)

Wing-Span -	35.5 ft.
Wing-Chord -	3.6 ft.
Aircraft Weight -	1800 lbs

What is the speed of this aircraft taking off from sea level (standard day) with 30° of flaps and an α of 8°?

$L = \frac{1}{2} \rho v^2 S C_L$

$V^2 = 2L/\rho S C_L$

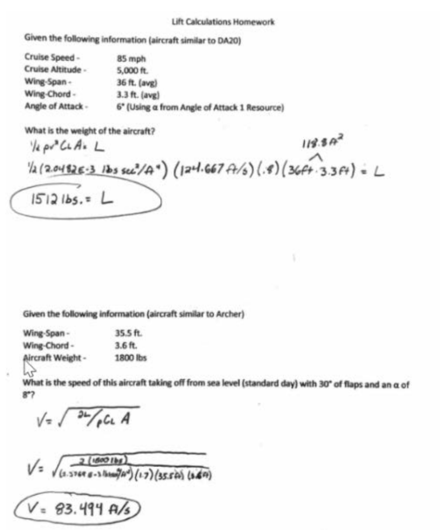
$V^2 = 2(1800 \text{ lbs})/(2.3769 \times 10^{-3} \text{ lbs s}^2/\text{ft}^4)(127.8 \text{ ft}^2)(1.8)$

$V^2 = 3600 \text{ lbs}/0.54726516 \text{ lbs s}^2/\text{ft}^2$

$V^2 = 6578.1659707 \text{ s}^2/\text{ft}^2$

$V = 81.10589 \text{ ft/s}$

SLO H Example 2



Lift Calculations Homework

Given the following information (aircraft similar to DA20)

Cruise Speed -	85 mph
Cruise Altitude -	5,000 ft.
Wing-Span -	36 ft. (avg)
Wing-Chord -	3.3 ft. (avg)
Angle of Attack -	6° (Using α from Angle of Attack 1 Resource)

What is the weight of the aircraft?

$\frac{1}{2} \rho v^2 C_L A = L$

118.8 ft²

$\frac{1}{2}(2.0482E\text{-}3 \text{ lbs sec}^2/\text{ft}^4)(124.667 \text{ ft/s})(.8)(36\text{ft} \cdot 3.3\text{ft}) = L$

1512 lbs. = L

Given the following information (aircraft similar to Archer)

Wing-Span -	35.5 ft.
Wing-Chord -	3.6 ft.
Aircraft Weight -	1800 lbs

What is the speed of this aircraft taking off from sea level (standard day) with 30° of flaps and an α of 8°?

$V = \sqrt{2L/\rho C_L A}$

$V = \sqrt{\frac{2(1800 \text{ lbs})}{(2.3769E\text{-}3 \text{ lbs sec}^2/\text{ft}^4)(1.7)(35.5\text{ft})(3.6\text{ft})}}$

V = 83.494 ft/s

SLO H Example 3

Given the following information (aircraft similar to DA20)

Cruise Speed -	85 mph	(85m/1h)(5280ft/1m)(1h/3600sec)=124.667ft/sec
Cruise Altitude -	5,000 ft.	2.0482×10^{-4} lbs sec^2/ft^4
Wing-Span -	36 ft. (avg)	36ftx3.3ft=118.8ft^2
Wing-Chord -	3.3 ft. (avg)	36ftx3.3ft=118.8ft^2
Angle of Attack -	6° (Using α from Angle of Attack 1 Resource)	

What is the weight of the aircraft?

$L=1/2PV^2SC_L$
$L=1/2(2.0482 \times 10^{-3}\ lbs\ sec^2/ft^4)(124.667ft/sec)^2(118.8ft^2)(0.8)=1512.697lbs$
In equlibriam flight lift is equal to weight so weight = 1512.697lbs

Given the following information (aircraft similar to Archer)

Wing-Span -	35.5 ft.	35.5ftx3.6ft=127.8ft^2
Wing-Chord -	3.6 ft.	35.5ftx3.6ft=127.8ft^2
Aircraft Weight -	1800 lbs	

What is the speed of this aircraft taking off from sea level (standard day) with 30° of flaps and an α of 8°?

$L=1/2PV^2SC_L$
Sea level density = 2.3769×10^{-3} lbs sec^2/ft^4
$1800lbs=1/2(2.3769 \times 10^{-3}\ lbs\ sec^2/ft^4)(V)^2(127.8ft^2)(1.8)$
$V=sqrt2(1800lbs)/(2.3769 \times 10^{-3}\ lbs\ sec^2/ft^4)(127.8ft^2)(1.8)=81.14ft/sec$

Given the following information (aircraft similar to Seminole)

Aircraft Weight -	3300 lbs	
Landing Speed -	60 mph	(60m/1h)(5280ft/1m)(1h/3600sec)=88ft/sec

This aircraft is Landing at Sea Level (SD) with 60° of flaps and CLMAX. What is the size of this aircraft's wing?

$L=1/2PV^2SC_L$
Sea level density = 2.3769×10^{-3} lbs sec^2/ft^4
$3300lbs=1/2(2.3769 \times 10^{-3}\ lbs\ sec^2/ft^4)(88ft/sec)^2(S)(2.35)$
$S=(3300lbs)/0.5(2.3769 \times 10^{-3}\ lbs\ sec^2/ft^4)(88ft/sec)^2(2.35)=152.58ft^2$

Course Assessment Form

Course: ASCI 2250-01 Aviation and Airport Security
Semester Taught: Fall 2020
Number of Students in Course: 9

Student Learning Outcome Assessed	Assessment Results: (Indicate what % of class achieved a minimum 70%)	Benchmark achieved? (Benchmark: 80% of students will score a minimum of 70% = “C”)
E. Communicate effectively using both written and oral Communication skills.	Case Study 1 – 100%; Case Study 2 – 100%; Class Presentation – 100%; AVG = 100%	Elements of Assessment (Case Studies & Presentation) yielded 100%, exceeding the desired benchmark of 70%
G. Assess contemporary issues.	Discussion Board 1 – 100%; Discussion Board 2 – 100%; Discussion Board 3 – 100%; Discussion Board 4 – 100%; AVG = 100%	Elements of Assessment (Discussion Boards) yielded 100%, exceeding the desired benchmark of 70%
I. Assess the national and international aviation environment.	Discussion Board 1 – 100%; Discussion Board 2 – 100%; Discussion Board 3 – 100%; Discussion Board 4 – 100%; AVG = 100%	Elements of Assessment (Discussion Boards) yielded 100%, exceeding the desired benchmark of 70%
J. Apply pertinent knowledge in identifying and solving problems.	N/A	N/A

Course Assessment (Intended Use of Results)
The following will be used for recommendations to improve the quality of course delivery based on assessment results. These recommendations may include prerequisite change; changing course outline and adding more topics; adding a third assessment; changing the course sequence, etc.

The assessment of student learning outcome (E) - communicate effectively, using both written and oral communication skills, met the benchmark of 80%, where students presented their case studies on aircraft hijacking incident and counterterrorism unit. The assessment of student learning outcomes (G) – assess contemporary issues and (I) – assess the national and international aviation environment, met the benchmark of 80%, where students debated the discussion boards on several ongoing pressing issues in airport security such as TSA’s proposal of having ‘Digital Services application’ to authenticate biographic information, Real ID, Federal Flight Deck Officers (FFDO) Program, and detection and prevention of Weapons of Mass Destruction (WMD). For the upcoming semesters, same assessment tools ‘case studies, class presentation, discussion boards’ will be used for evaluation of student learning outcomes.

**Attach description of assignment used for assessment and samples of student work.*

Discussion Board 1 – TSA's Proposal of having 'Digital Services application' to authenticate biographic information

After reading the article about TSA's proposal to verify passengers without biometrics or a physical ID, I found it to not only be impractical but also a potential security threat. First off, of the 600 people per day who show up to TSA checkpoints without an appropriate form of ID, many of them are most likely infrequent flyers who aren't going to know to fill out this form before getting to the airport. When they end up having to fill it out at the airport, it is still going to take extra time at the security checkpoint, plus the passenger will be charged a fee. However, I believe there is a more important security issue that arises with this process. After less than five minutes, the passenger is given a "pass" or "fail" which tells them whether or not they can advance. It seems very likely for breaches and identity fraud to occur with this method, due to the limited amount of time and lack of security equipment. For example, when somebody applies for TSA precheck, it takes on average 2-3 weeks for the person to be approved ("TSA Precheck™ FAQ," n.d.). An even longer timeline applies when applying and waiting approval for a US visa. After completing your application and embassy interview, it normally takes 3-5 weeks to hear if you were approved or not ("US Visa Processing Times," 2020). Another example we can look at is CLEAR, a program that lets you use your face as an ID rather than a physical piece of plastic. Although CLEAR only takes a few minutes to set up, travelers still have to present a physical ID when signing up, not to mention the fact that Clear uses advanced biometric and identification technology ("Sign up today and get CLEAR," n.d.). Because of this, I believe that this new system TSA is proposing will actually compromise safety. I believe that the safest and most practical approach is to send passengers who forget or don't have a valid ID to a designated line or area. There, they can use the same method that is used today to identify passengers who don't have a valid ID.

Sign up today and get CLEAR. (n.d.). Retrieved August 25, 2020, from https://www.clearme.com/enroll/
TSA PreCheck™ FAQ. (n.d.). Retrieved August 25, 2020, from https://www.tsa.gov/precheck/faq
U.S Visa Processing Times - How Long Does it Take? (2020, January 03). Retrieved August 25, 2020, from https://visahelp.us.com/us-visa-processing-times/

Before COVID-19, the Transportation Security Administration was looking into ways in which to lessen the amounts of passengers coming through airport security without identification. Their proposed solution being a "fee-based, digital services application that enables users to submit personal biographic information on the front end, which can then be authenticated through one or more databases on the back end" (Vincent, 2020, para. 2). However, I do not think this would be the appropriate course of action due to the fact that it does not solve the underlying problem: people are forgetful when stressed and air travel is an innately stressful experience for many.

The article by Brandi Vincent titled "TSA's Looking to Rapidly Verify Passengers Without Biometrics or Physical IDs", states that of the 2.5 million passengers TSA sees daily in the U.S., approximately 600 come through without proper identification. While the majority are able to verify themselves through TSA's National Transportation Vetting Center, it does not change the fact that they showed up to the airport, for their flight, without all their necessary materials. I do not believe having the option to fill out a form ahead of time will change that.

Flying is an incredibly stressful situation for many people worldwide, but especially for first time flyers. Writer for the journal Vox, Aditi Shrikant explained in her article the stressors encountered in an airport, "upon entering an airport, you are sifted through a regimented, mandatory, and inconvenient set of steps" (Shrikant, 2018, para. 6). She then goes on to compare TSA to a bouncer at a club and refers to the full body scanner as a "mysterious machine" (Shrikant, 2018, para. 7-8). With that stress building from rushing out of the house, getting to the airport, through TSA, to making your flight, and possibly a connection after that, it is no wonder people forget things. According to an article posted by the Former Executive Editor of Harvard Men's Health Watch, Daniel Pendick names stress and anxiety as one of seven common causes for forgetfulness. "Both can interfere with attention and block the formation of new memories or the retrieval of old ones," like leaving your passport in your safe at the house (Pendick, 2013, para. 8).

I do not think having an option for filling out information ahead of time would affect TSAs overall numbers of forgetful passengers unless it was required to be filled out before the day of the flight in question. People are still going to be overly stressed about their travel plans and will still forget to fill out the form. I am in full belief this would only be done by frequent flyers, who more than likely, are not a part of the demographic in which TSA is trying to change.

Instead, redesigning security lines to create a less stressful environment will allow for passengers who did come with all of their identification and who are prepared can make it through quickly and security can spend more stress free one on one time with the passenger in need of identification. There is no way we will be able to design out forgetfulness by passengers but by optimizing the experience for those who are frequent flyers or who show up prepared, we can create a better experience for those passengers which will reduce stress for everyone involved. An article I found by Rob Rushmer and Nigel Womersley De Zaldua outlines 9 "best practices" that will reduce anxiety and allow the passenger to "retain a degree of control" during the security process (Rushmer & Womersley De Zaldua, 2019, para. 14).

References

Pendick, Daniel. (2013, February 22). *7 common causes of forgetfulness*. Harvard Health Publishing. https://www.health.harvard.edu/blog/7-common-causes-of-forgetfulness-201302225923

Rushmer, R., & Womersley De Zaldua, N. (2019, October 29). *No shoes. No liquids. No control: Making airport security less stressful for passengers*. ICF. https://www.icf.com/insights/transportation/airport-security-for-passengers

Shrikant, Aditi. (2018, November 2). *Why there are so many viral confrontations on airplanes*. Vox. https://www.vox.com/the-goods/2018/11/2/18055830/air-rage-ryanair-flying-airlines

Vincent, Brandi. (2020, August 6). *TSA's Looking to Rapidly Verify Passengers Without Biometrics or Physical IDs*. Nextgov. https://www.nextgov.com/emerging-tech/2020/08/tsas-looking-rapidly-verify-passengers-without-biometrics-or-physical-ids/167521/

Discussion Board 2 – Real ID

Having a secure driver's license and identification documents are critical to ensuring national safety and security. The Real ID Act was passed by Congress in 2005, following the 9/11 commissioner's recommendation that the Federal Government "set standards for the issuance of sources of identification, such as driver's licenses" (Real ID, 2020). This Act established minimum security standards for license issuance and production, as well as, for certain purposes, prohibiting Federal agencies from accepting driver's licenses and identification cards from states not meeting the Act's minimum standards. One of those purposes includes boarding a federally regulated commercial aircraft. Beginning October 1, 2021, a driver's license won't get you through TSA. All travelers will either need one of these Real IDs or a federally approved document such as a passport, military ID, etc (Real ID, 2020). Originally, this law was enacted as an antiterrorism measure after the attacks on 9/11, after it was discovered that the hijackers of the 9/11 attacks used fake IDs. This Real ID act would in theory prevent that from happening again. Think about it, your driver's license is basically your key to everything, and this just makes that "key" harder to copy. States were given deadlines to come up with these new, more secure driver's licenses, however, unsurprisingly, the majority of states missed that deadline, hence why Real IDs are still not a requirement when going through TSA (Real ID Explained: Everything You Need to Know, 2018). Because it's relatively easy to create a fake driver's license, these Real IDs will help to keep unauthorized people from boarding commercial aircraft, thus increasing national security.

ID. (2020, September 11). Retrieved September 22, 2020, from https://www.dhs.gov/real-id

Bay Area. (2018, October 7). *Real ID Explained: Everything You Need to Know* [Video]. YouTube. https://www.youtube.com/watch?v=U74jdkmbzU4&t=54s

The importance of the Real ID Act of 2005 is that this federal law establishes minimum federal security standards for driver's licenses and identification cards that are issued across fifty states. It is necessary to switch from traditional ID checks to Real ID checks at airports as it creates a uniform security standard that will make producing and using forged licenses even more difficult at airport security checkpoints and other facilities, such as federal buildings and nuclear powerplants. Starting on October 1st, 2021, all fifty states must comply with security standards that are outlined in the Real ID Act when issuing driver's licenses, and federal agencies can only accept individuals who possess Real ID compliant licenses and identification cards when entering the facilities mentioned earlier. Also, every traveler who are 18 years old and older, and domestically traveling by air within the United States must present their Real ID cards to board a commercial aircraft. However, you cannot travel internationally using a Real ID card. In that case, you would need a passport to fly outside of the United States. To apply for a Real ID, you must visit your state's driver's licensing agency with necessary documents that are required by your state. Those required documents are usually documents that presents your full legal name, date of birth, social security number, address, and lawful status. Before you apply, you can check if you already have a license that is compliant to the Real ID Act. Any Real ID complaint license has a star on the upper-right corner of the license.

References

REAL ID Frequently Asked Questions. (2020, April 10). Department of Homeland Security. Retrieved from https://www.dhs.gov/real-id-frequently-asked-questions

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Discussion Board 3 – Federal Flight Deck Officers

On a scale of 1 to 10, I would rate my willingness to fly with Federal Flight Deck Officer (FFDO) on board as an 8. The 9/11 incident showed the United States and the world the serious damage hijacking can cause and how it can massively compromise airport and aviation security. Since then, the aviation industry implemented many features to prevent future hijacking incidents, and one of those features is training and operating FFDOs. I generally support having FFDOs on board because the pilots being armed can prevent the worst outcome that can come out of a hijacking incident as FFDOs can potentially eliminate the hijackers. I like that the FFDOs are well trained and required to keep training even after training graduation as "the training lasts 56 hours, spread across five days" (Amos, 2018) and "after graduating in New Mexico, the FFDOs have training every six months. And, every five years, there's a two-day refresher" (Amos, 2018). However, I decided to take off 2 points out the 10-point scale, and ultimately giving an 8, because I have two main concerns with armed FFDOs on board. The first concern is that the FFDOs don't get paid to be an FFDO as the FFDO program is entirely voluntary. As BBC puts it, "all this, and not an extra cent in their wages" (Amos, 2018). Yes, the training is free once the pilots decide to join the program, but there is no real benefits or incentives for pilots to join the program in the first place. If the FFDOs, along with federal air marshals, are an important factor to deter the terrorists and hijackers, why doesn't the FFDO program offer incentives and benefits to the pilots be FFDOs so that we have more certified FFDOs to prevent future hijackings and protect aviation security? BBC states that "…around one in 10 of the United States' 125,000 commercial pilots is armed" (Amos, 2018). That number of current FFDOs among the United States' commercial pilots is significantly low, and I believe significantly more pilots have to be trained to be FFDOs to make the FFDO program to be truly effective against terrorism. My second concern is what if an FFDO becomes mentally unstable due to his/her personal life, social factors, and/or physical problem? A mentally-ill FFDO that is armed can definitely sabotage the safety of the flight if he/she mentally and physically commits to do so. I believe the FFDO program should have a way to screen out mentally unstable applicants and a way to continually monitor the mental health of certified FFDOs. Other than those concerns that I have previously mentioned, I support the FFDO program as it will strengthen aviation security even further. I'm definitely interested to hear what my classmates think of my concerns.

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Amos, O. (2018, March 25). *Federal Flight Deck Officers: The airline pilots trained to shoot hijackers*. BBC. Retrieved from https://www.bbc.com/news/world-us-canada-43377461

I would definitely rate my willingness to fly with a Federal Flight Deck Officer (FFDO) on board of my aircraft as a 10. The reasons why I would choose to do so are because with how often I do fly, it is nice having that additional layer of security and knowing that if a Federal Flight Deck Officer were present on my flight, that if anything did occur then they would be there to rectify a situation if it occurred. According to a BBC article by Owen Amos, Federal Flight Deck Officers: The Airline Pilots Trained to Shoot Hijackers, Amos brings up a unique statistic that no flight since September 11th, 2001 has been hijacked in the United States, while globally over 55 flights have been hijacked.

I also would choose to do so with the fact that more important flights, such as ones traveling over sensitive airspace or near major monuments or cities where very important people would be, often times would have a Federal Air Marshal assigned to them. Federal Flight Deck Officers would be on the more traditional flights, which are what I often use since I primarily travel from St. Louis to Orlando, Portland, Las Vegas, or Seattle, and being smaller less risk laden flights, the chances of a Federal Air Marshal being present on one is significantly less.

I feel that with potential hijacking cases in the future, hijackers could potentially target flights like this knowing that very fact, and in the event a hijacker did manage to breach the cockpit or create a situation where the pilots had no choice but to open the door, being surprised by a pilot who is armed would be an effective tactic that would catch a hijacker off guard. With all of the positives to this, and the constant vetting and monitoring of pilots, I do not have any issues with this or any unwillingness to fly with one present.

In addition, if there is an increase in the monitoring of their mental status that would disqualify them from this if they start having major depressive issues that directly affect their well being such as suicidal thoughts, or qualify them for it if they show strong ability to maintain control or are no longer having mental issues, then the risks that others may cite would disappear.

Resources

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Discussion Board 4 – Detection and Prevention of Weapons of Mass Destruction (WMD)

One of the most important things about Weapons of Mass Destruction is first and foremost preparedness to handle an emergency situation. This involves the training that goes along with identifying and dealing with potential instances involving WMDs (Arledge, n.d.). The Federal Emergency Management Agency (FEMA) created a training program to help prepare response forces to be able to "...protect, prevent, deer, and respond to acts of terrorism...". FEMA emphasises that complacency is one of the response communities' worst enemies (Arledge, n.d.). Therefore, training is crucial to maintain preparedness for these types of situations even though they may not happen every day. There is still a threat of WMDs in today's society, and that is why FEMA is promoting this training program (Arledge, n.d.). This course highlights international and domestic threats but places special importance on "identification and decontamination of biological or chemical hazards." This course doesn't just provide prevention and handling the aftermath, but it also points out ways to preserve a crime scene so that evidence can be gathered to help further the knowledge of prevention and response tactics (Arledge, n.d.). This course also helps put confidence in the methods that are used. People can be secure in the fact that their protective equipment and strategies are actually helping to keep themselves and others safe (Arledge, n.d.). The course is called the Hazardous Materials Technician (HT) and CBRNE Incidents course. The training lasts three days and provides its students with classroom knowledge and real-world scenarios to apply it (Arledge, n.d.). When executing the scenarios, they go all out with various noises, alarms, and even smoke effects. This course is meant to instill preparedness and confidence in students so that they can respond the most effectively to incidents (Arledge, n.d.). Overall the course provides lots of things to help people prevent and respond to weapons of mass destruction incidents. It also provides them with the confidence to be able to act with their skills, and they have gained experience from hands-on training with all the bells and whistles provided by FEMA during the duration of the training.

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Currently, the United States is being faced with a rising threat from terrorists and terrorist organizations who are looking to utilize weapons of mass destruction. According to the Department of Homeland Security, a weapon of mass destruction is a nuclear, radiological, chemical, biological, or other device that is intended to harm a large number of people. One of the goals of the Department of Homeland Security is to stay ahead of the enemy, conducting research and development to build new equipment for detecting smuggled threat material or weapons. Jessica Stern, former Director for Russian and Ukrainian Affairs at the National Security Council, urged the US to pass legislation to improve its ability to address the threat of weapons of mass destruction in a few key areas. First, a nuclear emergency fund should be created, which would be used in situations when missing bombs or materials must be located and to quickly secure vulnerable facilities. The US should also increase funding for research and development to mediate and prevent the effects of chemical and biological WMD. This would provide funding for the development of pharmaceuticals and vaccines, sensors for subway cars, and technologies for predicting the spread of an agent in a chemical or biological attack. The US should also provide additional funds to secure US and foreign borders, especially those of Armenia, Azerbaijan, Kazakhstan, Russia, and Turkmenistan. In particular, US Customs and Border Protection should work to improve illicit materials detections systems as well as develop advanced interception measures. Finally, she argues that the US should expedite efforts to secure nuclear facilities in Russia by increasing funding and staffing, as well as to continue efforts to prevent Russian scientists from selling their experience abroad. In all, government involvement abroad and developments at home are critical to helping protect against weapons of mass destruction.

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Case Study #1- Hijacking: Scandinavian Airlines Flight 130

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Case Study #1- Hijacking: Scandinavian Airlines Flight 130

Terrorist attacks, especially hijackings of aircraft, have varying reasons for occurring. Some are to incite fear into a country, organization, or group of peoples; others to gain political or social advantages. Hijackings of aircraft are especially dangerous compared to alternative methods of terrorist attack, in these situations, aircraft are flying bombs. The damage they would cause in a crash is disastrous and must be avoided at all costs. This is why when an aircraft is taken over, a good majority of negotiators will give the hijackers what they ask for in exchange for minimal loss of life. This is the case in the hijacking of Scandinavian Airlines flight 130 in 1972.

Background of the Incident

On the 15th of September 1972, continuing into the 16th of September 1972, a McDonnel Douglas DC-9-21 was being operated by Scandinavian Airlines. The aircraft was set to take off from Torslanda Airport in Gothenburg, Sweden, and land in Stockholm Arlanda Airport in Stockholm, Sweden. Onboard were 86 passengers and 4 crew members.

During the flight, “three armed members of the Croatian National Resistance (CNR) forcefully took control of the aircraft and redirected it to the Bulltofta Airport in Malmö”, Spain (Scandinavian, 2020, para. 1). The hijackers were Tomislav Rebrina, Nicola Lisac, and Rudolf Prskalo (Independent, 2020). The aircraft arrived at Bulltofta Airport at 17:14 and the hijackers demanded the release of seven members of their group that had been imprisoned in 1971 for the occupation of the Consulate General of Yugoslavia in Gothenburg and the shooting at the Embassy of Yugoslavia in Stockholm (Scandinavian, 2020). If their demands were not met they threatened to detonate a bomb.

Negotiations ensued between the hijackers and six of the seven prisoners were transferred to and boarded the aircraft at 04:00 on September 16th. In response, a third of the passengers were released. The hijackers demanded half a million Swedish krona in exchange for the remaining passengers. The demands were met and the aircraft was routed to Madrid, Spain to the Madrid-Barajas Airport. Upon arrival, it was “surrounded by police, and the crew was released” (Scandinavian, 2020, para. 3). The hijackers surrendered at 14:47, were arrested, and were “sentenced to one year in prison after which they were permitted to move to Paraguay" (Scandinavian, 2020, para. 21).

Details of the Terrorist Suspects/Terrorist Organization

During World War 2, Croatia was occupied by Nazi Germany and under the Nazi supported the Ustaša regime the nation proclaimed independence and was named the Independent State of Croatia or the NDH (Nezavisna Država Hrvatska). The NDH was supported by the Axis powers and helped create concentration and extermination camps. Unlike the Nazis, however, these camps were an attempt to ethnically cleanse Croatia of all Serbian and Roma people through systematic extermination from 1941-1945.

On April 17, 1941, Ante Pavelić “became the absolute leader of the NDH throughout its existence” (Independent, 2020, para. 21). At the end of World War 2, Pavelić fled the country in an attempt to avoid execution or imprisonment and died in 1959 in Spain. “The end of the war resulted in the establishment of the Democratic Republic of Yugoslavia” (Independent, 2020, para. 54).

The three hijackers of Scandinavian Flight 130 were members of the Croatian National Resistance. It was founded in 1955 and the terrorist side of the organization, also known as Drina, was active from the 1955-1970s (Croatian, 2020).

On February 10th, 1971, Blago Mikulić and Ivan Vujičević gathered and restrained all the Consulate staff on the premises of the Yugoslav Consulate in Gothenburg, Sweden and demanded the release of Milikenko Hrkać. After unsuccessful negotiations with the Swedish police, the men gave up and were arrested. “The Yugoslav ambassador to Stockholm, Vladimir Rolović, criticized the Swedish police in the media and saying they did not take the terrorist threat seriously enough, claiming that the Croatian separatists belonged to Ustashe, an organization that collaborated with Nazi Germany during World War II” (1971, 2020, para. 3).

On April 7, 1971, at the Yugoslav Embassy on Strandvägen in Stockholm, Sweden Ambassador Vladimir Rolović was taken hostage by Miro Barešić and Anđelko Brajković. “The men tied Rolović to a chair, pulled a leather belt around his neck and shot him in the face and stomach. Several shots were fired, one penetrated a door and injured the embassy secretary, Mira Stempilhar” (1971, 2020, para. 4). The police arrived, stormed the building, and forced Barešić and Brajković to surrender. “On their way out of the building, they shouted ‘long live the Independent State of Croatia’ and ‘long live Ante Pavelić’” (1971, 2020, para. 4). “Rolović died a week later without regaining consciousness at Karolinska Hospital. The Yugoslav secret service has always maintained that Ante Stojanov, who was convicted by Stockholm District Court for complicity to murder, was, in fact, the mastermind behind the attack and aircraft hijacking, which Stojanov later admitted. He supervised the operation from a bar on Strandvägen. Ante Stojanov, was convicted of complicity to the murder of the Yugoslav ambassador, while his then twenty-year-old cousin Miro Barešić along with Anđelko Brajković were convicted to life imprisonment. Stojanov and the other two assailants, Marinko Lemo and Stanislav Miličević, were sentenced in the same trial to between two and four years in prison and deportation" (1971, 2020, para. 5).

After the breakup of Yugoslavia and the breakout of the Croatian War of Independence, the hijackers and prisoners that were transferred to Scandinavian Flight 130 during negotiations returned to their homeland to fight for Croatian independence.

Demands of the Terrorist Suspects/Terrorist Organization

The demands requested by the terrorists in exchange for the release of the 86 passengers and 4 crew members onboard the aircraft was the release of the seven members of the CNR that had been imprisoned and half a million Swedish krona.

Those members included Blago Mikulić and Ivan Vujičević who attempted to organize the release of Miljenko Hrkać as well as Miro Barešić and Anđelko Brajković who killed the ambassador of Yugoslavia. It also included the team who helped Barešić and Brajković pull off the assassination: Ante Stojanov, Marinko Lemo, and Stanislav Miličević.

While the demands of the hijackers were met, all parties were arrested in Madrid, Spain after the release of the crew of Scandinavian Airlines Flight 130.

Impact in International Aviation and Improvements

The hijacking of Scandinavian Flight 130 "was decisive for the Parliament of Sweden to pass the new Terrorism Act in 1973" (Scandinavian, 2020, para. 3).

"The Terrorism Act gave increased rights for the police and the Swedish Security Service to deport foreigners and to uncover surveillance of suspects" (Scandinavian, 2020, para. 20).

While it seems as if the international and domestic community did very little in regards to this hijacking, it was not a very eventful one. This was one of the only aircraft hijackings in Swedish history and it resulted in the safe recovery of all the passengers and crew. It also resulted in the imprisonment of all involved in the hijacking. Overall, the passing of the Terrorism Act was the best outcome of this incident.

Conclusion

In conclusion, this hijacking was a previously planned attack in order to facilitate the release of fellow terrorists due to the failure of previous attacks. However, it was unsuccessful.

With no loss of life and no injuries resulting from the hijacking I would say this should be counted as a win in the books of the Swedish and Spanish police forces. They negotiated the release of all innocents involved and the government of Sweden only saw the passing of the Terrorist Act a necessary result of this incident.

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The Hijacking of Lufthansa Flight 181

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ASCI 2250: Aviation and Airport Security

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Abstract

This paper looks at the hijacking of a Boeing 737, Lufthansa Flight 181 on October 13, 1977. The terrorists were internationally based but worked closely with domestic German terrorists. Hijacked Flight 181 flew to many locations around the Mediterranean Sea, particularly within the middle east. The hijacked plane was used as a political pawn for the terrorists to leverage the government into handing over ten German held terrorist prisoners. After a long five day hijacking the German government was able to successfully rescue the passengers of Flight 181 by the use a special operations unit. This sparked international interest in hostage rescue teams, especially with aviation hijackings. The sections addressed in this paper are the background of the incident, the terrorist organization that was responsible and their demands, the aftermath and impacts of this hijacking, and lastly the victim compensation from the government and airline.

Keywords: Flight 181, GSG-9, Mogadishu, RAF, PFLP

Background of the Event

On October 13, 1977 at 1100 hours, Lufthansa Flight 181 departed Palma de Mallorca, Spain destined for Frankfurt, Germany. The pilots of Lufthansa Flight 181 both served in the German armed forces as pilots. Pilot in command, Jurgen Schumann was a former German Air Force pilot and his copilot Jurgen Vietor was a former German Naval aviator. Approximately thirty minutes after departure, over the Mediterranean coast of France, four terrorist claimed control of the airplane. These terrorists claimed allegiance to the Popular Front for the Liberation of Palestine (PFLP), calling themselves Commando Martyr Halima. They were, however, working in close coordination with the popular radical left-wing terrorist group from Germany the known as the Red Army Faction (RAF). The lead hijacker called him Captain Martyr Mahmoud. Captain Mahmoud forcibly entered the cockpit and demanded the pilots divert the flight to Cyprus. Schumann informed Captain Mahmoud that the airplane did not have enough fuel to make it to Cyprus. Rome became the next airport of choice. In Rome, the terrorists insisted the plane be serviced and depart as soon as possible. At 1745 hours Lufthansa Flight 181 took off from Rome heading for Cyprus. Around 2030 hours, Flight 181 touched down in Larnaca, Cyprus. In Larnaca, a Palestine Liberation Organization (PLO) officer began trying to work out a deal with Captain Mahmoud. This attempt infuriated Captain Mahmoud which caused him to threaten to blow up the airplane should they not receive the fuel necessary to depart. The airplane left Larnaca at 2250 hours en route to Beirut. However, upon approaching the airport in Beirut, Flight 181 was denied permission to land. Subsequent landing attempts were made in Damascus, Baghdad and Kuwait, each airport denying landing access. After three hours of failed landing attempts Captain Mahmoud ordered the pilots to fly to Bahrain. In Bahrain Flight 181 was once again denied landing clearance. A lack of fuel caused the airplane to be granted emergency landing clearance. At 0152 hours on October 14 Flight 181 touched down in Bahrain.

When on the ground in Bahrain, soldiers from the Bahraini Army surrounded the airplane. This made Captain Mahmoud and the fellow terrorist more irritable and less likely to work out a deal. The plane was refueled once again and headed for Dubai where another forced landing was made. In Dubai, Captain Mahmoud demanded that they be given fuel, food, water, and newspapers. “The West German minister responsible for the hijacking, Hans-Jürgen Wischnewski and Colonel Ulrich Wegener, commander of the GSG 9, had arrived in Dubai and convinced the government to allow the commandos to storm the plane” Balestrieri (2020). In order for this raid to be successful the German government needed to stall the terrorists as much as possible. However, the terrorists became irrational and impatient with the stalling of the government. Around mid-night of October 17 Flight 181 suddenly left Dubai. Schumann was directed, by the terrorists, to fly the airplane to Aden where they were eventually denied landing clearance. As done in Dubai, Flight 181 landed forcefully, this time putting the airplane in the dirt next to the runway. Upon landing, Schumann was concerned about the status of the gear after the rough landing. Captain Mahmoud allowed Schumann out of the airplane to inspect the gear. Under the bottom of the airplane, Schumann was out of sight. It was here that he began to advise the authorities at the airport of the particular hijacking details. On the airplane, the terrorists became paranoid and feared that Schumann had defected to the authorities. A while later, Schumann returned to enter the airplane. Upon doing so he was directed to the center of the airplane where he was executed in front of the passengers and his crew. Captain Mahmoud tells the copilot, Vietor, to fly the airplane to Mogadishu. After arriving in Mogadishu, the body of Schumann was dumped onto the tarmac. The German government was granted clearance to land in Mogadishu and began talking to Captain Mahmoud and his fellow terrorists. The terrorists demanded that ten RAF prisoners be released in return for the lives of all the passengers and living crew. Should that request not be met, the terrorist claimed they would blow up the airplane. German authorities negotiated with the terrorists and created the illusion that the ten RAF prisoners were on a flight to Mogadishu from Cairo. This allowed the German government time to prepare for the impending raid. Around 0200 hours on October 18, the local authorities created a diversionary fire at the end of the runway. This diversion caused the terrorist to head to the front of the airplane and the GSG-9 operators to approach from the rear without being detected. The GSG-9 use ladders with rubber ends coated in petroleum jelly to climb onto the wing. These special ladders allowed for the operators to climb onto the wing almost silently. In unison the two GSG-9 teams breached into the airplane from both of the wing emergency exit doors. The operators shot all four terrorists, killing three instantly leaving one to bleed out. Captain Mahmoud manages to throw a hand grenade which gets caught under a seat and the damage was muffled. One operator and four hostages were injured during the shootout rescue.

Details and Demands of the Terrorists

The four terrorists involved with this hijacking were all a part of the PFLP. "Their leader was a Palestinian named Zohair Youssif Akache who called himself 'Captain Martyr Mahmoud.' The other three were another Palestinian, Suhaila Sayeh and two Lebanese, Wabil Harb and Hind Alameh" Balestrieri (2020). According to the ECRF, the PFLP was co-founded in 1967 by George Habash, Nayef Hawatmeh, and Ahmad Jibril, as an umbrella organization for Marxist-Leninist and Arab nationalist groups (Mapping). The PFLP has been on the decline since the downfall of the Soviet Union and is not considered a major threat anymore. Among the PLO the PFLP is the second largest faction. The PFLP opposes the idea of a two-state solution and calls for the recapturing of all historical Palestine. During the Hijacking of Flight 181 the PFLP terrorists were working in close coordination with the Red Army Faction (RAF). "The group had its origins among the radical elements of the German university protest movement of the 1960s, which decried the United States as an imperialist power and characterized the West German government as a fascist holdover of the Nazi era” Jenkins (2018). The German government was holding RAF members as prisoners. One of which being Andreas Baader, the co-founder of the RAF. The terrorist hijackers demanded that the German government release ten RAF prisoners or else they would blow up the plane. Closer toward the end of the negotiations the terrorists became more irritable and began using the threat of blowing up the plane more. At one point on the ground the terrorists began soaking the plane and passengers in alcohol as a precursor to lighting them on fire. Finally, in Mogadishu the terrorists withheld their threats due to the promise that the prisoners they requested were on the way.

The Roles of Both Government and Media

The primary reason Lufthansa Flight 181 was hijacked was to pressure the German government into releasing ten RAF prisoners. In the weeks leading up to the hijacking, the RAF had been carrying out attacks on the German government. In particular the RAF had been kidnapping and assassinating German government officials. One case being the kidnapping of a German business magnet, Hanns-Martin Schleyer. Media coverage of these events inspired others to commit similar acts of terror, such as the hijacking of Flight 181. Robert Holden says in *The Contagiousness of Aircraft Hijacking*: “the motivation to hijack aircraft spreads from one individual to another as a result of media coverage of hijacking incidents” (1986). Upon the initial touch down of, now hijacked, Flight 181 in Italy the German government began talking to the Italian government in hopes of finding a solution for Flight 181 while it was still on the ground. Minister Francesco Cossiga represented Italy and was at the head of the talks with the German government. Minister Cossiga was already dealing with multiple cases of civil unrest within Italy. Despite his reputation as a political strongman, Cossiga decided to let another government deal with the hijacking. The Italian government played a role in allowing this hijacking to extend for the length of time that it did. Media coverage of the broader hijacking allowed other countries to obtain insight into the situation. In doing so, this allowed many countries to block runways at their most popular airports, before Flight 181 could come within approach range. While Flight 181 was en route to Cyprus, the German government sent thirty of their elite counter terrorism soldiers from the GSG-9 to meet the hijacked flight. However, as the GSG-9 operators were landing in Cyprus, Flight 181 took off again. These operators returned to Frankfurt and another thirty operators along with Hans-Jurgen Wischenewski, the West German Minister of State. This airplane went to first to Dubai and then on to Mogadishu. Wischenewski took over the role as head negotiator from the locals and promised to get the prisoners to Mogadishu by 0245 hours. At 2000 hours the GSG-9 operators arrived and got their pre-rescue brief. Finally, at 0205 hours the GSG-9 successfully carried out their raid on Flight 181. Had it not been for Wischenewski taking over the negotiations and accepting the responsibility of the hijacking, Flight 181 may have never been saved.

The Aftermath and Impacts of the Hijacking on the World

The effects of the aftermath of the hijacking of Lufthansa Flight 181 were felt almost immediately. Many worldly figures condemned the assault on the plane as a risky move. However, the use of a special operations unit to rescue civilians sparked popularity amongst international governments and militaries. It was less than 1 month later, on November 11, 1977, that the United States formed their most elite special forces unit commonly referred to as Delta Force. This unit was founded as an elite hostage rescue team but now serves a broader role. As for the aftermath of the hijacking in Germany, three RAF prisoners committed suicide at the JVA

Stuttgart-Stammheim prison. A fourth attempted to commit suicide but was unsuccessful in her attempts. Hanns-Martin Schleyer who had been a prisoner of the RAF was executed. After the hijacking of Flight 181, the German government announced that it would no longer negotiate with terrorists. They had a history of doing so in the past and it showed as a sign of weakness in governmental authority. Demonstrating the successful use of a special operations unit to rescue a hijacked airplane would now give international governments an option as to how combat grounded hijacked planes. While not helping lower the amount of hijackings, this option would increase the effectiveness and safety with which hostage rescues would take place in international aviation.

Victim Compensations Through the Governments and Airlines

As for the German Government and Lufthansa airlines, they were left to deal with the passenger compensations. Many passengers reported saying that the German government did not handle their compensation well. The passengers claimed they were used as political pawns and were victims of a more politically based crime. As for the airline, Lufthansa had a record of being the safest airline up to this point. They were on the hot seat in terms of how they handled the situation in the view of the public from this point on. Lufthansa's main priority after the hijacking was compensation to the passengers for damage and loss of property. Lufthansa "paid a total of 100,000 DM for lost baggage and clothing" Jessensky & Rupps (2018). After they had paid the compensation, not much else was given to the passengers of Flight 181 by the airline, leaving many to feel bewildered. A way in which the passengers felt helpless was due to the fact that legally Lufthansa was acting in a dual role as both an injured party and a damage regulator. This left a lot of the decisions up to politicians who ultimately came to no helpful conclusion.

Ultimately, the passengers were forgotten about by the media and government as the rescue mission and the use of the GSG-9 stole the spotlight.

Conclusion

In conclusion the hijacking of Flight 181 was a serious hijacking that changed the way many parties operated. Governments around the world began to develop hostage rescue teams to combat hijacking. The RAF had been terrorizing the German government for weeks leading up to the hijacking. The successful rescue of this hijacking boosted the morale of the German government and the people. The last of the two founders of the RAF, Andreas Baader, was among the three individuals to commit suicide after the rescue of Flight 181. RAF morale began to dramatically drop as the German government began a series of crack downs on international and domestic terrorism. Germany would from this point forward no longer negotiate with terrorists. The passengers of Flight 181 were ultimately forgotten about and Flight 181 would be remembered as the flight successfully rescued by the GSG-9.

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Case Study 2

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ASCI 2250 Aviation and Airport Security

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October 17th, 2020

History of The Special Air Service

Great Britain's Special Air Service (SAS) is a formidable and highly secretive counterterrorism unit. This group started in 1941 during the Second World War by David Stirling ("The bizarre origins of the British Special Air Service (SAS)", 2017). This group was formed to work as a desert raiding force. During World War II, they were placed to the rear of German fronts in Northern Africa ("The bizarre origins of the British Special Air Service (SAS)", 2017). In this position, they carried out missions of sabotage and wreaked havoc on supply lines. David Stirling was known throughout his military career as someone quite lazy ("The bizarre origins of the British Special Air Service (SAS)", 2017). His nickname being "Giant Sloth" did him no favors in his efforts to start this organization, but he was entranced by the idea of a new unit, and that gave him the opportunity to go towards glory. However, this unit's performance at the Battle of Crete and the Battle of Litani River caused heavy casualties throughout the group ("The bizarre origins of the British Special Air Service (SAS)", 2017). Stirling counted the losses to a conceptual failure. His criticisms of the unit were that they were too large and insufficiently mobile ("The bizarre origins of the British Special Air Service (SAS)", 2017). They changed their form to that of small mobialized groups as using a style closer to guerilla tactics. With this new organization, Stirling showed results as he brought devastation onto many targets usually during a single operation ("The bizarre origins of the British Special Air Service (SAS)", 2017). Stirling knew that this concept would be best envisioned as paratroopers to get an upper head on their enemies. Stirling wanted this concept to intrigue the upper command's interests ("The bizarre origins of the British Special Air Service (SAS)", 2017). Nonetheless, Stirling had no experience parachuting out of a plane. He went about proving his new concept by obtaining a shipment of parachutes (“The bizarre origins of the British Special Air Service (SAS)”, 2017). He jumped from a plane several times with his comrades with zero training. He only injured his legs, but this test proved that this idea was possible (“The bizarre origins of the British Special Air Service (SAS)”, 2017). Stirling also used his unorthodox methods to speak with his commanding general. He did this by sneaking into the Middle East headquarters of the Army in Cairo also while recovering from parachuting injuries (“The bizarre origins of the British Special Air Service (SAS)”, 2017). During this situation, he was rejected from entering the main gates, and he used his crutches as a ladder to climb an unguarded section of the wall. After successfully climbing over the wall, he was sure he was going to get caught (“The bizarre origins of the British Special Air Service (SAS)”, 2017). However, he eventually found his way into the deputy chief of staff general’s office. For unknown reasons, this general let Stirling pitch his idea to him about this new unit (“The bizarre origins of the British Special Air Service (SAS)”, 2017). Stirling’s ideas impressed this general, and General Ritchie relayed this idea to the Commander-in-Chief of the Middle East Auchinleck. After this encounter, permission was granted to form a new special forces unit (“The bizarre origins of the British Special Air Service (SAS)”, 2017).

Command Structure

For the command structure, the British government has not commented too much on the issue because of the SAS’s type of work (Sof, 2019). However, there are a few things known about the command structure. First, is that the SAS is made up of three units. There is one regular and 2 Army Reserve units (Sof, 2019). The regular unit is called 22 SAS Regiment, while the reserve units are referred to as 21 Special Air Service Regiment and 23 Special Air

Service Regiment, and the Army Reserve units together are called the Special Air Service Reserves. Within the 22 SAS, there is usually an amount of between 400-600 people and is comprised of four operational squadrons: A, B, D, and G (Sof, 2019). There are usually 65 men within each squadron commanded by a major. They are once again divided up into 4 troops and each troop is commanded by a captain and a small headquarters section (Sof, 2019). Each troop has around 16 men, and within a troop, there are 4 patrols each with 4 men. In a patrol, each man usually processes a certain special skill such as medic or demolition in supplement to the skills learned in basic training (Sof, 2019). In addition, each of the troops specialize in different areas: boat, air, mobility, or mountain specialty. The boat troop specializes in maritime skills (Sof, 2019). This includes, but is not limited to using rebreathers, kayaks, inflatable boats, and they train with the Special Boat Service. The air troop specializes in free-fall and high altitude parachuting which also includes high altitude low opening and high altitude high opening techniques (Sof, 2019). The mobility troop specializes in different ground vehicles and are masters in desert warfare. Lastly, the mountain troop specialize in arctic combat and survival (Sof, 2019). They are also specialists in using equipment such as skis, snowshoes, and different mountain climbing techniques. There is an additional squadron named R that was formed in 1980 that is made up of ex-regular SAS regiment soldiers who have now commited to reserve service (Sof, 2019). The Squadron rotations are situated so that one squadron is on counterterrorism duty in the United Kingdom, another on deployment, another preparing for deployment, and another on preparing for long-term overseas training. While not on the schedule for deployment or counterterrorism, additional training is also being conducted (Sof, 2019).

However, during times where more squadrons are needed such as war, it is common practice to deploy more than one squadron.

Recruitment and Selection

Next is recruitment and selection. The SAS's selection process is very brutal and has about a 90% fail rate for potential recruits ("Special Air Service (SAS) selection/how to join", n.d.). The selection process is split up into three phases. The first phase is called endurance ("Special Air Service (SAS) selection/how to join", n.d.). This phase has the main focus of testing candidates physical and mental stamina. It is shown that recruits need to have high levels of determination and self reliance to be able to pass this stage ("Special Air Service (SAS) selection/how to join", n.d.). This first stage lasts about three weeks and takes place in Brecon Beacons and South Wales. During this stage, candidates are given the task of varying heavy items on long hikes while also navigating between checkpoints ("Special Air Service (SAS) selection/how to join", n.d.). During the checkpoints, the Directing Staff gives no encouragement or criticism to the candidates. The Directing Staff is composed of fully badged members ("Special Air Service (SAS) selection/how to join", n.d.). This approach is different because it is a tactic since each individual member needs to be self motivated, and if the Directing Staff were to talk in any way, it might tarnish the results of which candidates are actually self motivated. The details of the hike are as follows: forty mile trek carrying fifty five pounds, and it must be completed in twenty-four hours ("Special Air Service (SAS) selection/how to join", n.d.). The next phase is titled the jungle phase. This phase of training takes place in Belize ("Special Air Service (SAS) selection/how to join", n.d.). If candidates have passed the first stage, they move on to this phase. The candidates will learn survival basics and how to patrol in harsh environments (“Special Air Service (SAS) selection/how to join”, n.d.). In the SAS, jungle patrols have to endure weeks behind enemy lines in patrols of four while living on rations. Once again, there is also a mental component being tested, not just physical (“Special Air Service (SAS) selection/ how to join”, n.d.) . This phase is meant to distinguish who cannot handle the discipline it takes to keep their body in a good condition while on long range patrol in difficult sitations. The last phase is escape, evasion, and tactical questioning (“Special Air Service (SAS) selection/how to join”, n.d.). This phase is split up into 2 parts. The first involves escape and evasion (“Special Air Service (SAS) selection/how to join”, n.d.). This portion is usually set up as a lecture on appropriate techniques and testimonies from members who have been in real life scenarios of escape and evasion. The next part involves using what they have learned (“Special Air Service (SAS) selection/how to join”, n.d.). Candidates will dress in vintage World War II coats. Their task is to go to various waypoints without being captured by a group of active members (“Special Air Service (SAS) selection/how to join”, n.d.). This part lasts for three days, and whether or not a candidate is captured, they must go through tactical questioning. This portion tests someone’s resistance to interrogation (“Special Air Service (SAS) selection/how to join”, n.d.). Candidates are only allowed to give four pieces of information: name, rank, serial number, and date of birth. If candidates give any other information, they fail the phase (“Special Air Service (SAS) selection/how to join”, n.d.). Interrogators use several different tactics to get candidates to talk which may involve very stressful situations. Throughout questioning white noise is played to help break down the candidates’ sense of time and reality (“Special Air Service (SAS) selection/how to join”, n.d.). This may seem harsh, but the SAS is only looking for potential members that can withstand highly stressful situations so they would not be a threat to reveal any plans to an adversary. After making it through this grueling process, if candidates pass all three phases, they receive a beige beret with the SAS winged dagger insignia ("Special Air Service (SAS) selection/how to join", n.d.). However, this does not mean they are a part of the SAS, they still must go through training and are watched closely by the Directing Staff.

Training

After going through an intense selection process, the remaining candidates, who have now earned their wings, must go through training to be full fledged members of the SAS. The SAS recruits go through multiple different types of training, but instead, this focus will be on the counterterrorism training ("Special Air Service (SAS) training, n.d.). The role of counterterrorism is divulged to one squadron for a period of six months. During these six months, the squadron is split into two groups ("Special Air Service (SAS) training, n.d.). One that carries out training while the other is on standby to respond to a terrorist incident. For training, SAS members do most of their training in a specially designed house at headquarters called the killing house ("Special Air Service (SAS) training, n.d.). This house is designed with rubber-coated walls and fans to extract the fumes of gun fire. This house is designed to hone everyone's Close Quarter Battle Skills or CQB Skills ("Special Air Service (SAS) training, n.d.). In this house, they learn how to perfect entering a room and how to use multiple types of weapons. During drills, some members will play the role of hostage while other members come into the room firing live rounds into targets ("Special Air Service (SAS) training, n.d.). Additionally, they use other settings to hone their skills such as the interior of an aircraft or into a railway configuration. They also do not just use drills with only one aspect. They will practice full scale counterterrorism exercises that include other stakeholders such as politicians, police, terrorists, hostages, and negotiators (“Special Air Service (SAS) training, n.d.). Their intent with this type of training is to get the members prepared as close as possible to the real scenario.

Government Responsibility

The way that the Special Air Service is involved in government is through the British Army. The SAS is one of the important branches of the special forces for the British Army, and it is one of the most recognized military groups in the world (“Special Air Service”, n.d.). Many other countries look to Great Britain’s SAS as a model for their own special forces. This organization has had much success in many world wide operations which is why it is so well known (“Special Air Service”, n.d.) (“Special Air Service”, n.d.). The Special Air Service is a very secretive group. Whenever a medal is given to a member, it is not revealed that it is for the Special Air Service but instead to their parent unit. However, the organization attracts a lot of media attention compared to the small size of the organization (“Special Air Service”, n.d.). The SAS tries not to reveal as much information as possible, but since it is part of a government entity, there are some things that are more difficult to keep secret.

Liabilities and Criticism

The precise liabilities to this organization are similar to that of other counterterrorist groups. One of the main concerns is that the people who go through an organization's counterterrorism training will in turn use it to commit terrorist acts (Jackson et al., 2019). However, since the goal of these organizations is to prevent terrorism, they try to mitigate that outcome by being more careful about selection. The goal of looking at liability is to see if there is a way to minimize the outcome of someone using the training program for an unintended purpose (Jackson et al., 2019). The point is that this process is also surrounded by trial and error so that these organizations can better learn how to mitigate the risk of terrorism and almost eliminate their liability in a possible incident. Another concern is about the criticisms of different counterterrorism organizations (Jackson et al., 2019). People would consider terrorism a violation of human rights. With that, counterterrorism units are present to protect people and their human rights that are inhibited by terrorist actions (Jackson et al., 2019). While it is not clear the exact criticism that Great Britain's SAS receives, it should be noted that even with the criticism and liability involved with the organization, they have a greater purpose and intent to help people when they are called upon. This is important to note because the benefits of the SAS as an organization most definitely outweigh the criticism and liability that the organization imposes and gets from outsiders (Jackson et al., 2019).

Notable Intervention - Operation Titanic

Along with the operations of the SAS, they have had many notable interventions involving their organization. One of the two that will be highlighted is Operation Titanic (Dirnhuber, 2017). During this operation six SAS members went behind enemy lines in Northern France. These troops wreaked havoc on the Germans for forty days before they were captured (Dirnhuber, 2017). Their job was to distract the German troops from the D-Day beaches so that the other Allied troops could surprise them. One of the main tricks of the operation was dropping two hundred dummy parachuters alongside the six troops to fool the Germans into how many people were actually landing (Dirnhuber, 2017). Also during the operation, the troops rescued two American prisoners of war. They were not sure this plan would work, but the Nazis ended up deploying a whole company of soldiers in panic to try and get rid of the troops (Dirnhuber, 2017). After spending a month behind enemy lines, they tried to return to Allied grounds, but the troops were caught sleeping in a barn. This plan was quite successful despite the troops being caught (Dirnhuber, 2017). Ironically, the operation was called Titanic because the commanders were sure the operation would fail.

Notable Intervention - Operation Nimrod

Another notable intervention involving the Special Air Service is Operation Nimrod. This operation had the purpose of intervening during a siege of the Iranian embassy in London. This is one of the most public operations of the SAS (“Operation Nimrod - the Iranian embassy siege”, n.d.). This event took place on April 30th, 1980. Six Iranian gunmen forced their way into the embassy and took twenty six people hostage (“Operation Nimrod - the Iranian embassy siege”, n.d.). These, considered terrorists, called themselves the “Democratic Revolutionary Front for Arabistan”. Their purpose was to protest the oppression that the current Iranian leader had put on Khuzestan (“Operation Nimrod - the Iranian embassy siege”, n.d.). Their demands included the release of ninety one political prisoners in Iran and a plane to take themselves and their hostages away from the United Kingdom. The SAS’s B squadron was put into action because they were the anti-terrorist squadron at the time (“Operation Nimrod - the Iranian embassy siege”, n.d.). The situation was mostly under control. For days, the SAS had been gathering more intel about the situation and the building (“Operation Nimrod - the Iranian embassy siege”, n.d.). However, the hostage takers were getting bored. They released a few hostages, but once they realized the situation was not going their way, they threatened to shoot a hostage (“Operation Nimrod - the Iranian embassy siege”, n.d.). However, the terrorists made a mistake. It is not in the United Kingdom's policy to act unless a hostage has been killed or is in danger of being killed (“Operation Nimrod - the Iranian embassy siege”, n.d.). After the terrorists killed their first hostage, this forced the United Kingdom government’s hand to take action. Operation Nimrod is the SAS’s plan to free the hostages (“Operation Nimrod - the Iranian embassy siege”, n.d.). While the government was negotiating with the terrorists on the phone, SAS members broke into the building in an attempt to release the hostages. The SAS troops were almost discovered then multiple explosions and chaos proceeded (“Operation Nimrod - the Iranian embassy siege”, n.d.). After the situation calmed down, and the leader of the terrorists was killed, the police regained control of the situation. However, the SAS’s involvement with this siege took away their low profile (“Operation Nimrod - the Iranian embassy siege”, n.d.).

Conclusion

The Special Air Service is an important organization within the British Army. They have an organized command structure that is intuitive and gives everyone the chance to be in everyone's position. Their training involves a lot of moving parts so that their members are the most prepared for any given situation. They also have an intensive selection and training process to make sure only the best are selected for membership. The organization is a well known government entity, and they take their job seriously. As a counter terrorist group, they also take on certain liabilities. However, they combat that with their training and vigilant behavior of the active members of the organization. They have also been involved in many notable interventions including Operation Titanic during World War II and Operation Nimrod. All in all, the SAS is a highly renowned organization that is well known for their effectiveness and multifaceted abilities.

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Case Study on Canadian Armed Forces Joint Task Force 2

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Case Study on Canadian Armed Forces Joint Task Force 2

Secretive and highly capable, the Canadian Armed Forces Joint Task Force 2, otherwise known as JTF 2, works around the clock to ensure Canada, and its citizens remain safe from threats and terrorism. In order to help ensure an impenetrable operation, the recruitment process is highly selective and the training process long and intense. JTF 2 is an extremely quiet organization, and the Canadian government seldom comments on their involvement in anit-terrorism operations or much of anything else. While we may not have an abundance of information on JTF 2 and what all they do, we can conclude that they are successful in their mission of keeping Canada and its citizens out of harm’s way.

History of the Counterterrorism Unit

Joint Task Force 2, also known as JTF 2, is a high-readiness special operations force unit. JTF 2 exists to protect the national interests of Canada, combating terrorism in additon to threats made to Canadians both in Canada and abroad. JTF 2 was formed in 1993. Before JTF 2 was created, the federal organization responsible for hostage rescue and counterterrorism was the Royal Canadian Mounted Police Special Emergency Response Team (SERT). After 9/11, JTF 2 became dedicated to the international special operations forces coalition in Afghanistan. This deployment in Afghanistan was the first time JTF 2 was seen in a significant combat position outside of Canada (Joint Task Force 2 (JTF 2), 2020).

Command Structure

JTF 2 lies in one of the five command units organized in the Canadian Special Operations Forces Command (CANSOFCOM). Under CANSOFCOM lies four other units plus an HQ. The first is the Canadian Joint Incident Response Unit (CJIRU), which responds to special operations forces missions regarding chemical, biological, radiological, and nuclear threats. Canadian Special Operations Regiment (CSOR) has the capabilities and responsiveness to operate in austere situations throughout a conflict. Next, 427 Special Operations Aviation Squadron (427 SOAS) is a high-readiness aviation unit prepared to supply precision lift to special forces missions. The fifth unit is the Canadian Special Operations Training Centre (CSOTC). They are responsible for developing courseware and readiness training packages. Finally there's Headquarters (HQ), which provides operational level command and control to CANSOFCOM (Special Operations Forces Organizational Structure, 2019).

Recruitment and Selection

Civilians cannot join CANSOFCOM, which JTF 2 is a part of, directly. You must already be an active member of the Canadian Armed Forces (CAF), fully trained in your military occupation, in order to be eligible for employment with CANSOFCOM. Canadian Armed Forces personnel joining CANSOFCOM, "must have completed their operationally functional point (OFP) in their current occupation and demonstrate that they have the special attributes and training desired to fill these demanding roles" (How to join Canadian Special Operations Forces Command, 2020). The selection process for JTF 2 is divided into two phases. In Phase 1, Canadian Forces members apply for service with an SO unit and obtain approval for their submission from their current Unit's

Commanding Officer. In Phase 2, candidates complete a medical evaluation, aptitude testing, a Pre-Screening Physical Fitness Test (PFT), as well as a structured interview with a Personnel Selection Officer. Candidate’s files are then sent over to the respective Unit to which they are applying for service. After the submissions are received, Unit review boards are held, and applicants who meet the minimum requirements for service with their specified Unit are then invited to take part in the JTF 2 Assessment Process (Joint Task Force Two (JTF 2) Selection & Training, n.d).

Training

Training is rigorous and not easy. The first step of training after the JTF 2 Selection Process is the JTF 2 Assessment Centre. During the seven day Assessment Process, candidates will be assessed on a number of critical tasks and attributes that they will likely experience on the job and are crucial for peak task performance. Extremely high levels of physical fitness and motivation are imperative for success. Candidates will be assessed on physical fitness, both aerobic and anaerobic, individual and teamwork tasks, interpersonal skills, psychological profile, problem solving skills, as well as phobia tests for performing effectively at heights, water confidence, and confined spaces. These assessments are also carried out in high stress tactical settings in order to see the candidate's ability to recall directions, make decisions under physical and mental pressure, handle weapons safely, and identify and react to threats. Once candidates have successfully completed this, to which they are allowed a maximum of three attempts, they will enter the Special Operations Assaulter Course (SOAC). The SOAC lasts approximately seven months, and during that time, candidates receive group and individual training in patrolling, land navigation, basic and advanced weapons, and insertion and extraction techniques. Once the candidate has successfully completed the SOAC he or she will officially become one of the 600 members of JTF 2 (Joint Task Force Two (JTF 2) Selection & Training, n.d).

Governmental Responsibilities

Much of the information about work done by JTF 2 is classified and not commented on by the Canadian Government. However, we do know that their operations consist of counter-terrorism missions and operations, as well as providing armed assistance to other governmental agencies on a military basis. In the resolution of a crisis or when a possible issue that might impact national security presents itself, JTF 2 is responsible to provide the Canadian government with a force capable of providing armed support. While JTF 2’s primary responsibility is counter-terrorism, its staff can be used in any type of military operations that includes, but is not limited to, security counsel, surveillance, and close personal protection (Sof, 2018).

Liabilities and Criticisms

JTF 2 members are liable to keep much of their responsibilities confidencial. Any information about weapons used, procedures, etc., is just more information terrorist organizations have to work with. It’s to their own wish that as little information as possible be publicly available since information about one of their first missions was leaked and thus had to be called off. Members are expected to keep their business in the army out of their personal lives. JTF 2 members are also obligated to give no information or details about their deployment to any family members. This secrecy has also caused some controversy. Even though JTF 2 members perform in secrecy, they are also supposed to obey the law and only follow the Canadian Government's orders (Rodriguez & Wolczuk, 2014). However, Canada's Standing Senate Committee on National Security and Defence complained that they were "shrouded in secrecy." The Senate Committee report revealed, "Extraordinary units are called upon to do extraordinary things. But they must not mandate themselves or be mandated to any role that Canadian citizens would find reprehensible. While the Committee has no evidence that JTF2 personnel have behaved in such a manner, the secrecy that surrounds the unit is so pervasive that the Committee cannot help but wonder whether JTF2's activities are properly scrutinized" (Skinner, 2013).

Notable Intervention #1

For the sake of national security and as an act against terrorism, Joint Task Force 2 provided anti-terrorism and security measures at the 2010 Winter Olympic Games in Vancouver. When asked by Parliament's defense committee whether JTF2 members would be at the Games, Vice-Admiral Dean McFadden said, "Special Operations Forces will be assigned to support the operation of the Vancouver Olympics" (Reuters Staff, 2009). This surprised many, as they do not normally comment on the deployment of JTF 2 forces, which is usually of utmost importance to its so-called Special Operations Forces. Some of the troops backed the Royal Canadian Mounted Police, who were responsible for overall security. Other troops were placed on standby, however it is unknown how many were involved. This was successful, as there were no acts or known attempts of any acts of terrorism at the Vancouver 2010 Winter Olympic Games (Pugliese, 2009).

Notable Intervention #2

On November 25, 2005, four human rights workers for Christian Peacemaker Teams were held hostage in Iraq by the Swords of Righteousness Brigade. On March 23, 2006, two Candians and a Briton were rescued in a military operation. However, the fourth worker, an American, was later found in a trash pile in Western Iraq. He had been tortured, handcuffed, and shot. The other three were found bound but unguarded (Semple, 2006). The rescue was carried out by a force that consisted of American and British troops. While Prime Minister Stephen Harper wouldn't comment on the top-secret role that JTF 2 commandos played in the rescue, it is believed they were involved. Both the Pentagon and the British Foreign Office said that Canadian special forces were involved in the operation and commented on the instructional role they had in rescuing the Canadian and British Peacemaker Team, but it's not clear who took part or what their specific duties may have been (CBC News, 2006).

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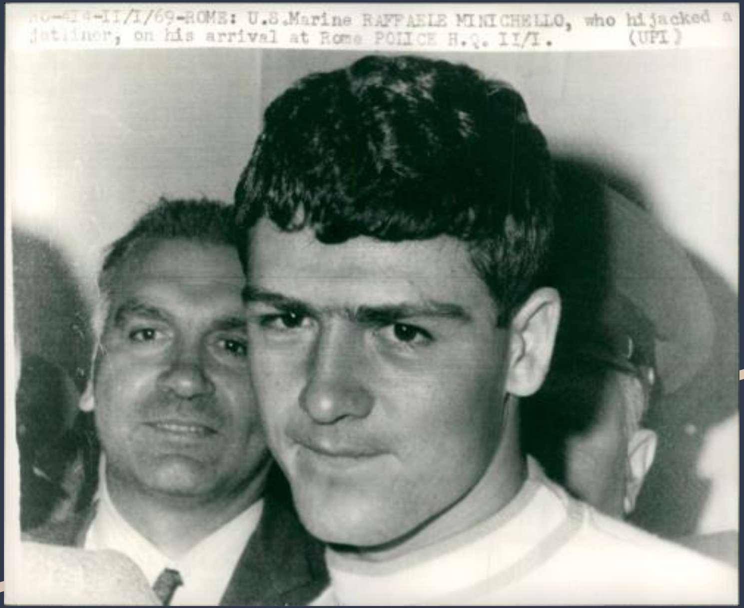
Aviation Security Case Study

TWA Flight 85

'The world's longest and most spectacular hijacking'

Background



- October 3, 1969, TWA 85 lands in Los Angeles-> San Francisco
- Raffaele Minichiello, 40 passengers; small sunshine pop group “Harpers Bizarre”, and the small flight crew

+ Minichiello suffered from PTSD; “nervous looking”, 19 year old Vietnam war vet from Italy
- Felt robbed when he believed his paymaster shorted $200-> stole $200 worth of radios and watches after drinking 8 beers
- Set to be court martialed-> resulted in fleeing

Demands?

15 minutes into the flight, Minichiello presents a 7.62mm bullet to a flight attendant

+ When asked what his demands were, Minichiello wasn't sure = didn't think that far
+ New York?
+ Settled to go back home in Rome

The plane was initially fueled for a short flight-> agreed to release all passengers and all but one flight attendant in Denver, CO

- FBI wasn't aware of the situation until an agreement was made to release passengers

Demands p2

Before leaving for Italy, the Boeing 707 landed at JFK International Airport

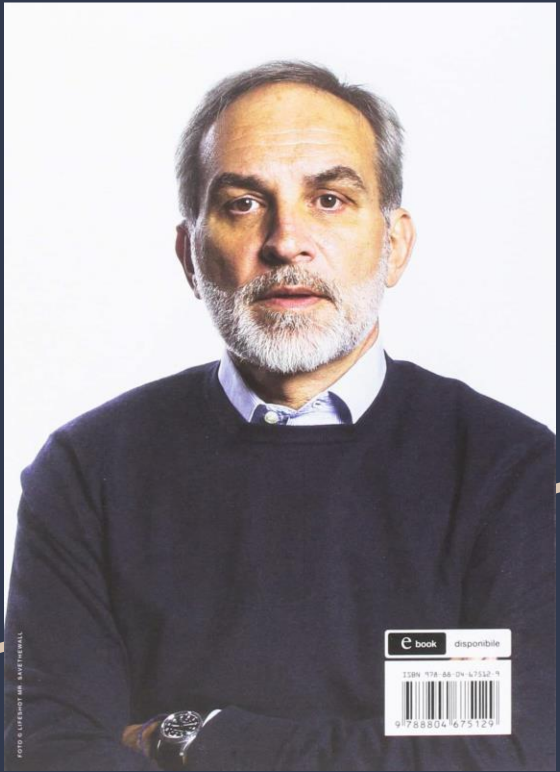
- Pilots were untrained for international travel
- Plane parked as far from the terminal as possible

+ New Pilots
+ Began refueling the plane

FBI agents dressed as mechanics slowly began walking towards the plane-> Minichiello halted to stay back-> Accidental misfire within cockpit-> Pilots immediately take off

Future: Pilots came out and publicly criticized how poorly laid out their plan was

Final Results



Raffaele Minichiello lands in Italy; negotiates with authorities, receives a car and hostage in exchange for the TWA plane-> captured indirectly 23 hrs later by a local priest

Investigation reveals Minichiello was shorted $200- money was supposed to see his dying father

Prosecuted in Italy-> Italian culture understood the story as a young war hero doing whatever he can to help his family and return to the motherland-> became a folk hero; 18 months in prison

Apologized for his actions-> wife dies while giving birth-> planned a revenge attack against the hospital for malpractice-> friend introduced him to the bible and attack is called off

Platoon from Vietnam is seeking PTSD support for Raffaele, rejected due to dishonorable discharge

Delta Force

Command Structure

No Information I Provide Is Confirmed

The official name of Delta Force is believed to be constantly changing

1. “1st Special Forces Operations Detachment - Delta” or “1st SFOD-D”
2. Combat Applications Group (CAG)
3. Army Compartmented Elements (ACE)

- The true command structure is unknown; believed to be under Joint Special Operations Command (JSOC)

Recruitment/Selection

Majority of its members are believed to be selected from other Army Special Forces Groups

- Green Berets
- 75th Ranger Unit

< Marine Force Recon, Air Force Pararescue, and Air Force Combat Controller?

Want physically and psychologically mature men

1. 21 years old
2. High Score in ASVAB
3. Minimum 2 yrs service left
4. Does not accept any officers under the rank of Captain
5. Enlisted soldiers must reach Staff Sergeant
6. Airborne qualified
7. Eligible for security clearance lvl "secret"

Training

Delta's Training Is Classified; This information is provided from an ex members book- "Robert Redford Paper"

- Delta Has 4 Phases of Training

1. Physical Endurance
2. Land Navigation Courses (LNC)
3. Operator Training Course (OTC)

- Marksmanship
- 6mo communication loss with family
- Demolition/Breaching with everyday materials
- Espionage/Spying

1. Offensive/Defensive driving

Operation Black Swan

Background

- Joaquín Archivaldo Guzmán Loera (El Chapo)
- Leader of Sinaloa Cartel
- One of the most prominent drug lords in history

Sinaloa Cartel

- Control 40-60% of Mexico’s drug trade (3 billion dollars annually)
- Believed to have killed 3,000-4,000 people

The Mexican/American government were searching for Chapo’s assassin-> ran into Chapo by chance

- Surveilling the house previously, bounced on the opportunity when Chapo was seen

Equipment

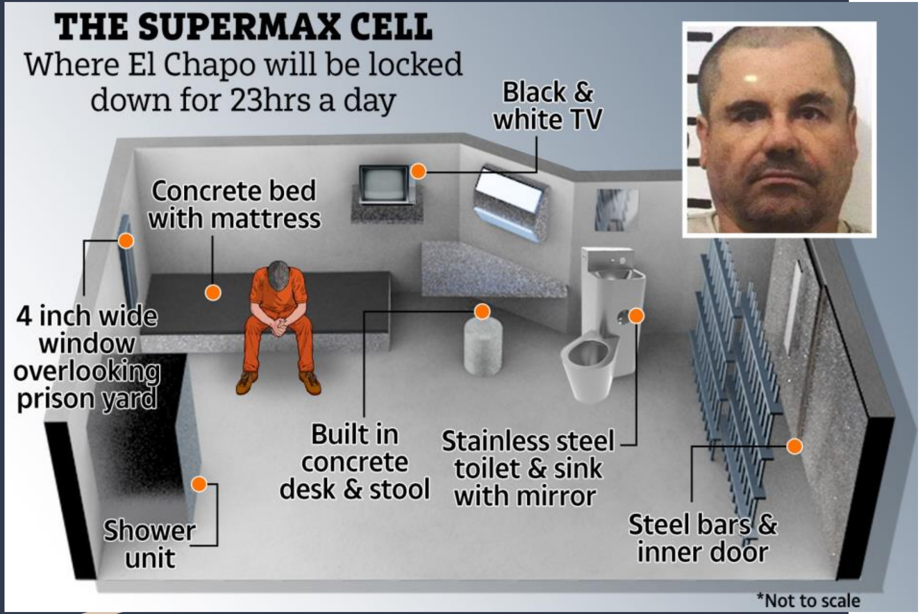
18 Mexican marines stormed the house; Delta Force believed to support the raid

+ Night vision goggles
+ Tear gas
+ Standard issue military equipment

11 Cartel members inside the house

+ 8 assault rifles
+ 2 M16s with grenade launchers
+ 2 Barrett M82 Sniper Rifles
+ 2 RPGs
+ Armored Cars

Result



Chapo managed to escape through a tunnel system leading to the cities sewer lines-> later tracked and caught in a hotel

- 5 cartel members killed, 6 injured
- 1 Mexican Marine injured

Chapo was transferred into American custody and is now being held in America’s ADX facility; a prison more secure than a maximum security facility

Case Study 1 & 2

Ashley Storz
Sophomore
Aviation Management and Psychology

Case Study 1

Qantas Flight 1737

Background of Incident

- May 29, 2003
- 53 passengers
- Boeing 717
- Flight from Melbourne Airport to Launceston Airport
- Attempted to hijack cockpit
- Stabbed flight attendant and flight purser with wooden stake
- Then restrained by passengers
- Pilot returned to Melbourne
- Robinson apprehended by police
- Police discovered items to make flamethrower in hijacker's bag

Ultimate Goal and Outcome

- No demands were made
- Goal: Crash in Tasmanian National Park to bring about Armageddon
- Believed crashing into the Walls of Jerusalem would release the devil
- Robinson detained once aircraft landed at Melbourne
- Determined he was having an episode of paranoid schizophrenia
- Found not guilty during trial because of mental state
- Judge ordered for him to be placed in maximum security psychiatric hospital

Improvements

- Improve security screening to detect non metal items such as wooden items
- Federal Government is calling for the hastened installation of security doors for cockpits on all international flights

Case Study 2

Great Britain Special Air Service

Command Structure

3 Units

1 Regular Unit
2 Reserve Units

4 Squadrons

A, B, D, and G

4 Troops

Usually have a specialty
Either boat, air, mobility, or mountain

Numbers

- Units ~ 400-600 people
- Squadron ~ 65 people
- Troop ~ 16 people

Recruitment and Selection

90% fail rate for potential recruits

1st Phase

Endurance

Long hikes carrying heavy weights

2nd Phase

Jungle

Survival basics and patrol harsh environments

3rd Phase

Escape, Evasion, and Tactical Questioning

Learn about tactics

Employ them in live action scenario

Go through interrogation

Training

- ➢ Training mostly occurs in the Killing House
- ➢ Rubber Coated Walls
- ➢ Fans to extract gunfire
- ➢ Hone Close Quarter Battle Skills
- ➢ Learn to perfect entering a room
- ➢ Use multiple types of weapons
- ➢ Use other settings such as aircraft or railways
- ➢ Practice full scale counterrorism exercises
    - Including politicians, police, terrorists, hostages, and negotiators

Operation Titanic

- 6 SAS members infiltrated enemy lines during WWII
- Dropped 200 dummies from parachutes along with the 6 troops
- Wreaked havoc on Germans for forty days before D-Day attack
- Goal was to draw Germans away from actual D-Day attack points for Allies
- During operation, Rescued 2 American troops
- Germans panicked and deployed troops to deal with perceived threat
- Spent one month behind enemy lines before being caught

Operation was considered a success!

Course Assessment Form

Course: ASCI 2250-10 Aviation and Airport Security
Semester Taught: Fall 2020
Number of Students in Course: 9

Student Learning Outcome Assessed	Assessment Results: (Indicate what % of class achieved a minimum 70%)	Benchmark achieved? (Benchmark: 80% of students will score a minimum of 70% = "C")
E. Communicate effectively using both written and oral Communication skills.	Case Study 1 – 100%; Case Study 2 – 100%; Class Presentation – 100%; AVG = 100%	Elements of Assessment (Case Studies & Presentation) yielded 100%, exceeding the desired benchmark of 70%
G. Assess contemporary issues.	Discussion Board 1 – 100%; Discussion Board 2 – 100%; Discussion Board 3 – 100%; Discussion Board 4 – 100%; AVG = 100%	Elements of Assessment (Discussion Boards) yielded 100%, exceeding the desired benchmark of 70%
I. Assess the national and international aviation environment.	Discussion Board 1 – 100%; Discussion Board 2 – 100%; Discussion Board 3 – 100%; Discussion Board 4 – 100%; AVG = 100%	Elements of Assessment (Discussion Boards) yielded 100%, exceeding the desired benchmark of 70%
J. Apply pertinent knowledge in identifying and solving problems.	N/A	N/A

Course Assessment (Intended Use of Results)
The following will be used for recommendations to improve the quality of course delivery based on assessment results. These recommendations may include prerequisite change; changing course outline and adding more topics; adding a third assessment; changing the course sequence, etc.

The assessment of student learning outcome (E) - communicate effectively, using both written and oral communication skills, met the benchmark of 80%, where students presented their case studies on aircraft hijacking incident and counterterrorism unit. The assessment of student learning outcomes (G) – assess contemporary issues and (I) – assess the national and international aviation environment, met the benchmark of 80%, where students debated the discussion boards on several ongoing pressing issues in airport security such as TSA's proposal of having 'Digital Services application' to authenticate biographic information, Real ID, Federal Flight Deck Officers (FFDO) Program, and detection and prevention of Weapons of Mass Destruction (WMD). For the upcoming semesters, same assessment tools 'case studies, class presentation, discussion boards' will be used for evaluation of student learning outcomes.

**Attach description of assignment used for assessment and samples of student work.*

Discussion Board 1 – TSA's Proposal of having 'Digital Services application' to authenticate biographic information

I do agree with the Transportation Security Administration's (TSA) proposal to verify flier's identity in real time. I believe that this would be convenient for not only passengers but the TSA as well. In this age, biometric technology is still not completely reliable and can be troublesome for both parties. With this proposal, you would enter information that is connected to you that only you should know which would prove your identity as well as pull up pictures of you in the database. Travelers would be able to get to their destination and TSA would not worry about falsification or faulty biometrics. In the article it states that this application or service would be "possibly fee-based" (Vincent 2020). This should not cause much uproar as the TSA "Pre-Check" is essentially the same service. Frequent fliers pay a charge in order to get through TSA quickly avoiding some of the hassles. In this case, a small fee is not a big deal if it means whether you miss your flight or not.

The concerns the TSA has for security are valid in which I believe some tech companies or app developers will be able to provide safeguards and security measures to ensure that there is little to no risk that someone could falsify information. I do see there being backlash as some people are skeptical about giving more information than is needed to government entities. As I said before, if that is the barrier that separates them from their flight, It would be a risk they are willing to take. Not to mention TSA takes extensive measures to protect one's personal information with data encryption. Overall I believe this will improve aviation security with the precautions they want to take and the method they are choosing in addition making flying more convenient for those who have lost, misplaced, or forgotten their IDs.

How does TSA protect the privacy of the information I provide? (n.d.). Retrieved August 24, 2020, from https://www.tsa.gov/travel/frequently-asked-questions/how-does-tsa-protect-privacy-information-i-provide

Vincent, B. (2020, August 06). TSA's Looking to Rapidly Verify Passengers Without Biometrics or Physical IDs. Retrieved August 24, 2020, from https://www.nextgov.com/emerging-tech/2020/08/tsas-looking-rapidly-verify-passengers-without-biometrics-or-physical-ids/167521/

When passing through airport security, there is a small percentage of passengers who do not possess the necessary identification to get screened. The Transportation Security Administration (TSA) wants to change the betting process from speaking to the national transportation vetting center to a fee-based digital services application to speed up the process. This application would allow users to input their personal information and one or more databases will authenticate the information (Vincent, 2020, para. 2). While this sounds like a good idea upfront, there are some issues with such an application that I do not think would be a good solution to the problem at hand.

To begin, having a payware digital application that gives the user a pass or fail indication within minutes does not seem promising when similar programs in place take longer than that to screen you. An example of such a program is the PreCheck program. As described by Dieker (2020), "TSA PreCheck is a Trusted Traveler Program administered by the U.S. Department of Homeland Security's Transportation Security Administration" (para. 4). When signing up for TSA PreCheck, an in-person interview is conducted. The interview I had took around 20 minutes to complete with a background check and having my fingerprints captured in their system. From personal experience, it took a full month to confirm my identity and to get my known traveler number. Since PreCheck is already a government run program, it would seem unlikely that the TSA could develop an application to go through their databases within minutes to confirm your identity.

Besides the verification process, I simply do not think it is right for the TSA to charge money for you to verify yourself when you forget proof of identification. The relationship between the TSA and individual travelers is not considered good. Journalist Halimah Abdullah from NBC News reported the many complaints travelers have regarding the TSA which include long security lines and low employee morale (Abdullah, 2016, para. 5). Adding onto this point, the officers working for the TSA consistently do not give good guidance and seem frustrated in regard to speaking with passengers. From the perspective from a traveler, Carstens (2019) argues, "Standing in line with no clear understanding of what's going on can make travelers frustrated, angry and stressed, and for good reason” (para. 4). Combining all of these factors into one, you get an unhappy traveler. The idea of having such service be payware would only add anger to an already unpleasant experience while traveling.

I think that a solution to this problem comes down to making the security check more organized and structured with contingency plans if an individual does not present a form of identification. The TSA should hire more individuals when wait times increase to an extreme and be trained in human factors to deal with travelers that may be annoyed. While the statistic of a traveler forgetting their form of identification is very slim, on average 600 out of 2.5 million, a formulated plan to ease the situation should be in place to destress said forgetful person. The current vetting process might not be ideal, but a digital application is not the solution.

References:

Abdullah, H. (2016, May 13). *TSA to Frustrated Travelers: Please Pardon Our Progress This Summer*. NBC News. https://www.nbcnews.com/news/us-news/feds-work-long-airport-security-line-waits-n573796.

Carstens, C. (2019, August 27). *Standing in line a nightmare? Here's how airports fix that*. International Airport Review. https://www.internationalairportreview.com/article/101657/standing-in-line-a-nightmare-heres-how-airports-fix-that/.

Dieker, N. (2020, June 4). *TSA PreCheck Vs. Clear: Which Is Best?* https://www.bankrate.com/finance/credit-cards/tsa-precheck-vs-clear-which-is-best/.

Vincent, B. (2020, August 6). *TSA's Looking to Rapidly Verify Passengers Without Biometrics or Physical IDs*. Nextgov.com. https://www.nextgov.com/emerging-tech/2020/08/tsas-looking-rapidly-verify-passengers-without-biometrics-or-physical-ids/167521/

Discussion Board 2 – Real ID

I think one of the most stressful parts of flying is making sure that you have proper identification. I can't remember a time when I traveled via air that my passport/wallet wasn't the single most important thing. More important, I would argue than your actual boarding pass, considering airlines now check your ID for your ticket rather than your itinerary in the digital age. Real ID is probably one of the better things to come out of an age of increased security. ID being standardized is a lot more effective, and now, the department of homeland security has confirmed all 50 states are compliant as of late 2013 (https://www.dhs.gov/real-id). With that, every states knows exactly what they must do to verify the integrity of an ID, and the TSA and customs don't have to spend time verifying the authenticity of an ID, because they know exactly what to look for when checking an ID.

Part of what really concerned me with the concept of **equal access** for every U.S. citizen. How was the department of motor vehicles handling this? Coming from a smaller town that has a constantly congested DMV center in a state that now charges $151 to license and register a vehicle in Illinois, I went looking for clarity. From an Minnesota based article, I was able to find information about how some states have handled this (https://www.kare11.com/article/news/verify/verify-is-an-enhanced-id-as-good-as-real-id/89-fb9cd030-cb9d-468f-9b9c-580e0405feb7). Real ID in fact costs the same as standard ID pricing, with the exception of a Enhanced ID which costs an additional $15. An enhanced ID has an extra layer of security that allows for certain border crossing for any United States permanent resident. So with real ID, I think that the importance and actual rolling out worked really well, almost hand in hand, and a success for the department of homeland security.

Sources:

https://www.dhs.gov/real-id

https://www.kare11.com/article/news/verify/verify-is-an-enhanced-id-as-good-as-real-id/89-fb9cd030-cb9d-468f-9b9c-580e0405feb7

Before 9/11 aviation was strict when it comes to security, but nothing like what we see today. Just after 9/11, Congress passed the Real ID Act of 2005 which called for a more strict way of identification when in federal facilities such as nuclear power plants and airports for commercial travel. Over the course of 15 years the department of homeland security has been enforcing this switch from traditional ID checks such as passports and drivers licenses, to an even more strict standard. Real ID will now require everyone after October 1st, 2021 over the age of 18 to obtain a valid Real ID compliant drivers license or a passport to be able to travel commercially.

I think that this new act is important and relevant to today for a couple reasons. First, the world of air travel is inherently dangerous and even though over the years we have been able to eliminate most of the risks associated with it, it is impossible to make aviation 100% safe. So it is good to see that the government and aviation officials are still trying to work on safety. If you look at aviation related accidents over the years, whether it is pilot error or even terrorist related, you can see that accidents and fatalities have been steadily dropping due to safety enhancements. I'm sure that many Americans can see this as an annoyance, having to obtain new and improved forms of identification, but when it comes to an industry like aviation, safety is a number one priority.

Discussion Board 3 – Federal Flight Deck Officers (FFDO)

So to preface this, I have had discussions with flight Majors and non-Aviation people, and I myself may be a commercial pilot at some point. I think that I would give myself a rating of 3 in terms of safety and willingness to fly. Not only is it dangerous in terms of potentially injuring passengers, but you introduce yet another variable that contributes to pilot stress or fatigue. The pilot, or pilots are now introducing a new element of flying, regardless of training or resources, when you are actively doing your job, you are relying only on one person, yourself. I'm sure the training is excellent, and properly trains the pilots efficiently, but anything can happen, and without getting off topic, we all know very acutely of how often trained "professionals" with firearms has resulted in the death of innocent lives. It just doesn't make sense, and while there are zero cases so far of officers discharging their weapons, but there was one incident that caught my attention. A pilot on a flight from Houston to Munich, Germany attempted to flush live ammunition down a toliet, because, while legal in the United States, Germany prohibits weapons. They story is somewhat funny, but highlights a flaw in the FFDO program: it is ONLY an American program. So, on higher risk International flights, what happens?

Another issue I take with the program is that while it is voluntary, we shouldn't focus on the last line of defense. Hijackers and unruly/dangerous passengers are not getting through a reinforced kevlar door. It just isn't happening. And, in the event of the hijacking, as we discussed, a pilots job is to fly the plane, not engage in combat. Introducing guns almost makes it more dangerous, as the fairly recent crash of the Germanwings flight indicates, with a suicidal first officer intentionally crashing and killing everyone onboard. This idea of focusing on an area of Aviation security is dangerous, even if it costs the TSA nothing. What would potentially cause a pilot to feel the need to leave the cockpit and wield a weapon? Smuggled weapons? Enforce better security checks. Compromised entry in to cockpit? Reinforce aircraft safety. I mentioned it above as well, but this is an American program, and I think in a post 9/11 hijacking, it has been shown ample times that American passengers take no chances, and their are countless videos online showing how many passengers now rush to restrain violent passengers, before even the pilots or flight attendants can get involved. If it gets to point where a pilot potentially must engage in armed combat at 30,000 feet, I guess I don't feel really safe anymore.

After the tragic events of September 11^{th}, the United States government worked quickly to implement a way for commercial aviation pilots to be armed in case of a hijacking. Congress was quick to act, enacting the Homeland Security Act of 2002. Title XIV of the law is entitled

“Arming Pilots Against Terrorism.” As described in the law, a program shall be established “to deputize volunteer pilots of air carriers providing passenger air transportation or intrastate passenger air transportation as Federal law enforcement officers to defend the flight decks of aircraft of such air carriers against acts of criminal violence or air piracy” (Homeland Security Act of 2002, 2002). The provisions of this law became the Federal Flight Deck Officer (FFDO) program with classes occurring since 2003.

Knowing this practice has been going on for over a decade, I would say on a scale of 10, I would be at around a 7. In all of the commercial flights I have been on, there definitely has been a chance one of the pilots has been armed. Not knowing if your pilot is armed could make some people nervous, but personally I do not find this to be an issue for me. Having pilots armed provides peace of mind for any “what if” hijacking scenarios, such as the criminal breaking passed the closed cockpit door. Pilots as FFDOs are only volunteers, so not every pilot is going to carry a gun with them. The benefits are best summarized by the Air Line Pilots Association, “FFDOs protect thousands of flights each day and serve as a cost-effective complement to our federal air marshals” (Air Line Pilots Association [ALPA], 2018, para. 3). All of the preceding advantages do make me feel safer on an aircraft.

I do understand concerns of the possibility of a pilot pulling their gun on an innocent bystander, possibly injuring or killing that individual. I also am aware that passengers could be apprehensive of just the thought a pilot could have the gun. For these situations, the volunteer pilots go through an extensive training process to qualify them to carry a weapon in the cockpit. As described by Jessica Zuckerman, pilots must undergo “physical and psychological testing and complete training on the handling of firearms, use of force, and defensive tactics” (Zuckerman, 2012, para. 3). This process will prevent any questionable aviator from obtaining qualifications to become an FFDO. Also, there have not been any previous incidents where such a situation has unfolded. Overall, I still would be willing to fly with an FFDO onboard, even if I do not know if the pilots in the cockpit are armed or not.

Air Line Pilots Association. (2018). *Improved Support For The Federal Flight Deck Officer (FFDO) Program*. ALPA. https://www.alpa.org/advocacy/federal-flight-deck-officer-program.

Homeland Security Act of 2002, Pub. L. No. 107-296, § 44921, 1, Stat. 116 (2002).

Zuckerman, J. (2012, March 20). *Federal Flight Deck Officer Program: First Line of Deterrence, Last Line of Defense*. The Heritage Foundation. https://www.heritage.org/homeland-security/report/federal-flight-deck-officer-program-first-line-deterrence-last-line.

Discussion Board 4 – Detection and Prevention of Weapons of Mass Destruction (WMD)

The FBI defines Weapons of Mass Destruction as "a destructive device, such as an explosive or incendiary bomb, rocket, or grenade or weapon that is designed to cause death or serious injury through toxic or poisonous chemicals."

The thought of a country having WMDs has caused wars and rising tensions. We have seen WMDs in the form of nukes that have been fired at Japan or chemical weapons that have been shot at civilians. It is essential to find ways to detect and prevent the use of WMDs. In my opinion, all WMDs and nukes should be eradicated so that no country has the power to do so. The fact that a nuclear fallout is a possibility in killing the entire world is a disgrace. Either way this does not stop the reality that many countries have these WMDs. One agency called the Defense Threat Reduction Agency (DTRA) uses it resources and skills to track down and prevent WMDs. In their agency, they have several programs that track people who would be expected to traffic or hold these weapons and well as threat reduction and security and elimination of the WMDs. These programs are essential in keeping the world safe. If we did not have brave women and men looking for these devices and the people who use them, the world would have already ended as we know it.

WMD. (2016, May 03). Retrieved November 17, 2020, from https://www.fbi.gov/investigate/wmd

WHAT We DO. (n.d.). Retrieved November 17, 2020, from https://www.dtra.mil/Mission/Mission-Directorates/Cooperative-Threat-Reduction/

A weapon of mass destruction (WMD) as described by Britannica is a weapon “with the capacity to inflict death and destruction on such a massive scale and so indiscriminately that its very presence in the hands of a hostile power can be considered a grievous threat.” (Britannica, 2020, para. 1). In today’s world, WMDs consist of either biological, nuclear, radiological, or chemical weapons. Instead of discussing the detection of the WMDs, the more important first step is the prevention of their existence.

Prevention of WMDs starts with the governmental side, specifically treaties or tariffs. There have been several treaties passed via the United Nations throughout the past 50 years for the prevention of such weapons. Some examples include the Biological Weapons Convention and Chemical Weapons Convention. There have also been treaties regarding the disarming of nuclear weapons such as the Treaty on the Prohibition of Nuclear Weapons. Despite such actions made by dozens of nations, there is still a threat of WMDs throughout the world with the potential to harm innocent lives. Governments should work closely with one another to continue to work out agreements and treaties to prevent any more harmful WMDs from becoming a reality.

In the detection side, there have quite a few methods to detect any suspicious activity relating to the manufacturing or transporting of WMDs. One good detection method that was implemented by the United Nations is to have nation states control the exportation and transit of ingredients used to make such WMDs. Besides the standard rules on the packaging and transport, a really important mandate is to have individuals trained on the identification of those hazardous materials. While some of the materials might be used for the commercial sector, it is necessary to track where those materials are going to make sure they are not headed to a questionable facility of some sort. Another method used is high energy X-ray cargo screening. This technology has been proven in the "detection of contraband material hidden within cargo including fully loaded sea containers" (Bjorkholm, 2003, para. 1). The main application of this technology is on large cargo shipping containers and is an automated process. More recently, BAE Systems has been working on developing analytical technology to assist in deterring mass destruction activity. Such kind of technology will "leverage multiple data sources and uses data fusion, adversary modelling, pattern matching, and machine learning techniques to detect and identify indications of chemical, biological, radiological, nuclear and explosive (CBRNE) threat" (BAE Systems, 2020, para. 1). The most important piece of this new technology is the ability to fill in the gaps in finding any threats from WMDs within large metropolitan areas. In the end, detection can only go so far without the help of governmental prevention techniques.

BAE Systems to develop advanced analytics to detect weapons of mass destruction threat activity. BAE Systems | United States. (2020, February 12). https://www.baesystems.com/en-us/article/bae-systems-to-develop-advanced-analytics-to-detect-weapons-of-mass-destruction-threat-activity.

Bjorkholm, P. J. (2003, July 16). *Detection of weapons of mass destruction*. Search the world's largest collection of optics and photonics applied research. https://www.spiedigitallibrary.org/conference-proceedings-of-spie/5048/0000/Detection-of-weapons-of-mass-destruction/10.1117/12.484680.short?SSO=1.

Encyclopædia Britannica, inc. (2020). *Weapon of mass destruction*. Encyclopædia Britannica. https://www.britannica.com/technology/weapon-of-mass-destruction.

Preventing the proliferation of weapons of mass destruction - the role of the OSCE in support of UNSCR 1540. OSCE. (2020, February 7). https://www.osce.org/secretariat/444844.

Weapons of Mass Destruction. UNRCPD. https://unrcpd.org/wmd/.

Course Assessment Form

Course: ASCI 4012 Jet Flying Techniques I
Semester Taught: Fall 2020
Number of Students in Course: 15

Student Learning Outcome Assessed	**Assessment Results: (Indicate what % of class achieved a minimum 70%)**	**Benchmark achieved? (Benchmark: 80% of students will score a minimum of 70% = “C”)**
D. Make professional and ethical decisions.	EXAM 6, Q4 – 87%. EXAM 6, Q14 – 100%. EXAM 6 Q18 – 93%. EXAM 7, Q2 – 96%. EXAM 7, Q4 – 89%. EXAM 8, Q1 – 80%. EXAM 8, Q8 – 100%.	Embedded test questions throughout all tests show that 92% of students got the assessment questions correct.
I. Assess the national and international aviation environment.	EXAM 6, Q9 – 100%.	Embedded test questions throughout all tests show that 100% of students got the assessment questions correct.

Course Assessment (Intended Use of Results)

While referencing this semester’s exams for questions pertaining to LEARNING OUTCOMES D & I, I found that the vast majority of the questions being asked were NOT applicable to these two LEARNING OUTCOMES. I suggest we add these two LEARNING OUTCOMES to the ASCI 4013 where *application in a simulated real world setting* of these LEARNING OUTCOMES can also be evaluated.

Future goals include:

1. Teach more situational type/real world scenarios during lectures to include tasks accomplished at the gate, taxi, departure procedures, arrival procedures to include approach and landing.
    a. Example test question: During taxi out, ATC notifies you of a ground delay program pertaining to your destination airport. You have already pushed of the gate and the delay is 45 minutes. What do you do?
2. Cover more national environment situations they would NOT see during their flight training at Parks College.
    a. Examples test questions: Approaching O’Hare, you are told to hold over the TAFFS intersection at 14,000’, what is your holding speed?
    b. What is a threat when entering Class C airspace in the CRJ 700 compared to the Piper Seminole?

LEARNING OUTCOME D: MAKE PROFESSIONAL AND ETHICAL DECISIONS

EXAM 6, QUESTIONS #4, #14, #18.

4. ATC reports moderate turbulence ahead, depending on your altitude, what airspeed should you slow to?

   280 KIAS or 0.75 mach.

14. Due to traffic, ATC asks if you can accept FL430. You say... (yes or no).

    No.

18. You are currently at 190 KIAS. The PF calls, "Gear down, flaps 30". Can you select flaps 20 to flaps 30?

    No.

EXAM 7, QUESTIONS #2, #4.

2. ATC gives you a vector to intercept the final approach course and clears you for the approach. The PF forgets to the arm APPR mode. As the PM, what should you do?

   The PM should directly and clearly communicate to the PF that they have been cleared for the approach and that the approach mode is not armed.

4. At the "500' to minimums..." call, you realize you have not been cleared to land. What do you do?

   Depending on how busy the tower controller is, either request landing clearance or tell the PF that we have not been cleared to land and to execute a missed approach.

EXAM 8, QUESTION #1, #8.

1. TRUE or False. If during a high workload setting (short flight), it is a good idea to transfer the flight controls to the PM while the PF sets up and subsequently briefs the approach.

   TRUE

8. TRUE or FALSE. During an instrument approach, the PF calls "minimums". As the PM, you are looking outside and you do NOT have the runway in sight. You know you are close to the ground and are confident you will see it within two seconds. You should not say anything until you have the runway in sight.

   FALSE

LEARNING OUTCOME I: ASSESS THE NATIONAL AND INTERNATION AVIATION ENVIRONMENT

EXAM 6, QUESTION #9.

9. What is our max airspeed at 11,000 MSL in US airspace?

335 KIAS

Course Assessment Form

Course: ASCI 4013 Jet Flying Techniques I Laboratory
Semester Taught: Fall 2020
Number of Students in Course: 15

Student Learning Outcome Assessed	Assessment Results: (Indicate what % of class achieved a minimum 70%)	Benchmark achieved? (Benchmark: 80% of students will score a minimum of 70% = "C")
H. Use the techniques, skills, and modern technology necessary for professional practice.		15/15 students received a minimum of a C for the course.

Course Assessment (Intended Use of Results)

This semester, we shifted the focus of the first 5 labs to spending more time solidifying procedures at the gate and getting the aircraft from the gate to the runway. During the classroom section, formal Power Point presentations were NOT developed for ground procedures, but discussions were had to answer any questions pertaining to the material. The material from the Standard Operating Procedures (SOP) that were covered in the lab section were tested. Very rarely did students have questions, yet based on lab instructor's input, the majority of student performance during labs prior to mid-term was not to standard.

Through personal discussions with numerous instructors, it is believed the lack of knowledge that should have been gained during flight training was absent. Part of this we can attribute to COVID, the other part is the lack of holding students accountable to the flight training pre-requisites. During this semester, we had four students who did not have an instrument rating, nor the knowledge of what an instrument approach is or how to fly one. The difficulty of having to learn new, different procedures in a crew environment, in addition to an advanced, unfamiliar aircraft, while at the same time single pilot procedures with ratings at stake, is too much to ask our students to handle.

Recommendations:

1. Apply the material found in our simulated Standard Operating Procedures (SOP) manual to the Basic Aircrew Fundamentals course so that students will have a *thorough* knowledge of how to get the aircraft from the gate to the runway by working together as a *crew*. I have sent that course instructor a suggested Power Point presentation as well as an outline of what I feel would be most beneficial for those students who will be taking the ASCI courses associated with the CRJ their senior year.
2. Continue to redefine the grading system that was developed last year.

3. A prerequisite be set to students who are, *at a minimum*, starting their multi-engine rating within the first month of the FALL SEMESTER, and even at that point, the students shall be required to test into both courses.

LESSON #12: Flight 1012

CAPTAIN / PILOT MONITORING: STUDENT 1

I. Demonstrate Professionalism Skills: __A__

   a. Pilots comply with the professional appearance, grooming, and dress standards as specified in the Billiken Air Express Standard Operating Procedures Manual.
   b. Pilots conduct themselves with an attitude, language, and demeanor aligned with Billiken Air Express guiding principles.
   c. Pilots adjust leadership styles to match the situational demands and demeanor of the followers.
   d. Captains assist the chief pilot in mentoring and furthering the progress of the SIC.
   e. First Officers apply the 10 rules of good followership as listed in the enhanced leadership manual.
   f. Pilots demonstrate a commitment to being fully compliant with procedures.
   g. Pilots correctly use Threat Management and CRM skills and manage anticipated/unanticipated threats.
   h. **NOTES:**

II. Pre-departure Ground Operations: __C+_

   a. Report for duty
      i. Pilots report to the aircraft on time.
      ii. Pilots report fit for duty.
      iii. Pilots report for duty with a flashlight.
      iv. Pilots report for duty with a headset.
      v. Pilots report for duty with a current company identification badge.
      vi. Pilots report for duty with a pilot certificate with appropriate type and class endorsement.
      vii. Pilots report for duty with a current FAA medical certificate.
      viii. Pilots report for duty with a valid passport.
      ix. Pilots report for duty with an FCC radio permit.
      x. Pilots report for duty wearing a Billiken Air Express approved uniform
   b. Perform crew briefing
      i. Captain correctly conducts the initial crew briefing.
      ii. Captain correctly briefs cabin crew on pertinent items prior to each flight.
   c. Perform external inspection
      i. Pilots correctly perform an external inspection prior to and after each flight.
   d. Perform Safety Checklist
      i. Pilots correctly verifies required flight deck emergency equipment is onboard.
      ii. Pilots correctly verify required flight deck documents and equipment are onboard aircraft.
      iii. Pilots correctly power up the aircraft.
   e. Perform Originating Checklist
      i. Captain correctly performs originating checklist flow.

ii. First Officer correctly performs originating checklist flow.
iii. Pilots correctly perform challenge and response checklist.

f. Perform Pre-Start Checklist
   i. Captain correctly performs prestart checklist flow.
   ii. Captain correctly performs prestart checklist tasks.
   iii. First Officer correctly performs prestart checklist tasks.
   iv. PF correctly performs PF prestart checklist tasks.
   v. PM correctly performs PM prestart checklist tasks.
   vi. Pilots correctly perform challenge and response checklist
g. Perform Takeoff Briefing
   i. PF briefs weather.
   ii. PF briefs the airport, **rejected takeoff plan**, area departure, NOTAMs, and **engine out procedure**.
   iii. **PF verifies the route in the FMS against the clearance**.
   iv. PF briefs highest threat.
h. Perform Weight and Balance
   i. CA ensures weight and balance is calculated
i. Perform Engine Start Checklist and Pushback
   i. **Captain correctly performs engine start checklist flow**.
   ii. Captain and or First Officer correctly performs engine start checklist tasks.
   iii. Pilots correctly perform challenge and response checklist.
   iv. Pilots correctly perform pushback.
   v. Pilots correctly start engines.
      1. **Calling engine start is complete prior to engine stabilization**.
j. Perform Pre-Taxi Checklist
   i. Captain correctly performs taxi checklist flow.
   ii. First Officer correctly performs taxi checklist flow.
   iii. Pilots correctly perform challenge and response checklist.
      1. **FO selected the flight controls when it should have been the CA**.
      2. **Flaps items done backwards, FO said it first, not the CA**.
k. Perform Taxi
   i. Captain conducts a single engine taxi when conditions permit.
   ii. First Officer correctly performs engine start procedure during taxi.
   iii. First Officer writes down complex taxi instructions.
   iv. Pilots comply with taxi instructions issued by ATC.
   v. Pilots correctly use aircraft deicing/anti-icing equipment during taxi.
   vi. Captain taxis aircraft at a safe speed.
   vii. Pilots use correct procedures when crossing active runways.
   viii. Pilots maintain a sterile flight deck.
   ix. Pilots have the airport diagram chart available for reference during taxi.
   x. First Officer correctly calls out deviations and errors.

LESSON #12: Flight 1012

l. Perform Before Takeoff Checklist
   i. **First Officer correctly performs before takeoff checklist to the line flow.**
   ii. First Officer correctly performs before takeoff checklist to the line tasks.
   iii. Captain correctly performs before takeoff below the line checklist flow.
   iv. First Officer correctly performs before takeoff checklist below the line flow.
   v. Pilots correctly perform challenge and response checklist.

m. **NOTES:**
   i. **Called ramp to notify them of almost ready to push.**
   ii. **FO briefed wrong fix on departure… CA caught it.**
      1. **Ensure ALL fixes are briefed.**
   iii. **Called for pushback before the ENGINE START CHECKLIST was called for or complete (cargo door still open) TWICE.**
      1. **Second time still did not do checklist…**
   iv. **Set flaps prior to ENGINE START CHECKLIST as well.**
   v. **Before takeoff check to the line, referenced checklist prior to doing flow, improperly called FA/PA.**
      1. **Waited to accomplished checklist.**
   vi. **Do not call tower for clearance to cross… especially in low IFR.**

III. Takeoff: __B-_

a. Perform Reduced Visibility Takeoff
   i. Pilots correctly determine the minimum runway RVR, runway lighting, and runway marking requirements for takeoff.
   ii. Pilots correctly use ice protection, radar, and ignition as required.
   iii. Pilots correctly complete the runway verification procedure.
   iv. Pilots correctly set thrust.
   v. PF correctly rotates.
   vi. **PF correctly makes required callouts.**
   vii. **PM correctly makes required callouts.**
   viii. PM correctly retracts flaps.
   ix. Pilots correctly operate the flight director and autopilot.
   x. **PM correctly calls out deviations and errors.**
   xi. PF maintains centerline during takeoff roll.
   xii. PF maintains heading within +/- 5 degrees.
   xiii. PF maintains airspeed within - 0/+ 10 knots.
   xiv. **NOTES:**
      1. **PF forgot TOGA buttons.**
      2. **SPD/HDG, then caught it immediately to SPD/NAV.**
      3. **PF called 1000’ which threw off PM.**

IV. Descent: __B__

LESSON #12: Flight 1012

a. Perform Descent
   i. Pilots correctly perform descent checklist procedures.
   ii. Pilots maintain a sterile flight deck below 18,000 ft.
   iii. Pilots correctly use ice protection, radar, and ignition.
   iv. Pilots comply with descent profile speeds.
   v. **Pilots comply with STARs and ATC clearances**.
   vi. Pilots are aware of their fuel situation and have enough fuel to complete the flight safely.
   vii. Pilots correctly operate the FMS.
   viii. Pilots correctly operate the flight director and autopilot.
   ix. PM correctly calls out deviations and errors.
   x. Pilots comply with airspace and airspeed restrictions during an arrival into a non-radar environment.
   xi. PF maintains airspeed within +/- 10 knots or .02 mach.
   xii. PF maintains heading within +/- 5 degrees.
   xiii. PF maintains altitude within +/- 100 ft.
   xiv. **NOTES:**
      1. **Missed descent to 3000' when given that and turn to heading 030.**

b. Perform PF/PM Tasks
   i. Pilots correctly enter approach into FMS.
   ii. Pilots correctly set up navigation frequencies and courses.
   iii. Pilots correctly set approach minimums.
   iv. Pilots correctly calculate landing distance.
   v. PM correctly set landing speeds.
   vi. PF briefs weather.
   vii. PF briefs the arrival, approach, airport, and NOTAMs.
   viii. PF briefs highest threat.
   ix. **NOTES:**

V. Approach: __C__

a. Perform LOC Approach
   i. Pilots comply with the published approach procedure.
   ii. **Pilots correctly configure flaps and gear at appropriate times.**
   iii. PM correctly makes required callouts.
   iv. PF correctly makes required callouts.
   v. Pilots correctly perform before landing checklist.
   vi. Pilots correctly identify the runway environment before descent below minimums.
   vii. Pilots correctly decide to execute a missed approach when appropriate.
   viii. Pilots correctly operate the FMS.
   ix. Pilots correctly operate the flight director and autopilot.

x. **PM correctly calls out deviations and errors.**
xi. PF maintains no more than one-quarter deflection of the LOC.
xii. PF maintains airspeed within +/- 5 knots.
xiii. PF maintains a stabilized approach.
xiv. **NOTES:**
   1. **10-mile final still doing 200 KIAS.**
   2. **Not fully configured and on speed at 3-mile final.**
      a. **Fully configured and on speed at 9.4 DME, procedure required to be fully configured by 10.6 DME.**
      b. **Did not reference appropriate DME and started down earlier than 7.6.**
         i. **It was NOT briefed during the approach brief.**

b. Perform Missed Approach Procedure: __**C+**_
   i. Pilots correctly comply with the ATC instructions or charted missed approach procedure.
   ii. PM correctly makes required callouts.
   iii. PF correctly makes required callouts.
   iv. Pilots correctly operate the FMS.
   v. PM correctly retracts flaps.
   vi. **Pilots correctly operate the flight director and autopilot.**
   vii. PM correctly calls out deviations and procedure errors.
   viii. PF descends no lower than -50 ft. below approach minimums on missed approach.
   ix. PF maintains altitude within +/- 100 ft.
   x. PF maintains heading within +/- 5 degrees.
   xi. **NOTES:**
      1. **Initially started well, PF selected TOGAs and mode was properly set. However, he reached back over and clicked them a few more times.**
      2. **After the gear was up, while hand flying the PF set speed to 200 and centered heading bug. Airspeed was not very stable.**

c. Perform Engine Failure at V1: __B__
   i. PF maintains directional control when the engine fails.
   ii. PF correctly makes required callouts.
   iii. PM correctly makes required callouts.
   iv. Pilots correctly retracts flaps.
   v. Pilots correctly comply with the single engine departure procedure.
   vi. Pilots correctly operate the flight director and autopilot.
   vii. PM correctly calls out deviations and errors.
   viii. **PF maintains heading within +/- 10 degrees.**
   ix. PF maintains airspeed within - 0/+ 5 knots.
   x. **PF maintains acceleration altitude within +/- 100 ft.**
   xi. **NOTES:**

1. **When PM talking to tower, PF reached up and hit autopilot on.**
2. **PF called 1000' AFE when only at 1340' MSL.**
3. **PF called flaps up at V2+8… PM caught it.**
4. **PM forgot to call MCT.**
    a. **PM took more of a CA role.**
    b. **Did PM call for the appropriate checklist???**

d. Respond to a System Failure/Malfunction
   i. Pilots correctly identify system failure.??????
   ii. Pilots correctly complete memory items when required.
   iii. Pilots correctly complete the QRC procedure when required.
   iv. Pilots correctly complete QRH procedures.
   v. Pilots correctly confirm thrust levers, generators, and guarded switches.
   vi. **NOTES:**
      1. **Prior to starting QRH, CA did not contact cabin.**
      2. **PF/FO contacted cabin while CA in the QRH.**

e. Perform CAT I ILS Approach
   i. Pilots comply with the published approach procedure.
   ii. Pilots correctly configure flaps and gear at appropriate times.
   iii. PM correctly makes required callouts.
   iv. **PF correctly makes required callouts.**
   v. Pilots correctly perform before landing checklist.
   vi. Pilots correctly identify the runway environment before descent below minimums.
   vii. **Pilots correctly decide to execute a missed approach when appropriate.**
   viii. Pilots correctly operate the FMS.
   ix. **Pilots correctly operate the flight director and autopilot.**
   x. PM correctly calls out deviations and errors.
   xi. PF maintains no more than one-quarter deflection of the localizer and glide slope.
   xii. PF maintains airspeed within +/- 5 knots.
   xiii. PF maintains a stabilized approach.
   xiv. **NOTES:**
      1. **Missed the FAF and subsequent call.**

f. Perform Single-Engine Approach
   i. Pilots comply with the published approach procedure.
   ii. Pilots correctly configure flaps and gear at appropriate times.
   iii. PM correctly makes required callouts.
   iv. PF correctly makes required callouts.
   v. Pilots correctly perform before landing checklist.
   vi. Pilots correctly identify the runway environment before descent below minimums.
   vii. Pilots correctly decide to execute a missed approach when appropriate.
   viii. Pilots correctly operate the FMS.

ix. Pilots correctly operate the flight director and autopilot.
x. **PM correctly calls out deviations and errors.**
xi. PF maintains no more than one-quarter deflection of the localizer and glide slope.
xii. **PF maintains airspeed within +/- 5 knots.**
xiii. PF maintains a stabilized approach.
xiv. **NOTES:**
1. **"I'm going to slow down…" What is your minimum speed?**
2. **Stalled…**
3. **On the missed selected his own AP modes.**

g. Perform Single-Engine Landing
i. PF lands in the touchdown zone, not to exceed one-third of the runway length.
ii. PF executes touchdown on the runway centerline.
iii. PF correctly uses brakes.
iv. PF correctly uses thrust reverse.
v. PM correctly makes required callouts.
vi. PF maintains positive directional control during the landing rollout.
vii. PM correctly calls out deviations and errors.
viii. PF maintains a stabilized flight path.
ix. PF maintains airspeed within +/- 5 knots.
x. **NOTES:**

VI. Systems: __A-_
a. Operate Autopilot
i. Autopilot general knowledge
ii. Autopilot controls and indications
iii. Autopilot limitations
iv. Autopilot operation
v. **NOTES:**

LESSON #12: Flight 1012

FIRST OFFICER / PILOT FLYING: STUDENT B

I. Demonstrate Professionalism Skills: __A__

   a. Pilots comply with the professional appearance, grooming, and dress standards as specified in the Billiken Air Express Standard Operating Procedures Manual.
   b. Pilots conduct themselves with an attitude, language, and demeanor aligned with Billiken Air Express guiding principles.
   c. Pilots adjust leadership styles to match the situational demands and demeanor of the followers.
   d. Captains assist the chief pilot in mentoring and furthering the progress of the SIC.
   e. First Officers apply the 10 rules of good followership as listed in the enhanced leadership manual.
   f. Pilots demonstrate a commitment to being fully compliant with procedures.
   g. Pilots correctly use Threat Management and CRM skills and manage anticipated/unanticipated threats.
   h. **NOTES:**

II. Pre-departure Ground Operations: _____

   a. Report for duty
      i. Pilots report to the aircraft on time.
      ii. Pilots report fit for duty.
      iii. Pilots report for duty with a flashlight.
      iv. Pilots report for duty with a headset.
      v. Pilots report for duty with a current company identification badge.
      vi. Pilots report for duty with a pilot certificate with appropriate type and class endorsement.
      vii. Pilots report for duty with a current FAA medical certificate.
      viii. Pilots report for duty with a valid passport.
      ix. Pilots report for duty with an FCC radio permit.
      x. Pilots report for duty wearing a Billiken Air Express approved uniform
   b. Perform crew briefing
      i. Captain correctly conducts the initial crew briefing.
      ii. Captain correctly briefs cabin crew on pertinent items prior to each flight.
   c. Perform external inspection
      i. Pilots correctly perform an external inspection prior to and after each flight.
   d. Perform Safety Checklist
      i. Pilots correctly verifies required flight deck emergency equipment is onboard.
      ii. Pilots correctly verify required flight deck documents and equipment are onboard aircraft.
      iii. Pilots correctly power up the aircraft.
   e. Perform Originating Checklist
      i. Captain correctly performs originating checklist flow.

   ii. First Officer correctly performs originating checklist flow.
   iii. Pilots correctly perform challenge and response checklist.

f. Perform Pre-Start Checklist
   i. Captain correctly performs prestart checklist flow.
   ii. Captain correctly performs prestart checklist tasks.
   iii. First Officer correctly performs prestart checklist tasks.
   iv. PF correctly performs PF prestart checklist tasks.
   v. PM correctly performs PM prestart checklist tasks.
   vi. Pilots correctly perform challenge and response checklist

g. Perform Takeoff Briefing
   i. PF briefs weather.
   ii. PF briefs the airport, rejected takeoff plan, area departure, NOTAMs, and engine out procedure.
   iii. PF verifies the route in the FMS against the clearance PMs.
   iv. PF briefs highest threat.

h. Perform Weight and Balance
   i. CA ensures weight and balance is calculated

i. Perform Engine Start Checklist and Pushback
   i. Captain correctly performs engine start checklist flow.
   ii. Captain and or First Officer correctly performs engine start checklist tasks.
   iii. Pilots correctly perform challenge and response checklist.
   iv. Pilots correctly perform pushback.
   v. Pilots correctly start engines.

j. Perform Aborted Start
   i. Pilots correctly recognize abnormal start indications.
   ii. Pilots correctly perform start abort memory item.
   iii. Pilots correctly complete start abort QRC and QRH procedure.

k. Perform Pre-Taxi Checklist
   i. Captain correctly performs taxi checklist flow.
   ii. First Officer correctly performs taxi checklist flow.
   iii. Pilots correctly perform challenge and response checklist.

l. Perform Taxi
   i. Captain conducts a single engine taxi when conditions permit.
   ii. First Officer correctly performs engine start procedure during taxi.
   iii. First Officer writes down complex taxi instructions.
   iv. Pilots comply with taxi instructions issued by ATC.
   v. Pilots correctly use aircraft deicing/anti-icing equipment during taxi.
   vi. Captain taxis aircraft at a safe speed.
   vii. Pilots use correct procedures when crossing active runways.
   viii. Pilots maintain a sterile flight deck.
   ix. Pilots have the airport diagram chart available for reference during taxi.

x. First Officer correctly calls out deviations and errors.

m. Perform Before Takeoff Checklist
   i. First Officer correctly performs before takeoff checklist to the line flow.
   ii. First Officer correctly performs before takeoff checklist to the line tasks.
   iii. Captain correctly performs before takeoff below the line checklist flow.
   iv. First Officer correctly performs before takeoff checklist below the line flow.
   v. Pilots correctly perform challenge and response checklist.

n. **NOTES:**

III. Takeoff: _____

a. Perform Reduced Visibility Takeoff
   i. Pilots correctly determine the minimum runway RVR, runway lighting, and runway marking requirements for takeoff.
   ii. Pilots correctly use ice protection, radar, and ignition as required.
   iii. Pilots correctly complete the runway verification procedure.
   iv. Pilots correctly set thrust.
   v. PF correctly rotates.
   vi. PF correctly makes required callouts.
   vii. PM correctly makes required callouts.
   viii. PM correctly retracts flaps.
   ix. Pilots correctly operate the flight director and autopilot.
   x. PM correctly calls out deviations and errors.
   xi. PF maintains centerline during takeoff roll.
   xii. PF maintains heading within +/- 5 degrees.
   xiii. PF maintains airspeed within - 0/+ 10 knots.
   xiv. **NOTES:**

IV. Descent: _____

a. Perform Descent
   i. Pilots correctly perform descent checklist procedures.
   ii. Pilots maintain a sterile flight deck below 18,000 ft.
   iii. Pilots correctly use ice protection, radar, and ignition.
   iv. Pilots comply with descent profile speeds.
   v. Pilots comply with STARs and ATC clearances.
   vi. Pilots are aware of their fuel situation and have enough fuel to complete the flight safely.
   vii. Pilots correctly operate the FMS.
   viii. Pilots correctly operate the flight director and autopilot.
   ix. PM correctly calls out deviations and errors.
   x. Pilots comply with airspace and airspeed restrictions during an arrival into a non-radar environment.

xi. PF maintains airspeed within +/- 10 knots or .02 mach.
xii. PF maintains heading within +/- 5 degrees.
xiii. PF maintains altitude within +/- 100 ft.

b. Perform PF/PM Tasks
   i. Pilots correctly enter approach into FMS.
   ii. Pilots correctly set up navigation frequencies and courses.
   iii. Pilots correctly set approach minimums.
   iv. Pilots correctly calculate landing distance.
   v. PM correctly set landing speeds.
   vi. PF briefs weather.
   vii. PF briefs the arrival, approach, airport, and NOTAMs.
   viii. PF briefs highest threat.
   ix. **NOTES:**

V. Approach: _____

a. Perform LOC Approach
   i. Pilots comply with the published approach procedure.
   ii. Pilots correctly configure flaps and gear at appropriate times.
   iii. PM correctly makes required callouts.
   iv. PF correctly makes required callouts.
   v. Pilots correctly perform before landing checklist.
   vi. Pilots correctly identify the runway environment before descent below minimums.
   vii. Pilots correctly decide to execute a missed approach when appropriate.
   viii. Pilots correctly operate the FMS.
   ix. Pilots correctly operate the flight director and autopilot.
   x. PM correctly calls out deviations and errors.
   xi. PF maintains no more than one-quarter deflection of the LOC.
   xii. PF maintains airspeed within +/- 5 knots.
   xiii. PF maintains a stabilized approach.
   xiv. **NOTES:**

b. Perform Missed Approach Procedure
   i. Pilots correctly comply with the ATC instructions or charted missed approach procedure.
   ii. PM correctly makes required callouts.
   iii. PF correctly makes required callouts.
   iv. Pilots correctly operate the FMS.
   v. PM correctly retracts flaps.
   vi. Pilots correctly operate the flight director and autopilot.
   vii. PM correctly calls out deviations and procedure errors.
   viii. PF descends no lower than -50 ft. below approach minimums on missed approach.
   ix. PF maintains altitude within +/- 100 ft.

x. PF maintains heading within +/- 5 degrees.
xi. **NOTES:**

c. Perform Engine Failure at V1
   i. PF maintains directional control when the engine fails.
   ii. PF correctly makes required callouts.
   iii. PM correctly makes required callouts.
   iv. Pilots correctly retracts flaps.
   v. Pilots correctly comply with the single engine departure procedure.
   vi. Pilots correctly operate the flight director and autopilot.
   vii. PM correctly calls out deviations and errors.
   viii. PF maintains heading within +/- 10 degrees.
   ix. PF maintains airspeed within - 0/+ 5 knots.
   x. PF maintains acceleration altitude within +/- 100 ft.
   xi. **NOTES:**

d. Respond to a System Failure/Malfunction
   i. Pilots correctly identify system failure.
   ii. Pilots correctly complete memory items when required.
   iii. Pilots correctly complete the QRC procedure when required.
   iv. Pilots correctly complete QRH procedures.
   v. Pilots correctly confirm thrust levers, generators, and guarded switches.
   vi. **NOTES:**

e. Perform CAT I ILS Approach
   i. Pilots comply with the published approach procedure.
   ii. Pilots correctly configure flaps and gear at appropriate times.
   iii. PM correctly makes required callouts.
   iv. PF correctly makes required callouts.
   v. Pilots correctly perform before landing checklist.
   vi. Pilots correctly identify the runway environment before descent below minimums.
   vii. Pilots correctly decide to execute a missed approach when appropriate.
   viii. Pilots correctly operate the FMS.
   ix. Pilots correctly operate the flight director and autopilot.
   x. PM correctly calls out deviations and errors.
   xi. PF maintains no more than one-quarter deflection of the localizer and glide slope.
   xii. PF maintains airspeed within +/- 5 knots.
   xiii. PF maintains a stabilized approach.
   xiv. **NOTES:**

f. Perform Single-Engine Approach
   i. Pilots comply with the published approach procedure.

ii. Pilots correctly configure flaps and gear at appropriate times.
iii. PM correctly makes required callouts.
iv. PF correctly makes required callouts.
v. Pilots correctly perform before landing checklist.
vi. Pilots correctly identify the runway environment before descent below minimums.
vii. Pilots correctly decide to execute a missed approach when appropriate.
viii. Pilots correctly operate the FMS.
ix. Pilots correctly operate the flight director and autopilot.
x. PM correctly calls out deviations and errors.
xi. PF maintains no more than one-quarter deflection of the localizer and glide slope.
xii. PF maintains airspeed within +/- 5 knots.
xiii. PF maintains a stabilized approach.
xiv. **NOTES:**

g. Perform Single-Engine Landing
i. PF lands in the touchdown zone, not to exceed one-third of the runway length.
ii. PF executes touchdown on the runway centerline.
iii. PF correctly uses brakes.
iv. PF correctly uses thrust reverse.
v. PM correctly makes required callouts.
vi. PF maintains positive directional control during the landing rollout.
vii. PM correctly calls out deviations and errors.
viii. PF maintains a stabilized flight path.
ix. PF maintains airspeed within +/- 5 knots.
x. **NOTES:**

VI. Systems: _____

a. Operate Autopilot
i. Autopilot general knowledge
ii. Autopilot controls and indications
iii. Autopilot limitations
iv. Autopilot operation
v. **NOTES:**

Undergraduate Course Assessment Form

Course: ASCI 4050 Human Factors
Semester Taught: Fall 19/20
Number of Students in Course: 24/29

Student Learning Outcome Assessed	Assessment Results: (Indicate what % of class achieved a minimum 70%)	Benchmark achieved? (Benchmark: 80% of students will score a minimum of 70% = "C")
B. Analyze and interpret data.	19 of 19 students scored a 70% or above on a paper applying the historical SHELL model to the Helios B737 cabin pressurization accident	Achieved
C. Work effectively on multi-disciplinary and diverse teams.	25 of 29 students (86%) scored 70% or above on an assignment that detailed individual contributions on multi-disciplinary, diverse teams.	Achieved
D. Make professional and ethical decisions.	25 of 29 students (86%) scored 70% or above on an assignment that discussed the importance of making both ethical and professional decisions in the aviation workplace.	Achieved
E. Communicate effectively, using both written and oral communication skills.	19 of 19 students (100%) scored 70% or above on an in-class presentation that discussed the human factors elements associated with an aviation accident. 19 of 19 students (100%) scored 70% or above on a paper assignment associated with human factors	Achieved
H. Use the techniques, skills, and modern technology necessary for professional practice.	Did Not Assess	Did Not Achieve
J. Apply pertinent knowledge in identifying and solving problems.	27 of 29 students (93%) scored 70% or above on Test #3 that covered spatial orientation, the vestibular system and sensing balance.	Achieved

Course Assessment (Intended Use of Results)

SLO B
19 of 19 students scored a 70% or above on a paper applying the SHELL model. The SHELL Model is a basic human factors model used in ASCI 4050 to begin discussion ion the role of humans in complex systems. I am pleased 100% of the class achieved the assessment goals for the Helios accident assignment. In terms of continuous improvement, I am considering adding a SHELL Model assignment that would allow students to apply the model in their own high-consequence activities to assist in developing a better understanding of how individual and group performance affects performance.

SLO C
25 of 29 students (86%) scored 70% or above on an assignment that was intended to help students develop a greater awareness of the importance of teamwork and communication. While I am pleased with the outcome of the percentage of individuals who successfully completed the assignment, I believe SLO C might better be assessed by rolling it into the presentation. Currently, SLO E is assessed with the presentation, however, I think SLO C would be better served if assessed with the presentation and a follow-up evaluation by teammates.

SLO D
25 of 29 students (86%) scored 70% or above on an assignment that discussed the importance of making both ethical and professional decisions in the aviation workplace. I am pleased with this outcome. The weakness in this assessment is that it is assessed with use of a single assignment. As a matter of continuous improvement, I am considering assessing ethical and professional decision making across multiple aspects of the course.

SLO E
19 of 19 students (100%) scored 70% or above on an in-class presentation that discussed the human factors elements associated with an aviation accident. I am pleased with the quality of the presentations over the past few years; efforts to improve writing and speaking skills appear to be working. One weakness that might be subject to improvement (continuous) is the limits I place on the length of the presentation. I am considering lengthening the assignment to allow groups to go into greater analysis. In addition to providing the opportunity for a deeper examination of an accident with human factors implications, a longer presentation would require more interaction within the group and additional practice of both writing and oral communications.

SLO H
SLO H was not assessed. No formal method for assessing the techniques, skills, and modern technology necessary for professional practice. Clearly, as a matter of continuous improvement I will be developing a formal assessment tool that accounts for SLO H.

SLO J
27 of 29 students (93%) scored 70% or above on Test #3 that covered spatial orientation, the vestibular system and sensing balance. I am pleased with the performance of students on the test associated with SLO J. This test was given later in the semester after students had the opportunity to become more familiar with concepts related to human factors. As a matter of continuous improvement, I am considering utilizing a written assignment rather than a test to assess SLO J. I think allowing students to develop a narrative, rather than using a multiple choice examination would provide me with a better idea of how well individuals are able to operationalize the concepts developed in class.

Student Learning Outcomes Evidence

SLO B Example 1 (Using the historical SHELL Model)
S- Many software factors contributed or were involved in the Helios accident. One of them was the checklist used by the pilots for pre-flight. It specifically listed the pressurization switch that was the cause of the accident. Another software issue was the procedure of the mechanic took after finishing hos pressure check the day prior. If it was a part of the mechanic checklist to prepare the plane for flight the switch may have been switched back after the pressure check.

H- I think a hardware issue was the auto and manual switch that pressurizes the cabin. A small change to this hardware to make the default on auto nay have changed the outcome. The alert system on the 737 could may have been more serious to let the pilots know the cabin had not pressure. Having a specific alert for such a major occurrence could help to save lives in the future.

E - Obviously the environment that was critical was the high altitude that the plane flew at. Also the location of the aircraft was a factor. If the aircraft was on a shorter flight it may have been a survivable trip to at least some of the people on board.

L - Liveware was obviously not the only issue that this crew faced that led to the Helios accident, but it was probably the most critical. First the pilots not completing the checklist proved critical for this flight, as it has the potential of doing for every flight. The pilot not using proper CRM and listening to the mechanic was also a large reason for the loss of life. The language barrier between the pilots and ATC as well as the mechanic could also have been a factor. The pilot was also from East Germany, meaning that his idea of authority was absolute, possibly making it an issue when the mechanic spoke up about what the issue may have been.

SLO B Example 2 (Using the historical SHELL Model)
Software- One obvious contributing factor was the omission of a critical step on the established preflight procedure. The crew failed to identify that the cabin pressurization mode selector switch was is manual versus auto. If there was a stricter adherence to standard operating procedures, this step would have not been missed. I believe they could have potentially just been going through the motions of the preflight, without ensuring proper configuration.

Hardware- I feel the indicators within the flight deck played a critical role in this accident. When the cabin reached 10,000 feet, the audio and visual warnings that were displayed created a sense of confusion in identifying the aircraft issue. The fact that the cabin aural warning is very similar to the aircraft configuration warning led the crew to believed that the aircraft was not properly configured. Even though the green light for the pressurization system being in manual was on, I do not feel that this would bring enough attention to the issue to help remedy the situation. Perhaps an amber or red light would have helped bring their attention to the matter.

Environment- With the flight deck being closed off from the rest of the aircraft, I feel this potentially closes off the pilot's ability to key into aircraft issues that could affect operations. In this case, with all of the aural warnings and aircraft noise and the flight deck being closed off, the pilots could have observed that the passenger oxygen masks were deployed. I understand the physical security of the flight deck aspect, but this definitely creates a barrier in situation awareness. The aural warnings alone are a big distractor when operating the aircraft. Having flown an aircraft with similar aural warnings, it can create confusion and lead to incorrect decisions.

Liveware- Communication between the crewmembers could have been a limitation. This involves communication between the pilots, the pilots and the flight attendants, and the crew with the maintenance personnel. The pilots were from two different countries and spoke different primary languages. Although this can be overcome, this creates additional stress to ensure issues are communicated clearly. I would not contribute this to the accident, but aggregated with other issues, it could have been an issue. As far as the communication between the front and the back of the aircraft, I would have expected some type of discussion about the passenger oxygen mask deployment from the flight attendants. This could have helped the pilots identify the correct issue. Purely through speculation, communication with the members that performed the operational checks should have eluded to a more in-depth check of proper pressurization system configuration. This may be my own experience leading me to this assumption, but anytime an aircraft system had a malfunction and was worked, I would always double check to verify the systems that were affected were properly configured.

SLO B Example 3 (Using the historical SHELL Model)
The Helios Airways Accident that took place in August of 2005 was a tragic and unfortunate incident that caused the death of every soul onboard the aircraft. While hearing about the accident, it is clear that there were many human factors that came into play and ultimately caused the accident. Some of these human factors were the age and health conditions the flight crew were in, the age and maintenance issues with the aircraft, and the ignorance of the entire flight crew. The human factors involved with the Helios Airways accident can be broken down into the SHELL interfaces: Liveware to Software, Liveware to Hardware, Liveware to Environment, and Liveware to Liveware.

When determining the Liveware to Software human factors the things that come to mind are the company's policies when handling the maintenance of the door seal squawk that was written the morning of the accident. When the maintainer was done conducting the pressure check, he never put the pressurization mode selector back to AUTO. At the same time the flight crew should have caught this during the pre-flight and switched it position of the selector. Another Liveware to Software factor is the way the Captain handled the cabin altitude warning horn. It should have been handled differently. The Captain received the alarm and continued to climb. At the very least he should have leveled off at the 12,040 ft altitude in which the alarm went off. This would have possibly prevented the hypoxia and kept a clearer head of all the flight crew to determine the problem and take the appropriate actions.

There are a few different Hardware issues in regards to the Helios Accident. One of the main issues is the fact that the aural tone of the cabin pressurization alarm sounds the same as other warning alarms. Each alarm should have a different tone and warning to help the flight crew determine what is going in with the aircraft easier and quicker. The aircraft itself could also be considered a Hardware issue. The aircraft had nearly 18,000 airframe hours and just over 16,000 cycles. This aircraft was far from new and perhaps should have been updated to help with these issues.

The Environment in which this aircraft was operating is essentially the cause of this accident. The crew seemed to suffer from hypoxia due to the lack of oxygen at which this aircraft was flying. Had the aircraft been flying much lower or the pilot leveled off at the 12,000 feet when he got the first alarm, the crew may have lived and the accident could have been avoided all together. The freezing temperatures at the high altitude also caused the initial flight squawk to be written about the door seal. Without the door seal freezing and making popping noises at altitude, the squawk would not have been written and the mechanic would have not switched the pressurization switch from AUTO to MAN.

There were several Livewire factors in regard to the Helios Airways accident. I should say one of the first was the Captain and his arrogant attitude towards the dispatcher and maintainer. Instead of listening to the mechanic about checking the pressurization switch, he kept asking where the circuit breakers were. It was as if the Captain insisted that he knew more than the mechanic. It also did not help that the Captain and mechanic were from two different countries both speaking English with an accent and it was not their native language. This could have created a barrier of communication between the two. When the passenger oxygen masks were deployed, the flight attendants should have donned their oxygen masks and carried around their bottles as well. It was shocking to hear that all of the flight attendant's oxygen bottles were full and the valves were closed. Had they put their masks on when the passenger's masks fell, they could have stayed alive and checked on the flight crew sooner and possible prevented the accident.

The Accident of the Helios Airways Boeing 737-300 was very tragic and, after looking at all the human factors that were involved, avoidable. The maintainer should have put the pressurization switch back to AUTO once he was done with his pressurization check. The Captain and First Officer should have put the pressurization switch back to AUTO during the pre-flight. When the Captain received the cabin pressurization warning at 12,040 feet, he should have leveled off or descended instead of continuing to climb. And once the oxygen masks fell for the passengers, the flight crew should have put theirs on and someone should have checked with the Captain and First Officer to verify that they had their oxygen masks on. All we can do now, is learn from their mistakes in hopes to never make them again.

SLO C Example 1
This question is completely related to management people who work in the field of aviation. Since those managers will be dealing with offices and people work behind the wheel and they will a perspective to get the way on dealing with all those people. Pilots have their own work environment which is completely different than other work environment. Those managers will have a great deal of idea about managing the work between those different environments.

I notice the diversity environment a lot since I am different from most people who am working with or studying with. The difference is expecting anything from people who come from different cultures which might be completely different from mine. And always seek for an answer for anything that's unusual to me or I do not see it that much in the working environment.

SLO C Example 2

Within a multi-disciplinary environment, human factors are demonstrated through the multitude of systems going on in a particular environment. Each individual in the organization will be specialized in different professional topics, thus the multitude of persons will bring various abilities to the table. The organization has to work together to learn each individual's characteristics and limitations to create a cohesive work setting. By figuring out an effective combination of these factors from each member, the multi-disciplinary environment will be set up for success because of the harmony of human factors.

When working in a diverse environment, the key aspect of human factors that shines through is individual differences. In a diversified setting, each individual within the system has their own skills and talents. Also, each person has their own limitations as well. Discovering what each individual is capable of taking on as a challenge is necessary in such a diverse environment. It is also important to mitigate stress in a diverse environment to
prevent mental overload for the persons involved. Figuring out the individual differences in the whole diverse system will help create an effective climate for working.

SLO C Example 3
Human factors is especially important in a multi-disciplinary environment because there are multiple aspects that you must be knowledgeable In and know how to deal with. In class we looked at the shell model which layed out how human factors relates to some of these different aspects. If we have a better understanding of how each of these aspects are related than we can further promote the safety and effectiveness of human performance. Once again this can relate back to human abilities and limitations. It is important to note how individual differences effect the connection and capabilities of each critical component in the shell model. From this understanding we can figure out the best way to reduce and mitigate errors in order to promote and safe environment and an improved quality of life for everyone involved.

Describe the importance of human factors when working in a diverse environment. Human factors is extremely important when working in a diverse environment because it will put your understanding and abilities to the test when you are faced with various situations. Diverse environments will require various responses to situations and the more prepared and knowledgeable you are about human factors and how each interface is connected, in relation to the shell model, the better your response will be to the situation. I think it is also important to
realize how every decision you make involving diverse environments could have direct effect on other interfaces and they should all be kept in mind. There is always a focus on improving efficiency and safety in all situations. Although this becomes more challenging in diverse environments it is extremely important to keep the same goals in mind and uphold the same level of safety and effectiveness as all other situations.

Throughout the semester we discussed various elements revolving around human factors and how each interface in the shell model is related to each other. Other Human factor elements we discussed included those intrapersonal factors that every pilot should be aware of. Some of these factors included, the eyes, ears, and stress. There are many others as well but having knowledge on these 3 specific factors can improve performance if they are leveraged correctly. Regarding the eyes, it is important to know yourself, your abilities and limitations, and understand some of the tricks that your eyes can play.

If you have a decent understanding of this information
you can apply it to certain situations in order to improve your performance. For example, If you are flying at night, you will want to keep in mind some of the environmental factors that could affect your vision and how you are interpreting the flying environment. It is important to know how light enters the eye and different ways you view things based on light intensity. Perhaps, in certain light conditions you will be better off using peripheral vision. Perhaps, coming into land, if you are aware of your environment you can eliminate some the illusions that could be falsely interpreted. In addition to your eyes, your ears also affect your performance, and it is good to have
an understanding of how the ears work. If you understand how the ears work and the affects, they have on balance and coordination then you can eliminate those risks as well. It is important when flying to not get disoriented and your ears could affect what you "feel" in the plane. Maybe you feel like you are climbing because you accelerated, but if you are aware of this illusion and focus on your instruments it is easier to improve your performance and mitigate risks. Another factor is stress. Stress can have a critical effect on your performance in the plane and it always good to do a self-assessment to make sure you are fit to fly. If you do not feel fit to fly because of stress or personal things going on, it is important to note this and not carry on with the flight with a bad performance.

SLO D Example 1

Describe how human factors is related to professionalism.
I believe Human Factor is a class that's related to the aspects that might influence a human body in the working field. If those factors or aspects are known by a person, they will be avoidable easily. However, Human Factor is not only the way that makes students to avoid being influenced in the working place, I think experience is required too. We have studied about many disorientations that will influence the working performance, but the person will
exactly know those factors if he gets into it. The responsible person will keep those factors in his mind until he experiences them.
It affects the liability on perspectives which means putting effort to get everything as expected. Since working in diverse environment provides the worker to work meet with the highest expectation because he/she never knows what might be expected from the manager which makes them work too hard to meet the highest level of expectation.

It's related by the way of thinking and treating others under any of those circumstances where a person is experiencing a factor that puts him away of the workplace's atmosphere.

SLO D Example 2

Discussing human factors is quintessential in regard to professionalism. For an individual to maintain a high level of integrity within the organization, they should consider human factor topics such as stress and safety. As an example, a pilot working on the line should know his/her limitations regarding stimuli. While working on the job, stress should be minimized to maintain professionalism in the cockpit. Tying into safety, maintaining a
stress-free climate in the cockpit will help maintain a secure climate. In general, a safe environment in aviation creates a professional environment for everyone within the organization.

Human factors relate to ethics in one major way: the identification of unethical practices within an

organization. As an example, creating a stressful environment in the cockpit could lead to potential hazards formulating. It is unethical to jeopardize the health and safety of passengers in the cabin due to stress within the cockpit. Also, the lack of completing checklists when operating in a high consequence environment such as aviation could be a demonstration of an unethical behavior when an accident might occur due to this behavior. Finally, it is unethical to skimp out of required maintenance intervals (such as the 100-hour inspection) due to the fact it jeopardizes on the safety of the individuals flying the aircraft. Behaviors made by human beings tie into unethical practices within
various organizations

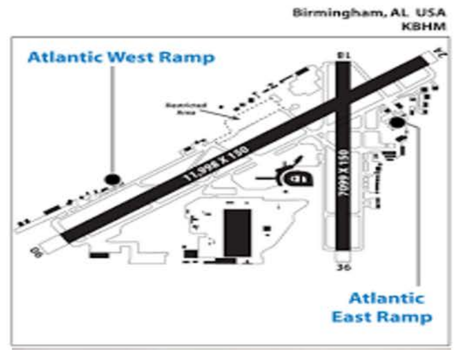
SLO D Example 3
Human factors is related to professionalism in the sense that human factors discovers and applies information about human behavior, abilities, limitations, and other characteristics of tools and environments. If we are able to study human factors and understand one's abilities and limitations in regards to how they interact with their environments than we can ultimately have an understanding of how someone will perform in certain situations. I believe this relates to professionalism because I think of a professional as someone who is very knowledgeable and educated in a specific field who you can consult for appropriate advice. Someone who understands the different aspects related to human factors would be the most professional and someone I would trust for advice. A specific aspect related to human factors as mentioned before is someone who knows their abilities and limitations. I think this is important for professionals because it shows that they are self-aware and can hold themselves accountable in various situations.

I think there are a lot of ethical decisions that we as pilots and professionals have to make specifically related to human factors. Since human factors is how people interact with their environment's pilots have an important role that involves many different critical environments, tasks, and technology. Once again I think the general idea of knowing your abilities and limitations in regards to the various environments you will be in and the various tasks you will have is very important. These tasks often include the safety of anyone you might be flying including yourself. How do you deal with certain situations or problems that might arise especially knowing that there
is potentially dozens of passengers on board and the decisions you make could have a direct impact on their lives as well. There could be many different ways that you could deal with certain situations and like I said before, especially when you have others onboard, you have an ethical responsibility of making decisions that will bring the greatest amount of safety for everyone. This might mean you handle situations differently with others on board rather than if it was just yourself flying.

SLO E Example 1 (Example Slides from Presentations)

Accident Overview

- SDF - BHM on Aug 14th 2013 at 4:47 a.m.
- Airbus A300
- Localizer non-precision approach to RWY 18 at BHM
- Unexpected low ceiling and visibility
- Hit the tree, then bounced three times on the ground uphill
- Fuselage broke apart and caught fire
- Both pilots were dead



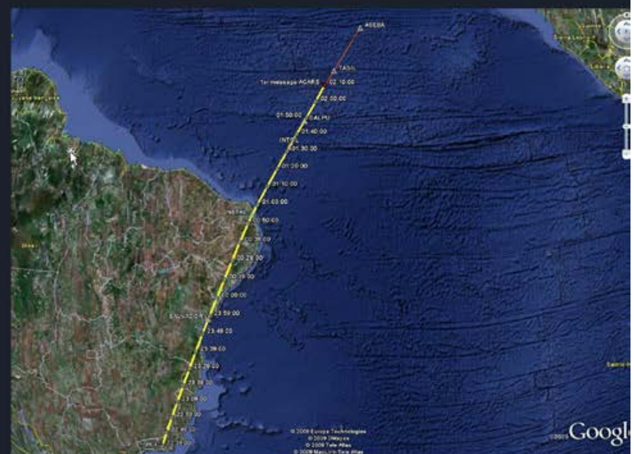
Human Factors Failure/Issue

- Failure to properly configure the FMS for the approach profile (human/machine)
- Poor communication...FO missed callouts & CA did not properly communicate intentions to FO
- Fatigue...FO cited for lack of sleep due to poor off-duty time management
- Performance deficiencies due to fatigue, distraction, and confusion

SLO E Example 2

Air France 447 Accident Overview

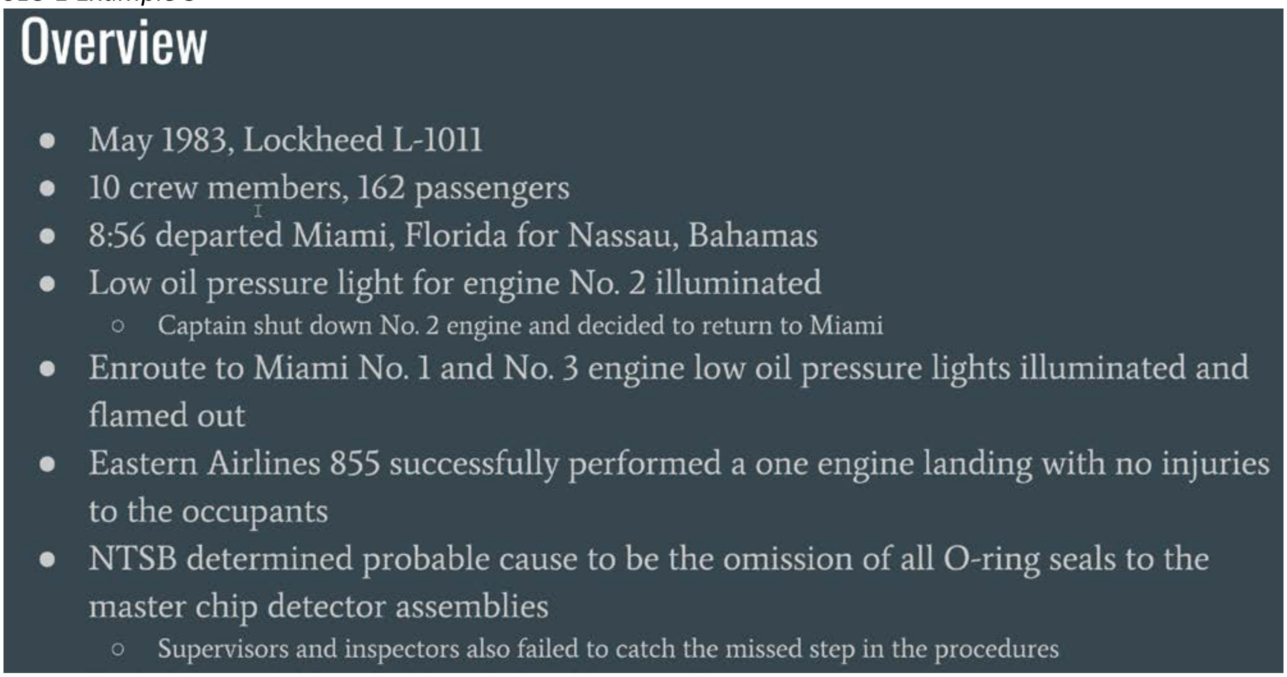
- June 1, 2009
- Air France Flight 447
  - Airbus A330
  - 228 Occupants
    - 216 Passengers, 12 Crew
  - Flight from Rio de Janeiro, Brazil to Paris, France
- Aircraft stalled and couldn't recover
  - Crashed into Atlantic Ocean
  - 228 Fatalities, 0 Survivors
- No mayday calls or radar signals prior to crash
  - Search cost $25 million over 2 years

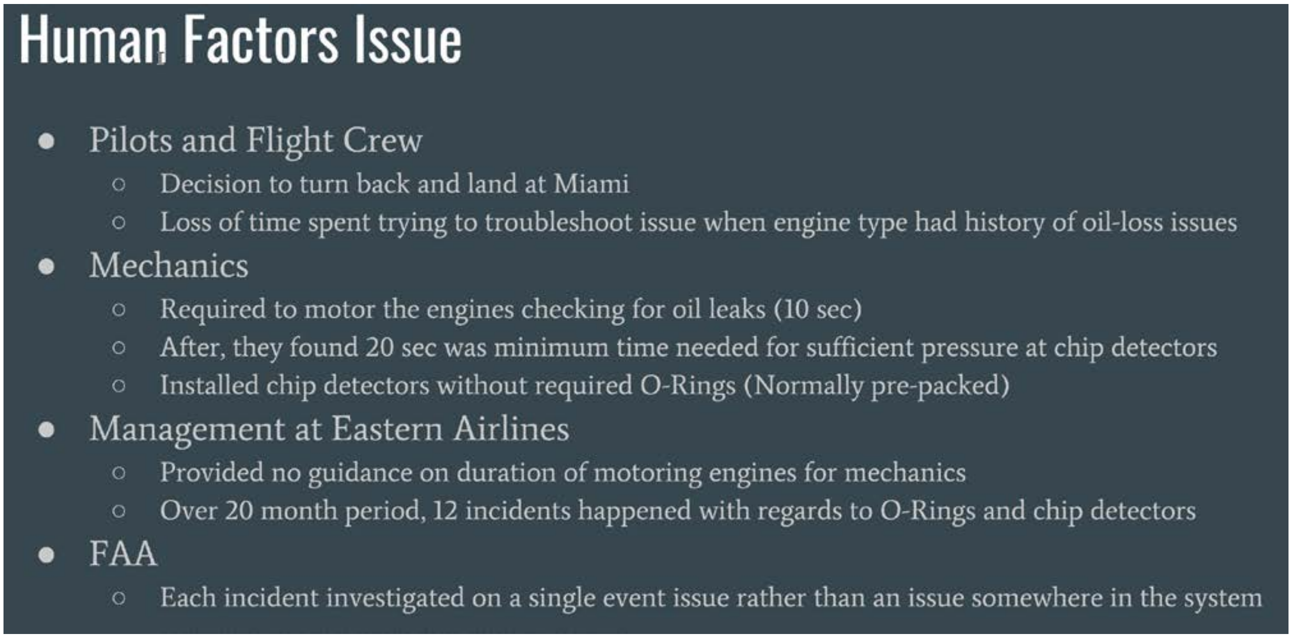


Could This Human Factors Issue Happen Today/Again?

- **Yes, it could happen again**
  - Failure to do proper and thorough weather briefing to avoid and prepare for hazardous weather conditions
  - Crew's inadequate experience and training on stall recovery
  - Misjudgement from the crew due to hazardous weather conditions and instrument malfunction

SLO E Example 3





SLO H Example
Did not Assess.

SLO J Example Test Questions
The vestibular apparatus is part of the?
a. Outer ear
b. Middle ear
c. Inner ear

Proprioceptive receptors are located throughout the body.
a. True
b. False

Spatial disorientation is a function of perception.
a. True
b. False

The vestibular system is the primary means of spatial orientation.
a. True
b. False

Of the following, which sense contributes most to spatial orientation?

a. Vision
b. Vestibular
c. Proprioceptive
d. Auditory

Spatial orientation includes the ability to perceive motion and position in?

a. One dimension
b. Two dimensions
c. Three dimensions

Each semi-circular canal is located at roughly ________ to each other canal?

a. 30 degrees
b. 45 degrees
c. 90 degrees
d. 120 degrees

How many semi-circular canals contribute to spatial orientation?

a. 1
b. 2
c. 3
d. 4

The Crista Ampullaris is fixed and does not move.

A. True
B. False

Of the following, which is less desirable?

a. Chronic stress
b. Acute stress

Graduate Course Assessment Form

Spring 2020 – Assess Student Learning Outcomes #1 and #2

Course: ASCI 5010 Introduction to Aviation Research Methods
Semester Taught: Fall 2019
Number of Students in Course: 8

Student Learning Outcome Assessed	Assessment Results: (Indicate what % of class achieved a minimum score of 70%)	Benchmark achieved? (Benchmark: 80% of students will score a minimum of 80% = “B”)
1. Assess relevant literature or scholarly contributions to the aviation field of study.	Precis: 1 2 3 4 7/7 7/7 7/7 7/7 100% 100% 100% 100%	Precis: 1 2 3 4 5/7 7/7 7/7 7/7 71% 100% 100% 100%
2. Apply the major practices, theories or research methodologies in the aviation field of study.	Mini Proposal 7/7 100%	Mini Proposal 7/7 100%

ASCI 5010 Introduction to Aviation Research Methods is intended (currently) to be the introduction to research methodologies course for both masters and PhD students. Historically, this course followed a both a qualitative and quantitative course. Most of the students in this course are enrolled in the PhD program (5/7).

SLO 1, suggests students demonstrate the ability to assess relevant literature. Assignments for the course include several Precis essays based on the literature. Student performance on this SLO are outstanding as evidence by the scores achieved. While I do not think any remedial action is necessary, for the sake of continuous improvement, I intent to require a minimum of three cited and referenced sources to support assertions in each precis.

SLO 2 success is demonstrated by mini-proposal submissions made by each student. The mini proposal =required each student to demonstrate an application of a research method to a proposed project. Students did quite well on the assignment 100% of the course achieving a score above 80%. As a matter of continuous improvement, I intend to expand the expectations of the mini proposal to include a more comprehensive methodologies section.

Instructions for Precis
Creating a Precis

Dr. Ross Matsueda from the University of Washington published a very useful guide for preparing a Precis. Below find a slightly edited copy of Dr. Matsueda's suggestions:

An important skill that academic researchers inevitably acquire is a way of writing a brief synopsis, or précis, summarizing a research article. This can be enormously useful for conducting research, as one does not have to re-read the same key articles repeatedly, but rather refresh one's memory by reading their synopsis. It is a crucial step when writing a review article, such as for the Annual Review of Sociology, in which the objective is to summarize and critically evaluate the state of research on a given topic. It is also a handy skill to have when serving as an anonymous reviewer for a journal.

There are several ways of writing a précis, and individuals typically develop their own style based on what works for them. Nevertheless, there are a few features that are common among virtually all good summaries.

Note that most of this is just commonsense. Note also that these recommendations suggest efficient ways of reading articles and are based on accepted normative models of how to write a research article.

Begin by reading the abstract, and the stated objectives of the paper. You may then flip to the substantive conclusions to get a sense of where the paper is heading, and if it is an empirical paper, check the data and methods quickly before returning to page one. Highlight as you read, and make quick comments, like "yuck," "good," "great point," "dumb," "important claim," etc. For an important paper highlight the key points, so the next time you want to read the paper, all you must do is read the highlighted passages. (I hate reading an article the second time with no highlights—it's just as much work as reading the first time.) In evaluating an article, flip back to the "objectives of the paper" section to determine if they are consistent with data, models, hypotheses, conclusions, etc.

The first step in writing a précis is to summarize the main points of the paper. What is the paper about? What is it trying to accomplish and why is this important? What are the key advances claimed by the authors? How do they do this? Here is a quick skeleton of a summary:

A. Introductory paragraph:

- What is the topic of the paper, why is it important (as argued by the authors), and how do they claim to advance our knowledge?

- What are the specific objectives of the paper that presumably advance our knowledge of this important topic?

- Usually there is a single key finding or theoretical argument that contributes to the body of knowledge. What is this finding or argument? State this early, and then use the summary to show how the authors come up with the finding or make the argument.

B. Summary of Steps Leading to Conclusions

For Empirical Studies

1. Theoretical background (if different from above)
2. Hypotheses: Are they listed? Do they follow from the theory/literature review?
3. Methods: Are they an improvement over prior research (e.g., sample drawn, statistical methods used, cases analyzed?)
4. Models used. (Do they follow from the theory discussed or prior findings reviewed?)
5. Findings.
6. Substantive conclusions: do they follow from the findings?

For Theoretical Essays:
1. Theoretical background: What is the theoretical issue(s) raised? Why important?
2. Deficit in the literature: What issue has been inadequately raised or solved in prior literature (which will be raised or solved here)?
3. Major argument: What is the author(s) major argument(s)?
4. Conclusions: Do they follow from the major arguments, theoretical background, and deficit in the literature?

C. Critical Evaluation

- Here you critique the reading or set of readings, picking out the most important issue and working down from there to the least important issue (if you still have space).
- This critique is highly variable, depending on your reading, the style of research, and the strengths or weaknesses of the reading.
- You probably want to mention the strengths of the reading before moving to a critique, and then end with a balanced conclusion (e.g., great dataset, good idea, strong analysis, interesting theoretical framework, innovative theory or methods).

Here are some examples:

General Criticisms:

- This has been done before
- Inadequate literature review
- Misunderstands the literature
- This isn’t important
- Conclusions do not follow from analysis.

Theoretical Criticisms:

- The theories have not been presented accurately
- The key concepts are poorly articulated, misunderstood, or incorrectly characterized
- The key hypotheses are not discussed or tested
- The key hypotheses are not shown to derive from the theory’s propositions.

Methodological Criticisms:

- The sample is not representative of the key population needed to be examined
- The sample is too small
- The sample is not random and sample selection bias could compromise results
- Measures are of poor quality (unreliable or invalid) or fail to capture theoretical Concepts
- Effects are too small to be meaningful.

Criticisms of Writing and Organization:

- Writing is not clear or grammatically correct
- The structure of the presentation is confusing
- Appropriate headings are not used in helpful ways
- Paragraphs do not follow from each other
- Theory or methods are not presented in a clear way

All of this can be boiled down to a very concise 2-page précis! Note that you can do this for a group of readings, making the summary very terse and restricting your critical comments to the most important issues and issues that cross-cut individual readings. I test my précis by reading it over and checking to see if I have captured the essence of the paper and described both the major strengths and weaknesses. Doing this well will allow you to write book reviews, critical essays, and reviews of articles.

Example Precis’

Example Precis 1

Introduction

This article presents an update on a research teaching tool oriented toward graduate learners in research methods coursework. In the report he describes results of a 2017 follow up study to the author’s online, interactive tool developed in 2015. This tool, termed “Hopscotch” was designed to assist graduate level learners and researchers in both teaching and learning the qualitative research design process. Jorrin-Abellan emphasizes the target audience as educational professionals and researchers who use research methodologies for “betterment of their practices” (pg. 6), especially in learning and designing qualitative research. The author describes use of a responsive evaluative case study as the evaluation method.

Background Summary

The author cites education and research design literature surrounding teaching and learning qualitative research frameworks (Hazzan & Nutov, 2014; Günter, 2008; Breuer & Schreier, 2007; Hammersley, 2004 among others) pointing to a need for more deliberate, iterative models to assist new researchers or graduate learners in the qualitative research design process. The author describes the original Version 1 online framework as a nine-step tool to guide learners through key components of qualitative research design. The steps include: Worldview of the researcher, Topic & Goals, Conceptual framework, Research Design, Research Questions, Data Gathering, Data Analysis, Trustworthiness & Validity and Ethics (pg. 6). For the paper reviewed here, the author highlighted two research questions for the study (Pg. 8):

1. Is the Hopscotch Model helping the teaching and learning of qualitative research method? and,
2. In which ways should the Hopscotch Model and web-tool be modified/enhanced to respond to the needs of its users?

Methodology

The author described his methodology of *purposeful sampling* of 86 users of the Hopscotch model. Methodologiesy included personal interviews, surveys and online quantitative analytics data from Google Analytics. The data was analyzed using Atlas.ti which the author asserted assisted in more accurate coding and triangulation of data.

Evaluation

This paper was a formal evaluation of the author's Hopscotch qualitative and, now in Version 2 includes a quantitative, assistive research teaching and learning tool. This paper seemed at first slightly lean in the front-end literature review, specifically in showing support for the need for better teaching tools and the gap proposed by the author. However, reading further it became evident this is essentially a "part II" follow up on an earlier design model from the author, where more substantive literature review was accomplished. Regardless, a slightly more in-depth

review section of supporting research would have been helpful to get into the mindset and direction for the paper.

The author does an excellent job laying out and articulating the evaluation approach used in this report, using established and well referenced methods (Jorrin-Abellan, pgs. 7-8). He specifically laid out the evaluation focus on utility and model contribution to teaching and learning qualitative research methods. I particularly like the analysis figure display (Figure 1 – Components of the Evaluation Design, pg. 9). Its layout and content are easy to read and identify relationship to other criteria areas.

Results the author reports include improvements made in five areas surrounding attributes of the online tool sections as well as language conversion capabilities. The author lays out results clearly in table formats and does a very good job interpreting, assessing and follow up from both positive and negative limitations from learner and teacher data responses. The author clearly establishes both in his assessment and treats both as valuable information for refining the current data tool into the Hopsctoch 2.0 version with its improved attributes. There is some bias language in the positive summary where he cites "copious use" (pg. 18) of his Hopscotch 2.0 tool. This is being perhaps too picky on my part – he clearly has the data to back it up. However, the word "copious' on its own in the text is difficult to quantify or envision within the context of a journal style research paper.

Overall this was a well written paper, especially in the latter sections describing the author's assessment methods and tools used with well cited supporting literature. In fact, I will likely return to Jorrin-Abellan's assessment set up and overall methodology described in this paper to assist in documenting my own future evaluation designs.

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Example Precis 2

Chuang, S., Ou, J-C & Ma, H-P, (2019). Measurement of resilience potentials in emergency departments: Applications of a tailored resilience assessment grid. *Safety Science, 121*(2020), 385-393. DOI: https://doilorg/10.1016/j.ssci.2019.09.012

This paper reported on the authors' adaptation of an existing resilience assessment grid (RAG), assessing organizational resilience across four area 'potentials' described by the authors: respond, monitor, learn and anticipate (Chuang et al., 2019, pg.385) based on a model from resilience engineering first put forward by Hollnagel (2011). The study quantitatively mapped and compared resilience readiness of emergency departments at four hospitals within a modern major metropolitan city in Taiwan. Tailoring Hollnagel's *four potentials* model, the purpose of the research was to comparatively test feasibility of a quantitatively scored adapted assessment tool measuring the four key potentials of resilience in four Emergency Departments (ED). The goal was to gauge ability of the adapted assessment tool to provide a statistically based visual assessment of readiness for sustaining operations during routine and unexpected conditions (Chuang et al., 2019, pg.386). This report was very intriguing, utilizing qualitative interview data, then scoring and translating results into statistical rankings used to produce quantitatively derived radar charts (Chuang et al., 2019, pgs. 387;388). The data was first collected from scored survey questions via direct focus group interviews. Then a four-point ordinal scale was used to rank and present resilience performance (Pg.387). The authors address a potential argument in this approach early on acknowledging that ordinal data at first glance would not provide mean values. They went at length into a statistical method-backed description articulating their design methodology for summing scores that laid out their line of thinking and logic.

For purposes of example and review, this report represents a challenging mix of qualitative and quantitative approaches. It was rightfully data and method “dense” which was necessary to describe the strategic statistical approaches and interpretations. However for this researcher personally, it was very challenging to read and review and, in honesty, struggled to follow it based on its sheer detailed depth and use of statistical tools and tabling, coupled with this researcher’s low fluency in statistics. The quality of the data resented and writing however were very good. From an overall report presentation, at the beginning of the paper they speak of resilience in Emergency Departments for the study, but were not very clear on the positive and negative impacts of presence/lack of resilience until several paragraphs later in the paper (pg. 385) which made the reader flip back and forth initially to pull together that particular part of the context. A sharper focus up front on implications of resilience readiness would have helped. They do however do an excellent job explaining the nature of the RAG as a guide for measuring resilience (pg. 385).

The paper demonstrates a study that transitioned from a qualitative assessment using thematic analysis of open-ended interview questions, which were then coded using two researchers reviewing and on a scored 4-point scale (pg. 387), ultimately translating this data into statistically useful form. To that end the authors do an outstanding job describing the preparation and measures used (ordinal with calculation of the means). The resulting radar charts displaying the resilience readiness in the four categories was compelling and one would assume quite useful for assessing operational safety culture. One of the prominent takeaways from this very recent article on resilience is from the authors' Discussion section on the study and view of resilience in dynamic, risk-sensitive environments - very similar to the aviation area in which this researcher is engaged:

> "ED's are dynamic, open, high-risk systems that function under considerable uncertainty and economic pressure. Their ability to perform in a resilient manner is therefore critical. Although identification of metrics and standards for measuring organizational resilience…remains challenging, it is necessary for a system…to harbor these four potentials in order to be able to perform in a resilient manner." (Chuang et al., 2019, pg. 391).

Mini Proposal Example

Mixed Methods Research Methodology
Justification

PROBLEM STATEMENT

Graduates from aviation education and training programs lack fluency in essential problem-solving resilience competencies required in the industry. It is hypothesized that desirable behavioral attributes related to resilience during adversity and challenging problem- based coursework – sometimes called 'capstone' learning designed to resemble industry problems - can be identified, taught and measured within the context of a collegiate learning environment.

Research questions

Literature review of positive resilience behavioral responses from other research across multiple domains resulted in the following research questions forming the basis of the proposed research study: 1) How could the notion of resilience be taught, developed, and measured in

terms of more concrete observable competencies and behaviors salient to the industry's needs and within an aviation academic program? 2) What are resilience competency transfer paths from the learning to working environments? Because the nature of behavior/performance-based learning and outcome measures in aviation academia must be both qualitatively and quantitatively measured, these questions lend themselves to a mixed methods approach for

developing and assessing key resilience behavioral traits. If these can be indexed into a teaching, performance and assessment model, results could be generalized into the larger industry.

PURPOSE

The purpose of this study is to identify is to develop and test efficacy of a theoretical

model for teaching and mentoring key behavioral learner attributes of resilience as they relate to the aviation learning and workforce environments. Because human behavior is subject to numerous variables including culture and a variety of human factors that can influence decision making and performance, a singular methodological approach would not provide the depth and

breadth of data required to accurately set up a study and effectively generalize results. Proposed is therefore a Mixed Methods approach using an *Exploratory Sequential Design* as described by Creswell & Creswell (2018, pg. 218-220).

Qualitative data collection and analysis

Beginning with a qualitative assessment of learner resilience attitudes and self-reflective responses to adversity during learning, a phenomenological study of learners within a senior capstone aviation course which routinely incorporates problem-based learning will be conducted first in order to refine focus for helping to then create quantitative survey assessment and performance scoring assessments of learner resilience behavioral responses during adverse or challenging problem-based learning experiences. The qualitative interview portion will include a sample of convenience using a targeted senior capstone course within a collegiate aeronautical engineering technology program. Design and data collection activities will follow a structured process flow described by Creswell & Poth (2018, pg. 149) which includes: Locating site/individual, Gaining access / developing rapport, Sampling purposefully, Collecting data using individual narrative interview as well as observational measures described by Creswell & Poth (2018, pgs. 165-166;169) and Recording information using Complete Participant data capturing and recoding approaches described by Creswell & Poth (2018, pg. 167). Finally Exploring field issues and ethical considerations including bias, power asymmetry and ensuring human subjects and data storage/security through CITI training of key researchers involved will also be addressed.

Participants will be asked questions related to personal resilience behavior responses using open ended interview questions developed around the six factors from the Resiliency

Scale for Adults (RSA) by Friborg et al., (2003) including:

1. Perception of self
2. Perception of future
3. Structured style
4. Social Competence
5. Family cohesion, and
6. Social resources.

Quantitative data collection and analysis

The design and data collection activities will then proceed to an instructor scored observational behavioral performance scale and participant's self-scoring survey of before and after performance using a 5-point Likert scale. These scored scales will utilize T-Test scores to assess if explicit training and performance of identified resilience behaviors impact project outcomes as well as learner perception of their own learning empowerment and capabilities.

MIXED METHOD APPROACH

Mixed method approach has been defined by listing "core characteristics" by Creswell & Creswell (2018, pg. 214): Involving collection of both qualitative and quantitative data, rigorous methods and both methods clearly integrated into the design by careful merging and explaining the collaborative or embedded data sets. This is congruent with earlier definitions of mixed methods. Haines (2011) also uses Creswell – a prominent and reliable source in the qualitative and mixed method fields – to define the approach as,

> "mixture of qualitative and quantitative approaches in many phases in the research process. As a method it focuses on collecting, analyzing, and mixing both quantitative and qualitative data in a single study or series of studies. Its central premise is that the use of quantitative and qualitative approaches in combination provides a better understanding of research problems than either approach alone" (Creswell & Plano Clark, 2007, pg. 5).

The value of mixed methods studies has been recognized for ability to find richer meanings and clarity for understanding findings and improving accuracy and completeness, thereby helping to establish overall validity (Haines, 2011). Previous mixed methods research consistently supports the importance of accounting for social and cognitive psychological phenomenon which can influence performance data and quantitative results. Malina et al. (2011) emphasize mixed methods as providing "the best opportunity for addressing research questions" (pg.59-60) and

Euske et al. (2010) notes specifically the important role of incorporating both quantitative and qualitative data when it comes to integrated human performance research where people interact and influence the performance outcomes. This is especially true in the context of complex and dynamic environments like aviation learning environments where learners must grapple with knowledge, hands-on technical and collaborative problem solving competencies simultaneously.

Therefore, her it behooves the researcher to set up a test that can richly assess and analyze both qualitative and quantitative evaluations and data. Given the proposed study a mixed methods assessment strategy could be employed and provide a better sight picture of the theory and future test cases. Creswell & Creswell (2018, pg. 218) illustrate an exploratory sequential mixed method design framework consisting of three phases: 1) Qualitative data collection and analysis 2) Identifying features for testing (tailored new instruments or experiments informed by the initial qualitative database), and 3) Quantitatively testing the designed feature. After this, results are interpreted. The power of this particular mixed methodology is that the quantitative feature can be tailored more directly to the needs and characteristics of the participants. This mixed method has precedent in global health care design for better understanding the population before administering test instruments (Creswell & Creswell, 2018, pg. 224).

A mixed method approach combines the strengths of both quantitative and qualitative approaches and also bridges weaknesses associated with each. Haines (2011) notes quantitative methodology often lacks contextual information (setting, conditions, cultural influence) which qualitative can richly fill in. Likewise, qualitative data can vary and carry with it a propensity for researcher bias to which the quantitative approach can impart rigor to control. With mixed methods, the literature shows that several data collection methods can be used which can help answer additional question and yield more supporting evidence and deeper insights on research questions.

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Graduate Course Assessment Form

Assess Student Learning Outcomes

Course: ASCI 5210 Aviation Organization Theory and Management
Semester Taught: Fall 2020
Number of Students in Course: 5

Student Learning Outcome Assessed	Assessment Results: (Indicate what % of class achieved a minimum score of 80%)	Benchmark achieved? (Benchmark: 80% of students will score a minimum of 80% = "B")
4. **Articulate arguments or explanations to both a disciplinary or professional aviation audience and to a general audience, in both oral and written forms.**	4 of 5 students achieved a course grade of 80% or better. 5 of 5 students achieved a score of 80% or better on the course final term paper. 4 of 5 students achieved a score of 80% or better on all module summary assignments (modules 1 through 4). Both groups achieved a score of 80% or better on the aviation safety culture assignment (module 5). Detailed rubric information is provided with the examples of student work.	Yes. At least 4 of 5 students (80%) achieved scores of 80% or better on their overall course grade, including the course final term paper, module summary assignments, and the aviation safety culture assignment.

Course Assessment (Intended Use of Results)
The following will be used for recommendations to improve the quality of course delivery based on assessment results. These recommendations may include prerequisite change; changing course outline and adding more topics; adding a third assessment; changing the course sequence, etc.

**Attach description of assignment used for assessment and samples of student work.*

Performance Indicator Rubric

4. **Articulate arguments or explanations to both a disciplinary or professional audience and to a general audience, in both oral and written forms.**

Course: ASCI 5210 Aviation Organization Theory and Mgmt Semester Taught: Fall 2020 Number of Students Scored: 5
For each item below, please mark the appropriate box to rate the students' strength on a scale of 1 to 4 where 1: beginning, 2: developing, 3: accomplished, and 4: exemplary.

Type of Student Work Used for Assessment* (e.g. Homework #4; Exam #2 problem 3; final project): Module assignments and group projects

*Attach description of assignment used for assessment and samples of student work.

Performance Indicator: Oral Form	Beginning	Developing	Accomplished	Exemplary
Student can give a prepared presentation/talk.		X		
Student integrates figures and graphics into their presentation.			X	
Student answers questions competently and adjusts their presentation style based on audience feedback.		X		
Student uses technical words precisely and is able to explain concepts without jargon.			X	

Comments:
Students developed journal article summaries for modules 1 through 4, and an organizational assessment report based on ASRS report narratives. The format for these activities were left to the student to provide a video presentation, slide deck or text document. In the majority of cases a PowerPoint slide deck was provided. Students did not elect to provide a video (oral) submission. In future semesters the ASRS report narrative assignment will include a video or zoom call element to incorporate oral presentations. Geographic and work schedule considerations limit the feasibility of a scheduled oral presentation in the current course format. Students reply to online user questions and comments via the course discussion board.

Performance Indicator Rubric

4. **Articulate arguments or explanations to both a disciplinary or professional audience and to a general audience, in both oral and <u>written</u> forms.**

Course: ASCI 5210 Aviation Organization Theory and Mgmt Semester Taught: Fall 2020 Number of Students Scored: 5
For each item below, please mark the appropriate box to rate the students' strength on a scale of 1 to 4 where 1: beginning, 2: developing, 3: accomplished, and 4: exemplary.

Type of Student Work Used for Assessment* (e.g. Homework #4; Exam #2 problem 3; final project): Module reading and summary assignments; Course final paper;

*Attach description of assignment used for assessment and samples of student work.

Performance Indicator: Written Form	Beginning	Developing	Accomplished	Exemplary
Student is familiar with examples of excellent writing and with sources of advice on scientific writing.			X	
Student can write about their work clearly.			X	
Student can create publication quality figures and graphics.			X	
Student revises their written work based on feedback.		X		
Student writing is clear and concise while avoiding confusing sentence constructions.			X	
Comments: **Students are provided examples of industry publications through module reading and article summary assignments in modules 1 through 4. The final student paper is presented in the context of developing an assessment of an organization using criteria consistent with a journal submission including word count requirements and compliance with APA standards. A minimum number of scholarly sources is required for the final student paper. Students are provided an opportunity in module 7 to receive feedback on their draft paper from other students. Two students took the opportunity to receive feedback in module 7. In addition the course instructor provided early feedback in response to a white paper presenting their final student paper topic due mid semester.**				

Article Summary Assignments (Modules 1 through 4)

Assignment: "Project: Students will provide a summary of individually assigned readings from the class reading assignments. The readings summaries may be uploaded in any appropriate form (video, podcast, PowerPoint, other document, or discussion post). Please begin a new discussion thread for each summary. Additionally they will be required to contribute to discussion board discussions of reading summaries and the following discussion questions."

Article summary assignments are assigned from the course text *Classics of Organization Theory* by Shafirz, J.M., Ott, J.S,, and Jang, Y.S.. (7th and 8th Editions). *Classics* predominately contains journal articles and textbook chapters written by the premier experts in the field of organization theory.

From the Preface: "*Classics of Organization Theory* is a collection of the most important works in organization theory written by the most influential authors in the field. *Classics* does not simply tell the reader what the 'masters' said-it presents their works in their own words. These are theories that have withstood the test of time-the critically acclaimed master-works in the field. Although this book contains a liberal sprinkling of important current works, its focus is the enduring classics. *Classics of Organization Theory* thus tells the reader the history of organization theory through the words of the great theorists."

In addition to the articles provided by Classics of Organization Theory, each module contains two aviation related peer review articles that apply the concepts of the associated "schools" of organization theory. This provides students with relevant examples of aviation peer review articles.

Reading Summary Assignments Grading Rubric (48 points per module)				
Category	Poor (0)	Fair (2)	Good (4)	Excellent (6)
Promptness	Fails to upload a suitable summary by the first half of the second week	Uploads a suitable summary in the first half of the second module week	Uploads a suitable summary in the second half of the first module week	Uploads a suitable summary in the first half of the first module week
Style and Grammar	Fails to demonstrate appropriate spelling and grammar or engages in inappropriate language or inappropriate discussions	Demonstrates appropriate spelling and grammar consistent with personal emails, social media or other similar correspondence	Demonstrates appropriate spelling and grammar consistent with business emails and other similar correspondence	Demonstrates appropriate spelling and grammar consistent with publications and other similar formal correspondence
Comprehensiveness	Fails to present the key facts, concepts, and arguments of the assigned article	Presents some of the key facts, concepts, and arguments of the assigned article	Presents the majority of key facts, concepts, and arguments of the assigned article	Presents all the key facts, concepts, and arguments of the assigned article
Engagement	Fails to introduce the class to the article in an engaging way	Introduces the class to the article	Introduces the class to the article in an engaging way	Introduces the class to the article in a highly engaging way
Depth	Article summaries completely lack specificity and detail	Article summaries are generally are not specific or detailed	Article summaries are somewhat specific and detailed	Article summaries are highly specific and detailed
Quality	Article summaries are lacking in organization and forethought	Article summaries illustrate some organization and forethought	Article summaries are generally organized and well thought out	Article summaries are highly organized well thought out
Stimulation	Fails to adequately summarize the assigned article	Adequately summarizes the assigned article	Adequately summarizes the assigned article and contributes to further discussion	Adequately summarizes the assigned article and stimulates further discussion
Synthesis	Fails to synthesize key concepts from the article with the broader theme of the module or course	Synthesizes at least 1 key concepts from the article with the broader theme of the module or course	Synthesizes at least 2 key concepts from the article with the broader theme of the module or course	Synthesizes at least 3 key concepts from the article with the broader theme of the module or course

Module 1 Summary Assignments

Rubric Statistics Report

Frequency Distribution
Summary Assignments

Criteria		Novice	Competent	Proficient	New Column4	Number Evaluation	Average	Median	Mode	Std. Deviation
Promptness	Points	0.00	2.00	4.00	6.00					
		0%	0%	60%	40%	5	4.80	4.00	4.00	1.10
Style and Grammar	Points	0.00	2.00	4.00	6.00					
		0%	0%	0%	100%	5	6.00	6.00	6.00	0.00
Comprehensiv	Points	0.00	2.00	4.00	6.00					
		0%	0%	60%	40%	5	4.80	4.00	4.00	1.10
Engagement	Points	0.00	2.00	4.00	6.00					
		0%	0%	60%	40%	5	4.80	4.00	4.00	1.10
Depth	Points	0.00	2.00	4.00	6.00					
		0%	0%	40%	60%	5	5.20	6.00	6.00	1.10
Quality	Points	0.00	2.00	4.00	6.00					
		0%	0%	0%	100%	5	6.00	6.00	6.00	0.00
Stimulation	Points	0.00	2.00	4.00	6.00					
		0%	0%	20%	80%	5	5.60	6.00	6.00	0.89
Synthesis	Points	0.00	2.00	4.00	6.00					
		0%	0%	0%	100%	5	6.00	6.00	6.00	0.00

Module 2 Summary Assignments

Rubric Statistics Report

Frequency Distribution
Summary Assignments

Criteria		Novice	Competent	Proficient	New Column4	Number Evaluation	Average	Median	Mode	Std. Deviation
Promptness	Points	0.00	2.00	4.00	6.00					
		0%	20%	40%	40%	5	4.40	4.00	4.00	1.67
Style and Grammar	Points	0.00	2.00	4.00	6.00					
		0%	0%	0%	100%	5	6.00	6.00	6.00	0.00
Comprehensiv	Points	0.00	2.00	4.00	6.00					
		0%	0%	0%	100%	5	6.00	6.00	6.00	0.00
Engagement	Points	0.00	2.00	4.00	6.00					
		0%	0%	60%	40%	5	4.80	4.00	4.00	1.10
Depth	Points	0.00	2.00	4.00	6.00					
		0%	0%	40%	60%	5	5.20	6.00	6.00	1.10
Quality	Points	0.00	2.00	4.00	6.00					
		0%	0%	0%	100%	5	6.00	6.00	6.00	0.00
Stimulation	Points	0.00	2.00	4.00	6.00					
		0%	0%	0%	100%	5	6.00	6.00	6.00	0.00
Synthesis	Points	0.00	2.00	4.00	6.00					
		0%	0%	0%	100%	5	6.00	6.00	6.00	0.00

Module 3 Summary Assignments

Rubric Statistics Report

Frequency Distribution

Summary Assignments

Criteria		Novice	Competent	Proficient	New Column4	Number Evaluation	Average	Median	Mode	Std. Deviation
Promptness	Points	0.00	2.00	4.00	6.00					
		0%	20%	20%	60%	5	4.80	6.00	6.00	1.79
Style and Grammar	Points	0.00	2.00	4.00	6.00					
		0%	0%	0%	100%	5	6.00	6.00	6.00	0.00
Comprehensiv	Points	0.00	2.00	4.00	6.00					
		0%	20%	0%	80%	5	5.20	6.00	6.00	1.79
Engagement	Points	0.00	2.00	4.00	6.00					
		0%	0%	20%	80%	5	5.60	6.00	6.00	0.89
Depth	Points	0.00	2.00	4.00	6.00					
		0%	0%	60%	40%	5	4.80	4.00	4.00	1.10
Quality	Points	0.00	2.00	4.00	6.00					
		0%	0%	0%	100%	5	6.00	6.00	6.00	0.00
Stimulation	Points	0.00	2.00	4.00	6.00					
		0%	20%	20%	60%	5	4.80	6.00	6.00	1.79
Synthesis	Points	0.00	2.00	4.00	6.00					
		0%	0%	20%	80%	5	5.60	6.00	6.00	0.89

Module 4 Summary Assignments

Rubric Statistics Report

Frequency Distribution
Summary Assignments

Criteria		Novice	Competent	Proficient	New Column4	Number Evaluation	Average	Median	Mode	Std. Deviation
Promptness	Points	0.00	2.00	4.00	6.00					
		0%	20%	20%	60%	5	4.80	6.00	6.00	1.79
Style and Grammar	Points	0.00	2.00	4.00	6.00					
		0%	0%	0%	100%	5	6.00	6.00	6.00	0.00
Comprehensiv	Points	0.00	2.00	4.00	6.00					
		0%	0%	20%	80%	5	5.60	6.00	6.00	0.89
Engagement	Points	0.00	2.00	4.00	6.00					
		0%	0%	20%	80%	5	5.60	6.00	6.00	0.89
Depth	Points	0.00	2.00	4.00	6.00					
		0%	20%	20%	60%	5	4.80	6.00	6.00	1.79
Quality	Points	0.00	2.00	4.00	6.00					
		0%	0%	20%	80%	5	5.60	6.00	6.00	0.89
Stimulation	Points	0.00	2.00	4.00	6.00					
		0%	20%	20%	60%	5	4.80	6.00	6.00	1.79
Synthesis	Points	0.00	2.00	4.00	6.00					
		0%	0%	20%	80%	5	5.60	6.00	6.00	0.89

The Engineer as Economist

Henry R. Towne

Summary by Katie Bosman

ASCI 5210 Aviation Organization Theory and Management, Module 1

The Engineer as Economist

- Main Focus
  - Towne presented this paper to the American Society of Mechanical Engineers in May of 1886.
  - Towne, an engineer who was also a business manager, proposed that the engineering society expand its scope to include a management division.
  - This work has been described as one that ushered in a new era of industrial management (Kiechel, 2012).

The Engineer as Economist

- “There are many good mechanical engineers;--there are also many good “business men”;-- but the two are rarely combined in one person (p. 49).”
- These two qualities are “essential to the successful management of industrial works (p. 49)” whether they are one person or two, but if the engineer can also be the manager, the role is more effective because that person understands the big picture.

The Engineer as Economist

- While engineering "has long been conceded a place as one of the modern arts, and has become a well-defined science, with a large and growing literature of its own… [shop management] is unorganized, is almost without literature, has no organ or medium for the interchange of experience, and is without association or organization of any kind (p. 49)."
- Managers and accountants were basically left to create a new management strategy from scratch for each new enterprise.
    - There was no body of work to draw upon, no way for new organizations to learn from the mistakes and best practices of others.
- Shop management was an academic orphan, but it often fell within the necessary skill set of engineers tasked with running a shop.

The Engineer as Economist

- The remedy for this problem should not be left to accountants alone, but rather, should be solved by people who are also mechanical engineers.
- Towne proposed that the Society take on a new, expanded role as a repository for experience and research to be shared among its engineer members in management roles.
    - Through manufacturing data, he illustrated to the engineers in the audience that management, though very different from the original purpose of the society, was relevant to the profession of nearly all its members.

References

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Article 5: General Principles of Management, *Henry Fayol*

Jon Martin

Key Points:

“The managerial function finds its only outlet through the members of the organization (body corporate).” “The soundness and good working order of the body corporate depend on a certain number of conditions termed indiscriminately principles, laws, rules.” “There is no limit to the number of principles of management, every rule or managerial procedure which strengthens the body corporate or facilitates its functioning has a place among the principles so long, at least, as experience confirms its worthiness.”

Essentially Fayol is stating that his 14 principles allow the full maximization of production if the body of the organization buys into it.

14 Principles of Management

1) Division of work
2) Authority and responsibility
3) Discipline
4) Unity of command
5) Unity of direction
6) Subordination of individual interest to the general interest
7) Remuneration of personnel
8) Centralization
9) Scalar chain
10) Order
11) Equity
12) Stability of tenure personnel
13) Initiative
14) Esprit de corps

Division of work

- Reducing the wide spectrum of employee responsibilities will allow productivity to increase.
- “The object of division of work is to produce more and better work with the same effort.”
- One group at Boeing does not build an entire airplane. Each area is segmented with specialized employees specifically

Authority and Responsibility

- “Authority is the right to give orders and the power to exact obedience.”
- “Responsibility is a corollary of authority, it is its natural consequence and essential counterpart, and wheresoever authority is exercised, responsibility arises.”
- People want authority without responsibility.
- “A good leader should possess and infuse

Discipline

- “Discipline is in essence obedience, application, energy, behavior, and outward marks of respect observed in accordance with the standing agreements between the firm and its employees.”

Unity of Command

- “An employee should receive orders from one superior only.”
- Essentially this section states that dual orders can be confusing and counterproductive for employees if they have two people telling them what to do.

Unity of Direction

- “One head and one plan for a group of activities having the same objective.”
- This can be described as the “body corporate” staying coordinated and focused on the end goal

Subordination of Individual Interest to General Interest

- "The interest of one employee or group of employees should not prevail over that of the concern, that the interest of the home should come before that of its members."

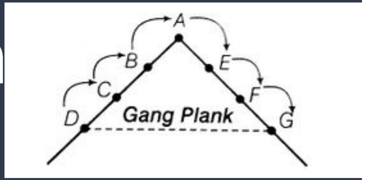
Remuneration of Personnel

- "Remuneration of personnel is the price of services rendered."
- Reward employees fairly and they'll continue to work well.
- Give a bonus if you can
- Profit sharing-generally not a great idea
  - Workers can be paid from the profit of the business, but it's difficult to operate that way
  - Junior Managers (foremen, superintendents, engineers) can be incentivized by higher company profits
  - Higher Managers probably won't like their pockets directly tied to company profits

Centralization

- The movements of the system controlled by the organizations central nervous system.
- Orders given out by the hierarchy received by employees “intentionally or unintentionally” which causes an execution of those orders.
- How well things can be delegated and

Scalar Chain



- The chain of superiors ranging from the ultimate authority to lowest ranks
- “Gang plank” is the direct contact without going through “A” in this scenario. “D” and G’s” supervisors can ensure that appropriate work is being communicated

Order

- “A place for everyone/everything and everything/ everyone in their place.”
- Material order
    - “The object of order must be avoidance of loss of material.”
- Social order
    - “The right [person] in the right place”

Equity

- Personnel will be encouraged to perform their duties with devotion and loyalty if they are treated kindly, justly, and with respect.

Stability of Tenure Personnel

- “The managerial personnel of prosperous concerns is stable, that of unsuccessful ones is unstable.”
- Tenure is a function of time and industry successes, and the security of tenure should be desirable if that type of position has little turnover.

Initiative

- “The power of thinking out and executing.”
- Employees should be encouraged and have the freedom to propose and execute ideas

Esprit De Corps- “Union is strength”

- Effort should be made to strengthen the union of personnel
- Personnel must not be split up
  - This could disturb the harmony of relationships. Managers must be able to effectively deal with employee diversity
- Abuse of written communications
  - Avoid growing tensions due to written disagreements or misunderstandings

Source

Shafritz, J. M., Ott, J. S., & Jang, Y. S. (2011). *Classics of organization theory* (7th ed.). Boston, MA: Wadsworth Cengage Learning.

The Proverbs of Administration

Herbert A. Simon

Summary by Katie Bosman

ASCI 5210 Aviation Organization Theory and Management, Module 1

The Proverbs of Administration

- Main Focus:
  - The author discusses four commonly accepted "administrative principles" and compares them to proverbs, in that each one has "an equally plausible and acceptable contradictory principle" (p. 103).
  - Simon systematically dismantles each principle by describing how they would fail to apply to typical real-life examples
  - The author concludes by illustrating a path forward, using empirical data, to study which principles might best apply to any given situation in a real organization

The Proverbs of Administration

- “Theory of administration is concerned with how an organization should be constructed and operated in order to accomplish its work efficiently” (p. 112).
- “The defect of proverbs”… “they almost always occur in mutually contradictory pairs” (p. 103).
- “For almost every principle [defining administrative theory today] one can find an equally plausible and acceptable contradictory principle” (p. 103).
- The accepted principles or proverbs at the time were too simple, often linear, contradictory with each other, and typically did not hold up when applied in “concrete” situations.

The Proverbs of Administration

- Some accepted administrative principles to increase efficiency:
  - Specialization
  - Hierarchy (Unity of Command)
  - Span of Control (Limiting the hierarchy of control to a small number)
  - Grouping workers according to:
    - Purpose
    - Process
    - Clientele
    - Place

The Proverbs of Administration

- Problems with Specialization
  - Specialization in and of itself does not lead to increased efficiency
  - It must be thoughtfully done to promote efficiency

The Proverbs of Administration

- Unity of Command in Hierarchy
  - Doesn't apply cleanly in typical real-world situations
  - Contradicts specialization, because if decisions are only handed down from one source, what's the point of specializing? Perhaps the one who can best make an informed decision is not the one designated with authority. "Specialized knowledge of problems will be subordinated or ignored" (p. 106).
  - "That this actually occurs is shown by the frustration so commonly expressed by functional supervisors at their lack of authority to apply sanctions" (p. 106)

The Proverbs of Administration

- Span of Control
  - Ideally a supervisor should only have a small number under them for detailed control
  - In larger organizations, the supervisory structure becomes too complicated because decisions between employees on the same level must go upward multiple levels to a common supervisor, then back down.
  - No data existed to substantiate the 6-11 people argument. The small numbers offered in the literature are arbitrary.
    - It is accepted that there can be too many people under one supervisor's control, but there is no data to decide what that number is.

The Proverbs of Administration

- Grouping Workers by Purpose/Process/Clientele/Place
    - “These are competing bases of organization…At any given point of division, the advantages of three must be sacrificed to secure the advantages of the fourth” (p. 107).
    - The terms often overlap with each other and do not have defined boundaries (purpose/ process, clientele/place are often the same)
    - Categorization of the worker groups is not enough to create efficiency. There must be great thought put into which categories to use and why, and how that categorization will affect the efficiency of the other elements of Purpose/Process/Clientelle/Place

The Proverbs of Administration

- Can these principles be salvaged?
  - "A valid approach to the study of administration requires that all the relevant diagnostic criteria be identified; that each administrative situation be analyzed in terms of the entire set of criteria; and that research be instituted to determine how weights can be assigned to the several criteria when they are, as they usually will be, mutually incompatible" (p. 111).

The Proverbs of Administration

- Diagnosis of Administrative Situations
  - “Administrative description suffers currently from superficiality, oversimplification, lack of realism” (p. 111)
  - “Administrative theory must be interested in the factory that will determine with what skills, values and knowledge the organization member undertakes his work. These are the ‘limits’ to rationality with which the principles of administration must deal” (p. 112)

The Proverbs of Administration

- “Assigning weights to criteria” (p. 114)
  - First step- “develop a vocabulary… for the description of administrative organization” (p. 114)
  - Second step- “study the limits of rationality to develop a complete and comprehensive enumeration of the criteria that must be weighed in evaluating an administrative organization” (p. 114)
  - Third step- assign weights to the criteria or “proverbs” to determine their “relative importance in any concrete situation” (p. 114)
    - This should be done using empirical evidence

The Proverbs of Administration

- Empirical research is required, with 2 requirements that had yet to be seen in prior "administrative experiments"
  - Objectives under study must be "defined in concrete terms" (p. 114)
  - Experimental control must be used to eliminate "other disturbing factors" within the organization that could affect results
- Conclusion
  - Simon made the case that simple theory is not enough to make decisions in an actual organization; the scientific method must be used to determine the best way to structure each organization, based on its individual situation.

The Proverbs of Administration

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A Theory of Human Motivation

Abraham H. Maslow

Summary by Katie Bosman

ASCI 5210 Aviation Organization Theory and Management, Module 2

A Theory of Human Motivation

- Abraham Maslow studied human psychology and motivation in the middle of the 20th century, publishing his well-known "Hierarchy of Needs" in 1954 (FAA, 2020).
- The article in our textbook was published in 1943, during the height of World War II, and served as an outline of Maslow's thoughts on his theory of human motivation.
- Maslow believed that humans have several levels of basic needs, from physiological needs, to safety, relationships, and personal fulfillment. If a need on the basic level is not met, e.g. they are starving, a person will tend to ignore the higher levels until that basic need is met.
- The FAA still uses Maslow's Hierarchy of Needs in its Aviation Instructor's Handbook to describe human behavior during the learning process, but disputes some of Maslow's claims (FAA, 2020).

A Theory of Human Motivation

- “Man is a perpetually wanting animal.” (Maslow, 1943, in Shafritz, Ott & Jang, 2016, p. 142)
- Maslow begins by reviewing 12 points he had made in a previous paper which outlined his thoughts on what a theory of motivation should look like, as well as observations he had made about human behavior as it relates to basic needs.
- He states that the purpose of this paper was to “formulate a positive theory of motivation” which fit clinical and experimental observations. He went on to say that the theory “must be considered to be a suggested program or framework for future research and must stand or fall, not so much on facts available or evidence presented, as upon researches yet to be done…” (p. 143)
    - He viewed this paper as a springboard for further research into the topic.

A Theory of Human Motivation

- "Any conscious desires are more or less important as they are more or less close to the basic needs" (p. 147).
- "These basic goals are related to each other, being arranged in a hierarchy of prepotency. This means that the most prepotent goal will monopolize consciousness and will tend of itself to organize the recruitment of the various capacities of the organism." (p. 151)
  - People tend to focus on the most basic need that is not being met. The FAA (2020) uses the example of a student pilot who is afraid of stalls, and therefore less likely to be able to focus on learning the maneuver because of a concern for their own safety.

A Theory of Human Motivation

- Basic Human Needs as defined by Maslow:
  1. "The 'Physiological' Needs"
     - Food, water, shelter, sex
     - "For the man who is extremely and dangerously hungry, no other interests exist but food" (p. 144).
     - "Freedom, love, community feeling, respect, philosophy, may all be waved aside as fripperies which are useless since they fail to fill the stomach" (p. 144).

A Theory of Human Motivation

- Basic Human Needs as defined by Maslow:

  2. “The Safety Needs”

     - Once the basic physiological needs are met, “there emerges a new set of needs, which we may categorize roughly as the safety needs” (p. 144).
     - One may become consumed with safety; and, having satisfied the physiological needs, he “underestimates” them.
     - Man seeks order, stability, and peace.

A Theory of Human Motivation

- Basic Human Needs as defined by Maslow:
  3. "The Love Needs"
     - Once the physiological and safety needs are met, one feels the need to find love, companionship, "a sweetheart, a wife, or children" (p. 146)
     - "He will want to attain such a place more than anything else in the world and may even forget that once, when he was hungry, he sneered at love…" (p. 146)

A Theory of Human Motivation

- Basic Human Needs as defined by Maslow:
  4. "The Esteem Needs"
     - All people, with few clinical exceptions, need "firmly based self-esteem…" which is "soundly based upon real capacity, achievement, and respect from others" (p. 146)
       - These are further split into two groups: "a desire for strength, for adequacy, for confidence… independence and freedom," and a need for recognition among peers

A Theory of Human Motivation

- Basic Human Needs as defined by Maslow:
  5. "The Need for Self-Actualization"
     - "What a man can be, he must be" (p. 146).
       - "The desire to become more and more what one is, to become everything that one is capable of becoming" (p. 146). "The artist must paint, the poet must write…"
     - This is the pinnacle of Maslow's hierarchy. A life's work, or at least, achievement of meaningful goals of great personal importance. Continual achievement and improvement of the thing(s) that make a person tick.

A Theory of Human Motivation

- “Preconditions for the Basic Need Satisfactions”
  - Maslow writes that if basic human freedom is threatened or taken away, the basic needs cannot be met. He stops short of citing the Bill of Rights here, but refers to freedoms of expression, justice, “freedom to defend one’s self,” and the like (p. 147).
    - Opinion: Maslow does not talk about the war, but seeing as this was written in 1943, I can imagine that the plight of Europe and the Allies may have been at the front of his thoughts when he wrote this passage.

A Theory of Human Motivation

- While Maslow acknowledges that the needs are not always satisfied in order of most basic to most complex; that people typically have partially-satisfied needs at all levels at the same time.
    - Some people also have need hierarchy "reversals," such as very creative people, those with very high moral values, or those suffering from psychological problems.
    - Side note: The FAA (2020) claims that Maslow stated in his 1954 piece that each need had to be satisfied 100% before the next need could be addressed, however, this earlier piece by Maslow does not say that at all. Rather, he acknowledges a real flexibility and variability of people's responses to their own needs.

A Theory of Human Motivation

- References

  - Federal Aviation Administration [FAA]. *Aviation instructor's handbook.* https://www.faa.gov/regulations_policies/handbooks_manuals/aviation/aviation_instructors_handbook/media/aviation_instructors_handbook.pdf
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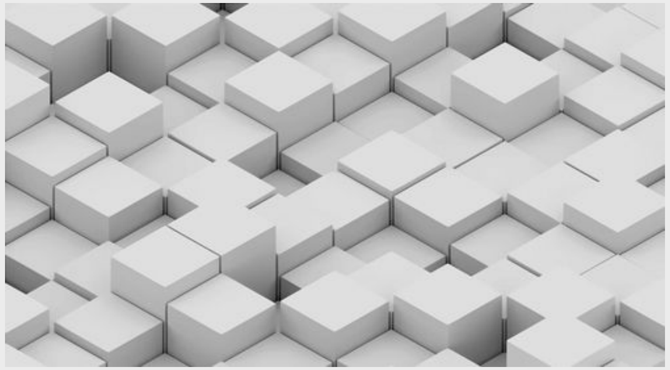
The Human Side of Enterprise Douglas Murray McGregor: Theory Y & Theory X



Article 14

by

Nurettin Dinler

ASCI 5210-Aviation Organization Theory & Management

Fall 2020

Who is Douglas Murray McGregor?

- A student of Abraham Maslow,
- A management professor at MIT from 1948 to 1954,
- Contributed much to the development of the management and motivational theory,
- His 1960 book, "*The Human Side of Enterprise*" presented Theory X and Theory Y to capture two views of human motivation at work.

Theory X

Theory X is an authoritarian style where the emphasis is on productivity.

Following are the widespread assumptions made by Theory X style of management:

- Management is responsible for organizing and directing work,
- Employees and their behaviors must be controlled, directed, motivated and modified to be achieved organizational needs,
- Without this active intervention by management, employees would be not active,
- Employees intrinsically do not like work and tend to escape it whenever possible,
- Employees generally dislike responsibilities,
- Employees have little or no ambition to organizational needs,
- Employees resist change,
- Employees need formal direction because they are gullible and very bright.

According to McGregor, conventional organization structures and managerial practices reflect the assumptions of Theory X.

Theory X

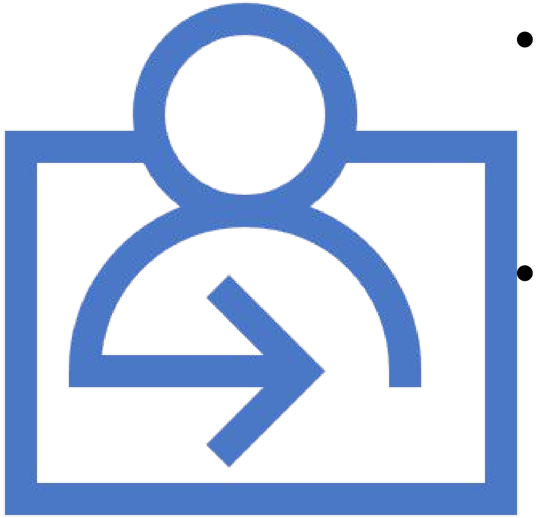
Theory X represents the carrot-and-stick assumptions .

- “a motivational approach that involves offering a “carrot”(a reward—for good behavior) and a “stick” (a negative consequence for poor behavior).”

Assuming that employees are motivated by financial means and by the threat of punishment.

The central principle of Theory X is the direction and control of employees through managers.

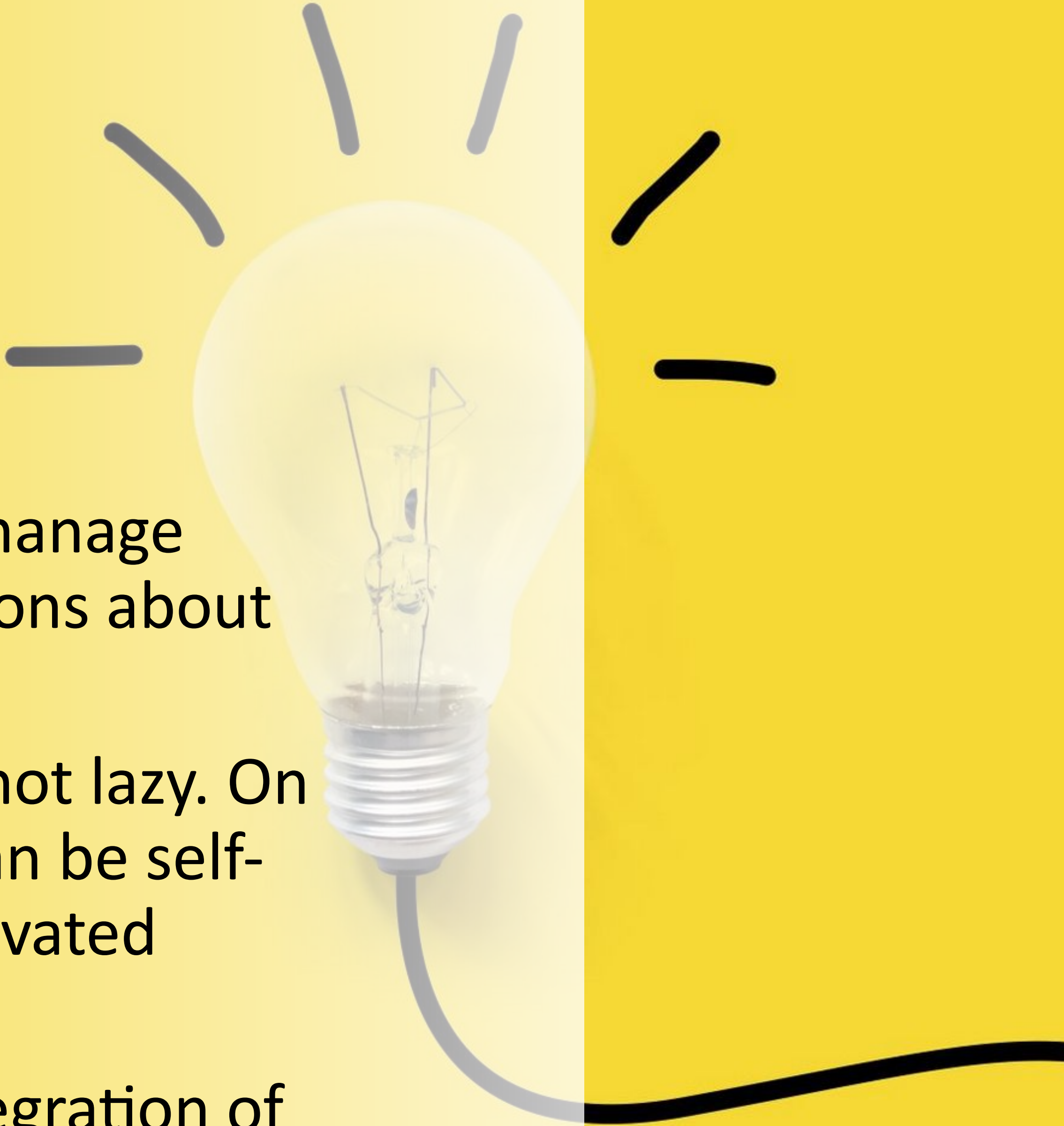
Is the Theory X correct?



- Stated that " the conventional approach of Theory X is based on mistaken notions of what is cause and what is effect."
- Referring to Maslow's hierarchy of needs, indicated that Theory X was inadequate because this philosophy did not consider the subject of motivation.
- Highlighted that Theory X's assumptions were not applicable to people whose only physiological and safety needs are satisfied, while social, ego and self-actualization needs are becoming more important.
- Concluded that the philosophy of management by direction and control fails to motivate employees for attaining the organizational goals today.

Theory Y as "A New Theory of Management"

- Suggested that Theory Y was required to manage people based on more adequate assumptions about human nature and human motivation.
- This theory considers that employees are not lazy. On the contrary, it assumes that employees can be self-directed and very creative, if they are motivated properly.
- The central principle of Theory Y is the integration of employees and organizational goals.



The Assumptions of the **Theory Y**

- Following are the assumptions of the Theory Y highlighted in the textbook:
  - Management is responsible for organizing and directing work,
  - Employees do not become passive if they are dedicated and sincere to achieve the organizational needs,
  - The responsibility of managements make employees’ capabilities uncover for themselves,
  - The essential task of management is to arrange organizational conditions and methods of operation so that people can achieve their own goals

Some Difficulties with the Theory Y

Indicated that “ to create an organization today which will be a full application of the Theory Y is nearly impossible.”

- Many formidable obstacles to overcome

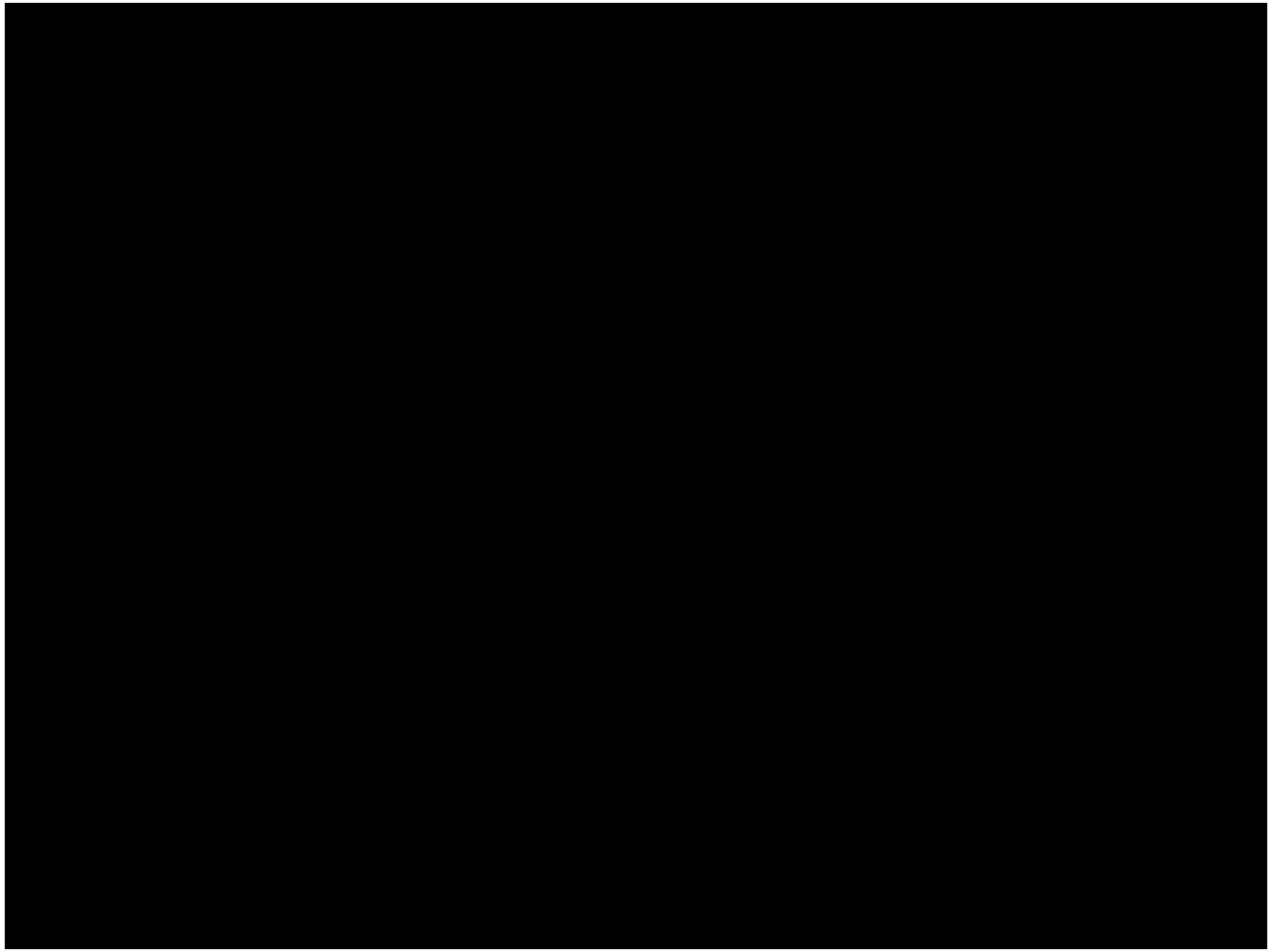
But, there a few innovative ideas that “Theory Y are today being applied with some success.”

- Take the concept of *Job Enlargement* pioneered by I.B.M. and Detroit Edison as an example
  - encourages the acceptance of responsibility at the bottom of the organization;
  - provides opportunities for satisfying social and egoistic needs.

Concluded that only the management that has confidence in human capacities and is itself directed toward organizational objectives could grasp the implications of the Theory Y

Conclusion

- Theory X and Theory Y are useful for management practitioners to understand the changing dynamics of human behavior at work.
- Not concluded that Theory X is bad, and Theory Y is good.
- Recommended that managers should base his/her assumptions on Theory Y with one caveat:
    - there are cases in which a directive and controlling behavior is required to help some people develop.



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- **Additional Resources**
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Groupthink: The Desperate Drive for Consensus at Any Cost

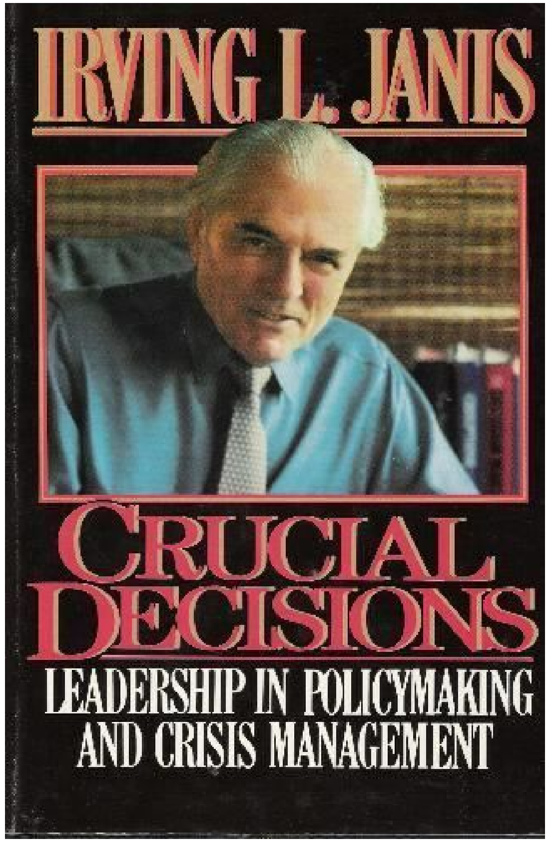
Article 15 Review

Michael Chertude

ASCI-5210

Irving L. Janis

- Born May 26, 1918 in Buffalo, NY.
- B.S. from University of Chicago in 1939.
- Doctorate from Columbia University.
- Drafted into U.S. Army during WWII to study military morale.
- Became Yale faculty member in 1947.
- Extensive work in group dynamics/groupthink.
- Wrote or co-wrote more than a dozen books.



How was Groupthink Developed?

- Dr. Janis examined major United States fiascoes such as:
  - Attack on Pearl Harbor
  - Korean War stalemate
  - Escalation of the Vietnam War
- Examined “historical reports about formal group meetings and informal conversations among the members” who participated in the above mentioned fiascoes (Shafritz et al., 2015, p. 161).
- Stupidity was not the explanation for the fiascoes since the group members were some “of the greatest arrays of intellectual talent in the history of American Government” (Shafritz et al., 2015, p. 161).
- Concluded that the members of these groups were victim of ‘groupthink’.

What is Groupthink?

- Groupthink can be defined as “the mode of thinking that persons engage in when *concurrence seeking* becomes so dominant in a cohesive in-group that it tends to override realistic appraisal of alternative courses of action…the desperate drive for consensus at any cost that suppresses dissent among the mighty in the corridors of power” (Shafritz et al., 2015, p. 130).
- Janis takes the stance that groupthink has a negative impact on executive decision making.
- For those who have been in organizations where there are often times meetings with a hierarchical group (such as the military), groupthink can be a dangerous phenomenon.
- Because of the dangers of groupthink, military aviation squadrons have a safety officer who has the authority to talk directly with the commanding officer at anytime of the day (with impunity) to address any safety concerns.

Groupy

- Dr. Janis was surprised to discover that these highly regarded intellectuals displayed a phenomena of social conformity.
- Group norms will tend to bolster the morale of the individuals even at the expense of critical thinking.
- Groupthink phenomena is inline with social-psychological experiments in regards to social pressures.
- Tends to occur when there is a strong presence of group cohesiveness.

1984

- George Orwell wrote a book in 1949 titled "*1984*" which is a chilling prophecy about the future where the government heads are unknown to the public, and propaganda makes people believe the lies told by the government.
- Dr. Janis uses the term '1984' because it "refers to a deterioration in mental efficiency, reality testing, and moral judgements as a result of group pressure" (Shafritz et al., 2015, p. 162).
- Members tend to engage in ***concurrence-seeking*.**
- The motivation of members is to avoid being critical or harsh of their leaders or colleagues ideas.

Kill

- Members tend to dehumanize outgroups or enemies.
- Due to this dehumanizing, it is easier for members/leaders to "readily authorize bombing attacks that kill large numbers of civilians in the name of the noble cause of persuading an unfriendly government to negotiate at the peace table" (Shafritz et al., 2015, p. 162).
  - The Blitz conducted by Nazi Germany in WWII
  - Bombing of Dresden conducted by British-American aerial bombers
  - Atomic bombing of Hiroshima and Nagasaki
- Members are "unlikely to pursue the more difficult and controversial issues that arise when alternatives to a harsh military solution come up for discussion" (Shafritz et al., 2015, p. 162).

Norms

- Social-psychological studies show that as groups become more cohesive and comfortable with each other, members become more comfortable with expressing their ideas which may oppose the groups point-of-view because they do not feel constrained and have fear of retribution.
- For some reason instead, groupthink actually tends to increase conformity as the cohesiveness increases.
- Members will tend to automatically agree with another members ideas without truly evaluating its merits and thinking critically about it.
- Members will doubt their own misgivings about an idea and assume it is theirs alone and the group knows what they are doing.

Stress

- Although groups have the ability of making advantageous decisions, they are prone to psychological pressures.
- Occurs when members have the same set of values and “face a crisis situation that puts everyone under intense stress” (Shafritz et al., 2015, p. 163).
- Parkinson’s Law:
  - “The more amiability and esprit de corps there is among the members of a policy-making ingroup, the greater the danger that independent critical thinking will be replaced by groupthink, which is likely to result in irrational and dehumanizing actions directed against outgroups” (Shafritz et al., 2015, p. 163).

8 Symptoms of Groupthink

1. Invulnerability: Invulnerability illusion.
2. Rationale: Ignore warnings or negative feedback.
3. Morality: Does not question morality of the group.
4. Stereotypes: Negative view of ‘opposing’ group leaders.
5. Pressure: Rapid peer-pressure against members who may deviate from consensus.
6. Self-Censorship: Individuals will avoid deviation from the group.
7. Unanimity: Illusion of unanimous group opinion.
8. Mindguards: Avoid information that may go against the ‘unanimous’ group decision.

Products of the Symptoms

- When executives display all or some of these symptoms, there are often times immediate consequences:

1. Only discusses a few alternative course of actions (COA) without thinking through all of the possibilities.
2. If risks are learned or realized before or after the COA, the group will not reexamine the preferred COA.
3. Does not discuss rejected COAs even if they overlooked an important piece of information.
4. Does not seek counsel of experts.
5. Seeks out facts that support their COA and avoids or ignores those facts that don’t.
6. Fail to examine how their COA may encounter difficulties, therefore they do not develop contingency plans

Support

- Dr. Janis sought to find understand the symptoms of groupthink and concluded that groupthink is a mutual effort of the members to maintain self-esteem and emotional equanimity.
- Even when faced with facts that a groups decision was not correct, the members will seek out esprit de corps to bolster each others morale.
- This will often time result in the group creating an optimistic lookout even if the facts disagree, because it reaffirms their “past policies to which all of them are committed” (Shafritz et al., 2015, p. 167).

Pride

- Members share illusion of invulnerability, because it “can reduce anxiety about taking risks” (Shafritz et al., 2015, p. 167).
- Between the groups mutual enhancement of self-esteem and morale, although it may enable them to continue to take actions, it has the capability to lead the group to serious errors of judgement.

How can Groupthink be Prevented?

- Dr. Janis examined the Marshall Plan in the Truman Administration and the Cuban missile crisis by President Kennedy.
- Dr. Janis developed 9 recommendations for preventing groupthink:

1. Assign the role of critical evaluator to each member.
2. When leaders assign a policy-planning mission, do so without adopting a particular stance or expectations/preferences.
3. Set up several outside policy—planning/evaluation groups to work on the same question.
4. Each member should discuss the groups deliberations with associates and report back to the group with ideas.

How can Groupthink be Prevented? Continued

5. Group should invite at least one expert to each meeting to challenge the members views.
6. At least one member plays devil's advocate at each meeting.
7. When a policy involved a rival nation/organization, devote a sizable amount of time to developing alternative scenarios and survey all warning signs.
8. When examining policy alternative, divide into two or more groups to discuss and then meet back up after to talk about differences.
9. After a preliminary decision, meet back up a second time to allow every member to express doubt or concern about the choice before making the definitive choice.

Reference

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The Concept of Formal Organization

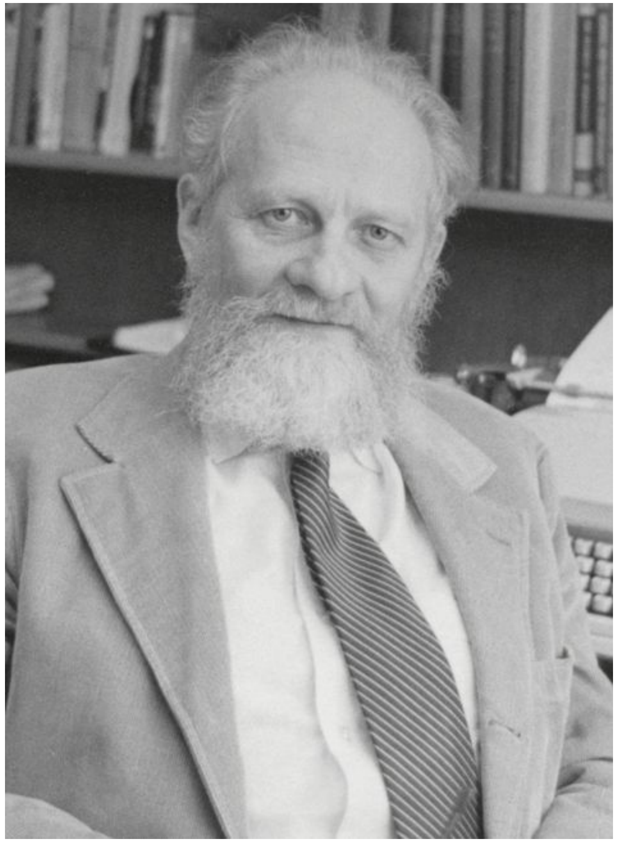
Article 16 Review

Michael Chertude

ASCI-5210

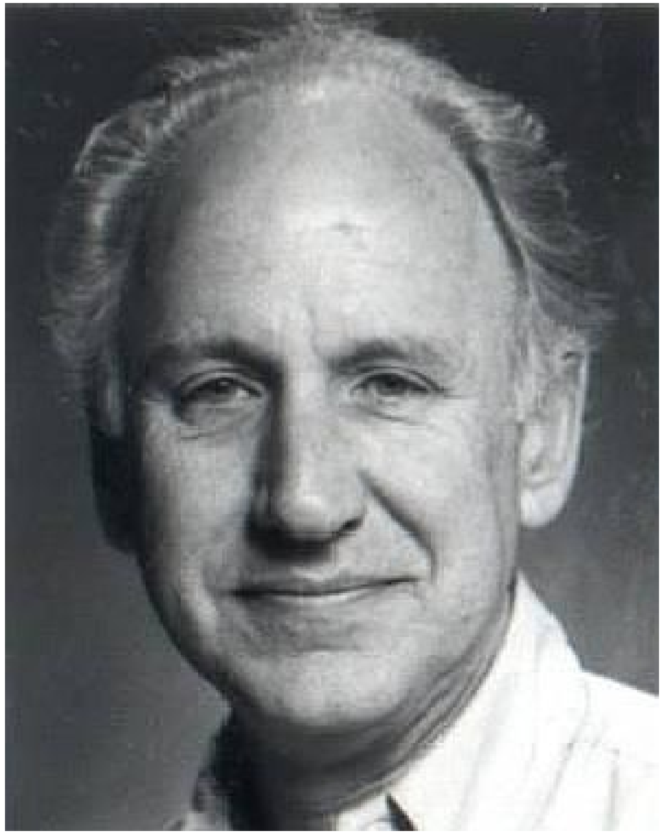
Peter Michael Blau

- Born in Vienna, Austria on February 7, 1918 and died March 12, 2002.
- Immigrated to the United States in 1939.
- Completed his PhD at Columbia University in 1952.
- He was an American sociologist and theorist whose specialty was in organizational and social structures.
- Taught at University of Chicago from 1953-1970.
- Returned to Columbia University in 11970 and was awarded position of Professor Emeritus from 1988-2000.



William Richard Scott

- Born in Parsons, Kansas on December 18, 1932.
- Completed his PhD from University of Chicago in 1961.
- He is an organizational sociologist who studies the relationship between organizations and their environments.
- He has worked his entire career at Stanford where he is Professor Emeritus in the Department of Sociology since 1997.



Social Organizations & Formal Organizations

- When the authors speak of organizations, they mean examples such as the American Medical Association, the Bureau of Internal Revenue, a union, General Motors, or a church.
- The authors do not consider a family, friendship clique, community, or economic market as an organization.
- There is a specific and differentiating criterion which drives the distinction between social and formal organizations.
- This distinction between the two has to do “with how human conduct becomes socially organized” (Shafritz et al., 2015, p. 173).

Social Organizations

- Social organizations refers “to the ways in which human conduct becomes socially organized” (Shafritz et al., 2015, p. 173).
- The social conduct of these people constitute two basic aspects of social organizations:

1. “The structure of social relations in a group or larger collectivity of people” (Shafritz et al., 2015, p. 173).
2. “The shared beliefs and orientations that unite the members of the collectivity and guide their conduct” (Shafritz et al., 2015, p. 173).

Conception of Structure or System

- ‘The whole is greater than the sum of its parts’.
- An example which does not constitute this concept is 15 apples. Although there are 15 apples, the whole is not greater than the sum because it is no more than 15 times one apple.
- An example which does constitute this concept is a block of ice. A block of ice is the sum of the connections between Hydrogen and Oxygen atoms which distinguishes ice from Hydrogen and Oxygen.
- Examining this further, “a network of social relations transforms an aggregate of individuals into a group…and the group is more than the sum of individuals” (Shafritz et al., 2015, p. 174).

Dimensions of Social Organizations

- There are two dimensions which constitute social organizations:

1. Social Structure: “The networks of social relations between individuals and groups, and the status structure defined by them constitutive the core of social organizations” (Shafritz et al., 2015, p. 174).
2. Culture: The other dimension is the “system of shared beliefs and orientations, which serve as standards for human conduct” (Shafritz et al., 2015, p. 174).

Social Relations & Status Structure (Social Structure)

- Social relations involve patterns of social interaction.
- Social relations entail people's sentiments to one another.
- The distribution of these social relations within the group will define the status structure.
- Each member within the group will have a hierarchical status based on the relations within others in the group and their reciprocal sentiments.
- Leaders and followers will emerge from this status structure.
- Relations will develop between groups as well, not just individuals within the groups.

- ***Every society will have their own complex social structure!***

Shared Beliefs and Orientations (Culture)

- During social interaction, common notions will begin to arise:

1. Common values crystalize.
2. Social norms develop.
3. Differential role expectations emerge.

- ***Every society will have their own complex culture!***

Formal Organization

- These formal organizations are deliberately established for a particular purpose.
- Formal organizations look to accomplish certain objectives which requires a collective effort. The organization is established in order to coordinate the activities of the many individuals.
- These organizations do not develop spontaneously during social interaction.
- The distinctive characterization of formal organizations “is that they have been formally established for the explicit purpose of achieving certain goals” (Shafritz et al., 2015, p. 175).

Formal Organizations & Informal Organizations

- Even though an organization has been formally established, this does not mean all of the individuals inside conform to an 'official blueprint'.
- Management will devote time and effort towards developing an organization chart and manuals
  - These plans will "never completely determine the conduct and social relations of the organization's members" (Shafritz et al., 2015, p. 175).
- Within this formal organization, informal organizations will develop between the organization's members and will develop their own "practices, values, norms, and social relations" (Shafritz et al., 2015, p. 175).
- These informal organizations have roots embedded in the formal organization.
- Remember that there is only 'one' actual organization even though there is a distinction between the formal and informal aspects.

Informal Organizations

- Rules developed by the formal organization must have sufficient scope to cover situations which can arise in informal organizations.
- Unofficial norms will tend to develop which regulates performance and productivity.
- Complex networks of social relations will form within and between groups which are influenced by many factors; not just the organizational chart.
- These informal organizations "develop in response to the opportunities created and the problems posed by their environment, and the formal organization constitutes the immediate environment of the groups within it" (Shafritz et al., 2015, p. 176).

Bureaucratic Organization

- This term denotes the fact that most organizations will have some sort of administration.
- This administration will generally be responsible for maintaining the organization and coordinating the activities of the organizations members.
- One problem with bureaucratization is that the minutia attention to detail and enforcement of the rules and regulations will often times impede effective operations.
- In this sense, all formal organizations have to have some level of bureaucracy.

Key Takeaways

- Formal organizations are developed to accomplish certain objectives which requires a collective effort.
- All organizations have both a formal and informal aspect to them.
- Informal organization is rooted in the formal structure.
- It is impossible to understand the true nature of the formal organization without an understanding of the informal organization.
- Informal organizations will establish their own “practices, values, norms, and social relations” (Shafritz et al., 2015, p. 175).

Reference

- Shafritz, J. M., Ott, J. S., & Jang, Y. S. (2015). Classics of Organization Theory. Cengage Learning.

Structure in 5's: A Synthesis of the Research on Organization Design

Henry Mintzberg

Summary by Katie Bosman

ASCI 5210 Aviation Organization Theory and Management, Module 2

Structure in 5's

- Henry Mintzberg was "one of the most widely respected management and organizational theorists in the second half of the twentieth century and the early years of the twenty-first century" (Shafritz, Ott & Yang, 2016, p. 171).
- His ability to synthesize many schools and theories of management and organizations "with coherence" (Shafritz, et al., 2016, p. 171) earned him much of that respect.
- Mintzberg outlined five configurations of organizational structure and supporting categories, all curiously observed in groups of five.

Structure in 5's

- Mintzberg begins by outlining the nine "mechanisms" (p. 189) used by organizations to shape their structures, as defined in the organizational theory literature at that time (1960-1980):
    1. Job specialization
    2. Behavior formalization (rules, policies, manuals, etc)
    3. Training and indoctrination (standardization of knowledge/skill)

Structure in 5's

- Design of the Superstructure
  4. Unit grouping (groups of people and divisions)
  5. Unit size (the sizes of those groups)
- Design of "lateral linkages to flesh out the superstructure" (p. 190)
  6. Planning and control systems
     - Action planning (what is produced and how it's done)
     - Performance control (measurement of performance of the unit, e.g. quarterly sales)
  7. Liaison devices
     - "establish informational connections across units" (p. 190) through managers, committees, etc.

Structure in 5's

- Models for decision making
  8. Vertical decentralization
     - Extent of delegation from the top down
  9. Horizontal decentralization
     - "…extent to which power flows informally outside the chain of line authority" (p. 190)
     - Can be further divided into several schemes of decision-making distribution based on the management structure

Structure in 5’s

- “Contingency Factors” (p. 191)
  - Literature had stressed “the effects of…contingency factors on the design parameters”
  - A contingency factor is an event or situation that cannot be accurately predicted or controlled; an environmental or situational factor
  - Literature was based on a “congruence hypothesis”
    - “structure must reflect situation” (p. 191)
    - “relates organizational effectiveness to the fit between a given design parameter and a given contingency factor” (p. 193)

Structure in 5's

- Contingency factors that were focused on the most in the literature:
  1. Age and size of the organization
     - "The older and larger the organization, the more formalized its behavior" (p. 192)
     - Larger organizations tend to be more complex, with larger, more complex units
     - The age of an organization's industry may affect its structure
  2. "Technical System"
     - "the more regulating the technical system– in other words, the more it controls the work of the operators—the more formalized is their work and the more bureaucratic is the structure of the operating core" (p. 192)
     - Greater sophistication leads to greater decentralization and reliance on technical decisions by "professional support staff"

Structure in 5's

3. Environment
   - Changing environments are associated with organic structures
   - Complex environments are associated with decentralized structures
   - "Hostile" environments can lead to temporary centralization
     - Side note example: Effect of COVID-19 on corporate and governmental decision making- more centralized, top-down mandates
4. Power factors
   - External control increases formalization and centralization
   - Individual needs of people in charge can cause more centralization (micromanagement)
   - "Fashionable" management structures may be used even though they are not the right choice

Structure in 5's

- Congruence Hypothesis
  - Organizational effectiveness is related to "the fit between a given design parameter and a given contingency factor" (p. 193)
- Configuration Hypothesis
  - "Effective structuring requires internal consistency among the design parameters" (p. 193)
- Combined hypothesis
  - "Extended configuration hypothesis"
    - "Effective structuring requires a consistency among the design parameters and the contingency factors." (p. 193)

Structure in 5's

- His observational obsession with 5
  - 5 organization configurations
  - 5 coordinating mechanisms
  - 5 parts of the organization
  - 5 kinds of decentralization
- "…in each configuration a different coordinating mechanism dominated, a different part of the organization was key, and a different one of the five types of decentralization was used" (p. 193)

Structure in 5’s

- Organizations are typically “pulled” in five different directions by their parts
  - One part will naturally dominate over the rest
  - This phenomena helps to define the “typology” of five “ideal or pure” types of organizations (p. 194)
  - An organization’s typology is largely shaped by the contingency factors it faces

Structure in 5's

- Typology of Organizations (Five Configurations)
  - Simple Structure
  - Machine Bureaucracy
  - Professional Bureaucracy
  - Divisionalized Form
  - Adhocracy

Structure in 5's

- Simple Structure
  - Smaller, simple organization with centralized, informal decision making
    - Small, young startups or family businesses
  - Pull: "Strategic apex exerts a pull for centralization"
  - Complex organizations can become Simple Structures in times of crisis
    - E.g. COVID-19 restrictions force more centralized decision making by executives
- The Machine Bureaucracy
  - Larger organization with standardized, formal work processes
  - Pull: Standardization and "limited horizontal decentralization" of decision making (p. 193)

Structure in 5's

- Professional Bureaucracy
  - Horizontal and vertical decentralization with a reliance on mostly autonomous groups and employees with outside training (formal education and past work experience)
  - Pull: Professionalism
- Divisionalized Form
  - Middle management pulls power upward and downward
  - Limited vertical decentralization
  - "…market-based units which can control their own decisions, coordination being restricted to the standardization of their outputs" (p. 194).

Structure in 5's

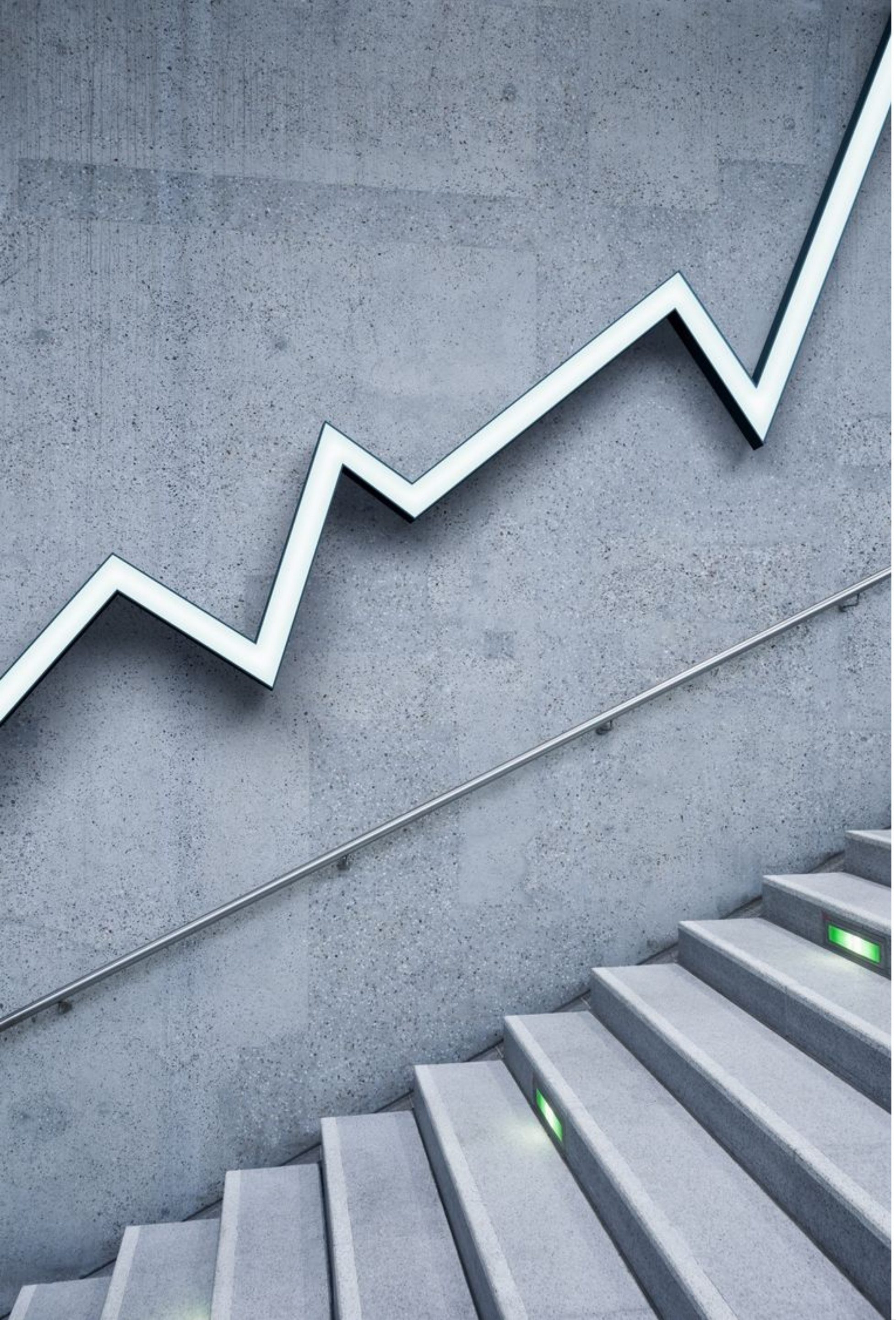
- Adhocracy
  - "Sophisticated innovation"
  - Pull to collaborate among organic "work constellations"
  - "Professional specialists" deployed in "market-based teams"
    - Operating Adhocracy
      - Consulting firms, creative agencies; work on behalf of clients
    - Administrative Adhocracy
      - "the project work serves the organization itself" – space agencies, etc.
  - Selective decentralization

Structure in 5’s

- Conclusion
  - The five configurations are not rigid structures, but rather a “conceptual framework” for understanding organizational behavior
  - Elements of organizational structure curiously occur in 5’s
    - Five configurations
    - Five basic organizational parts
    - Five coordination mechanisms
    - Five design parameters
    - Five contingency factors

A Theory of Human Motivation

- References
  - Mintzberg, H. (1980). Structure in 5's: A synthesis of the research on organization design. In Shafritz, J.M., Ott, S.J. & Jang, Y.S. (2016). *Classics of organization theory*. (pp. 142-153). Cengage Learning.



The Economics of Organization: The Transaction Cost Approach

OLIVER E. WILLIAMSON

The beginnings of Transaction Cost approach began in 1934 by John R. Commons.

-WILLIAMSON 1981

Antecedents

- “Market failure is not absolute; it is better to consider a broader category, that of transaction costs, which in general impede and in particular cases completely block the formation of markets” (1969, p. 48).
- A Transaction occurs when a good or service is transferred across a technologically separable interface (p. 212)
  - The costs are what it takes to produce the good or service
- The relationship between the organization and the market depends on the organization
  - Things like specially designed products, or mass-produced products with materials sourced from elsewhere (later discussed)
- Shafritz, Jay M.. Classics of Organization Theory (p. 211). Cengage Learning. Kindle Edition.

Some Rudiments

- Behavioral Assumptions
  - Complex contracts are costly to write and to enforce
    - Humans are subject to bounded rationality
      - It is impossible to deal with complexity in all contractually relevant respects
    - Some agents will partake in opportunism
      - Dishonest, distorts data, confuse transactions which makes things costly
- Dimensionalizing
  - The critical dimensions for describing transactions are:
    - Uncertainty
    - Frequency of recurring transactions
    - Degree at which transaction-specific investments are required to least cost supply

Efficient Boundaries

- … Only two organizational alternatives are considered: either a firm makes a component itself or it buys it from an autonomous supplier….
  - This is the foundation that the chapter then goes on to discuss
- A simple Model
  - Nonspecific products are easier for firms to produce, as they are not as dependent on the market
    - Not subjected to market controlled uncorrelated demands
  - More specific products/services require more work, and often create a more bilateral character
    - Thus, the governance of recurrent transactions for which uncertainty is held constant (in intermediate degree) will vary as follows: classical market contracting will be efficacious whenever assets are nonspecific to the trading parties; bilateral or obligational market contracting will appear as assets become semispecific; and internal organization will displace markets as assets take on a highly specific character. (p. 214)
- Shafritz, Jay M.. Classics of Organization Theory (p. 213). Cengage Learning. Kindle Edition.

Managing Human Assets: The Employment Relation

- The degree at which the staff needs to be trained dictates the type of relationship the organization will provide it's employees
  - If the job is not skill based, and you do not need extensive (firm specific) training, the company and the employee tend to be in an agreement where if either is dissatisfied, they will terminate the contract
  - If the job is not skill based, but hard to meter (or requiring firm specific training) the relationship between the employee and company is more important
  - If the job requires a large amount of firm specific training, then there are often safeguards in place to keep the employee's happy (benefits and what-not)
  - If the job requires a large amount of firm specific training and is hard to meter, then the relationship is more mutual, and the employee is provided much job security, which causes them to not exploit the firm

Reference:

Williamson, O.E. (1981). The Economics of Organization: The Transaction Cost Approach. *American Journal of Sociology 87: 548–577*. Reprinted by permission of The University of Chicago Press.

Learning from Organizational Economics

Jay B. Barney & William G. Ouchi

Summary by Katie Bosman

ASCI 5210 Aviation Organization Theory and Management, Module 3

Learning from Organizational Economics

- Reviews the contributions of organizational economists to the literature surrounding organizational theory
- Asserts that knowledge gained by organizational theorists from economics "has less to do with specific applications of concepts or models, and more to do with a way of thinking" (Barney & Ouchi, 1986, p. 218) about organizations

Learning from Organizational Economics

- Neoclassical price theory tended to focus on hypothetical or ideal situations, seemingly ignoring the variables of reality, such as transaction costs
- The value of Equilibrium Analysis, which was often viewed as unrealistic, is that it can "highlight the reasons why equilibrium states do not actually develop" (p. 218)
- "Multistage dynamic" (p. 218): While most organization theory models describe a linear relationship between firms or behaviors, equilibrium analysis goes into a deeper investigation of cause, effect, and interaction with other firms

Learning from Organizational Economics

- "The Transaction as Unit of Analysis" (p. 218)
  - The current (at the time) trend was to integrate different disciplines and theories together for organizational analysis, such as psychology, sociology, and political science
    - These fields were "based on different assumptions and beliefs" and generally created overly-abstract theories that strayed from reality
  - The authors advocated for simplifying multiple overlapping organizational levels of analysis to one level, the transaction.

Learning from Organizational Economics

- “The Transaction as Unit of Analysis” (p. 218)
  - The concept of “organizational boundary” disappears because conditions inside and outside the firm are considered
  - “organizational environment” becomes hundreds of “micro-environments” defined by transactions
  - Less of an emphasis on an organization’s structure, and more emphasis on the nature of the transactions

Learning from Organizational Economics

- What is an "organization?"
  - By looking at an organization through a lens of transactions, the traditional definition of an organization as a firm or bureaucracy becomes restrictive, ignoring markets and hierarchies

Learning from Organizational Economics

- Economists have also learned from organizational theory
  - Study of decision-making, rationality, and how/why people make decisions the way they do
  - Use of empirical research

Learning from Organizational Economics

- References
  - Barney, J.B., & Ouchi, W.G. (1986). *Organizational economics*. In Shafritz, J.M., Ott, S.J. & Jang, Y.S. (2016). *Classics of organization theory*. (pp. 218-223). Cengage Learning.

An Institutional Approach to the Study of Self-Organization and Self-Governance

Elinor Ostrom

by

Nurettin Dinler

ASCI 5210 Aviation Organization Theory and Management

Fall 2020

Who is Elinor Ostrom?

- Elinor Ostrom (1933-2012),
- An American political economist,
- Studied at the University of California, Indiana University and Arizona State University,
- The first and only woman to win the Nobel prize in economics for her analysis of economic governance, especially the commons.

Introduction

- Ostrom's study offers an institutional approach to the study of self-organization and self-governance in common-pool resource (CPR) situations.
- She begins with defining what she meant by CPR and how she viewed individual behaviors in complex and uncertain CPR situations.
- She, then, discusses the general problem facing individuals in CPR situations: *the negative outcomes of independent action.*
  - solved by external agents in two well-accepted theories*:*
    - *the theory of the fi rm and the theory of the state.*
- She concludes with proposing some assumptions to frame the analysis of collective actions.

The Common-Pool Resource (CPR) Situation

- CPR means :
  - "a natural or man-made resource system that is sufficiently large as to make it costly (but not impossible) to exclude potential beneficiaries from obtaining benefits from its use."(p.224).
- The difference between the *resource system* and *the flow of* resource units produced by the system should be recognized to understand how to organize and govern CPRs.

Resource Systems and Resource Units

- Resource systems refer to
  - "stock variables that are capable, under favorable conditions, of producing a maximum quantity of a flow variable without harming the stock or the resource system itself."(p.224).
    - Examples include fishing grounds, bridges, lakes, oceans, parking garages etc.
- Resource units are:
  - "what individuals appropriate or use from resource systems." (p.225).
    - Exemplified by the tons of fish harvested from a fishing ground and the number of bridge crossings used per year by a bridge

Resource Systems and Resource Units

- Multiple individuals or firms can collectively provide or produce a resource system.
  - Given costly improvements of resource systems
- Yet, the resource units are not collectively used.
  - For example, the water spread on a farmer’s fields cannot be spread onto other farmers' fields.

Ostrom’s Terms

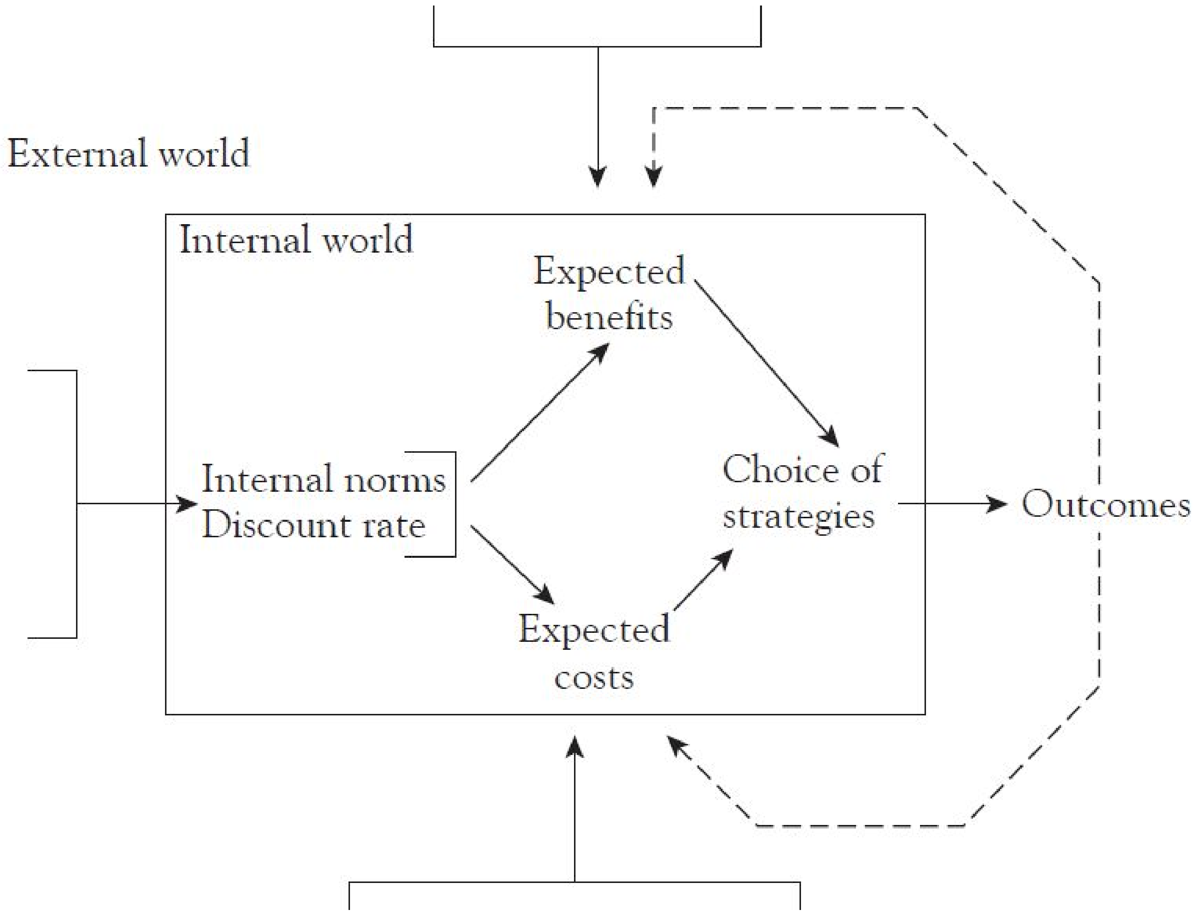
Ostrom preferred to call different terms and key concepts to illustrate the problem of CPRs

- Appropriation
  - “the process of withdrawing resource units from a resource system” (p.225).
- Appropriators
  - “those who withdraw resource units (e.g., herders, fishers, irrigators, commuters)” (p.225).
- Providers
  - “those who arrange for the provision of a CPR” (p.225).
- Producer
  - “anyone who actually constructs, repairs, or takes actions that ensure the long-term sustenance of the resource system itself “(p.225).
- Institution
  - “the sets of working rules that are used to determine who is eligible to make decisions in some arena, what actions are allowed or constrained, what aggregation rules will be used, what procedures must be followed, what information must or must not be provided, and what payoffs will be assigned to individuals dependent on their actions.”(p.236).

Rational appropriators in complex and uncertain situations

- Stated that CPR related problems occurred when different appropriators had interests in common-pool resources
- Pointed out that regarding a CPR, organizing appropriators was usually uncertain because of the external and internal factors.
- Examples of uncertainty resulting from external sources:
  - the quantity and timing of rainfall ,and the temperature and amount of sunlight,
- Examples of uncertainty stemming from internal sources:
  - the appropriators' lack of knowledge and strategic behaviors
- Highlighted that uncertainty reduction was never fully achieved, but appropriators could gain a more accurate understanding of the physical world and what to expect from the behavior of others

Rational Action-Individuals' Strategies



- Pointed out that the success of the appropriators depends on the capability to solve individual and collective problems.
- Appropriators' strategies are affected by the type and extent of shared norms.
- According to Ostrom, four internal factors affect appropriators' choice of strategies:
  - "expected benefits, expected costs, internal norms, and discount rates" (p.228).

Source: (Shafritz, Ott, & Jang, 2015. p. 228)

Interdependence, Independent, and Collective Action

- In case of several appropriators that are dependent on a particular CRM, each must consider the choice of others because they are affected collectively.
  - For example, if a fisher holds a good fishing site, the other(s) in the same location must invest more resources to move to another good fishing site.
- Argued that appropriators would obtain less total net benefits if they act independently in a CPR.
  - At worst: the CPR itself might be destroyed
- Encouraged CPR appropriators for collective actions

Collective Action Theories

- The theory of the firm and the theory of the state provide individuals with rational explanations as to how collective action can be achieved.
- In the theory of the firm,
  - an entrepreneur recognizes that substantial benefits can be obtained by organizing some activities.
- In the theory of the state,
  - a ruler recognizes that substantial benefits can be obtained by organizing some activities
- Stressed that each theory could help the problem of independent action an interdependent situation be solved

Three Puzzles: Supply, Commitment, and Monitoring

- Suggested that there were three problems related to collective action:
  - “(1) the problem of supplying a new set of institutions,
  - (2) the problem of making credible commitments, and
  - (3) the problem of mutual monitoring.”(p.231).
- These three problems should be solved in explaining how a set of principals can organize themselves to obtain long-term collective benefits.

Three Puzzles: Supply, Commitment, and Monitoring

- **The problem of supply** could be solved by
  - establishing trust and establishing a sense of community
- **The problem of credible commitment** could be solved by
  - Following the rules in a particular CRM
    - Unless monitoring problem is solved, credible commitments cannot be solved!
- **The problem of mutual monitoring**
  - The usual presumption that individuals will not themselves monitor a set of rules
  - But some individuals have achieved to monitor their own conformance to their commitments, as well as their conformance to the rules in a CPR situation,
    - The challenge of this study according to Ostrom,

Framing Inquiry

- Stated that when CPR problems are conceptualized as collective action problems, Scholors' two presumptions continue to frame the analyses:
  - (1) a prisoner's dilemma game
    - "individual rationality leads to collective irrationality."
  - (2) one level of analysis
- However, Ostrom's study addressed an alternative set of these presumptions:
  - (1) Appropriation and provision problems
  - (2) Multiple levels of analysis

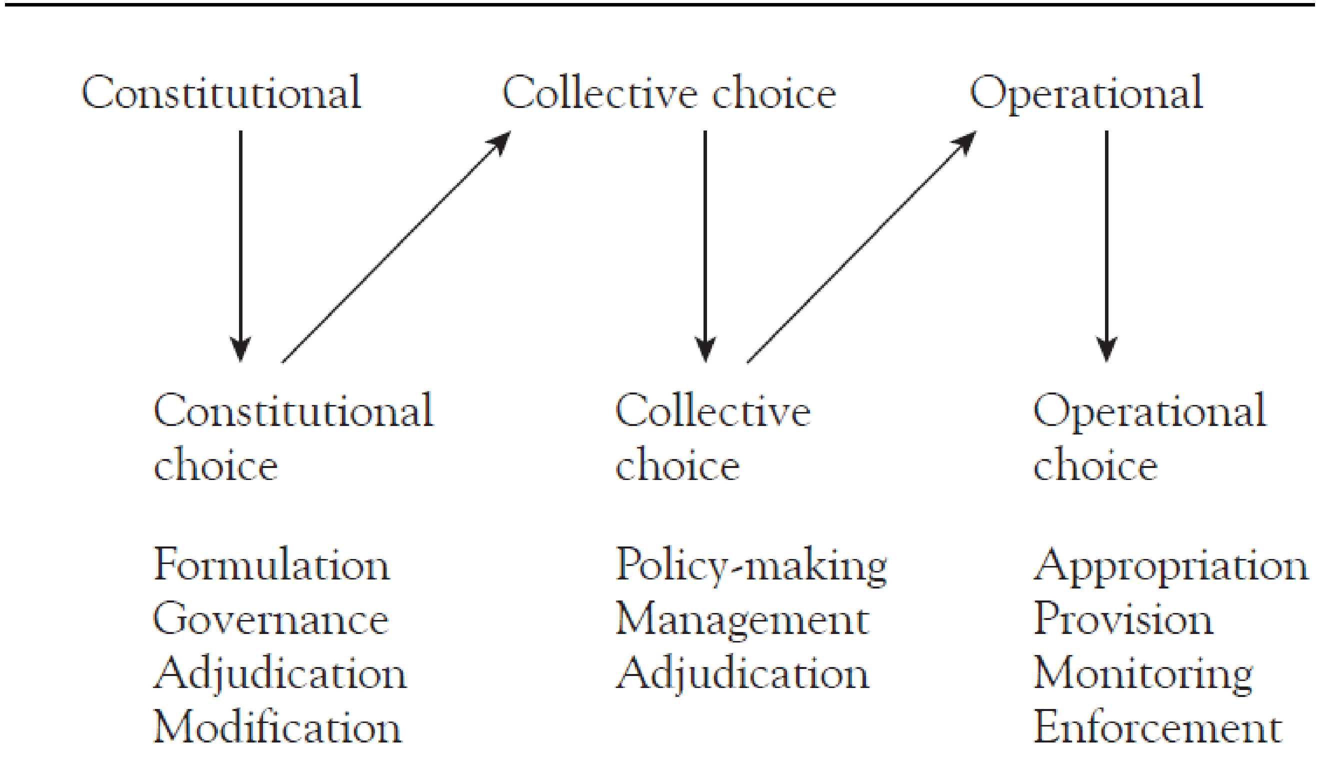
Appropriation and provision problems

- Both types of problems are involved in every CPR,
- When appropriators face appropriation problems, they are concerned with how to allocate a fixed, time independent quantity of resource units to reduce uncertainty.
  - "Appropriation problems are concerned with the allocation of the flow"(p.234).
- Provision problems concern with the resource system's building, restoring, or maintaining , as well as the well-being of the appropriator.
  - "Provision problems are concerned with the stock."(p.234).
- The solutions to appropriation problems must be appropriate with solutions to provision problems

Multiple levels of analysis

- Most analyses of CPR problems and related collective action problems focus on a single level of analysis, also called the operational level of analysis,
- However, Ostrom proposed that the framing assumption that analysis at a single level should be dropped given that CPR appropriators do switch back and forth between operational, collective, and constitutional choice arenas.
- Three levels of rules that cumulatively affect the actions taken and outcomes obtained in using CPRs
  - *Operational rules*
    - affecting the day-to-day decisions made by appropriators
  - *Collective-choice rules*
    - used by appropriators , their officials, or external authorities in making policies how a CPR should be managed
  - *Constitutional choice rules*
    - affecting operational activities and results through their effects in determining who is eligible

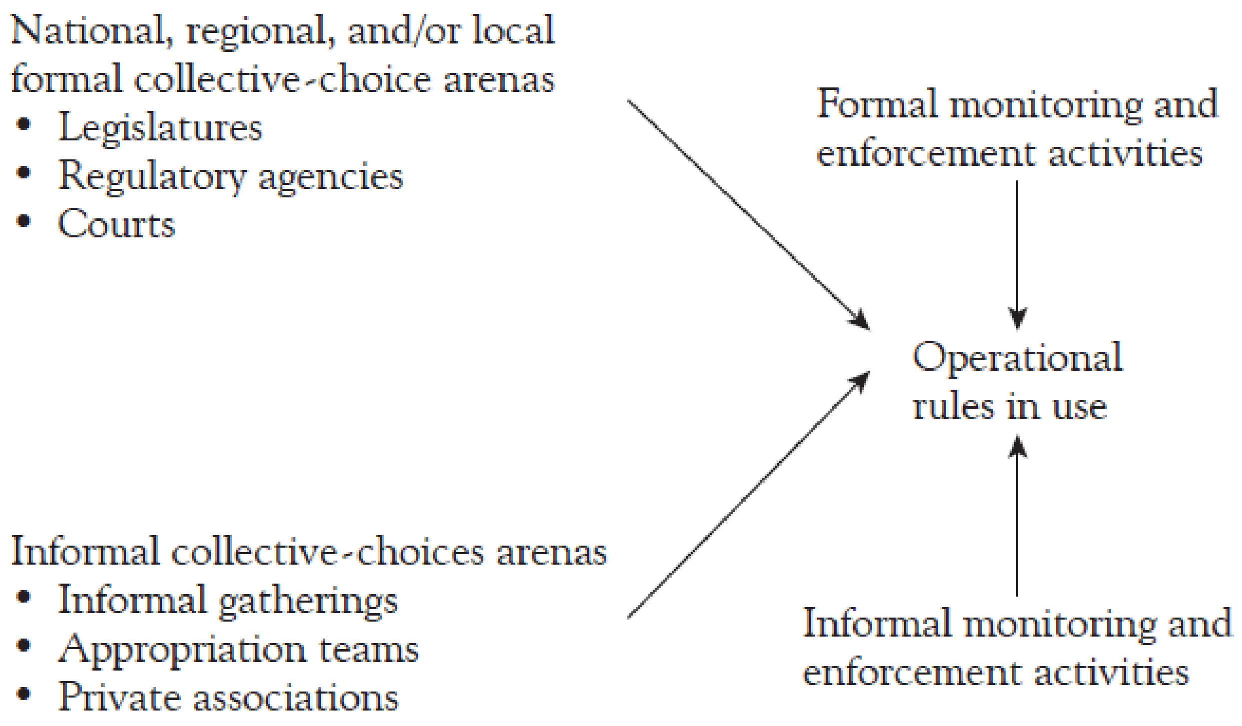
Linkages Among Rules and Levels Of Analysis



Source: (Shafritz, Ott, & Jang, 2015. p. 238)

- The figure shows the connection between the rules that cumulatively affect the actions and the outcomes in CRM and the related level of analysis at which humans make choices and take actions.
- At the operational Level
  - The processes of appropriation, provision, monitoring, and enforcement
- At the collective choice level
  - The processes of policy making, management, and adjudication of policy decisions
- At the constitutional level
  - Formulation, governance, adjudication, and modifications of constitutional decisions

Relationships of Formal and Informal Collective choice Arenas and CPR Operational Rules



Source: (Shafritz, Ott, & Jang, 2015. p. 239)

- Ostrom introduces the ”arena”, ”the situation in which a particular type of action occurs.”(p.239).
- Every policy-making takes place in such an arena, e.g. for operational-choice rules in the collective-choice arena
- The figure shows the relationships of formal and informal collective-choice arenas and CPR operational rules
- Ostrom stressed that local appropriators may develop working rules over the course of time
  - “Such rules may or may not lead appropriators to manage their resource efficiently and fairly, but they will affect the strategies that appropriators perceive to be available to them and the resulting outcomes.”(p.240).

Conclusion

- In this study, Ostrom tried to answer the question,
  - “how a group of principals who are in an interdependent situation can organize and govern themselves to obtain continuing joint benefits when ail face temptations to free-ride, shirk, or otherwise act opportunistically.”(p.224)
- She introduced the concept of a common pool resource (CPR),
- She stressed the role of cooperative self-governing institutions to manage CPRs effectively.
- She also made some presumptions about individuals and appropriators.

Reference

- Shafritz, J. M., Ott, J. S., & Jang, Y. S. (2015). *Classics of organization theory*. Cengage Learning. (p.224-240)

The Bases of Social Power

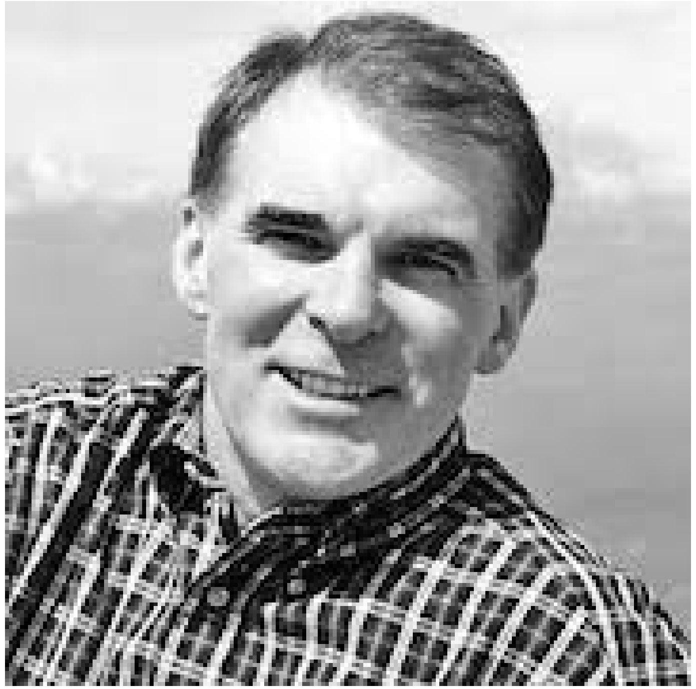
Article 22 Review

Michael Chertude

ASCI-5210

John R. P. French Jr.

- Born August 7, 1913.
- Doctorate from Harvard University in 1940.
- Doctoral dissertation was on the cohesion of groups under distress and in danger.
- Known to be an expert in social psychology and experimental research.
- Professor emeritus of psychology at University of Michigan.
- Died October 14, 1995.



Bertram Raven

- Born September 26, 1926 in Youngstown, OH.
- B.A. and M.A. in Psychology from Ohio State University
- Doctorate from University of Michigan in social psychology.
- Faculty member at UCLA from 1956 until his death in the psychology department.
- Died February 26, 2020.

Introduction

- French and Raven were searching for the major types of power within organizations and how to appropriately organize them.
- They compared these types of powers “according to the changes which they produce and the other effects which accompany the use of power” (Shafritz et al., 2015, p. 251).
- Power and influence is a “dyadic relation between two agents which may be viewed from two points of view: (a) What determines the behavior of the agent who exerts power? (b) What determines the reactions of the recipient of the behavior?” (Shafritz et al., 2015, p. 251).
- French and Raven examine (b) to develop their theory.

Psychological Change

- Psychological change is "any alteration of the state of some system *a* over time" (Shafritz et al., 2015, p. 251).
- This state of change will be measured by the difference between the states of system *a*.
- Change must be coordinated with all forces in play
  - Driving force (another person).
  - Restraining force (group opinion).
  - Own force (person's need).

Social Influence

- French and Raven do not consider social influence which is exerted on a group.
- The social influence must be exerted on an individual person (*P)* by a rule, norm, group, part of a group (*O)*.
- The influence by *O* "does not include P's own forces nor the forces induced by other social agents" (Shafritz et al., 2015, p. 252).
- The influence by *O* can either be an act or the mere presence of *O*.
  - The mere presence of *O* can be something such as a police officer on the corner to deter speeding motorists.

Social Power

- The amount of power *O* has over *P* is the "maximum potential ability of *O* to influence *P* in *a*.
- Power of O/P(a)5($f_{a,x}$-$f_{\overline{a,x}}$)max
- This can be viewed as the magnitude of power.
- An individual may have broad range of power over a certain individual but may have a narrow range of power over another.

Assumptions

- Any change in the state of *a* is due to some factors which is dependent.
  - This could be an internal or external factor.
- "Psychological change and stability can be conceptualized in terms of dynamic dependence" (Shafritz et al., 2015, p. 253).

5 Bases of Power

1. Reward Power
2. Coercive Power
3. Legitimate Power
4. Referent Power
5. Expert Power

Reward Power

- As rewards increase in magnitude, the power *O* has over *P* increases as well.
- It is critical that if *O* promises a reward to *P*, that they are able to deliver on said promise.
- The act *O* is requesting from *P* must be doable (i.e. not impossible).
- As *O* rewards *P* on a constant basis, there will be less and less resistance from *P*.

Coercive Power

- Coercive power is similar to reward power, but it relies more having on *O* to manipulate *P*.
- Coercive power relies on negative punishment by *O* if *P* doesn't conform to the task/request.
- *O* needs to be careful to "introduce restraining forces, or other strong valences, so as to prevent P from withdrawing completely from O's range of coercive power" (Shafritz et al., 2015, p. 255).

Legitimate Power

- This type of power is typically due to some form of internalized values of *P* which dictates them to believe that *O* has a right to influence *P*.
- *P* believes that they must listen to *O*.
- Bases for legitimate power:
  - There could be cultural basis for this (i.e. age, intelligence, caste, and physical characteristsics).
  - Acceptance of the social structure
  - Designation by a legitimizing agent
- Range of legitimate power:
  - Specified with the designation of the power.
  - Power can be specific and narrow.
- Legitimate power and influence:
  - Relative stability and consistent.

Referent Power

- Based on “the identification of P with O” (Shafritz et al., 2015, p. 256).
- This can be though of the oneness of *P* with *O*.
- *P* may not even recognize the power *O* has over them.
- The power which *O* has over *P* can be amplified if there is an attraction from *P* to *O*.

Expert Power

- If *P* evaluates *O*’s knowledge to be superior to theirs or a ‘standard’.
- An example of this could be someone taking legal advice from their lawyer.
- There has to be an acceptance of information.

6 Hypotheses Developed

1. For all five types, the stronger the basis of power, the greater the power.
2. For any type of power the size of the range may vary greatly, but in general referent power will have the broadcast range.
3. Any attempt to utilize power outside the range of power will tend to reduce the power.
4. A new state of a system produced by reward power or coercive power will be highly dependent on O, and the more observable P's conformity the more dependent the state.
5. Coercion results in decreased attraction of P toward O and high resistance; reward power results in increased attraction and low resistance.
6. The more legitimate the coercion, the less it will produce resistance and decreased attraction. Shafritz et al., 2015, p. 258

Reference

- Shafritz, J. M., Ott, J. S., & Jang, Y. S. (2015). Classics of Organization Theory. Cengage Learning.

Article 23- The Power of Power
James G. March

By

Nurettin Dinler

ASCI 5210 Aviation Organization Theory & Management

Fall 2020

Who is James G. March?

- James G. March (1928-2018),
- An American sociologist,
- Received his Ph.D. from Yale University,
- Served on the faculties of the Carnegie Institute of Technology, the University of California, and Stanford University,
- Best known for his research on the concept of The Power of Power written in 1966.

1-Introduction

- In article 23, March attempted to explain why he thought that power was not a central concept in the studies of politics.
- In the article, March begins with asking a technical question;
  - “To what extent is one specific concept of power useful in the empirical analysis of mechanisms for social choice?”(p.261).
- In his eyes, the specific concept of power used in theories have the following general assumptions:
  - “1. The choice mechanism involves certain basic components (individuals, groups, roles, behaviors, labels, etc.).
  - 2. Some amount of power is associated with each of these components.
  - 3. The responsiveness (as measured by some direct empirical observation) of the mechanism to each individual component is monotone increasing with the power associated with the individual component....”(p.261).

1-Introduction cont.

- March offers **two things** to investigate the power of power in empirical theories of social choice.
- First, he offers **three different approaches** to give a better idea about the power in his mind.
- He, then, proposes **six different models of social choice** that are associated with what at least one substantial group of students means by social power

2-Three Approaches to Study of Power

- The three approaches are:
  - experimental studies,
  - community studies, and
  - institutional studies,
- The three general approaches above were used to illustrate the possible uses of the concept of power in empirical research or in empirically oriented theory.
- March also used these three approaches as a basis for exploring the utility of the concept of power in the analysis of systems for social choice.

2.1 The Experimental Study

The first approach to the study of power is called the experimental study.

Conceptual Basis:

- Power is defined by Standard Newtonian Version
- Pointed out that experimental studies are interested in <u>the power of one individual over another</u> but tend to reduce that relationship to more basic components.

Procedures:

- Classic procedures are used in the experimental studies.
  - Power is determined by some a priori measure or experimental manipulation,
  - Hypotheses are generated by using a simple force models,
  - After all, the observed results are compared with the predicted ones.

Results:

- Manipulated elements in the studies allow researchers to reject certain kinds of social choice models for certain kinds of situations.
- A priori measured power is particularly germane

2.2 The Community Study

The second approach to the study of power is called the community study.

- Conceptual Basis: (Standard Newtonian Versions of Power)
  - In the community studies, power is associated with specific individuals.
    - The community studies try to infer the power of individuals within the community by observing their net effects on community choice.
      - Assuming that a decision is some function of individual powers and the individual preferences.
- Procedures: involves
  - (1) some variation of asking individuals within the community to assess the relative power of other individuals in the community, and
  - (2) the direct observation of decision outcomes and prior preferences over a series of decisions
- Results: described in in terms of three broad types of interests In the community studies
  - (1) asking ask how power is distributed in the community,
  - (2) asking what relation exists between power and the possession of certain other socioeconomic attributes
  - (3) asking how power is exerted.

2.3 The Institutional Study

- The third approach to the study of power is called the institutional study,
  - the analysis of the structure of institutions to determine the power structure within them
    - March characterized it in terms of the game-theory version
- Conceptual Basis:
  - In the intuitional studies, power is measured by von Neumann concept of a game
  - Power is measured the extent to which the individual can induce the system to provide resources of value to him
  - Alternatively resources themselves are viewed as power in the intuitional studies
- Procedures: two main ways articulated
  - (1) make some assumptions about the relation between the empirical and a priori measures, and test the consistency of the empirical results with the a priori measures
  - (2) use some additional propositions the index and test those propositions
- Results: the Shapley-Shubik approach, used to assess the contribution to power of formal position alone, was reported to be abandoned because the data did not support the hypotheses

3. Six Models of Social Choice and the Concept of Power

- Provided six types of models of social choice:
  - “1.Chance models
  - 2. Basic force models
  - 3. Force activation models
  - 4. Force-conditioning models
  - 5. Force depletion models
  - Process models” (p.265)
- March evaluated these models’ consistency with available data and consider the problems of the concept of power associated with them.

3.1 Chance Models

- Assumed that “choice is a chance event, quite independent of power.”(p.265).
- Power is exerted all the time.
- Discussed 3 chance models
  - The Unconstrained Model
    - Provides a set of choice alternatives given to the system
  - The Equal-Power Model
    - In this model, it is assumed that social choice is the equal-power choice plussome error term.
  - The Encounter Model
    - assuming only two possible choice outcomes: win or lose;pass or fail;
- Concluded that even though chance models were the weakest tests they could not be rejected in some situations.

3.2 Basic Force Models

- Assumed that “the components of the system exert all their power on the system with choice being a direct resultant of those powers.”(p.265)
- Power is exerted all the time.
- the implications of the models:
    - 1) the force models say nothing about the distribution of power in a choice system if they are not linked to a set of constraints,
    - 2) In case of more than two individuals, the relation between distance and power becomes more complex

3.3 Force Activation Models

- assumed that “not all the power of every component is always exerted.”(p.265).
- observations of reality is a possible problem relating to activation models
- A general assumption:a constant utilization of power over all choices.

3.4 Force-Conditioning Models

- Assumed that “ the power of the components is modified as a result of the outcome of past choices.”(p.265).
- By replacing a constant power resource with a variable power resource, Force-Conditioning Models can take the format of either the basic force model or the force activation model.
- In this model, success breeds success, and power varies over time
- In the literature on the measurement of power, two nagging problems popped up:
  - the problem of the chameleon
    - who frequently jumps in and agrees with an already decided issue and
  - the problem of the satellite
    - who is highly correlated with a high-power person though he himself has little power,
- March points out that the satellite and chameleon are now not measurement problems but important phenomenon because reputations impact outcome.

3.5 Force Depletion Models

- assumed that “the power of the components is modified as a result of the exertion of power on past choices.”(p.265)
- In this model, success breeds failure , and power is viewed as a resource

3.6 Process Models

- assumed that “choice is substantially independent of power but not a chance event.”(p.265).
- Process models of social choice:
  - 1) An Exchange Model: the individual components in the system prefer certain of the alternative social choices
  - 2) A Problem-Solving Model: the individual components in the system has certain information and skills relevant to a problem of social choice
  - 3) A Communication-Diffusion Model: the components in the system are connected by some formal or informal communication system by which information is diffused through the system.
- Process models look technically difficult for estimation and testing.

4 The Power of Power

- March stressed that
  - "Although power and influence are useful concepts for many kinds of situations, they have not greatly helped us to understand many of the natural social-choice mechanisms to which they have traditionally been applied."(p.271).
- Power is considered a useful concept for many short-run situations rather than long-run situations.
- He concluded by saying that "power is a disappointing concept" because "it gives us surprisingly little purchase in reasonable models of complex systems of social choice."(p.271)

Conclusion

- In article 23, March aimed to explain that the concept of power did not have a critical role in the study of politics.
- For this aim, he discussed different definitions and concepts regarding power used in empirical theories of social choice,
- He raised three approaches to the study of power: experimental studies, community studies, and institutional studies.
- He also addressed the advantages of the six models of social choice to arrive at empirically meaningful predictions about power.

Reference

- Shafritz, J. M., Ott, J. S., & Jang, Y. S. (2015). *Classics of organization theory*. Cengage Learning. (p.261-273)

Power Failure in Management Circuits

Rosabeth Moss Kanter

Summary by Katie Bosman

ASCI 5210 Aviation Organization Theory and Management, Module 3

Power Failure in Management Circuits

- Kanter begins by asserting that the subject of power has been taboo, a subject to be avoided. However, the concept of power and the way it is used should be central to the discussion of good leadership.
- Throughout the article, she compares the actions of a powerful manager to one who is or feels powerless, and how those actions affect their subordinates. Three areas of focus include first-line supervisors, staff professionals, and top executives.
- Good leaders share their power by providing their subordinates with the means to succeed. On the other hand, powerless managers, often insecure in their position, rely on rules and micro-management to control subordinates.

Power Failures in Management Circuits

- Organizational Sources of Power
  - Lines of Supply (“Influence outward”)
    - The power to bring in resources for the team; funding, materials, prestige
  - Lines of Information
    - The power to get information, and then pass it down the line for the benefit of the team
  - Lines of Support
    - The power to exercise their own discretion or judgment when making decisions; to use one’s own creativity to solve problems without prior approval
  - “Productive power has to do with *connections* with other parts of a system.” (p. 275)

Power Failures in Management Circuits

- Qualities of a powerful manager
  - Extensive connections outward to bring in resources and information, as well as trust and communication with upper management
  - "Subordinates' talents are resources rather than threats." (p. 275)
    - By transferring power downward to subordinates, thereby making them stronger, the strong leader grows support and influence both upward and downward.
  - "By empowering others, a leader does not decrease his power; instead he may increase it, especially if the whole organization performs better…" (p. 282)

Power Failures in Management Circuits

- Powerless managers tend to:
  - Micromanage, or over-supervise
    - Doing a job themselves vs. training a subordinate may allow them to hold onto a bit of power or make them feel more important
  - Feel frustrated because of demands from higher management that come without enough resources and/or clout to improve productivity
  - Impose rules and overly-structured tasks on subordinates
  - Feel strongly about their "turf" (especially administrative staff) and protect it by "creating islands" as if they are the only ones who know or can do certain things (p. 279)
  - Feel stuck in a dead-end position with no further advancement possiblities

Power Failures in Management Circuits

- Powerless executives (or those who feel powerless) tend to:
  - Focus on short-term problems and solutions, losing sight of long-term objectives
    - This feeds a downward trend of powerlessness, as the longer the main objectives go without attention, the "greater the scramble" to prove they are in control of daily issues (p. 280)
  - "…pull in every shred of power they can and to decrease the power available to other people to act."
    - This leads to curtailed innovation, "limits rather than targets," downsizing to meet financial goals rather than investing in resources for higher production capacity (p. 281).

Power Failures in Management Circuits

- It is important for executives to be “insulated” from the daily problems of the organization so they can focus on the big picture, but often this leads to a loss of touch with what is really going on in the company.
  - Executives must let their subordinates do their own work, but remain connected to information and support networks.
  - When they lose their lines of information, supply and support, they feel powerless and try to tighten control.

Power Failures in Management Circuits

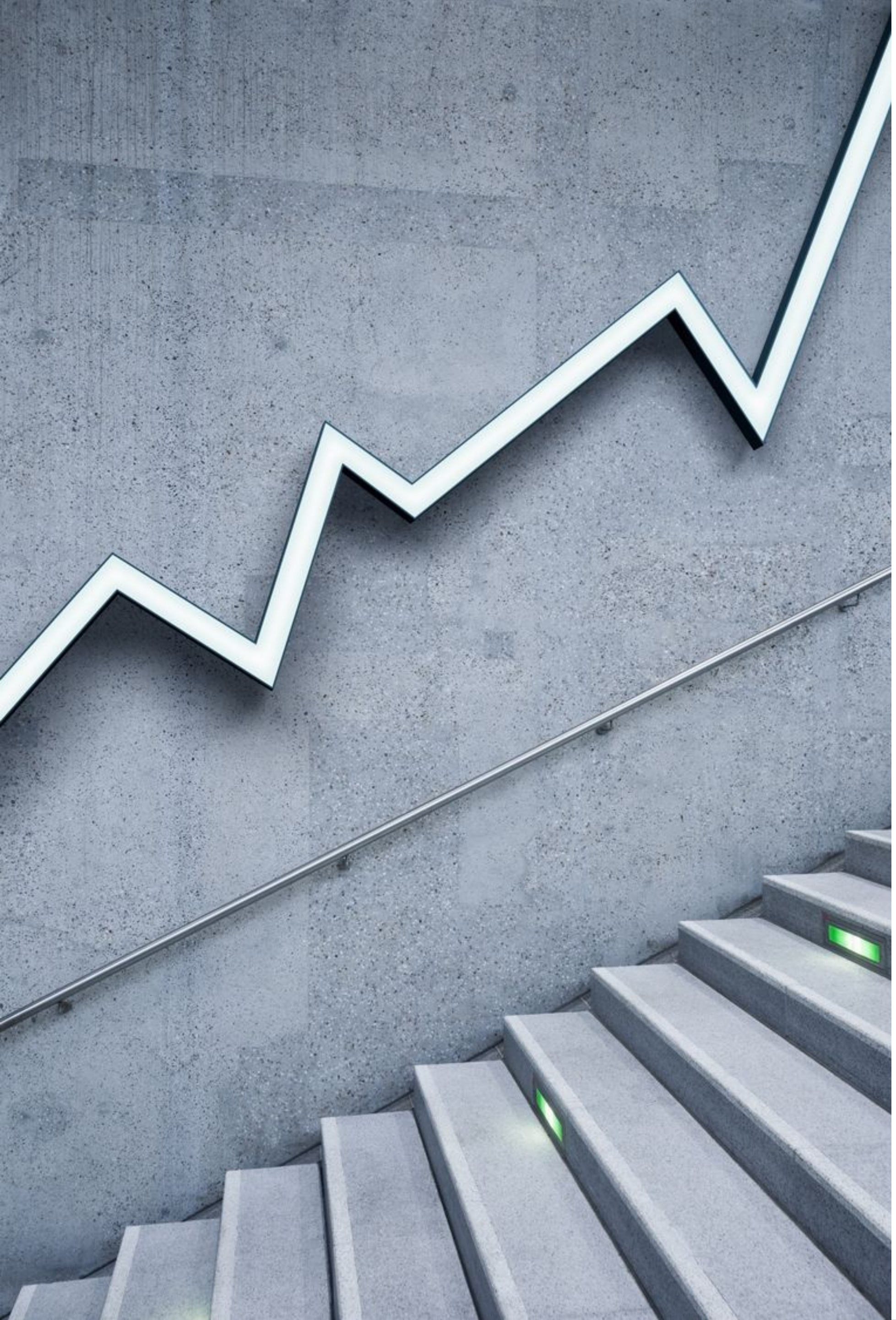
- "To expand power, share it." (p. 281)
  - "Productive power" is different from absolute power in that productive power is the ability to make things happen for the benefit of the team or unit, rather than for one's own self.
  - Productive power is grown when it is shared because when leaders empower their subordinates with more information, supplies, and autonomy, the performance of the team is enhanced, bringing more respect and influence back to the leader.
  - Sharing power is very difficult for some people to do, especially if they feel insecure about their own abilities and status.

Power Failures in Management Circuits

- Sidebar: Women Managers Experience Special Power Failures
  - Women have been more susceptible to structural powerlessness than men
  - A male manager can make a woman powerless by:
    - Trying to "protect" her from risky or challenging situations to "help her succeed"
    - Avoiding the promotion of women because of a fear that his judgment will be questioned by peers or other managers if the woman fails to succeed
    - Undercutting her authority by allowing her subordinates to bypass her
  - Women must often overcome common assumptions that they don't know technical details beyond their immediate job.
  - "Women have been viewed as the *recipients of sponsorship rather than as the sponsors themselves*" (p. 278)

Power Failure in Management Circuits

- References
  - Kanter, R.M. (1979). Power failure in management circuits. In Shafritz, J.M., Ott, S.J. & Jang, Y.S. (2016). *Classics of organization theory*. (pp. 274-283). Cengage Learning.



The Power Game and the Players

HENRY MINTZBERG

The core of this book is devoted to the discussion of a theory of organizational power. It is built on the premise that organizational behavior is a power game in which various players, called influencers, seek to control the organization's decisions and actions.

- SHAFRITZ, JAY M.. CLASSICS OF ORGNIZATION THEORY (P. 284). CENGAGE LEARNING. KINDLE EDITION.

The Exercise of Power

- Hirschman states that participation in any system has three basic options:
  - To stay and contribute as expected (loyalty)
  - To leave (exit)
  - To stay and try and change the system(voice)
    - If chosen, becomes influencer
  - The General Bases of Power
    - Three primary bases of power are
      - Having control over a Resource
      - Control over a technical Skill
      - Control over a body of knowledge critical to the organization

The Exercise of Power Cont…

- The fourth basis of power stems from legal aspects.
  - Formal in nature
  - Laws that shape what the organization can/cannot do
- The fifth basis of power is having access to people who control the organization
  - A significant other to a CEO
- Will and Skill
  - Having the basis of power is not enough, you must use it
  - “In the game of power, it is often the squeaky wheel that gets the grease.”
  - Influencers Pick and Choose their issues

  - Shafritz, Jay M.. Classics of Organization Theory (p. 286). Cengage Learning. Kindle Edition.

The Cast of Players in Order of Appearance

- Internal and External Influencers
  - Internal is the employees
  - External influencers use their power of influence to affect the behavior of the employees
  - These form *coalitions*
  - 10 Groups of possible influencers
    1. Owners –own the title of the organization
    2. Associates – suppliers of the organization's input resources, clients for it's output, trading partners and competitors
    3. Employee Associations – Unions for example that represent internal influencers, but are external themselves
    4. Publics – families, special interest groups, government of any form
    5. Directors of the organization – formal coalition, stands at the interface of the External and Internal coalitions
  - 1-5 are considered External influencers

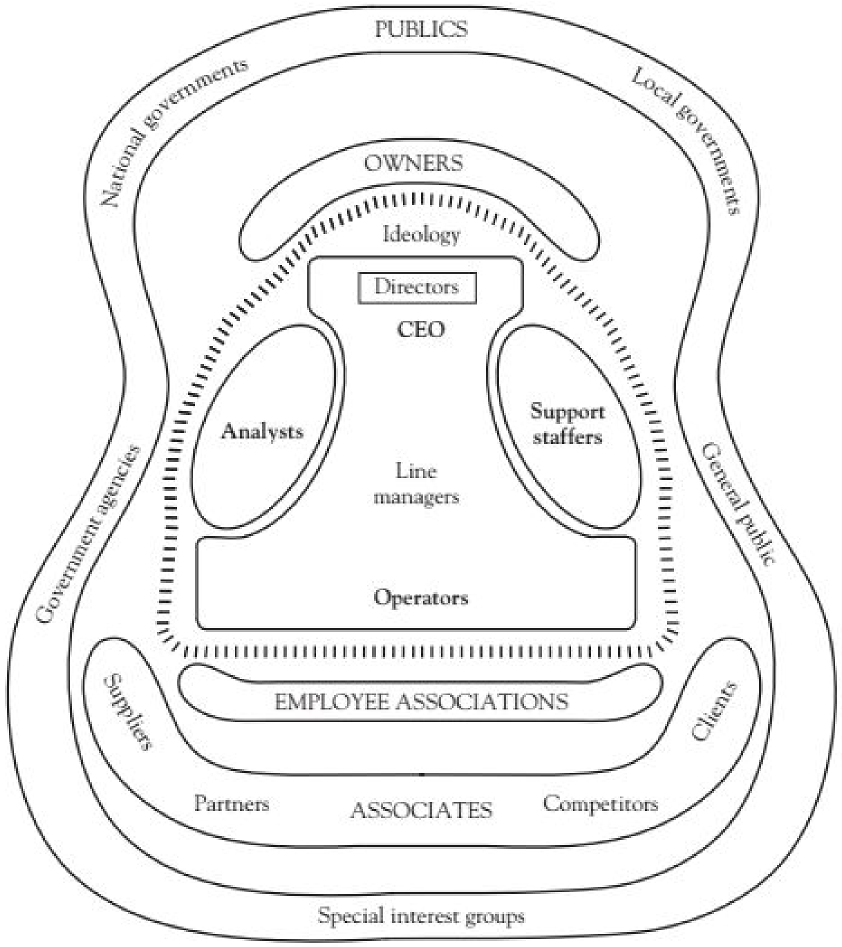
The Cast of Players in Order of Appearance Cont…

- Now starts the Internal influencers (would be 6-10 in order)
  1. Top or General management – CEO
  2. Operators – workers who directly produce the products or services
  3. Line Managers – From CEO down to shift leads
  4. Analysts of the technostructure – work study analysts, cost accountants, and long-range planners
  5. Support Staff – mailroom staff, cafeteria, the researchers ect…
  6. Ideology of the organization – inanimate, but still shows all the signs of influence over an organization

Figure 25.1

Can see how the influencers affect each other in a diagram format

FIGURE 25.1 • THE CAST OF PLAYERS



Henry Mintzberg, Power in and Around Organizations (Englewood Cliffs, NJ: Prentice-Hall, 1983), pp. 22–30. © 1983 by Prentice Hall. Reprinted by permission of SAGE.

Reference:

Henry Mintzberg, Power in and Around Organizations (Englewood Cliffs, NJ: Prentice-Hall, 1983), pp. 22–30.

Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure

MICHAEL C. JENSEN & WILLIAM H. MECKLING

JON MARTIN

Motivation of the Paper

- Property Rights
- Agency
- Finance to develop a theory of ownership structure for the firm

Theory of the Firm: An Empty Box?

- The Empty Box Theory is designed to be applicable to any organization and focuses on the idea that each firm has market forces applied on it.
- ”The material generally subsumed under that heading is not a theory of the firm but actually a theory of markets in which firms are important actors.”
- Organizations are not solely focused on maximizing profits, rather maximizing market value
- Weaknesses include:
  - No existing theory explains how individual participants with conflicting objectives are balanced out in order to present value.

Property Rights

- This section focuses on the individual behavior of owners and managers
- There are different stakes based on organizational ownership
  - Costs and rewards are distributed based on the contracts of owners and managers
  - “Agents” of the firm will be tied less to the organization if they have lower vested interest (and vice versa)

Agency Costs

- An agency relationship is "a contract under which one or more persons (the principal) engage another person (the agent) to perform some service on their behalf which involves delegating some decision-making authority to the agent" (pg. 248).
- Agency costs are a resultant of diverging from maximization of the welfare of the principal. This includes:
  - The monitoring expenditures by the principal
  - The bonding expenditures by the agent
  - The residual loss

Agency Costs

- Associated problems stem from the definition of there being a distance between stockholders and the managers of that organization
- Criticisms of current theories:
  - It's too generalizing to state that an agent will not always behave as if he were maximizing the principal's welfare.
  - All organizations have cooperative efforts; therefore, all organizations have agencies and agency costs
- Current literature focuses on normative aspects of the agency relationship (compensation incentives)
- This article assumes those relationships and instead focuses on the incentives faced by various parties' determination to enter contractual relationships

General Comments on the Definition of the Firm

- Contracts are a ”vehicle for voluntary exchange”
- ”Contractual relations are the essence of the firm, not only with employees but with suppliers, customers, creditors, etc.”
- “Most organizations are simply legal fictions which serve as a nexus for a set of contracting relationships among individuals.”
  - Organizations are a coordinated way to engage in relationships
- Three questions must be asked when evaluating contractual nature of organizations (pg. 248).
  - 1. Why particular sets of contractual relations arise for various types of organizations
  - 2. What the consequences of these contractual relations are
  - 3. How they are affected by changes exogenous to the organization

More General Comments on the Definition of the Firm

- The "Firm" is NOT an individual
  - The firm is the nexus of a set of contracting relationships among individuals
  - "It is a legal fiction (artificial construct under law which allows certain organizations to be treated as individuals) which serves as a focus for a complex process in which the conflicting objectives of individuals are brought into equilibrium within a framework of contractual relations" (pg. 250).

Agency Costs of Outside Equity

- "If a wholly owned firm is managed by the owner, he will make operating decisions which maximize his utility"
  - The decisions are not necessarily only concerned with financial gains.
  - They can also revolve around organizational aesthetics (the book mentions "the attractiveness of the secretarial staff" which shows how dated this article is)
- There are ways for owners to sell equity claims which offset certain costs without compromising operational control or perquisites.
- Issues with owners managing their own companies include potential resistance to new technologies and creative ventures that stray from known activities.

Reference

Shafritz, J. M., Ott, J. S., & Jang, Y. S. (2011). *Classics of organization theory* (7th ed.). Boston, MA: Wadsworth Cengage Learning.

Aviation Safety Investment Assessment Utilizing Return on Investment and Bayesian Networks

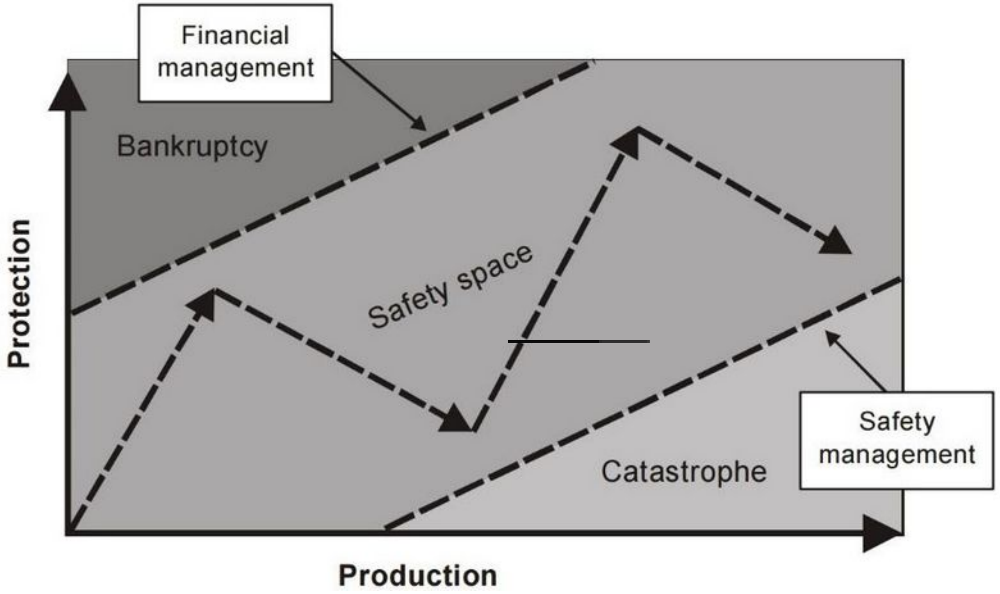
Michael Chertude

ASCI-5210

Safety First

- In general, the public views aviation as one of the safest means of transport although the media highlights crashes.
- With the multiple factors involved with keeping an airline afloat, “economic issues are overtaking safety more often than not and safety is then limited to what the aviation authorities require by law” (Szabo et al., 2015).

Protection vs Production Dilemma



- Airlines are trying to maintain their companies in a 'safety space' which is a "healthy ration between production and safety management expenses" (Szabo et al., 2015).
- It is through this delicate balance of safety investments which airlines try to avoid bankruptcy and catastrophic crashes.
- Airlines are "naturally more motivated to raise production and maximize profit whilst bearing some risk than vice versa" although there has been a shift in the industry which "is much more sensitive to any safety occurrence" (Szabo et al., 2015).

Return on Investment (ROI)

- The logic for any company/airline is to “get at least what was invested in return” (Szabo et al., 2015).
- ROI will highlight the final profit or loss of a particular factor.
- Although this type of tool may be easy to utilize in certain industries, it becomes much more difficult and complicated when it comes to aviation.
- By implementing adequate training and safety features, airlines should see a reduction in mishaps which will also ultimately lower insurance costs.
- In order to determine ROI, we need to “establish some reliable and meaningful safety performance measurement” (Szabo et al., 2015).

ROI Estimation Example

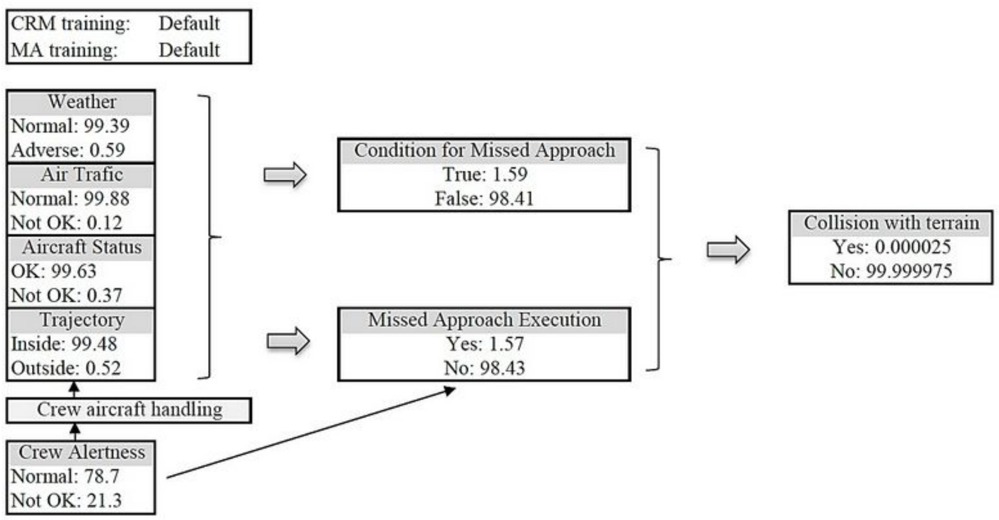
- An example of this is a real-world example of a large maintenance organization.
- Data was collected on the contribution of fatigue to incidents/accidents in 2011.
- It costs $204,500 to implement fatigue training.
- Fatigue training *should* reduce incidents/accidents by 10% for a total savings of $1,053,702.30.
- Final ROI was estimated at 312%.

Bayesian Network (BN) and ROI

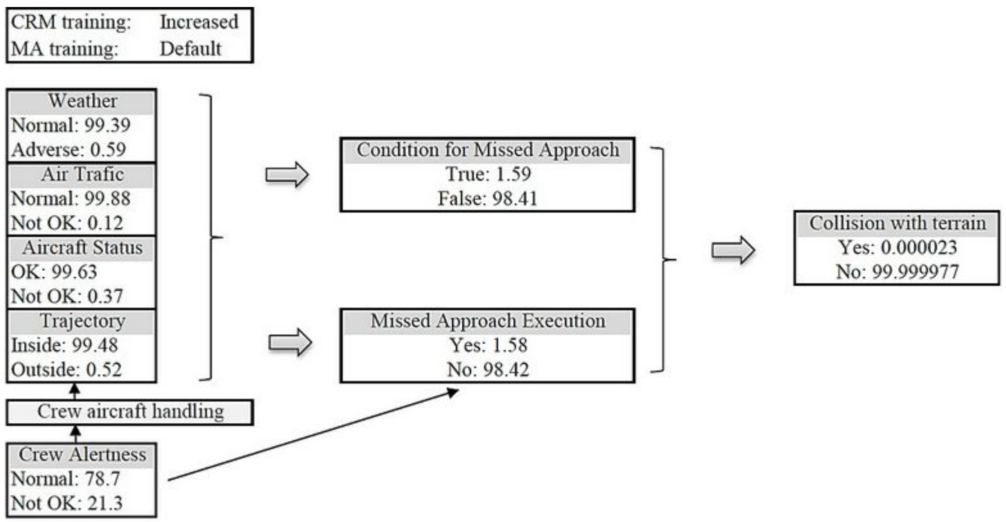
- Due to complex aviation organizations, utilizing BN and ROI can help.
- In the case of Missed Approaches (MA), every time a pilot executes a MA, they will cost the airline more fuel. On the other hand, if they don’t and crash that will cost the company money as well.
- Utilizing BN, companies can see the probabilities of implementing CRM training.

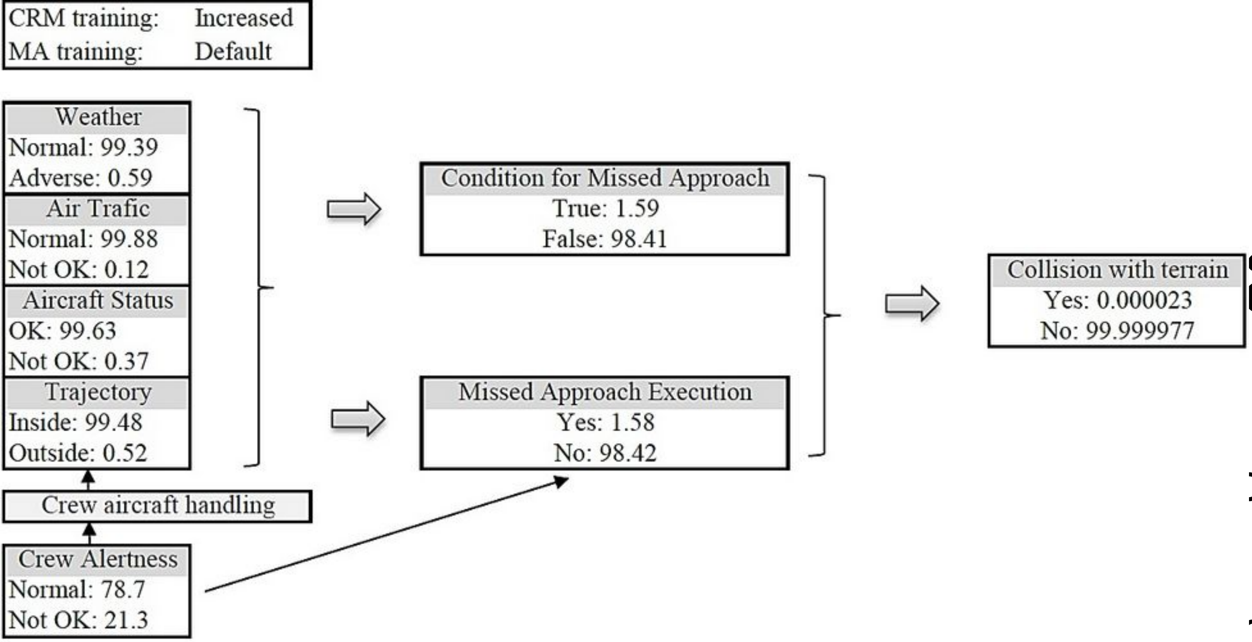
Missed Approaches Utilizing BN

Probability before CRM training



Probability after CRM training





aways

- organization and volume of traffic (Szabo et al., 2015).
- complex and difficult variables involved.
- Rough probability estimates to calculate ROI will have to be derived by subject matter experts to make an educated guess.
- Using BN can help facilitate this difficult process of predicting ROI.
- Organizations need to be motivated monetarily in order to act proactively.

Reference

- Szabo, S., Vittek, P., Lalis, A., & Cervena, V. (2015). Aviation Safety Investment Assessment Utilizing Return on Investment and Bayesian Networks. *Central European Conference in Finance and Economics*.

The Concept of Organizational Culture: Why Bother?

Article 26 Review

Michael Chertude

ASCI-5210

Edgar H. Schein

- Born March 5, 1928.
- Received his Master's Degree in Psychology from Stanford University in 1949.
- Received his Ph.D. in Social Psychology from Harvard University in 1952.
- Former professor at MIT Sloan School of Management.
- He has studied many areas to include career development, group process consultation, and organizational culture.

Introduction

- “Culture is an abstraction, yet the forces that are created in social and organizational situations that derive from culture are powerful. If we don’t understand the operation of these forces, we become victims to them” (Shafritz et al., 2015, p. 301).
- Organizational culture is an interesting phenomenon that differs from organization to organization.
- If someone is studying an organizational culture from their own lens or assumptions, they can not adequately evaluate another’s.
- “To make sense of situations requires taking a cultural perspective; learning to see the world through *cultural lenses*; [and] becoming competent in cultural analysis” (Shafritz et al., 2015, p. 302).

Digital Equipment Corporation (DEC)

- Dr. Schein was called in to help DEC “improve its communication, interpersonal relationships, and decision making” (Shafritz et al., 2015, p. 301).
- After he observed several meetings he observed 4 important items:
  1. High levels of interrupting, confrontation, and debate
  2. Excessive emotionality about proposed course of action
  3. Great frustration over the difficulty of getting a point of view across
  4. A sense that every member of the group wanted to win all the time
- Over the next several months he made observations and suggestions to DEC in order to combat these cultural problems he saw. The problem was these were observations and recommendations he made through his cultural lens/assumptions.

Fundamental Problem with Initial DEC Recommendations

- Dr. Schein realized that his recommendations were not working at DEC.
- He was having difficulty with this until he "began to examine [his] own assumptions about how things should work in these organizations and began to test whether [his] assumptions fitted those operating in [his] client's systems" (Shafritz et al., 2015, p. 302).
- After looking at DECs organization culture and assumptions, he realized a key assumption held by managers was "one cannot determine whether or not something is "true" or "valid" unless one subjects the idea or proposal to intensive debate" (Shafritz et al., 2015, p. 302).
- After realizing this cultural assumption, he was able to make better recommendations to improve the topics he was brought in to help with.

What is Culture?

- Historically, culture was viewed as someone who is sophisticated.
- “In the last several decades, it has been used by some organizational researchers and managers to refer to the climate and practices that organizations develop around their handling of people, or to the espoused values and credo of an organizations” (Shafritz et al., 2015, p. 302).
- There is implications that the ‘right’ kind of culture will determine how effective an organization is. Dr. Schein sees this as a possible dangerous view.
- Instead, “whether or not a culture is “good” or “bad,” “functionally effective” or not, depends not on the culture alone, but on the relationship of the culture to the environment in which it exists” (Shafritz et al., 2015, p. 303).
- Personality is to an individual, what culture is to a group.
- Dr. Schein argues “we must avoid the superficial models of culture and build on the deeper, more complex anthropological models” (Shafritz et al., 2015, p. 303).

What Phenomena Can Organizational Culture Explain?

- Why do those who we consider leaders often disappoint us?
- Why do smart people do such dumb things?
- Why do certain departments in an organization seem to be more interested in fighting with each other than simply getting the job done?
- Why do I have to adopt certain values and norms within my organization or risk being forced out?

- "The concept of culture helps to explain all of these phenomena and to normalize them" (Shafritz et al., 2015, p. 304).

Culture and Leadership

- Neither culture or leadership can be understood by itself, rather they can be viewed as two sides of the same coin.
- The uniqueness of leaders is that they are there in order to correct culture when there are problems.
- This is the main difference between leadership and management/administration because management/administration act within a culture.
- The challenge leaders have is that culture is usually the most stable and least malleable element of a group/organization.
- This is why leadership and culture is intertwined because it is up to the leader to culture and correct organizational culture when required (no matter how hard this task may be).

What Critical Elements does Culture Add?

- Organizations, groups, and occupations are "difficult to define unambiguously" (Shafritz et al., 2015, p. 305).

1. Structural Stability:
   - When we talk about 'culture,' we imply that not only is it shared, but it is also stable and helps define the group.
2. Depth:
   - Culture can be viewed as the deepest, often 'unconscious' part of the group.
3. Breadth:
   - Culture covers *all* of a groups functioning.
4. Patterning or Integration:
   - Culture ties together rituals, climates, values, and behaviors into a coherent whole.

How Does Culture Form?

- Culture can form in two ways:
  1. “Spontaneous interaction in an unstructured group gradually leads to patterns and norms of behavior that becomes the culture of that group” (Shafritz et al., 2015, p. 307).
  2. “In more formal groups an individual creates the group or becomes its leader…he or she will initially impose these on the group and/or select members on the basis of their similarity of thoughts and values” (Shafritz et al., 2015, p. 307).
- If a group does not adopt their original leader’s values/world view, they will reject it and seek a new leader. On the other hand, if they accept it, they will assume the leader had it ‘right’ and it will now be the shared view.
- As time goes on, these views and beliefs will become less conscious, and begin to treat them as nonnegotiable assumptions.

Process of Socialization

- Now that a group has a culture, they will continue to pass on the elements of said culture to the next generation.
- This will perpetuate because once culture moves into the nonnegotiable assumption realm, the surface aspects of the culture will be taught. It will take time for the new generation to learn what is at the heat of a culture.
- As a new member enters a group, they must “decipher the operating norms and assumptions” (Shafritz et al., 2015, p. 309).
- The culture will survive via this process of teaching.

Behavior is Derivative, Not Central

- Formal definition of culture does not include overt behavior patterns.
- An example of this is a group who cowers in the presence of a large/loud leader.
- This should not be considered as part of the culture.
- "When we observe behavior regularities, we do not know whether or not we are dealing with a cultural manifestation" (Shafritz et al., 2015, p. 309).

Can a Large Organization or Occupation Have One Culture?

- Dr. Schein does not specify a size to which culture can be legitimately applied.
- Large organizations can have an overarching corporate culture while at the same time having powerful subcultures.
- For this reason, there can be a multitude of cultures in an organization, and powerful subcultures can develop as the organization grows.

Do Occupations Have Cultures?

- Occupations which have an intense indoctrination will often have a culture.
- The reason for this is due to the shared learning aspect of the occupation which will expose the person to attitudes, norms, and values which will become nonnegotiable assumptions.
- These cultural assumptions can be reinforced in meetings and continuing education sessions.

Are Some Assumptions More Important than Others?

- There are some assumptions which are more important than others.
- These critical assumptions can be viewed as the ‘cultural DNA’ of an organization.
- For this reason, it is important to understand why certain organizations view an assumption above others when another similar organization may view it differently.

Summary

- A group which has a stable membership and history will develop a culture.
- A high turnover of employees will minimize shared assumptions and a culture may not develop.
- Once shared assumptions are taken for granted, it becomes culture and is taught to new members.
- If we are to adequately define culture, we must go beyond the behavioral level.
- Culture and leadership are two sides of the same coin.
- If culture becomes out of balance, it is up to the leadership to correct it.

Reference

- Shafritz, J. M., Ott, J. S., & Jang, Y. S. (2015). Classics of Organization Theory. Cengage Learning.

Cultures and Organizations: Pyramids, Machines, Markets, and Families: Organizing Across Nations
Geert Hofstede, Gert Jan Hofstede, & Michael Minkov

By

Nurettin Dinler

ASCI 5210

Aviation Organization Theory and Management

Fall 2020

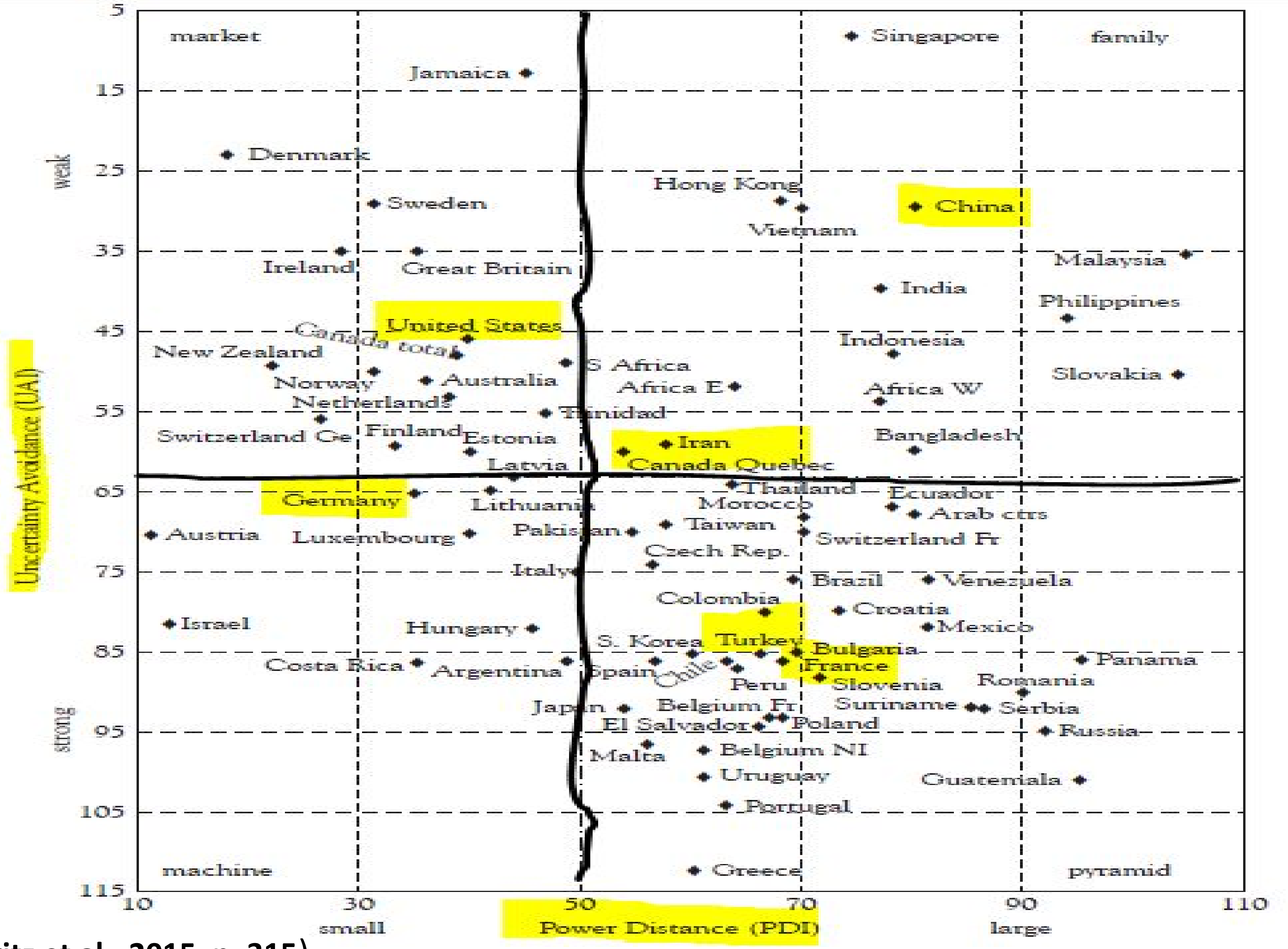
1.Implicit Models of Organizations

- **Banal Problem** in Organizations:
  - “consists of people’s ideas about what an organization should be like”(p.315).
- **Two questions** required to answer for organizing:
  - (1) who has the power to decide what? and
    - **Cultural norms of power distance** affect the possible answers
  - (2) what rules or procedures will be followed to attain the desired ends?
    - **Cultural norms about uncertainty avoidance** affect the possible answers

Power distance (PDI) vs Uncertainty avoidance (UAI)

- In 1970, **James Stevens**, an American professor at a business school in France, **discovered** coincidently **the power distance and uncertainty avoidance as dimensions of country cultures** in an examination assignment.
  - **The French Students** saw organizations as a **“pyramid of people”:** the general manager at the top of the pyramid and each successive level at its proper place below.
  - **The German Students** saw organizations as a **“well-oiled machine”** in which management intervention is limited to exceptional cases because the rules should settle all daily problems.
  - **The British Students** saw organizations as a **“village market”** in which neither hierarchy nor rules but rather the demands of the situation determine what will happen.

Power distance (PDI) vs Uncertainty avoidance (UAI)



The position of a country in the plot should tell us something about how **the countries solve organizational problems**.

Source: (Shafritz et al., 2015, p. 315)

Scientific studies developed after Stevens' models

- **A group of political scientists** from Denmark and the USA-who studied local government administration -distinguished **four ways in which local government was organized**:
  - 1. **The strong-mayor form**, in which an elected mayor controls the majority of the city council.
    - found in France, Italy, Portugal, and Spain, as well as in major cities in the United States.
  - **2. The council-manager form**, in which all executive functions are in the hands of the top civil servant.
    - found in Australia, Finland, Ireland, and Norway
  - 3**. The committee-leader form**, in which the executive functions are shared among the committees of elected politicians, the political leader, and the top civil servant.
    - found in Denmark, Sweden, and the United Kingdom
  - **4. The collective form,** in which all executive functions are in the hands of an executive committee of elected politicians presided over by an appointed mayor.
    - found in Belgium and the Netherlands

Classic school writers' conceptions regarding the pyramid, the machine, the market, or the family

According to	**Henry Fayol,** a French engineer, the authority is both in the person and in the rules • Referring to **a pyramid of people** with both personal power and formal rules as principles of coordination.
According to	Max Weber, a German academician, the real authority is in the rules. • Referring the model of the organization as **a well-oiled machine** that runs according to the rules.
According to	**Winslow Taylor**, an American engineer, the authority is neither in the person nor in the rules but rather in the situation. • Referring to the model of the organization as **a market,** in which market conditions dictate what will happen.
According to	**Sun Yat-sen**, concerned with organization, albeit political from China, the authority of the president (large power distance) is equipped with the legislative and judicial powers. • Referring to **a family model**, with the ruler as the country's father and with whatever structure there is based on personal relationships.

2. Culture and Organizational Structure: Elaborating an Mintzberg

According to Henry Mintzberg, one of today's leading authorities on organizational structure, "all good things in organizations come in fives."(p.3210):

Organizations' five distinct parts:

1. The operating core (the people who do the work)
2. The strategic apex (the top management)
3. The middle line (the hierarchy in between)
4. The technostructure (people in staff roles supplying ideas)
5. The support staff (people in staff roles supplying services)

Organizations' five mechanisms for coordinating:

1. Mutual adjustment (of people through informal communication)
2. Direct supervision (by a hierarchical superior)
3. Standardization of work processes (specifying the contents of work)
4. Standardization of outputs (specifying the desired results)
5. Standardization of skills (specifying the training required to perform the work)

Organizations in general use one or more of these mechanisms for coordinating.

2 Culture and Organizational Structure: Elaborating an Mintzberg cont.

- According to Henry Mintzberg ,” most organizations have one of five typical configurations “(p.321):

1. **The simple structure.**

   Key part: the strategic apex. Coordinating mechanism: direct supervision.

2. **The machine bureaucracy**

   Key part: the technostructure. Coordinating mechanism: standardization of work processes.

3. **The professional bureaucracy.**

   Key part: the operating core. Coordinating mechanism: standardization of skills.

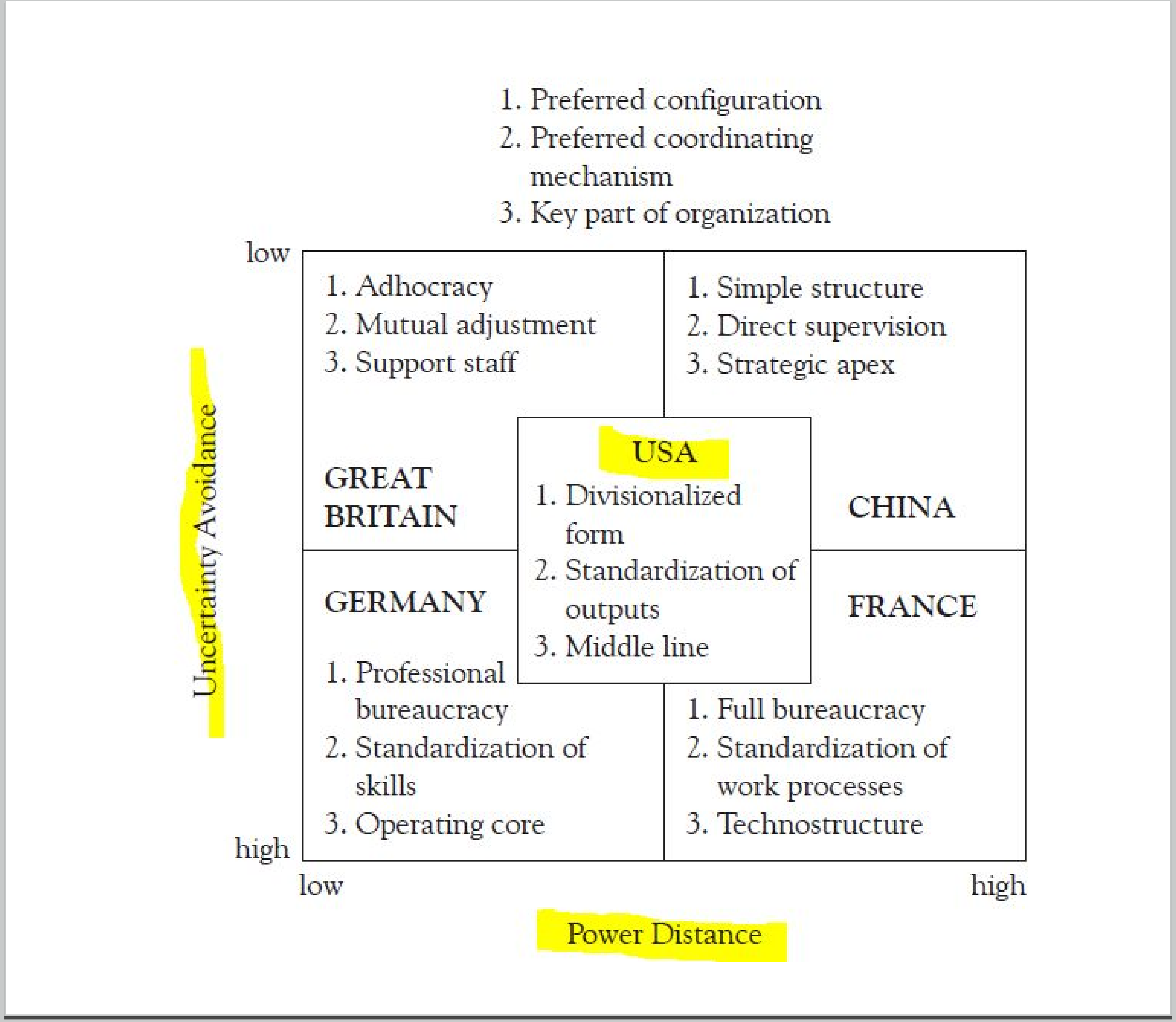
4. **The divisionalized form.**

   Key part: the middle line. Coordinating mechanism: standardization of outputs.

5. **The adhocracy.**

   Key part: the support staff (sometimes with the operating core). Coordinating mechanism: mutual adjustment.

- Mintzberg highlighted *the role of cultural values in the choice of coordinating mechanisms*



Source: Shafritz et al., 2016, p.323

The link between Mintzberg's five configurations and Steven's model

- the term *machine* is used in different sense in Mintzberg's organizations of configurations.
- in his machine bureaucracy, Mintzberg stresses the role of the technostructure but not the role of the highly trained workers who belong to his operating core.
- Therefore, Mintzberg's machine bureaucracy corresponds not with Stevens's machine but rather with his pyramid

3.Corporate Governance and Business Goals

- **Individualism (IDV)** affects patterns of **corporate governance** among countries.
- "Capitalism is historically linked to individualism." (p.324).
- In individualistic countries, such as the USA, Great Britain, the relationship between the individual and the organization is **calculative** both for the owners and for the employees.
  - it is based on enlightened self-interest
- In collectivist countries, Portugal, Mexico, and Turkey, the link between individuals and their organizations is **moral** by tradition.
  - A hire and-fire approach in the collectivist societies is considered immoral or indecent.

3.Corporate Governance and Business Goals cont.

- Differences in **power distance** also affect **corporate governance.**
  - In high Power Distance societies, such as France, Russia, and Turkey, banking, the large companies, and foreign trade are strongly directed and controlled by the state.
- **Masculinity-Femininity (MAS)** also affect **ownership** models. The share of cooperatively owned corporations is negatively correlated with masculinity, but positively correlated with femininity.
  - In the countries, such as Denmark, Finland, Norway, and Sweden, and Austria, more of the hundred largest corporations are owned by a cooperative.
  - In countrifies, such as Britain and Italy, in contrast, none of the hundred largest corporations are owned by a cooperative.
- **Corporate financial goals** are also related to **corporate governance**
  - Such goals are not culture free.

Geert Hofstede's fifteen potential business goals

TOP FIVE
1. Growth of the business
2. Continuity of the business
3. This year's profits
4. Personal wealth
5. Power
MIDDLE FIVE
6. Honor, face, reputation
7. Creating something new
8. Profits ten years from now
9. Staying within the law
10. Responsibility toward employees
BOTTOM FIVE
11. Respecting ethical norms
12. Responsibility toward society in general
13. Game and gambling spirit
14. Patriotism, national pride
15. Family interests (e.g., jobs for relatives)

Source: Shafritz et al., 2016, p.325

- The table shows fifteen potential business goals determined by Geert and his three coauthors asking **the goals of successful business leaders** across seventeen countries.
- These goals are listed to their priorities.

Perceived business goals in the USA compared with 17 country average

International top five in bold; international bottom five in *italics*.	
UNITED STATES	
More important	Less important
Growth of the business	*Profits ten years from now*
Respecting ethical norms	*Responsibility toward employees*
Personal wealth	*Family interests*
This year's profits	*Creating something new*
Power	Continuity of the business

Source: Shafritz et al., 2016, p.326

- The table shows the profile of the USA's perceived business goals compared to seventeen county average ones.
- The scores for the USA were produced by M.B.A. students from five universities in different regions of the country.
- The M.B.A. students' consensus ranking closely resembles the seventeen-country average in the previous slide page.

4. Leadership, Decision Making, and Empowerment

- “Asking people to describe the qualities of a good leader is a way of asking them to describe their culture.”(p.328).
- People describe what the readers would like to be and to believe based on cultural values.
- For example, in masculine societies-Australia, Britain, and the US- people describe masculine leaders,
- In contrast, in feminine cultures-Sweden, Norway, and Denmark- people believe in modest leaders

4. Leadership, Decision Making, and Empowerment cont.

- **Cultural values** also affect the corporation's **decision-making styles**.
- In societies with high power distance -French and Russia- leaders are described as taking autocratic initiatives.
- In societies with low power distance and high uncertainty avoidance – Germany and Austria- leaders are encouraged the training and responsibilities in managerial actions.
- In societies with low uncertainty avoidance and low masculine – Sweden and Norway- leader tend to take entrepreneurial risks and at the same time caring for their people's quality of working life

4. Leadership, Decision Making, and Empowerment cont.

- **Empowerment** refers to “any kind of formal and informal means of sharing decision-making power and influence between leaders and subordinates.”(p.329).
- In low power distance cultures, distributing influence comes more naturally.
- The country’s level of uncertainty avoidance affects the choice of informal versus formal empowerment.
  - In countries with low power distance and low uncertainty of avoidance –Sweden and Norway- the stress is on informal, whereas in countries with low power distance and high uncertainty of avoidance- Germany- the stress is in formal, legally determined systems

5. Conclusion: Nationality Defines Organizational Rationality

- Hofstede points out that " the idea that the validity of a theory is constrained by nationality was more obvious in Europe, with all its borders, than in a huge borderless country such as the United States." (p.330).
- **Theories, models, and practices** are basically **culture-specifi**c:
  - "they may apply across borders, but this should always be proved."(p.330).
- The assumption that management ideas are universal is **naïve**.
- However, the lack of universal solutions to management and organization problems does not mean that countries cannot learn from each other.

5. Conclusion: Nationality Defines Organizational Rationality cont.

- "In organization theories, the nationality of the author reflects implicit assumptions as to where organizations came from, what they are, and what they try to achieve." (p.331).

Geert's list of the paradigms he observed

In the United States	the market
In France	the power
In Germany	order
In Poland and Russia	efficiency
In the Netherlands	consensus
In Scandinavia	equality
In Britain	systems
In China	the family
In Japan	Japan

Source: Shafritz et al., 2016, p.331

Reference

- Shafritz, J. M., Ott, J. S., & Jang, Y. S. (2016). *Classics of organization theory*. Cengage Learning

Appreciative Inquiry

David L. Cooperrider & Diana Whitney

Summary by Katie Bosman

ASCI 5210 Aviation Organization Theory and Management, Module 4

Appreciative Inquiry

- Appreciative Inquiry (AI) is a "positive, strengths-based approach to organization development and change management" (Cooperrider & Whitney, 2005, p. 334)
- Based on the premise that organizations are not problems to be solved, but solutions that thrive on the strengths of the people involved
- Most organizations focus on fixing problems rather than emphasizing strengths

Appreciative Inquiry

- The authors spent 5 years working wth GTE/Verizon to convert the culture to one of Appreciative Inquiry
- "Positive revolution" in the way problems are approached, the way language is used
- An applied focus on customer satisfaction
- An effort to "…recognize and invite the positive expression of frontline employee strengths, initiatives, and capabilities"

Appreciative Inquiry

- AI Definition according to the authors:
  - "…the cooperative, coevolutionary search for the best in people, their organizations, and the world around them…"
  - "In AI, intervention gives way to inquiry, imagination, and innovation. Instead of negation, criticism and spiraling diagnosis, there is discovery, dream and design. AI involves the art and practice of asking unconditionally positive questions that strengthen a system's capacity to apprehend, anticipate, and heighten positive potential." (p. 336)

Appreciative Inquiry

- AI "takes the idea of the social construction of reality to its positive extreme" (p. 336)
- Tom White, president of GTE/Verizon during the AI project, said that a problem-based approach can lead to a "negative culture" where problems seem too much to overcome.
  - White supported the AI approach: "I'm not advocating mindless happy talk. Appreciative Inquiry is a complex science designed to make things better. We can't ignore problems—we just need to approach them from the other side."

Appreciative Inquiry

- The Positive Core of Organizational Life
  - "Human systems grow in the direction of what they persistently ask questions about… The single most important action a group can take to liberate the human spirit and consciously construct a better future is to make the positive core the common and explicit property of all." (p. 337)
  - Includes things such as achievements, traditions, spirit, knowledge, "elevated thoughts," as well as financial assets and strategic opportunities

Appreciative Inquiry

- Problem-Solving Paradigm, according to the authors
  - Is “painfully slow,” asking people to “look backward,” and “rarely results in new vision”
  - Flow: Identify problem, analyze causes, possible solutions, and plan action.
  - Basic assumption: “an organization is a problem to be solved”
- Contrast this with AI:
  - Flow: “appreciating and valuing the best of what is” and “envisioning what might be,” followed by “dialoging”
  - Basic assumption: “an organization is a mystery to be embraced”

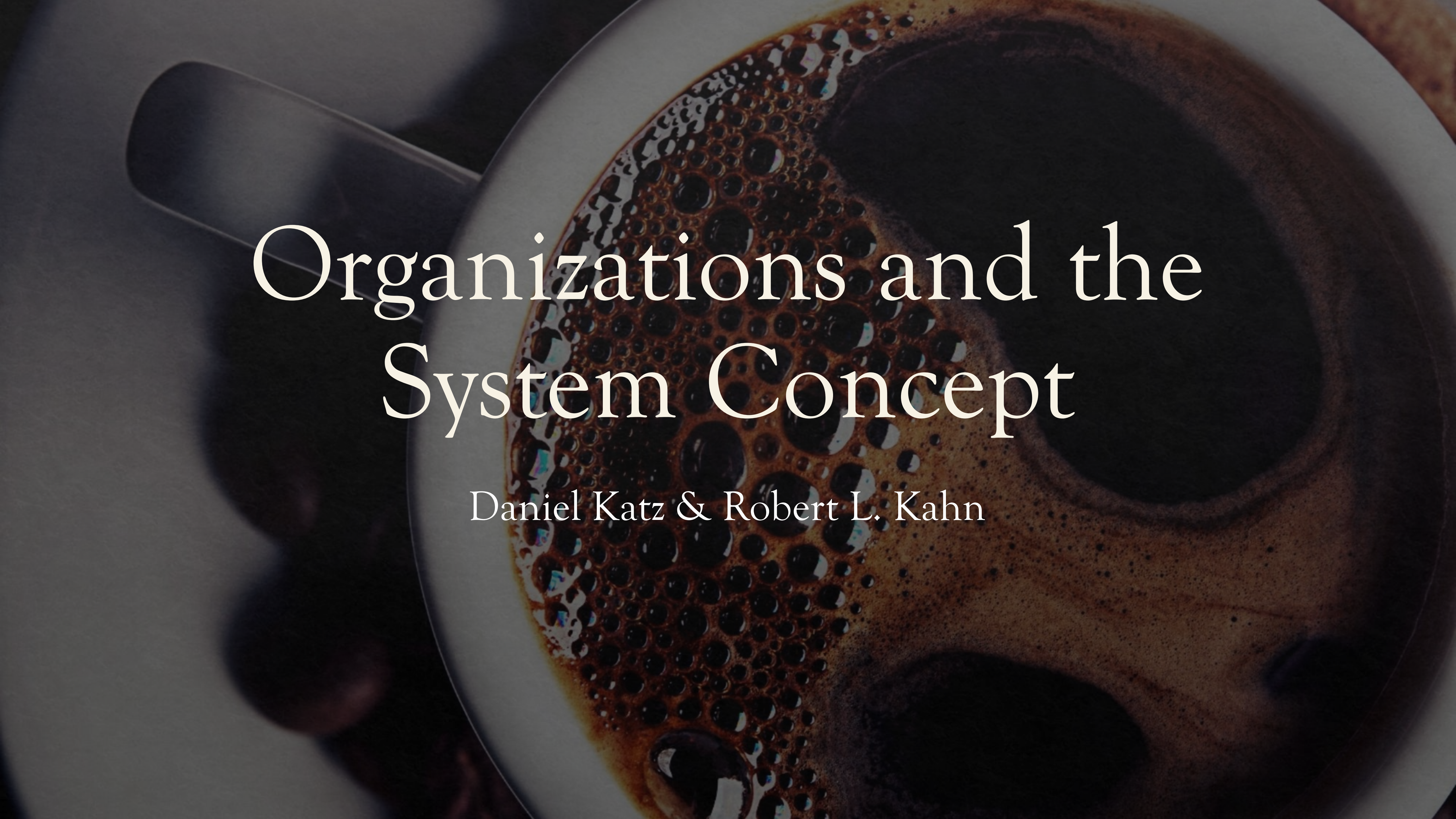
Appreciative Inquiry

- Conclusion:
    - AI is a different way of looking at how to implement organizational strategies and goals, utilizing positive language and emphasizing the strengths of people instead of criticism and problem-solving.
    - Problem-solving is viewed as a negative influence on the culture of an organization, leading to a rigid, reactive environment.
    - Personal opinion: AI sounds like a utopian idea. While I feel like it is desirable to incorporate elements of AI into management and leadership to encourage creativity and connection, it may be unrealistic to adopt AI as an all-encompassing culture, especially in safety-sensitive industries.

Appreciative Inquiry

- References

  - Cooperrider, D. L. & Whitney, D. (2005). *Appreciative Inquiry*. In Shafritz, J.M., Ott, S.J. & Jang, Y.S. (2016). *Classics of organization theory*. (pp. 334-339). Cengage Learning.



Organizations and the System Concept

Daniel Katz & Robert L. Kahn

Social Systems:

- Two assumptions made about organizations
  - The location and nature of an organization are given by it’s name
    - People within and outside the organization accept stereotypes about its nature
  - Organizations has built-in goals from founders and current leaders
    - Goals of the people might be different from the organization
- Organizations are a social device for accomplishing some stated purpose
  - It is not always possible to understand the intended design of the organization

Organizations and the System Concept

- The creator or leader can cause unintended consequences
  - Also the different levels of the organization can have different ideas of what the organization should "be"
- One way to look at organizations is that of an energic input-output
  - This creates open-systems that take input and turn it into output which creates more input (transactions)
- The outcome of the cycle of activities furnishes new energy for the initiation of a renewed cycle

Social Systems

- Businesses do not only exist to make money
  - Some organizations do not depend on the cycle of selling and buying to maintain themselves
    - The example in the text is a bird watching group, the enjoyment to keep it going is the pleasure of seeing some birds
  - The larger the business, the less “self contained” it becomes (generally)
    - Needs more energy in to function and create output

Social Systems

- System theory is basically concerned with problems of relationships, of structure, and of interdependence rather than with the constant attributes of objects
  - But a living system has to depend on it’s environment making it an open system

Common Characteristics of Open Systems:

- Importation of Energy
  - Open systems import some form of energy from the external environment
  - No social structure is self-sufficient or self-contained
- The Through-Put
  - Open systems transform the energy available to them
    - The energy gets turned into something

Common Characteristics of Open Systems:

- The Output
  - Open systems export some products into the environment, whether it be the invention of an inquiring mind or a bridge constructed by an engineering firm
- Systems as Cycles of Events
  - The pattern of activities of the energy exchange has a cyclic character
    - The product exported into the environment furnished the sources of energy for repetition
  - Structure, or the relatedness of parts can be seen as a problem
    - The unit is bounded by size (complex machinery that cannot be moved)

Common Characteristics of Open Systems:

- Negative Entropy
  - To survive, open systems must move to arrest the entropic process; they must acquire negative entropy
  - Organizations tend to maximize its ratio of imported to expanded energy (allows them to survive when times get tough)
  - Social systems can adapt to endless possibilities, yet several organizations go out of existence every year

Common Characteristics of Open Systems:

- Information Input, Negative Feedback, and the Coding Process
  - The inputs into living systems consist not only of energic materials which become transformed or altered in the work that gets done. Inputs are also informative in character and furnish signals to the structure about the environment and about its own functioning in relation to the environment
  - Negative feedback is the simplest type of information input found in all systems
    - A thermostat is an example of a device designed to regulate negative feedback
    - If nothing is there to correct the system, then too much energy will be used and the system will cease to exist
    - Coding is the selective mechanisms of a system where incoming materials are accepted or rejected

Common Characteristics of Open Systems:

- The Steady State and Dynamic Homeostasis
  - Open systems are in a "steady state"
  - Though the tendency toward a steady state in its simplest form is homeostatic, as in the preservation of a constant body temperature, the basic principle is the preservation of the character of the system.
  - To survive, systems will operate to acquire some margin of safety
  - Sometimes a change in size, changes the dynamics of the organization

Common Characteristics of Open Systems:

- Differentiation
  - Open systems move in the direction of differentiation and elaboration. Diffuse global patterns are replaced by more specialized functions.
    - Progressive mechanization
- Equifinality
  - The system can take several different approaches to reach the same destination (different paths all leading to the same goal)
  - Regulatory mechanisms can reduce equifinality

Consequences of Viewing Organizations as Open Systems

- The major misconception is the failure to recognize fully that the organization is continually dependent upon inputs from the environment and that the inflow of materials and human energy is not a constant.
- The general principle, which characterizes all open systems, is that there does not have to be a single method for achieving an objective.
- Irregularities from the environment are not errors, but normal
  - Further study needs to be done to completely understand the system

Reference

- Shafritz, J. M., Ott, J. S., & Jang, Y. S. (2015). Classics of Organization Theory. Cengage Learning.

Institutionalized Organizations: Formal Structure as Myth and Ceremony

John W. Meyer and Brian Rowan

Summary by Katie Bosman

ASCI 5210 Aviation Organization Theory and Management, Module 4

Institutionalized Organizations

- Introduction
  - Written in 1977, this article illustrates that organizations tend to be built around socially-understood ideas of how things should be, rather than the most efficient way to fulfill their purpose.
  - The author refers to these socially-accepted, institutionalized ideas and ways of thinking or doing as "myths"
    - "Institutionalized products, services, techniques, policies and programs function as powerful myths, and many organizations adopt them ceremonially." (p. 373)

Institutionalized Organizations

- "…conformity to institutionalized rules often conflicts sharply with efficiency criteria and, conversely, to coordinate and control activity in order to promote efficiency undermines an organizations ceremonial conformity and sacrifices its support and legitimacy." (p. 373)
- Even though an organization should strive for efficiency, it must also conform to these social norms and myths, or else risk losing legitimacy and support from its environment.

Institutionalized Organizations

- "Institutionalization involves the processes by which social processes, obligations, or actualities come to take on a rule-like status in social thought and action." (p. 373)
  - Institutionalizations may be an accepted social norm or a formal law
  - The effects of institutional rules on an organization and its work are different from the effects and behavior of people within and around the organization.

Institutionalized Organizations

- Formal structure is impersonal and built around rational organizational goals and policies.
- Most organizational theories accepted at the time of writing assumed that organizations primarily functioned according to their formal structure (i.e. rationally), but empirical evidence "casts doubt on this assumption" (p. 374)
  - Research by Weick and others uncovered disconnects between structural elements and actual activities, noncompliance with rules, decisions that went unimplemented, weak evaluation systems, etc.
  - This paper attempts to answer why formal organizations are so common and prolific despite the evidence that they don't usually work as intended.

Institutionalized Organizations

- "In modern societies, the elements of rationalized formal structure are deeply ingrained in, and reflect, widespread understandings of social reality." (p. 375)
  - Elements can include professions defined by licensing and education, ideologies that define organizations according to function (manufacturing, sales, education, hospitals, etc), technology accepted for use in a certain domain (medical, transportation), etc.
  - Failure of an organization to use such pre-determined elements can cause it to lose legitimacy; whereas using them builds stability and credibility.
- Institutionalized norms provide opportunities for more formal organizations to grow, such as universities, trade groups, and various professions.

Institutionalized Organizations

- "Proposition 1: As rationalized institutional rules arise in given domains of work activity, formal organizations form and expand by incorporating these rules as structural elements." (p. 376)
  - New "institutionalized myths" cause an emergence of new formal organizations
  - Existing organizations expand to include new myths within their formal structure
    - "become isomorphic" or correspond in form with the myths

Institutionalized Organizations

- "Proposition 2: The more modernized the society, the more extended the rationalized institutional structure in given domains and the greater the number of domains containing rationalized institutions." (p. 376)
  - As society becomes more modern, both the number and complexity of relational networks increases, leading to a proliferation of bureaucracies and formal organizations.

Institutionalized Organizations

- “Proposition 3: Organizations that incorporate societally legitimated rationalized elements in their formal structures maximize their legitimacy and increase their resources and survival capabilities.” (p. 382)
  - “Local relational networks” encourage development of organizational structure that controls output and activities, while institutional demands are shaped by what society expects
  - Organizational success rests somewhere along a continuum that spans from management of relational networks and efficiency on one end, and the stability and confidence from alignment with institutional rules on the other
  - “The uncertainties of unpredictable technical contingencies or of adapting to environmental change cannot be resolved on the basis of efficiency.” (p. 383)

Institutionalized Organizations

- "Proposition 4: Because attempts to control and coordinate activities in institutionalized organizations lead to conflicts and loss of legitimacy, elements of structure are decoupled from activities and from each other." (p. 384)
  - Delegation and professionalism are used to distance the productive activities from the institutionalized face or leadership of the organization.
  - Not everything fits the formal structure, therefore conflicts arise, problems are solved, but these things are separated from the façade to maintain appearances and save public faith.
  - "…confidence and good faith of internal participants and external constituents" maintains flow and prevents anarchy

Institutionalized Organizations

- "Proposition 5: The more an organization's structure is derived from institutionalized myths, the more it maintains elaborate displays of confidence, satisfaction, and good faith, internally and externally." (p. 385)
  - "Participants not only commit themselves to supporting an organization's ceremonial façade, but also commit themselves to making things work out backstage."
  - Informal coordination within the organization may break formal rules, but is often done to get around the technical inconsistencies and problems caused by the institutionalized myths

Institutionalized Organizations

- "Proposition 6: Institutionalized organizations seek to minimize inspection and evaluation by both internal managers and external constituents."
    - Evaluation and inspection are usually minimalized or "ceremonialized" to maintain morale and the confidence of the public.
    - Credentials and "categorical evaluations" are accepted by boards and agencies without question, because questioning them leads to uncertainty and instability.
    - Side note: Does this describe Boeing during the initial 737 Max certification??

Institutionalized Organizations

- Conclusion
    - Institutionalized myths drive the formation and development of formal organizational structures
    - Formal structures often conflict with "practical activity" or production
        - The formal structure and the productive element of an organization are usually "loosely coupled" to allow production and flexibility behind a stable public façade
    - Organizations are typically more successful and stable when they align with institutionalized societal myths and expectations
        - Deviation from these increases risk of losing support and faith both internally and externally

Institutionalized Organizations

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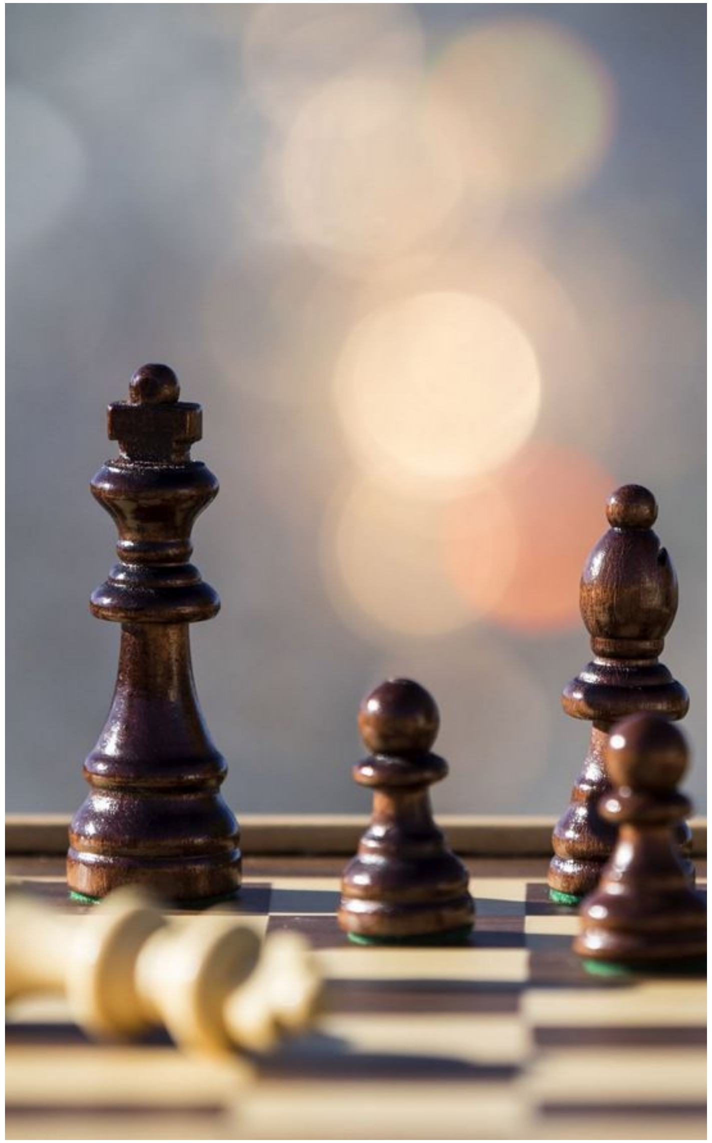
  - Meyer, J.W. & Rowan, B. (1977). Institutionalized organizations: Formal structure as myth and ceremony. In Shafritz, J.M., Ott, S.J. & Jang, Y.S. (2016). *Classics of organization theory*. (pp. 373-388). Cengage Learning.



External Control of Organizations: A Resource Dependence Perspective Jeffrey Pfeffer & Gerald R. Salancik

- **By**
- **Nurettin Dinler**
- **ASCI 5210**
- **Aviation Organization Theory and Management**
- **Fall 2020**
- **Saint Louis University**

Preface

- Highlighted that individuals cannot understand the structure and behavior of an organization without understanding the ecology of the organization.
  - Organizations are depending on the conditions of their environment.
- Organizations are viewed as open systems.
  - Organizations' external factors are important for understanding actions and structures.
- The purpose of the article is to explain the importance of organizational environments.

Overview

- asking how managers go about ensuring their organization’s survival?
- The key to organizational survival is the ability to acquire and maintain resources.
    - Therefore, organizations must engage in exchanges with their environments in order to survive.
- However, suggested that no organizations are self-sufficient.
    - Therefore, organizations need to acquire resources from their environments.
        - Meaning that organizations are dependent on the environment for their survival
- Problems arise when environments change, new organizations enter and exit, and the supply of resources becomes more or less scarce.
    - In such cases, organizations either can not survive or alter their activities in response to these environmental factors.

3 Concepts for Understanding the Nexus between Organization and Environment

Pfeffer and Salancik introduce three key concepts for understanding organization-environment relationships.

1. Organizational Effectiveness

2. Organizational Environment

3. Constraints

Organizational Effectiveness

- The effectiveness of an organization is “its ability to create acceptable outcomes and actions.”(p.393).
    - Makes the concept of environment important
- Important to note that <u>the difference between organizational effectiveness organizational efficiency.</u>
    - Because the difference in two concepts is at the heart of the external versus internal perspective on organizations.
- **Organizational effectiveness** is “an **external** standard of how well an organization is meeting the demands of the various groups and organizations that are concerned with its activities.”(p.393).
    - Do the right things
- **Organizational efficiency** is “an **internal** standard of performance”(p.394).
    - Do the things right

Organizational Environment

- Organizations are a part of other organizations' environment.
  - In case of any failure in the system, organizations may be affected.
    - Thus, understanding an organization's environment is useful to respond the changes in the environmental factors.
- It is important to note that the scarcity of the resources that firms need determine the extent of organizational dependency on the environment.
  - "A baking company which has a large inventory of sugar will be less affected by changes in the price of sugar than one which must purchase supplies on the open market continually."(p.394).
- An organization itself is the most important influences on an organization's response.
  - By the existence of information systems, organizations can improve their knowledge of the environment

Constraints

- Constraint is the third concept important for understanding organization-environment relationships.
- The concept of constraint explains “ why individuals account for relatively little variance in the performance and activities of organizational systems.” (p.396).
    - Understanding constraints on behavior is important because every individual and leader operate under constraints.
- Argued that behaviors will be constrained when responses to a given situation at predictable.
    - For example, behaviors of a driver who drives between 25 and 35 miles per hour on city streets will be predicted somewhat when s/he drives on highways, probably s/he will tend to drive between 50 and 65 miles per hour.

The Role of Management

Pfeffer and Salancik discuss the role of the manager within the perspective of resource dependence theory.

Leaders or managers are given a symbolic role to be held accountable.

- It does not mean that managers serving as symbols have little importance

In addition to the symbolic role, managers can adjust and alter the social enviorenment surrounding the organization

Summary

All organizations are dependent on the environment for their survival because there is “no organization is completely self-contained.”(p.398).

The environment of an organization is critical for understanding organizational behaviors.

When organizational actions are constrained, there are several perspectives on the role of management in organizations from the perspective of resource dependence theory:

- Management serves as a symbol of the organization and its actions.
- Management can facilitate the organization’s adjustment to its environment

Reference

- Shafritz, J. M., Ott, J. S., & Jang, Y. S. (2016). *Classics of organization theory*. Cengage Learning

The Network Organization in Theory and Practice

Article 33 Review

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ASCI-5210

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Introduction

- Network organization has recently become a concept in theory and practice.
- It is an organizational form which has been used in manufacturing and service firms.
- “A network organization can flexibly construct a unique set of internal and external linkages for each unique project” (Shafritz et al., 2015, p. 401).
- Network organization is different from bureaucracies because bureaucracies has a fixed set of relationships, where network organization molds to each different problem.
- Another interesting point about network organization is “it adapts itself not by top-management fiat but by the interactions of problems, people, and resources” (Shafritz et al., 2015, p. 401).

Network Organization Clarifications

- Network organization is a specific organizational type. All organizations have networks and patterns, but this does not mean they are a network organization. This is how we can differentiate between bureaucracies and network organization.
- “A network organization is characterized by integration across; formal boundaries of *multiple types* of *socially important* relations” (i.e. ‘thick’ network organizations) (Shafritz et al., 2015, p. 402).
- When considering network organization, we must consider the interactions not only across horizontal levels, but vertical levels (i.e. hierarchical).
- Network organization is not only limited to professional service firms. It could apply to examples like Hollywood film making or book publishing.

Differentiation and Integration

- Differentiation is “the formal division of an organization into ranks, functions, departments, work teams, and so on” (Shafritz et al., 2015, p. 403).
- Differentiation can be in both vertical, horizontal, and spatial levels.

- Integration is “the degree of coordination (or, in a broader sense, interaction) among organization units, however differentiated” (Shafritz et al., 2015, p. 403).
- What makes network organization different from others is that it has a high degree of integration.

- Within network organizations, “formal boundaries do not inhibit relationships” (Shafritz et al., 2015, p. 404).

Ingroup and Intergroup Relationships

- Network organizations will not develop spontaneously and must be intentionally created utilizing integrating mechanisms.
- There are three forces which will either inhibit or induce integration
  1. Task characteristics
  2. Organizational characteristics
  3. Environmental factors

Task Characteristics

- The nature of the task will determine if it will inhibit or induce integration.
- If the task requires specialization, it will inhibit integration.
- If the task is “unique, requires input from various experts, an integrated organization is more effective” (Shafritz et al., 2015, p. 404).

Organizational Characteristics

- As system sizes increase, it can become increasingly difficult to sustain integration.
- "Differentiation means more differences among individuals, which reduce the rate of intergroup ties, but differentiation itself increases the likelihood of intergroup ties because it constrains available choices" (Shafritz et al., 2015, p. 405).
- Personnel selection, control systems, facility design, and cultural norms and values will facilitate organizations with integration.

Environmental Characteristics

- The structure of network organization is that it’s structure is related to the environment the organization is in.
- If the structure is a good fit with the environment, it can enable “quick and flexible responses to project and market demands” (Shafritz et al., 2015, p. 406).
- A complex environment may induce integration, but it can also inhibit it by exacerbating ingroup biases.
- “The match of internal organizational structure with external market structure can seriously obstruct overall integration” (Shafritz et al., 2015, p. 406).

Conclusion

1. "Spatial differentiation impedes integration by both strong and weak ties, but weak ties integrate the firm across formal groups created by horizontal differentiation, and the firm is integrated by strong and weak ties across formal group boundaries created by vertical differentiation" (Shafritz et al., 2015, pp. 407-408).
2. Deal makers are integrated across boundaries both vertical and spatial differentiation.
3. The CEO is not *the* critical node in deal maker networks. If the CEO is removed, the deal makers do not become more or less integrated.

Reference

- Shafritz, J. M., Ott, J. S., & Jang, Y. S. (2015). Classics of Organization Theory. Cengage Learning.

THE Z ORGANIZATION

WILLIAM G. OUCHI

JON MARTIN

WHAT IS A "Z COMPANY" ?

- A Z COMPANY IS AN ORGANIZATION THAT REVOLVES AROUND A HOLISTIC SET OF BELIEFS AND A CULTURE OF INTERDISCIPLINARY TRUST
- A "Z COMPANY" IS DRIVEN BY THAT COMPANY'S CULTURE, AND THE ORGANIZATION'S VALUES WILL DETERMINE STRATEGIES
- OPEN COMMUNICATION, TRUST, AND COMMITMENT
- HISTORICALLY RESEMBLE JAPANESE FIRMS

Z COMPANY TRAITS

- EMPLOYEE AUTONOMY
- THEY FOSTER CLOSE INTERCHANGE BETWEEN WORK AND SOCIAL LIFE
  - CONCERNED ABOUT THE WHOLE PERSON
  - THEY RECOGNIZE EMPLOYEES AS HUMAN BEINGS
- EGALITARIANIST VIEWS- EQUALITY OF INFLUENCE AND POWER
- DEMOCRATIC TEAMWORK AND TIGHT COORDINATION
  - MANY PEOPLE ARE DRAWN INTO THE SHAPING OF IMPORTANT DECISIONS
  - THIS PARTICIPATIVE PROCESS PROVIDES FOR THE BROAD DISSEMINATION OF INFORMATION AND OF VALUES WITHIN THE ORGANIZATION

MORE Z COMPANY TRAITS

- LONG TERM EMPLOYMENT- OFTEN A LIFETIME, BUT NOT FORMALLY STATED
- EMPLOYEE RETAINMENT- LOTS OF INVESTMENT IN EMPLOYEE TRAINING TO PERFORM WELL IN THAT SETTING
- SLOW PROCESS OF EVALUATION AND PROMOTION
  - INFORMAL, IMPLICIT MECHANISMS OF CONTROL DEVELOP ONLY UNDER THE CONDITIONS OF STABLE EMPLOYMENT, SLOW EVALUATION AND PROMOTION, AND LOW CAREER SPECIALIZATION
- INTIMATE COORDINATION BETWEEN THE DIFFERENT SECTORS OF THE COMPANY
- CONCERN FOR THE COMPANY PHILOSOPHY
- EMPHASIZING INDIVIDUAL RESPONSIBILITY
- ADAPTIVE

Z COMPANY DRAWBACKS

- XENOPHOBIA
  - AVOIDS THE RISKS ASSOCIATED WITH DEVIATING FROM KNOWN SUCCESSES
- RACISM AND SEXISM
- SLOW REACTION TIME TO MAJOR ENVIRONMENTAL SHIFTS
- DIFFICULT TO CHANGE THE CULTURE- IT HAPPENS OVER A LONG PERIOD OF TIME
- LOSS OF PROFESSIONALISM
- LAZINESS
  - COMBATED BY UNITED GOALS BETWEEN INDIVIDUALS AND THE COMMUNITY (EVERYONE BENEFITS SO DO YOUR PART)

WESTERN MANAGEMENT STYLE SHORTCOMINGS

- DISREGARD FOR THE PHILOSOPHY OF THE COMPANY AND PUTS PROFITS AS THE MAIN MOTIVATION
- LOSS OF THE ABILITY FOR DISPARATE DEPARTMENTS WITHIN A SINGLE ORGANIZATION TO COMMUNICATE EFFECTIVELY AND UNDERSTAND EACH OTHER
- ORGANIZATIONAL HIERARCHY
  - THE NATURAL FORCE OF ORGANIZATIONAL HIERARCHY PROMOTES A SEGMENTED RELATIONSHIP AND A HIERARCHICAL ATTITUDE
- DEHUMANIZED RELATIONSHIPS WHICH EASILY BECOME AUTHORITARIAN
  - IMPERSONAL AND FORMAL RELATIONSHIPS PROVIDE MORE DISTANCE FROM SUBORDINATES
- BUREAUCRATIC

SOURCE

SHAFRITZ, J. M., OTT, J. S., & JANG, Y. S. (2011). *CLASSICS OF ORGANIZATION THEORY* (7TH ED.). BOSTON, MA: WADSWORTH CENGAGE LEARNING.

Measuring Safety Climate in Aviation: A review and recommendations for the future

Paul O’Connor, Angela O’Dea, Quinn Kennedy, Samuel E. Buttrey

Introduction:

- Organizations often asses safety performance on the basis of lagging indicators
  - Lag, so show when the system has already failed
- Organizations that succeed in avoiding catastrophes in high risk environments are known as High Reliability Organizations (HROs)
- Few formally documented efforts have been made to assess safety culture within the aviation industry
  - Lately more have been done, and a literature review is presented

Literature Review:

- The article reviews 23 studies
  - 48% were peer review articles
  - 35% theses
  - 13% reports
  - 4% conference proceedings
- A total of 48% of the studies were conducted with US military operations
  - 35% maintainers
  - 30% pilots
  - 9% ground handling
  - 4% cabin crew
  - 17% mixture of occupational groups

Summary of studies separated by occupational group

- Commercial Pilots
  - Three factor model
    - Management commitment and communication
    - Safety training and equipment
    - Maintenance
  - Gibbons et al. (2006) developed a questionnaire designed to assess safety culture within the context of airline flight operations
- Cabin Staff
  - 23 item questionnaire to assess safety climate attitudes
    - High management commitment to safety was significantly related to high crewmember participation in safety

Summary of studies separated by occupational group

- Ground Handlers
  - 40 item safety climate questionnaire
  - Safety climate agreed with expert analysis of company safety practices
- Aviation Maintainers
  - 622 responses that determined that a strong subculture existed that influenced safety climate (found across 4 companies)
- Air Traffic Controllers
  - Designed study around three themes
    - Priority of safety, involvement in safety, and learning from safety
    - Results incomplete

Summary of studies separated by occupational group

- Combined aviation occupational groups
  - 399 personnel evaluated
    - Significant differences were found between flight operations, maintenance, and “other” personnel with regard to the factors of pride in company, safety opinions, and supervisor trust
- US Naval Aviation
  - Command Safety Assessment Survey (CSAS)
  - Maintenance Climate Assessment Survey (MCAS)
    - Based on Model of Organizational Safety effectiveness (MOSE)

Summary of studies separated by occupational group

- MOSE
    - Process auditing – a system of ongoing checks to monitor hazardous conditions.
    - Reward system – expected social compensation or disciplinary action to reinforce or correct behavior.
    - Quality assurance – policies and procedures that promote high quality performance.
    - Risk management – how the organization perceives risk and takes corrective action.
    - Command and control – policies, procedures, and communication processes used to mitigate risk.
        - MCAS useses a sixth MOSE
            - Communication/functional relationships – environment where information is freely exchanged

Summary of studies separated by occupational group

- US Naval Aviators
  - A two or more factor solution resulted in a better fit to the theoretically derived factors than a single factor method
  - This information was compared to Healthcare workers (overlapping items (partially))
    - Hospital workers reported 12 times more adverse safety issues
      - Aviators then had a more positive safety climate
  - Positive improvement from minor to serious minor events
    - Often caused a positive safety improvement
      - Occasionally created a negative effect if perceived not fixed (the problem being addressed)

Summary of studies separated by occupational group

- US Naval Aviation Maintainers
  - All the data pointed to one principal component
    - All six MOSEs were represented in this principal component
  - Researchers determined that the MCAS was sound based off the MOSEs falling into one Principal component
  - The single principle component causes issues, and may be attributed to the fact that all questions were answered positively with a mean range between 3.17 and 4.37 (out of 5)

Assessing construct validity

- Construct validity is concerned with the extent to which the questionnaire measures the underlying theoretical construct it intends to measure
- All the themes listed:
  - Management/Supervision - included in every aviation safety climate questionnaire, and has been found in about 75 % of other safety climate research
  - Safety systems - found in about ⅔ of safety climate studies
  - Procedures/rule - one of the most frequently occuring themes in safety climate research

Assessing construct validity

- Training/Education – workers’ perceptions of the significance of safety training were the most important safety climate factor predicting actual safety behavior
- Risk – higher threat perception is positively related to safe behaviors
- Communication – 4 safety questionnaires had factors concerned with communication
- Resources – 3 safety climate questionnaires had factors that were categorized as resources
- Operations personnel – concerned with the commitment of the operations personnel to safety

Assessing discriminante validity

- In addition to establishing the construct validity of a safety climate questionnaire, it is also necessary to determine the discriminate validity. If the tool is unable to differentiate between organizations or personnel with different levels of safety performance, then it is of limited usefulness
- The discriminate validity can be assessed by correlating the data from the questionnaire with a criterion variable such as accidents, or other safety-related behavior (Guldenmund, 2007)

Recommendations

- It is recommended that rather than constructing more aviation safety climate questionnaires, researchers (and sponsors) should focus on establishing the discriminate validity of existing measures by correlating safety climate with other measures of safety performance (O'Connor et. al. 2011)
- The questionnaires are comprehensive enough, but need to be determined effective or not based on observed experiences
  - Essentially summed up as “Does this mean less accidents” (Greg, 2020)

Reference

- O'Connor, P., O'Dea, A., Kennedy, Q., & Buttrey, S. E. (2011). Measuring Safety Climate in Aviation: A Review and Recommendations for the Future. *Safety Science, 49*, 128-138. https://blackboard.slu.edu/webapps/blackboard/execute/displayLearningUnit?course_id=_209299_1&content_id=_4193136_1&framesetWrapped=true

- What I look like flying --->

Context: Recent trends in voluntary reporting data from several airlines has created concern amongst the Federal Aviation Administration (FAA) that the organizational culture at these airlines is not conducive to safe operations. Discussions between the corporate leadership of two of these airlines and FAA representatives have resulted in the willingness of these two airlines to undergo an organizational assessment aimed at evaluating their organizational culture and providing recommendations for improvement.

Your organizational consulting firm has been hired by the FAA to examine the safety culture at these two airlines in order to assess the current operating culture and to provide recommendations that may be voluntarily implemented to improve their organizational culture. This meeting is an initial meeting with the FAA representatives to provide a preliminary assessment (based on the supplied voluntary reporting data) of the organizational culture of these airlines and to develop a plan of action for further study of the organizational culture of these two airlines. In order to facilitate the study, your consulting group has been divided into two teams, each tasked with examining one of the participating airlines. The full report narrative and a synopsis (summary) of each report have been provided for related reports occurring over the past 10 years.

Airline "X": Airline "X" is a regional (commuter) airline operating 30, 50 and 70 seat regional jets primarily on short to medium length flights within the continental United States. Employees of this airline are generally newer entrants into the industry with the intent of building experience that will lead to more stable, better paying positions with a major airline. Airline "X" operates approximately 615,000 flights per year and has 10,467 employees (3,200 pilots).

Assignment: Using this message board thread as your discussion mechanism, develop a document or presentation that:

- Provides a preliminary assessment of the airline's culture grounded in the voluntary report narratives
- Lists any concerns associated with the airline's current organizational culture
- Lists potential areas of inquiry to facilitate further organizational study of the airline
- Provides a preliminary plan of action to facilitate further study of the airline
- Addresses any concerns or questions from the FAA representatives who are present at the preliminary briefing

Airline "X" Voluntary Report Narratives (filtered for 'Company Policy')

ACN: 992723

Narrative: 1

I am a pilot for a large <edit>regional<edit> operator. The [company's] fatigue inducing schedules are almost impossible to manage. I was forced to call in fatigued this time because two days in a row my scheduled duty start time forced me to wake up at 0300 one day and 0200 the next. These times reflect the time zone where I live.

The workload is not the issue. The problem is that I am constantly being shifted back and forth on duty start times and it creates a constant state of fatigue while I am on the road. There are no controls or safeguards for this at the scheduling level and it is up to the pilot to call in fatigued. The company fatigue policy is supposed to be a no questions asked policy, yet I have been called into Headquarters and asked why I have so many fatigue calls. This causes me to be uneasy about calling in fatigued and to push myself when I should not. Another issue I see a lot are very early duty start times--often between the 0300-0500 hour--with six to eight hours of sitting at the airport. After these very early wake ups and extensive sits I am often expected to fly another five or six hours. This causes fatigue.

Management's practice of calling people into Headquarters about fatigue calls has also created a social stigma among the pilot group where, if one deviates from the statistical average of fatigue calls, he/she is deemed an "abuser" of the policy. Because our company is an unscheduled operation and pilots cannot bid trips ahead of time, Schedulers often give certain pilots "preferential treatment" with their schedules thereby skewing the fatigue numbers. This helps the company justify that only a few "abuse" the fatigue policy by giving just a few the most "fatiguing" schedules.

Synopsis

An HS-125 Captain for a <edit>regional<edit> operator alleged coercion of some pilots to fly fatiguing schedules and preferential treatment for others to avoid the same, resulting in flight crews being compelled to fly when not fit to do so.

ACN: 974877

Narrative: 1

Initially refused aircraft due to left Engine degraded Message written up by previous crew and all Maintenance did was reset FADEC, ops check good. Looking in Aircraft Maintenance Log (AML) there were 3 write ups in less than 2 weeks for same issue. We were to be flying into an airport where there were thunderstorms and bad weather, I was tired from scheduled reduced rest and haven gotten in late the previous night for another aircraft refusal and maintenance issues. I was concerned that Maintenance is simply resetting systems and not actually fixing the problems. After speaking with Chief pilot I accepted the aircraft and we took off. About 45 min into flight we received a left engine temperature probe heat caution message and returned to the departure airport due to QRH stating we have to avoid Icing conditions. Upon further review of the AML books this aircraft has been written up 10 times for the Engine Degraded message. The T2 probe has been changed no less than 3 times, and still having repeat issues with this aircraft. Pull aircraft off line, and insist that Bombardier help troubleshoot the problem. I should have stuck to my guns and refused aircraft in the first place but due to my fatigue from short night, pressure placed upon me by company to get flight out this could have been avoided by just refusing aircraft. We severely inconvenienced our passengers and our code share partner by running flight 3 hours late after a return to the field and a aircraft swap, then the passengers on the return flight were inconvenienced all for this re occurring problem.

Synopsis

A CRJ700 engine T2 inlet probe heat failed in flight so the crew returned to the departure airport because destination weather included icing. The probe had been changed three previous times.

ACN: 972489

Narrative: 1

The last four days of flying have consisted of multiple 10 plus hour duty days with just slightly more than minimum rest each night. The previous day, before the trip in question, we had flown a transcon from ZZZ3 to ZZZ with a fuel stop in ZZZ4. We arrived into ZZZ around 1700 local time and entered rest at 1830 local time. After being on the west coast for the last two days my body clock was on west coast time and I was unable to fall asleep until about 01:00. This would have been fine since the trip we were scheduled for did not depart until the next day around 14:00.

At 5:24am I was awakened by my company for a pop-up trip scheduled to leave in 2 hours. The trip is from ZZZ-ZZZ1-ZZZ2, then sit in ZZZ2 for a sliding departure back to ZZZ1 later. Needless to say this is an unsafe situation since my body has not had even one night to acclimate to the Eastern Time zone. Essentially my body thinks it is 02:24. The scheduled duty of this pop-up trip is to end at 1730 Eastern Time, if flown as scheduled. Most likely this won't happen because the passenger didn't know when he would return. A 12 hour plus duty day for a crew that has not been sufficiently rested after doing a transcon flight across 3 time zones the day before.

During our preflight briefing, the Captain and I come to the conclusion that we will not be able to accomplish this trip as scheduled and that flying any trips after arriving in ZZZ2 would not be safe as we will definitely be fatigued. The Captain relayed this information to flight management and it appeared on the schedule that we will end in ZZZ2. When we arrive in ZZZ2, the flight follower is still expecting us to continue flying later in the day. Obviously the communication chain was broken. A crew should have been scrambled when we first told them of this impending fatigue issue early in the morning.

The company proceeded to scramble another crew to drive up to ZZZ2 to fly our plane for the rest of this trip. The crew planner then tells us that we will be driving to their original airport this afternoon to crew the other plane. We say that is unacceptable as we are fatigued and driving for another 2 to 2.5 hours is not safe for us either. The prudent thing for us would be to be released to the hotel so we could start our rest. However, we are instructed by our chief pilot to stay on duty and wait for the crew from Naples or the passengers to arrive, whichever occurs first to provide "customer service".

As I write this report I am still on duty, extremely exhausted and fatigued, and my company is unwilling to release me to rest. I feel that once a crew declares they are fatigued, the company should recognize that and release the crew to rest.

Having us "hang out" at the airport now is doing nothing more than increasing my fatigue and frustration level. I should be getting rest in preparation for my next duty assignment.

Crew planning also must start looking back to see if situations like flying eastbound 3 time zones the day before, previously flying multiple long duty days, and then putting a pop up on a crew at 02:24 body clock time would really be safe. Just because it is legal does not make it safe.

Synopsis

A <edit>regional<edit> flight crew expressed concern about rescheduling practices at their company that failed to consider the need for essential rest prior to flights.

ACN: 949130

Narrative: 1

On the sixth consecutive day at work my company wanted me to fly seven legs. I finished the day with seven hours forty eight minutes block to block hours and almost fourteen hours on duty. It is as if recent accidents in which fatigue was a contributing factor had never happened.

My First Officer on the last two legs was brand new. He was a good pilot, but hadn't quite put all the pieces of the puzzle together yet. He had to be watched a lot. I found myself too tired to say everything that needed to be said to get him flying the aircraft accurately. Sometimes we weren't quite on the airspeed we were assigned. Changes to heading and course were not as prompt or as accurate as they should have been.

Driving pilots to the limits of the regulations and placing all the responsibility on them to call it quits is not a safety-minded practice. This, combined with the fact that our aging aircraft are falling apart because we are hemorrhaging mechanics who know them tells me that management is lying when they say safety is number one. Fiduciary responsibility to stockholders and labor relations brinksmanship have supplanted safety at our airline. Clearly, management is gambling that they can make it through a "rough patch" without crashing anything.

So, what do I think needs to be accomplished to prevent this from occurring again? Obviously, a fatal crash where scheduling asked the pilot to fly something appalling and the pilot chose to try it to the point of exhaustion, or where inexperienced mechanics messed something up to the point where the crew could not recover, or both. In the past two months I've had two landing gear malfunctions. I've heard of several others. My money is not on the company, or the stockholders.

Synopsis

A CRJ-200 Captain expressed his dismay about his airline's flight crew scheduling practices that, he feels, do not take adequate note of flight crew fatigue issues. He also addressed concerns about aircraft maintenance practices.

ACN: 946312

Narrative: 1

I called in fatigued yesterday and was dealt with in a manner I would call inappropriate by an Assistant Chief Pilot. He called inquiring as to the nature of the fatigue call. I told him my reasons which he deemed unsatisfactory and proceeded to lecture me in a manner which appeared to me as condescending and threatening in nature. I was told, "This is your second call in a week and it looks awfully suspicious...maybe you better get in shape or quit and find yourself a cushier job." I'm 6'3" and weigh 200 LBS. I went to the doctor for a routine physical 3 weeks ago and was told I'm perfectly healthy if it matters. I inadvertently called him "dude" which then prompted him to tell me, "Listen son, I'll talk to you any way I see fit." From there I asked if I was being pressured into flying fatigued to which he responded, "No, but this looks like a trend and maybe you should get into shape or something. I'm tired of you pilots meandering around." I get regular exercise, spend most of my days off outside and eat as healthy as one can with our work schedule (no soda, no coffee, no tobacco, minimal fried foods). I then asked if the conversation was being recorded. He said, "What, do you want a copy? Sure, now it's being recorded." I ended the conversation before I said something I'd regret and before I hung up was told, "I look forward to reading your report." These reports are anonymous in nature and identities are redacted so I'm not sure how he plans on finding mine. If it was recorded and you want to hear the conversation I'm sure he will oblige. I'd actually like a copy as well for my records and for the FAA. He has done this to multiple other pilots as well as sent "unacceptable attendance" emails and letters to crew members violating the attendance policy which requires a verbal notice prior to a written one.

From talking to pilots in the crew room, they've shown me letters saying that their attendance was "at an unacceptable level and further sick calls would result in disciplinary action." This creates an atmosphere where crew members will jeopardize the health of their crew and passengers to avoid being punished for doing the right thing. This is not only punitive but extremely unsafe. I do not take pride in being unable to complete my schedule today. However, I cannot be held responsible for chronic poor staffing and the canceled flights associated with it. Anyone can look back over the past 6 years and see my record here. My record speaks for itself. As a reserve pilot this month I will credit around 93 hours. This is absurd. My line next month has me flying 93 hours with 12 days off. I'm unable to drop flying due to lack of reserves. No reserves [means] abused reserves are now forced to cover open time as well as any call offs by being reassigned. This amount of work every single month with minimal time off between trips is a perfect recipe for chronic fatigue. Last Thursday I was reassigned into flying 9 legs in and out of the hub. I barely accomplished this and was therefore unfit to fly the 6 legs they scheduled me for barely 12 hours later. This resulted in 4 canceled flights for lack of crew. Weather was blamed, but no Captain was put on those flights. Last night a hockey team saw fit to wake my First Officer and I in the middle of the night. I maybe had 4 hours of sleep and flew 5 legs today in 9 hours of duty. Looking back, on the last leg I was yawning the entire flight and had to keep myself from nodding off in flight. After being notified of 2 more legs upon arrival I called off due to being too exhausted. Apparently this is unacceptable.

If one person here makes a decision that could potentially save lives and is threatened, the likelihood they will continue to do what is required to remain safe diminishes. If I valued anything my Chief Pilot had to say, I may now feel my job could be on the line should I be unfit for duty in the future. Is this the kind of message you want to spread throughout the company? Continuing to fly when unfit could prove extremely detrimental when you consider the airspace in which I'm operating on a daily basis. ZZZ is among the busiest airspace in the country. It's an unforgiving airspace where mistakes will get you killed or seriously hurt. Contrary to popular belief, I am not a robot. Should something arise where prior rest affects fitness for duty, I should not have to fear punitive action from the company should I do what is necessary and required per the FAA. Threats and intimidation will do nothing but breed contempt and ultimately create more incidents. I'm positive nobody at this company wants such a thing to happen again.

Actions speak louder than words, and perception is reality. The Management at this company is at a fork in the road. They've created this mess through under staffing and poking the pilot group with sharp sticks long enough that morale is at an all time low. Orders flow from the top down. I'm inclined to believe that Management is more than happy with the status quo. The CEO stated last September that the culture of this company would change in 6 months time; it has not. In fact, it is worse. Flight crews are overworked and unable to take time off without fear of retaliation from their direct supervisors. With this company I've missed birthdays, weddings, funerals, anniversaries, etc., and have done so because my work schedule dictated that I be flying and not present for family events. I've tried dropping trips, but to no avail due to lack of personnel. So I take personal offense when some middle Manager calls me out on my personal telephone and lectures me on my attendance. The only way for events like this to be prevented is by new personnel. The current people we have working at headquarters are too set in their ways. They do whatever they want without fear of reprisal and that is unacceptable. Actions have consequences. Just because someone is your direct Supervisor does not mean that they can tell you whatever they wish and get away with it, especially in a tone that is demeaning and unprofessional. I will not be intimidated. Neither should anyone else at this company, especially for something as sensitive as fatigue.

Synopsis

Air carrier Captain describes the events surrounding a fatigue call and his reprimand by an Assistant Chief Pilot.

ACN: 941320

Narrative: 1

I started my day at XA:30 to prepare for and drove to the airport to begin a 2-day trip at XD:54. The first round trip, ZZZ-ZZZ1-ZZZ, went nearly as scheduled and we began our 3 hour scheduled sit at XJ:24. The second half of our day was to be a XM:30 deadhead ZZZ-ZZZ2 then work a flight ZZZ2-ZZZ3. Due to weather delays our deadhead flight had been delayed with an estimated departure of XQ:00. At approximately XO:10 I felt my fitness for duty was compromised due to fatigue and notified crew scheduling. After being quickly told they would adjust my schedule with no further questions asked regarding my fatigue or the circumstances I was placed on hold for a considerable amount of time.

When the crew scheduler returned I was told I would have a XB:25 report the following morning. I explained that, based on my fatigue, I didn't feel that would be enough rest. I suggested a report time from XD:30 or later would be adequate. I was told by the crew scheduler that per company policy and FARs that they were required to give me only 10 hours of rest and that my choices would be to show up at XB:25 or to refuse the trip. This option felt like an intimidation tactic to pressure me into accepting a schedule for which I felt I was unfit. I reiterated a few times that based on my assessment of my fatigue level that a XD:30 report time would be the earliest I would feel safe accepting. I was again told to either accept the XB:25 report or talk to the Chief Pilot.

I asked to talk to the Chief Pilot and was told I was being marked as refusing to accept the trip then was transferred to the Chief Pilot's voicemail. At this time I have received no response from the Chief Pilot.

While the original schedule was demanding with its hours (XJ:21 duty for day 1) it was not unsafe in my opinion if it were to operate on time. With the weather delay increasing the airport sit time from 3 hours to 6+ and with no comfortable and quiet place to rest became too fatiguing. Weather delays are unpredictable and the crew scheduler's refusal to accept my fatigue call and the intimidating statements that I would be refusing the trip if I didn't accept the early report time were unsafe. I am the best judge of my fitness for duty.

Synopsis

An air carrier Captain expressed his displeasure at attempts by Crew Scheduling and Flight Operations Management to coerce him to fly despite lengthy weather delays that had increased their originally schedule 13 hour plus day by at least three hours.

ACN: 921785

Narrative: 1

Let me begin by saying the fatigue call is the last call in my playbook. I have muscled through tough rest issues in the past and I consider the fatigue call a last resort. I have been employed here for over twelve and a half years and have called in with fatigue once before this incident. I certainly didn't want to spend another evening away from home and would have much rather been curled up on the couch with my fiancÃ©e than alone in a hotel. However, in this case, I felt it was in the best interest of our passengers' safety to remove myself from this flight. The root of my fatigue stems from our original schedule. I was on a 3 day trip that began in the afternoon. The first day was easy - just 2 legs. However, day 2 was quite the opposite - scheduled for 6 legs and over 10 hours of duty beginning midmorning and concluding ten and a half hours later. That schedule was amended as weather in the disrupted our original pairing and we suffered a cancellation after a tarmac delay of nearly 2 hours. Additionally, the weather that day contributed to my fatigue as turbulence, windshear and low visibility created challenging flying conditions from the moment we started until we finished our day ten hours and forty five minutes later.

Day 3 started after a short overnight and was scheduled to be over a nine hour duty day. Our schedule essentially went from working an evening shift on the first day to an early morning shift on day 3 which always does a number on my internal clock. Needless to say, I was tired regardless of how today transpired. Also, I was on the tail end of a nasty cold that I received over the Thanksgiving holiday and was feeling the lingering effects (sinus pressure, congestion, cough, etc) throughout the week. Day 3 Events: It started early, but went well - an uneventful first two flights. After we deplaned on the second leg for an aircraft change, we were notified that the plane we were in had been swapped and would now be going to back to the previous destination. Our crew was to remain at the current station and wait on an aircraft delayed for maintenance on the ground up north. Our scheduled quickly changed, that flight was canceled for maintenance and we were reassigned to deadhead on the plane we just brought in. Our layover there was also cut short (less than an hour after running from the E concourse to our flight out of terminal B). Thus, there wasn't enough time to catch our breath, let alone eat. We departed on time and landed at our second to last destination about 15 minutes after we were scheduled to depart to our base for checkout. I quickly gathered my things and made a bee line to our aircraft to operate the last flight. I retrieved the paperwork and then proceeded to our aircraft. I was immediately greeted by an FAA Inspector. He notified me that the plane was down for maintenance and our technicians had the aircraft logbook in their possession. So, I was unclear of the actual write-ups at this point.

After settling in and stowing my bags, I called Dispatch and Maintenance Control to get the extent of the delay. I was told it was delayed indefinitely and the Technicians would be out in about 45 minutes (they were searching for the necessary parts to repair the discrepancy). Shortly after I got off the phone, our Maintenance Technicians arrived and I stepped outside to ask them for a status update. They told me they had been working on several issues brought up by this Inspector and they were unsure on whether they could fix the problem. They started by replacing some missing/displaced screws along the wing fairing, but were also notified there was a loose screw on the lower side of the flap panel. They were unclear on whether they could fix the problem and got back into their truck and disappeared. I repeatedly called Dispatch and Maintenance Control trying to figure out was going on, but to no avail. They keep saying give us another 20 minutes. After an hour of this back and forth, the fatigue of this trip was becoming quite evident - I could barely keep my eyes open awaiting the next update. Hoping it would help, I finally got something to eat, but that only contributed to my exhaustion. My contact lenses were burning and I was growing equally tired and frustrated with the situation. There was no progress throughout the duration of this delay and every time we moved forward, we were greeted by something that forced us to take a step back. For example, while we were waiting for the Technicians to repair the flap panel, the Inspector commented that our QRH binder should be "looked at" because the rivet on the binder was showing some wear.

I made the mistake of saying to my First Officer (in the presence of the FAA Inspector) that I wouldn't be awake by the time all of these issues were resolved. So, after two flights, two deadheads, countless running around, two and half hours of waiting and absolutely no end in sight, I made the decision to call in fatigued. I was exhausted and in the interest of safety, I felt I should remove myself from this trip. I know that I would not have been able to perform my duties at the standard I've set for myself, this airline and the meticulous FAA Inspector awaiting to ride in my jumpseat. My request in this situation (and any others like it) would be a thorough examination of any reassignments after a shorter rest period (i.e. >12 hours). When they decided to cancel our first flight, they should have looked down the line and determined whether we could reasonably be expected to finish our trip by our originally scheduled release time. Instead, they created a new schedule with a negative 15 minute turn and drastically reduced block time for our flight home (34 minutes less than the original block time) just to show us arriving on time at our final destination. Additionally, this was done with the knowledge that our aircraft had been removed from service and we wouldn't be able to leave the next to last station even if we had arrived on time. I understand the need to complete flights and run an on time operation, but not at the expense of the health and well being of the flight crew because now it becomes a blatant disregard for the safety of that same operation. We are expected to act and present ourselves as professionals, but we are not treated with that same courtesy in these situations. It would be tough to imagine other airline crews being forced to complete the same schedule I just described above, so why is it acceptable for a regional airline crew?

Synopsis

An ERJ Captain called in fatigued on day three of a trip following numerous delays for aircraft maintenance and weather. Crew Scheduling knowingly changed layover periods and altered flight times.

ACN: 921727

Narrative: 1

On day three of a five day trip I completed a 14 hour duty period. Following that duty period I was given 9:10 minutes of rest with a pre-dawn report time for day four. On day four I was extended by scheduling into another relatively long duty day (9:30 hours). About seven hours into that duty day I was feeling the effects of fatigue. For example, I had to ask the Captain if we had completed checklists and get verification that we were cleared to land. After completing that flight, I called Crew Scheduling and had myself removed from any further duties that day.

I had long duty days on the first three days of my trip. By day three I was already getting worn out. Completing a 14 hour day followed by a short rest period with an early show was not an acceptable/safe assignment, especially with another long day tacked on to day four. After I called in fatigued I was docked pay and a "red tag" was put on my schedule by the company (A mild deterrent technique intended to scare/dissuade crews from calling in fatigued).

According to scheduling I was legal to work 16 hours. I feel like I was setup for failure in this situation. Because I was given a non-human (computer) schedule I was docked pay and will now receive a call from a management pilot to have the "red tag" removed from my line. Makes me wonder how serious the company is about safety.

Narrative: 2

Removed from trip due to excessive fatigue. Scheduled for six days on reserve with multiple swaps from AM to PM to AM, multiple days over 12 hours of duty and seven flights after only an 8 hour overnight.

Synopsis

A Q-400 flight crew refused further assignments due to fatigue during the fourth day of a five day flight sequence. The company applied modest disciplinary actions and docked them pay for the flying they were unable to perform due to feeling unfit to fly.

ACN: 902322

Narrative: 1

I was working a CRJ-200 aircraft August 2010 in the APU bay area, on the APU and other servicing routines for a Service Check and through maintenance for this aircraft. I had oil and fuel spillage in the [APU] bay area to clean up and had serviced the oil tank. I closed the cap on the oil tank and apparently thought the cap was on. I was bounced around other aircraft that night and had to come back to this aircraft to finish Leak and Run Checks which were good on the APU assembly. The aircraft had to go to the Run-Up [area] for engine runs and I was the only one qualified to Taxi and Run this aircraft. I felt that I was rushed to get aircraft out on time, delivered aircraft back to gate and went back to hangar to finish paperwork for this aircraft.

Then I got a call to [to the] gate to Inspect oil servicing tank lid for security and found it loose, secured lid and found a rag behind the tank. Went to talk to the [Flight] Crew and told then I had secured the lid and found the rag. No documentation was noted in the Logbook, so I went back to the hangar and nothing was said. Too many projects started at one time, need to stay focused on task at hand. Jumping around to too many aircraft due to shortage of manpower. Feel that I am rushed under pressure due to gate times. Need more people to become more Taxi/Run qualified.

Synopsis

Mechanic feeling rushed and under pressure to get their aircraft to the gate for on-time departures, failed to properly secure an APU oil cap. Mechanic noted the difficulty working too many Maintenance Tasks on too many aircraft due to lack of manpower, fatigue and too few qualified Taxi/Run mechanics for the workload expected to be accomplished.

ACN: 893464

Narrative: 1

[I] started a 3 day trip with Day 1 a XA45 report; I dutied out on Day 3 at XW13. I was supposed to start another 3 day pairing on Day 3 at XI50. This legally gave me 10hrs 37min in base to get the "rest" I am required to have. Basically this is 5 consecutive duty days with a 10hr 37min sit in base in the middle of the day to get my rest.

The first day of the trip concluded with 7 legs and an arrival time at the layover station at XQ06 which was 2hrs and 26min late. By the time we reached the hotel and went to bed it was XR00. The hotel here is perfectly placed next to a cereal factory and the railroad yard. Needless to say, trains at XU30am are not conducive to those trying to sleep. Day 2 was 4 legs with a reduced rest at the layover. We arrived at Base ahead of schedule and I concluded that trip at XW13.

After the previous events and lack of sleep the previous 2 nights I felt not only fatigued but also that I could not get the rest I needed due to the time and day and would be unfit to start my other 3 day trip that evening. I contacted scheduling and informed them I was fatigued and was told I could not call fatigued by our Chief Pilot and that he would mark me as unavailable and take me off the whole trip. I informed him that I didn't feel fit to start the trip but would like to pick up the remainder the next day as it came through Base. I explained that I hadn't received adequate sleep and was told that I had my 10hrs in base and basically that was sufficient and he would not treat this as a fatigued call.

In my opinion this is a violation of the "ask no question fatigue policy." Who has the right to determine if I am fit for duty 10 hours in base or not? Can you sleep in the middle of the day at a hotel? I can't. NO ONE except for myself can determine my condition to start a duty period.

First there should not be two pairings in the same day assigned to any pilot. NO ONE, including management, has the right to make the decision for a crew member who feels unfit for duty. Marking this as an "Unavailable" is a threat or strike against me and should be removed and marked fatigued. MOVE the bad layover hotel to another location. Get rid of 7 leg days and trips with Reduced Rest built into every pairing. Everyone knows the delays that Base experiences. This only adds to the stress and workload of a 7 leg day or a reduced rest overnight. Why not have other crews take a flight if there will be a significant delay to relieve another crew?

Synopsis

A commuter air carrier pilot alleges company coercion regarding fatigue-inducing flight crew scheduling by his airline.

ACN: 883803

Narrative: 1

During departure roll, at approximately 90 KTS, I noticed what appeared to be environmental smoke in the cockpit. We aborted the take-off and performed memory items for smoke in the cockpit and notified ATC to roll the fire department as we had smoke in the cockpit. The smoke immediately dissipated as we cleared the runway into the terminal ramp. The operations personal were at the gate immediately and we returned and deplaned the passengers quickly, leaving all personal belongings in the aircraft. I spoke with the Flight Attendant on the short taxi to the gate and he informed me that very little, if any, smoke had made it into the passenger cabin. The fire department assessed the aircraft and found no evidence of a fire. Dispatch and Maintenance Control were notified and I left a message with the Chief Pilot regarding the event.

Maintenance Control then requested we run the aircraft to try to isolate the problem. The first run up at idle resulted in no smoke present in the aircraft. We then took the aircraft to a run up area on the field to perform a high power check on the bleed and pack system. Upon our first attempt at configuring bleed 1 and pack 1 on, we noticed smoke in the cockpit. Again, we performed memory items, checklists, and returned to the gate. I then notified Maintenance Control of the results on the run up and they were quick to have an answer to the problem, defer pack 1 and operate the flight.

I was very uneasy with the quick decision after such a problematic event and I did not feel like the aircraft was safe to operate with passengers on board. The Contract Maintenance individual and I both agreed that before any passengers board the aircraft we should check the #2 bleed and pack system. When I notified Maintenance Control of my intentions to do another run up before attempting a revenue flight they seemed very irritated. They were under the impression that I had already tested all systems and isolated it to pack #1. I calmly explained that after smoke had entered the aircraft once again, we figured the test was over and the aircraft was out of service. The First Officer and I agreed to a third engine run up to test the #2 system. With the #2 bleed feeding the #2 pack, no smoke was present. With the #1 bleed providing air to the #2 pack we almost immediately had smoke present in the passenger cabin. We again performed memory items, checklist, and returned to the gate.

It was now apparent that the issue was in the #1 engine and associated bleed system. I, again, contacted Maintenance Control and they were quick to tell me they would just defer the entire #1 system. I told Maintenance Control that they could handle the corrective action with Contract Maintenance and I was not going to defer the system on the phone with him. I then spoke with my First Officer and voiced my concerns about not only the aircraft, but the fact we inhaled smoke three times and I did not feel fit to fly. He agreed and we both placed fatigue calls to Scheduling and notified Dispatch of the aircraft status. The flight was then canceled and we went to the hotel for roughly 10 hours of rest.

Overall, I feel this event was handled extremely well. The only suggestions I have for improvement is on the part of Maintenance Control. I fully understand they are under pressure to get an aircraft back in service, but it should never involve mocking or pushing a crew into taking an unsafe airplane with passengers on a flight. I was amazed that any person, Maintenance especially, would be so eager to get passengers back on an aircraft that obviously just had a system malfunction that could result in serious aircraft damage and risk the safety of passengers. It put me in a defensive situation where I had to be the last line of defense in refusing to operate an unsafe aircraft. My goal, like all Captains, is the make 100% sure the aircraft is safe to operate with passengers and it was clear through this experience that I had more resistance then I did help in achieving that goal.

Synopsis

Following a rejected takeoff due to smoke in the cockpit, an ERJ Captain assisted Maintenance Control to evaluate and resolve the source. The outcome of the diagnosis effort was less than harmonious and the flight crew felt physiologically incapable of continuing and the flight was ultimately canceled.

ACN: 853767

Narrative: 1

A CRJ-700 left on a revenue flight after being returned to service after a Heavy "C" check at ZZZ Maintenance Base. Shortly after take off, an in-flight-emergency was declared when the landing gear failed to retract. After a brief investigation it was discovered that the Nose Landing Gear (NLG) Weight-on-Wheels sensors were not adjusted properly. The installation of the NLG Upper Torque link was the most recent maintenance performed on the nose gear, and I was the Technician responsible for this maintenance.

The Adjustment/Test of the NLG Weight on Wheels sensors was not performed, Quality Control did not catch it, and the problem was not discovered until the aircraft was airborne with passengers onboard. I believe Fatigue was a key factor in this incident as well as previous Quality escapes caused by mistakes made by Technicians at ZZZ, including a flap torque tube that was not installed correctly and fell off the spline shaft on a revenue flight, and an Elevator Control cable that was improperly installed and not seated on a pulley.

In addition to Quality escapes, there are problems with accidents, injuries, and rework at ZZZ Repair Base. Many employees, including myself, have voiced our concerns to Management regarding the 12 1/2 hour shifts we work at ZZZ. We feel that the duration of these shifts is unnecessary, and despite being "efficient" and "cost effective" from the company's perspective, I believe these shifts are unsafe for employees as well as the crew and passengers that fly on these aircraft everyday.

I do not feel that the company is taking our concerns seriously, and I sincerely hope a catastrophic event does not occur before the shifts are addressed. I would like to remain completely anonymous in this matter. ZZZ Repair claims that all employees are encouraged to bring safety issues to their attention without fear of reprisal. Unfortunately, I honestly feel that expressing my concerns could put my employment in jeopardy.

Callback: 1

Reporter stated they have only two shifts in a twenty-four clock. Each shift is 12 hours plus thirty minutes for lunch. He just recently got on the Day shift schedule, when the air turn back occurred on a CRJ-700 for a landing gear failure to retract. The Job Card he followed to install the Nose Gear Upper Torque link was handed down to a midnight shift Inspector.

Reporter stated he missed the last step of the Job Card that refers him to another Maintenance Manual Chapter for the Adjustment and Test of the Weight on Wheels (WOW) Proximity Sensor located on the Nose Gear strut. The Midnight Inspector was not aware the Proximity Sensor Adjustment Test had not been accomplished on the Nose Gear, when he signed for the Security of the Proximity Sensor in the bracket.

Reporter stated the twelve and a half hour shifts are exhausting because they work them three days in a row, and Midnights are the worse around three to five AM. Midnight shift starts at 6:30 PM until 7:00 AM. Reporter stated his Repair station Management believes the twelve and a half hour shifts are the best situation for the company and doesn't associate the Maintenance errors that many of the Mechanics have been making with the long hours.

Synopsis

A Repair Station Mechanic reports that a CRJ-700 returned to field when the landing gear failed to retract after take-off. Aircraft had just come out of a Heavy "C" Check, and the Adjustment/Test of the Nose Landing Gear (NLG) "Weight on Wheels" (WOW) Proximity Sensors had not been accomplished.

ACN: 852257

Narrative: 1

In response to the FAA Administrator's request for to hear from pilots pressured to fly when sick or tired, I am a First Officer at a Regional Carrier. I called in fatigued a couple months ago and the company deducted a whole day worth of pay off my paycheck after I had already completed some flying that day. I feel that it is a punishment to deduct pay from a pilot when he calls in fatigued. I have a ton of sick time in my sick bank. The safety issue is that calling in fatigued now becomes a financial decision. It was also suggested to me that the fact that I called in fatigued 3 times in a short period of time would weigh heavily on me when the day comes that I make a mistake and am evaluated by management. My request to management to get my pay back from the fatigue call was denied twice. I can say with confidence that it is a FACT that pilots are less likely to call in fatigued at my airline because of the fear of losing part of their salary and because management will record it as an occurrence against you.

Synopsis

A Regional Airline First Officer reports having pay deducted after calling in fatigued.

ACN: 850938

Narrative: 1

I reported for a continuous duty overnight (CDO) knowing that I was not properly adjusted to the time change involved with doing a CDO that could potentially keep me up all night. I had just completed a four day trip the previous day that finished a little after XA00 and with traffic got to my home a little after XC00. I made supper and went to bed at XF00. My normal sleep routine after a four day trip especially is to sleep for at least ten hours as I am usually tired from different sleep cycles required from my schedule. I slept for ten hours waking up without an alarm clock at XP00 the next day. Late in the afternoon I attempted to get some sleep in preparation for the CDO. I was unable to sleep. I was used to being up during the day from the four day trip. I showed up to work on time and felt comfortable performing my flight duties that evening provided the flight went as planned with no delays. We got to the hotel a little after midnight and I immediately tried to get to sleep. I was unable due to not having time to wind down after the flight and anxious about the early wake up the next morning and only having 6 hrs on the ground to get to the hotel, wind down, sleep, get up and ready and back to the airport. Due to these things I only got about one and a half hours of broken sleep. I showed up at the airport fatigued, and completed my flight fatigued. This is not a schedule that I bid on. I normally avoid CDOs knowing that my internal clock does not adjust to them, especially after a four day trip immediately prior to the CDO. This event occurred because planning changed my schedule for integration and tacked on the CDO after my carry in trip as a way to make their schedule work the way they needed it to, not taking into account the human factors involved in trying to change a sleep pattern in a little over twenty four hours. You could also say that I felt pressure from the company not to call in fatigued because I had been told that the company was frustrated with the number of sick and fatigue calls it had been receiving after furloughs were announced. I did try to drop this pairing previous to reporting for it but it was denied due to lack of reserves. The company should take into account the human factors of changing the human body clock in short periods of time. Just because it's legal rest does not make it safe. It's difficult to change your sleep rhythm in two days off from 5 am shows to 2 pm shows which is done quite frequently. Almost impossible to switch to potentially up all night for a CDO especially after a four day.

Synopsis

An air carrier Captain reported feeling fatigued flying the return on a continuous duty overnight assignment after flying a four-day sequence.

ACN: 838932

Narrative: 1

I made numerous errors during the entire flight. I missed several radio calls on the ground and in-flight, missed several required callouts and did not react to errors made by the pilot flying. None of the errors caused a safety event. I am a reserve and have no choice in the trips I fly. This was the third in a row of continuous on duty all nighters. I had a total of less than 10 hours sleep on these trips. I tried to sleep during the day, but found it very difficult to get quality rest. I did not realize how tired I was during the first leg. I was too tired to make good decisions and my judgment was affected by fatigue. This resulted in numerous errors during the flight. If I had realized how tired I was, I would not have flown. I was still on reserve after these trips and was finally getting caught up on sleep when scheduling called at XA00 to transition me to short call reserve. They adjusted my 9 hour protected rest time to XB00 to XK00. It would have been nice to be called closer to XB00 to get another hour of sleep. Fortunately I was not called to fly. The next day my protected rest time was moved to XS00 to XD00. That meant that somehow I was to rest from XB00 to XK00 and be ready for duty with adequate rest starting at XK00 and then go back into rest at XS00 and ready for duty with adequate rest at XD00 the next day. Again, I was not called to fly. I was so fatigued by the end of this period that I would have been unsafe to drive to the airport. The environment at our company is toxic enough without adding scheduling induced fatigue. Stress is extremely high and most pilots show up to work already fatigued and often reach an even higher level of performance degradation as the work period progresses. I fly with first officers that are worried about feeding their kids and paying their mortgage. Throw in a couple of all nighters and protected rest times that change at the whim of schedulers and the crew can be fatigued to the max and probably not know it. Calling in fatigued is hard to do when you are too tired to realize you are fatigued and knowing your pay will be reduced. Protected rest times need to reflect what the pilot has done and if the pilot can reasonably be expected to get actual rest. All nighters should be done away with. I will never fly 3 in a row again. We need leadership that realizes how dangerous the environment is and will seek solutions instead of management that is only concerned with on time performance and how to get their next bonus.

Callback: 1

The reporter detailed specifics of his company's reserve system. He elaborated on the required protected rest times that can be altered based on the needs of the schedulers; the short and long call out systems which require a two or nine hour prior to departure assignment; the fact that pilots can be switched from long to short call out as necessary, etc. He also discussed the debilitating continuous on duty all nighter trip pairings that he finds particularly fatiguing and from which he is unable to quickly recover. He reiterated the stress induced by working at an airline that has an uncertain financial future and whose pilots are desperate to achieve some balance between work, compensation and a healthy family situation. He was not a happy man.

Synopsis

Air Carrier Captain reports extreme and ongoing fatigue exacerbated by airline reserve scheduling practices.

ACN: 836384

Narrative: 1

I have concern that the new "efficient" schedules at my air carrier are not meeting the physiological rest requirements of the human body and are creating a dangerous situation in which pilots are being required to fly fatigued and if scheduled for multi-day trips will actually put the pilot into an extreme sleep debt. It should be noted that since many pilots have been displaced from their original bases that they are now trying to group their flying together as much as possible in order to have time off to travel home. It is my concern that the trips, which have a rest period in a hotel in the middle of the day, which allows the company to schedule the pilot for two separate duty periods and avoid the maximum 15-hour duty day limit, make it impossible for the pilot to be adequately rested for both duty periods. The scenario is that a pilot goes to sleep early the night before in order to be adequately rested for an early morning departure. After accomplishing a full nights sleep and showing rested and ready for the AM departure the pilot fly's his assignment and ends up at a hotel at XA20L later that morning and is now again on "rest" for 8 hours, which resets his duty day clock. It is physiological impossible for that pilot to go back to sleep at this time because he has already had a full nights sleep the night before. The pilot is required to be back on duty 8-hours later and is required to fly for 5 hours. In my opinion there is no way the pilot can be rested adequately for both ends of this trip and will end up flying fatigued one end or the other. It is just unrealistic to expect a pilot to be able to turn his sleep pattern on and off like a switch. I recently performed this type of trip and found myself making several small errors and taking longer to accomplish the same tasks on the second half of this trip that I did effortlessly on the first half when I was well rested. I urge you to also consider the effect of performing this type of trip and then coming back to work to fly again for several more days with only 9 hours in base between flights. Currently our collective bargaining agreement does not provide for a minimum time at base upon returning from a trip so I have witnessed this type of trip being backed up to other flying with minimum rest. We all know that it takes time to get back and forth to the airport from wherever you sleep and to expect a pilot to perform his duties rested day after day with this type of flying is not safe. I urge you to look at the current trip list and to examine how these trips are being placed into pilots schedule and determine for yourself if you think this is a fatigue problem / accident waiting to happen. Although scheduling has complied with the FAR's they are creating a situation in which it is impossible for the human body to be rested and fit for flight. I believe that the FAR's regarding duty and flight time limitations were written to ensure a minimum level of rest was guaranteed; however, I believe the intent of those regulations have been disregarded in order to allow the airline to staff at a minimal level and still "comply" with rest requirements dictated by FAR's. The company has met their scheduling needs, but has not given any thought as to whether their pilots will truly be fit for flight based on the schedules they have created. This seems to have come about with our change in management and a new culture of making the airline more profitable. I believe this goal is being accomplished without regard to safety and the effects of fatigue on the safety of flight.

Synopsis

Air carrier First Officer reports "efficient" scheduling practices of his air carrier that are very fatiguing.

ACN: 783177

Narrative: 1

WE RPTED AT XA30 AND WERE SCHEDULED TO FINISH AT XJ50 IN ZZZ. OUR FIRST FLT TO ZZZ1 WAS UNEVENTFUL EXCEPT FOR LOW CEILINGS. ON THE RETURN FLT TO ZZZ2 ON TAXI OUT, WE EXPERIENCED A FLAPS FAIL. WE RETURNED TO THE GATE AND MAINT WAS CALLED AND INFORMED SCHEDULING WE WOULD NOT BE BACK TO ZZZ2 UNTIL AT LEAST XK00. WE BLOCKED IN TO ZZZ2 AT XK22. THE RAMP WANTED US TO DO A QUICK TURN IN 25-30 MINS AND GO TO ZZZ. I, AS WELL AS MY ENTIRE CREW, FELT WE WERE UNSAFE DUE TO FATIGUE TO FLY THIS LEG. WE WERE INFORMED THAT OUR RPT TIME IN THE MORNING WOULD BE ADJUSTED TO GIVE US 8 HRS AT REDUCED REST. I, AS WELL AS MY CREW, THOUGHT THIS WAS UNSAFE AS WELL. THEREFORE, DUE TO THE CIRCUMSTANCES AND OUR CURRENT LEVEL OF EXHAUSTION, I AND THE REST OF MY CREW CALLED IN FATIGUED. MY FLT ATTENDANT WAS GIVEN A HARD TIME ABOUT THIS AND WAS TRIED TO BE COERCED/GUILTED INTO DOING THE FLT BY THE SCHEDULING SUPVR, AND WAS TREATED RUDELY. SHE DID CALL IN FATIGUED AS WELL. MYSELF AND MY CREW WERE PUT IN A VERY BAD POS HERE. THE LOSS OF PAY (ALMOST 5 HRS) WAS DISCUSSED. INCONVENIENCE OF PAX AS WELL WAS CONSIDERED. HOWEVER, IN THE END WE ALL CHOSE SAFETY. IT SHOULD HAVE BEEN OBVIOUS TO ANY MGR THAT THIS WAS NOT A SAFE ASSIGNMENT AND THE FLT TO ZZZ SHOULD HAVE BEEN RE-CREWED WELL BEFORE WE EVEN GOT BACK TO ZZZ2. LACK OF CREWS IS NOT AN EXCUSE FOR COMPROMISING SAFETY! THIS AIRLINE MUST PUT SAFETY FIRST, IN PRACTICE, NOT JUST IN WORDS. I CANNOT STRESS ENOUGH HOW UNSAFE THIS ASSIGNMENT WOULD HAVE BEEN, NOT ONLY FOR THE ZZZ2-ZZZ LEG, BUT ALSO THE NEXT MORNING ON THE ZZZ-ZZZ2 LEG WITH REDUCED REST OF ONLY 8 HRS. WE ALSO WOULD HAVE HAD TO REDUCE OUR RPT TIME IN THE MORNING FOR THE ZZZ-ZZZ2 LEG. UNDOUBTEDLY THERE WOULD HAVE BEEN PRESSURE TO GET THAT MORNING FLT OUT ASAP. AGAIN, THIS WOULD HAVE BEEN A COMPROMISE IN SAFETY. THIS TYPE OF PROC MUST STOP. JUST BECAUSE SOMETHING IS LEGAL, DOES NOT MAKE IT SAFE. SUPPLEMENTAL INFO FROM ACN 783179: I HAVE SEEN THIS PRACTICE MANY TIMES, AND I KNEW THAT IF I DECIDED TO CONTINUE THE TRIP I WOULD MOST LIKELY GET MYSELF INTO A VERY UNSAFE SITUATION.

Synopsis

CRJ FLT CREW REFUSES REASSIGNMENT DUE TO FATIGUE.

ACN: 617869

Narrative: 1

I WAS COERCED INTO FLYING A TRANSPORT CATEGORY ACFT BEYOND A 16 HR DUTY DAY, WITH INOP EQUIP INTO SEVERE WX CONDITIONS. THOUGH I WAS TOO FATIGUED TO SAFELY FLY, I WAS PRESSURED BY MY CAPT INTO REPOSITIONING THE ACFT UNDER PART 91 OPS. WE HAD FLOWN 4 LEGS ALREADY, WITH LONG 'SIT' PERIODS BTWN FLTS, FOR A TOTAL OF

5.8 HRS. I HAD FLOWN 23.2 HRS THUS FAR OVER THE COURSE OF THE 4 DAYS. BTWN LEGS 4 AND 5, WE WERE SCHEDULED TO SIT IN BURLINGTON, VT (BVT), WHEN WE ARRIVED AND TURNED OUR AIRPLANE OVER TO AN OUTBOUND CREW, THAT EVENING, WHEN WE WOULD DEPART FOR ZZZ. THERE ARE NO CREW REST FACILITIES IN BVT, SO THE CREW IS EXPECTED TO WANDER THE ARPT WITH THEIR BAGS FOR OVER 2 1/2 HRS. INFORMED THE CAPT THAT WE WOULD HAVE TO TAKE OFF NO LATER THAN XA30 LCL TO ARRIVE IN ZZZ AND REMAIN LEGAL FOR PART 121 OPS. AT XC00 LCL, ATC INFORMED US OF AN ADDITIONAL 1 HR GND STOP. DISPATCH WAS NOTIFIED, AND THE FLT WAS CANCELLED. DISPATCH TOLD US THAT WE WERE TO WAIT OUT THE GND STOP, AND FLY THE ACFT TO ZZZ UNDER A PART 91 REPOSITIONING FLT. I AGREED TO TAKE A NAP IN THE BACK OF THE ACFT WHILE A DECISION WAS MADE WITH DISPATCH (THEY WERE SCRAMBLING THEMSELVES DUE TO THE WX). ONCE A DECISION WAS MADE, WE WOULD DISCUSS OUR OPTIONS AS A CREW (GO/NO-G0) AND ACT ACCORDINGLY. I WAS AWAKENED SHORTLY THEREAFTER, TO BE TOLD THAT WE WERE GOING TO LAUNCH FOR ZZZ. AT THIS POINT, THE BOARDING STAIRS HAD BEEN PULLED, THE GND CREW WAS SIGNALING FOR ENG START, THE CLRNC HAD BEEN RECEIVED AND THE PAPERWORK COMPLETED. STILL GROGGY, I ONCE AGAIN VOICED MY CONCERNS OF FATIGUE TO THE CAPT, WHO WAS ANXIOUS TO GET GOING. UNDER PRESSURE FROM HIM AND THE FLT ATTENDANT (IT'S OK, I HAD A NAP, I FEEL FINE, I'LL DO EVERYTHING, YOU JUST SIT THERE AND WORK THE RADIOS), I RELUCTANTLY AGREED TO GO. ON THE TAXI OUT, IT WAS CLR THAT THE CAPT HAD NEGLECTED EVEN HIS NORMAL PREFLT DUTIES, AS BOTH THE V-SPDS AND THE FMS HAD NOT BEEN PROGRAMMED (CAPT DUTIES, BOTH). FURTHERMORE, THE CAPT WAS CONFUSED ON THE RTE OF TAXI (I HAD TO DIRECT HIS TAXI) -- IT WAS CLR THAT I WOULD BE DOING MUCH MORE THAN SITTING AND WORKING THE RADIOS. WE DEPARTED FOR ZZZ, A SCHEDULED 1 HR 31 MIN FLT, 15 HRS AND 10 MINS INTO OUR DUTY DAY. WE LAUNCHED WITH AN INOP THRUST REVERSER, INTO SENSITIVE AIRSPACE AT NIGHT AND INTO AN AREA OF SEVERE TSTMS. I BROUGHT UP THE ACCIDENT IN LITTLE ROCK ON THE TAXI OUT, AND GOT A DIRTY LOOK. ENRTE, THE CAPT REMOVED HIS HEADSET AND READ THE PAPER, IT IS TOO NOISY TO TALK IN THE ERJ COCKPITS WITHOUT HEADPHONES, SO WE DID NOT TALK. I DRANK COFFEE AND CONCENTRATED ON STAYING ALERT AND MONITORING THE ACFT. THE CAPT MISSED A DSCNT CLRNC, WHICH I CAUGHT BEFORE ATC DID. WE ARRIVED IN ZZZ WITHOUT TALKING BEYOND THE RECITATION OF CHKLISTS, WITHOUT INCIDENT. ON ARR, THERE WAS NO PLACE TO PARK, SO WE WAITED ON THE RAMP. THE CAPT'S FLT HOME, WHICH WE HAD CLRLY BEEN PUSHING TO MAKE, LEFT WITHOUT HIM. WHEN WE FINALLY SHUT THE ACFT DOWN, WE HAD BEEN ON DUTY FOR 17 HRS AND 40 MINS, AND I WAS EXHAUSTED. THOUGH THE FLT ARRIVED UNEVENTFULLY, I BELIEVE THAT THE OP WAS UNSAFE. SOME CONTRIBUTING FACTORS: 1) THE CAPT HAS A HISTORY OF ALTERCATIONS WITH THE CHIEF PLT, AND HAD BEEN DEMOTED TO FO FOR AN EXTENDED PERIOD DUE TO A SERIOUS OPERROR. HE IS SCARED OF THE CHIEF PLT. 2) THE CAPT IS PROCEDURALLY SLOPPY (I HAD BEEN WARNED ABOUT HIM BY OTHER CAPTS) AND EASILY DISTR, PARTICULARLY WHEN HE IS HUNGRY, WHEN FOOD TAKES COMPLETE PRECEDENCE -- EVEN INFLT. HIS INATTENTION TO THE ACFT AND HIS DUTIES INCREASES THE LOAD ON HIS CREW. 3) THE OFFICE OF THE CHIEF PLT AT THIS AIRLINE RULES BY INTIMIDATION. PLTS EXERCISING PRUDENT JUDGEMENT (PRECAUTIONARY LNDGS FOR FUEL LEAKS AND CARGO DOORS OPENING AFTER TKOF) ARE ROUTINELY HARASSED BY THE CHIEF PLT, AND CAN EXPECT A DISCIPLINARY MEETING AT HEADQUARTERS. AT THIS MEETING, THEY CAN EXPECT A HOSTILE RECEPTION, AND WILL BE PROVOKED INTO A VERBAL ALTERCATION. IF THEY TAKE THE BAIT AND ARGUE, THEY CAN EXPECT TO BE DISMISSED IMMEDIATELY ON THE GNDS OF INSUBORDINATION. PEOPLE ARE

Synopsis

FO TELLS OF OVER SCHEDULING OF FLT CREWS AT HIS ACR. IF PART 121 IS TO BE EXCEEDED, THE COMPANY GOES TO A REPOSITION OR FERRY OP UNDER PART 91.

Context: Recent trends in voluntary reporting data from several airlines has created concern amongst the Federal Aviation Administration (FAA) that the organizational culture at these airlines is not conducive to safe operations. Discussions between the corporate leadership of two of these airlines and FAA representatives have resulted in the willingness of these two airlines to undergo an organizational assessment aimed at evaluating their organizational culture and providing recommendations for improvement.

Your organizational consulting firm has been hired by the FAA to examine the safety culture at these two airlines in order to assess the current operating culture and to provide recommendations that may be voluntarily implemented to improve their organizational culture. This meeting is an initial meeting with the FAA representatives to provide a preliminary assessment (based on the supplied voluntary reporting data) of the organizational culture of these airlines and to develop a plan of action for further study of the organizational culture of these two airlines. In order to facilitate the study, your consulting group has been divided into two teams, each tasked with examining one of the participating airlines. The full report narrative and a synopsis (summary) of each report have been provided for related reports occurring over the past 10 years.

Airline "Y": Airline "Y" is a major airline operating aircraft with 100 or more seats in domestic and international flights. The majority of flights are of longer lengths with just under 50% to international destinations. Employees of this airline are generally well established in their careers, with the typical employee having been employed for 5-10 years at a regional airline prior to their employment at a major airline. Employees at airline "Y" generally experience better compensation and working conditions than their counterparts at airline "X". Airline "Y" operates approximately 720,000 flights per year and has 86,000 employees (9,600 pilots).

Assignment: Using this message board thread as your discussion mechanism, develop a document or presentation that:

- Provides a preliminary assessment of the airline's culture grounded in the voluntary report narratives
- Lists any concerns associated with the airline's current organizational culture
- Lists potential areas of inquiry to facilitate further organizational study of the airline
- Provides a preliminary plan of action to facilitate further study of the airline
- Addresses any concerns or questions from the FAA representatives who are present at the preliminary briefing

Airline “Y” Voluntary Report Narratives (filtered for ‘Company Policy’)

ACN: 956799

Narrative: 1

Crew fell asleep momentarily during cruise. Aware of this as a result of knowing a position report was coming up nodding then realizing we were past point by a minute or two. Captain called out while on short reserve. He had been awake since XA:00. As a result of call out he went over 24 hours prior to crew rest. As Captain and non flying pilot at this time I have learned a lot. I recently refused a similar assignment for fatigue knowing I was unable to perform my duties safely. I was charged a personal day even though I had been on duty 13 of my 15 hours as a short call. Unfortunately this time I allowed the pressure by the company to mark it personal and dock my pay to influence my decision. I took the assignment and flew, resulting in falling asleep momentarily and surely operating at less than acceptable levels of safety. It is impossible as a short call reserve to be rested for all situations. If I had rested in afternoon just in case of a flight assignment then I would have been unable to rest during my protected time (PT) for assignment the next day. LEGAL does not mean safe. We need designated INTERNATIONAL reserves. Although no incident occurred, the awareness of its possibility is clear now.

Narrative: 2

I was the Relief Pilot and ended up with the first break. When I returned from my break I relieved the First Officer. While filling in for the First Officer the Captain told me he had "dozed off for a couple of minutes". He said he realized it because he had missed a reporting point by a minute or so. Later on in the flight, closer to the end of the First Officer's rest break, the Captain said he was very tired and shortly thereafter dozed off for about two minutes. (He did what I refer to as a "chin-drop"). No calls were missed. The First Officer returned a few minutes later and the Captain went to the rest seat. After his rest period the Captain returned and appeared to be adequately rested to destination. It's important to note that the Captain is a "Short Call Reserve" and had been on RESERVE duty for approximately 13 hours and approaching his PROTECTED TIME (FAA Mandated rest period for DOMESTIC trips) when Scheduling contacted him and assigned him this trip due to a Captain out of position situation. Under our current system at my carrier reserves are expected to cover INTERNATIONAL trips without regard to the PT restrictions that are required for DOMESTIC trips thereby allowing for this Captain to have been on CONTINUOUS duty in excess of 24 hours. (Our contract has a 16 hour duty provision but for some reason this does not seem to apply). I personally have experienced just about every possible Reserve scheduling scenario one can imagine. Please believe me when I say that this situation alone represents the WEAKEST LINK in the Reserve assignment process. Add to it the fact that when this normally occurs there are other circumstances that only serve to aggravate the situation (late, mechanical, MEL, bad weather, backside of the clock, take your pick). Having been a Reserve almost all my life living in base with great family support as to getting sufficient rest due to Reserve I can tell you that there is no way possible a pilot can be adequately rested for an assignment like this unless: The pilot knows in advance he will be assigned or by accident. Apply the same rest requirements to International that are required for Domestic. Otherwise the message is "we only care if you're rested for Domestic". Rest is rest and it needs to be consistent no matter where you're going. THIS IS AN EASY FIX!

Synopsis

An B767 Captain fell asleep in flight because his domestic protected time was opposite the international flight departure he was involuntarily assigned so his awake time exceeded twenty four hours. Previously refusing an international trip fatigued cost him a day's pay.

ACN: 952472

Narrative: 1

This crew flew duty period 1 of our 4 day trip uneventfully from the U.S. to the Caribbean which was then scheduled to receive a "reduced rest" period (R3) in the Caribbean due to being scheduled for 9:37 flight time in a 24 hour period. The next morning, duty period 2, when arriving at the aircraft in the Caribbean, preflight inspection revealed the First Officers "Nav Display Unit" (NDU 2) was blank, and would not display any information....it was just blank. I called Maintenance Control to discuss the item and we both agreed this item could be covered as an MEL item, allowing the aircraft to continue to our destination (a Company Maintenance Station). We were scheduled to continue with this same aircraft on from the Company Maintenance Station on, and then another leg. Knowing this, when approaching the Company Maintenance Station from the Caribbean and within ACARS range, we reminded the Company Maintenance Station that we would be looking to have the NDU 2 replaced there. Ten minutes prior to landing, we again radioed the station to remind them we had an item we wanted fixed there. After landing, the crew cleared customs, and returned to our aircraft (which the agent was anxious to board for the next flight) only to find out that Maintenance had visited the aircraft, performed a brief and required "daily check" on the aircraft, and had converted the pilot-MEL for the NDU 2 into a regular maintenance MEL for the NDU 2. Clearly, the intention was to minimize delay, and have the crew continue to fly with an inoperative NDU 2, in the interest of "keeping on schedule."

My original First Officer was replaced due to illness, and I met the replacement First Officer, who informed me he was still "new" on the aircraft. Although he did have over 100 hours in type he said he was still "getting used" to the aircraft. With this knowledge and after noting a severe weather advisory for thunderstorms had been issued for the destination area and along the route to there, I determined it was not in the interest of safety to continue there and then on with a "new" First Officer and an inoperative NDU 2 screen, effectively cutting in half our ability to see and navigate around any severe weather, and safely navigate our route. After some discussion with Maintenance I explained I would not take the aircraft in its degraded state, and expressed frustration in that they had nearly 5 hours notice of the aircraft's condition upon arrival, and that they knew the crew had to clear customs before continuing on allowing additional time for maintenance to be performed, and that the scheduled turnaround time for these flights was 1:37 to begin with, plenty of time to replace a display unit screen.

The mechanic who performed the daily check was somewhat perplexed as well, since he stated to me that the replacement display unit had been sent to the aircraft, was available and waiting for replacement, yet Maintenance Control had said it would now take "too long" to replace the screen, and was just going to keep the item on MEL and send us on our way. Realizing I would not accept the aircraft with that MEL for the next two legs due to the proximity and severity of weather along the route, Maintenance then put an estimated time of departure delay of approximately and hour and a half. Shortly afterward, Dispatch and Maintenance decided to swap aircraft and issue us another aircraft for our next flight.

Our company has gone too far in their attempts to stay "on time." The corporate philosophy has shifted much too far in favor of keeping schedule at minimum cost, and much too far away from maintaining adequate staff, parts, and qualified mechanics, pilots, and customer service agents on staff to properly run the airline. The agents are far too heavily task saturated when everything is running "smoothly," and they become woefully inadequate for our customer's needs when there is even the slightest disruption to a perfect operation. One agent to check in passengers, board an aircraft, answer questions and accommodate seat change requests, process frequent flier mileage updates and wheelchair requests, etc. is sadly inadequate. In addition, every agent is intimidated about having any flight leave the gate even a minute late, is constantly answering to their supervisors as to why they were not "on time" (which does not necessarily mean departing the gate on schedule, but rather 5-10 minutes early!)

The Maintenance Department has been outsourced at all but a handful of stations which we serve. This outsourcing has allowed the company to maintain virtually NO spare parts at an overwhelming majority of our stations served, other then a steady stream of MEL stickers for use to keep the airplanes flying. Even at our largest of Maintenance Stations there are so few mechanics on staff that they are unable to complete most line repairs due to the (company perceived) delay it will cause the outgoing flight. In other words, we would rather put a "band-aid" and an MEL sticker and send the aircraft out than fix it properly and promptly.

The problem with this philosophy is it is contradictory to the preamble governing our MEL authority. As with my case in point as stated above, the INTENT of the MEL system is to (according to the preamble) "allow the aircraft to be safely flown to a station where repairs may be made." This does NOT mean carrying an item on MEL through maintenance hubs for 3, 4, or 5 days in order to "trouble shoot" or keep the airline on schedule. The Preamble also states that it is important to note the "importance of accomplishing repairs at the earliest opportunity."

The company has sadly warped the intent by creating a deliberate shortage of parts supplies, and then claiming the required repairs are unable to be made due to "parts availability." I believe this is NOT a valid interpretation of the MEL preamble intent....the intent is to allow the safe continuation of the aircraft to the first available maintenance station CAPABLE of performing the repair, whether that be at a Company Maintenance Station or a Contract Maintenance Station, but one which has a qualified mechanic and the required expertise and equipment capable of conducting the repair. Parts availability is a company issue, and the company's obligation is to get the part to the aircraft at a station where "repairs MAY be made."

Additionally, the pilot force has been subjected to increasing pressure by phone calls from Chief Pilots "urging" them to "use good judgment," or to "help" them make their decision about taking an aircraft which the pilot may feel is not in proper condition for continued operation. This is all very indicative of an extremely poor safety culture, a major distrust between the pilot force and the "management pilots," and increased hostility between the maintenance, operations, in-flight, and customer service departments ALL due to managements increased pressure to provide more service with fewer people, parts, and time. EVERY employee (short of middle to upper management) is feeling intimidated, pressured, coerced, and harassed by the pressures exerted from above, while each and every employee group has taken repeated pay cuts, reduced vacation and sick time, while shouldering mandatory additional overtime, extra duties and responsibilities.

This company simply requires more employees to provide the level of service our costumes deserve, and to allow our employees to recover and recuperate from the increased demands placed on them through several bankruptcies and ever more tyrannical management personalities.

Synopsis

An A319 Captain provided a lengthy and detailed report on what he feels are the many areas in which flight safety is being compromised by his airline with respect to flight crew fatigue, aircraft maintenance and pressure to operate on schedule (often times, early) even if critical issues need to be ignored to do so.

ACN: 935188

Narrative: 1

[On this week], I was in ZZZ. I was the only Mechanic for Company X in the area. Mr. Y was the other Mechanic, but had given his two weeks notice and the company knew that his last day would be three days earlier. I began work [on my first day] knowing I was going to be the only Mechanic on duty to run the day and night shift. Two days later, Aircraft X, had broken down with a navigation light issue and Maintenance Control and I decided to ground the airplane and I would work on it that night. We then sent Aircraft Y to ZZZ1 for the run. I worked Aircraft X that night, installing a navigation light switch, which fixed only one of the write-ups. I then continued to work on the other write-up on Aircraft X. Next morning, Maintenance Control decided to make Aircraft Y a stand-by plane and was sent to ZZZ2. On its return, Aircraft Y also had been written-up.

I was told by Maintenance Control to get Aircraft X deferred, so it could make the run to ZZZ1 that night. I proceeded to defer the other write up on Aircraft X. I received a phone call from Maintenance Control stating that the ZZZ1 run had been canceled due to weather. When the stand-by flight crew arrived at the station and Maintenance Control told them they did not have an airplane for them on this morning. After being aware of Aircraft X not being used, I began work on Aircraft X again. We had a winter storm come through [on the fourth] night/next morning. I finally finished launching Aircraft Z to ZZZ3 and Aircraft A to ZZZ4. I had decided after launching the planes that I was going to go home since I had not been home in three days, and had only gotten a few hours of sleep here and there, not a consistent sleep because company Maintenance Control continued to call at every hour. I did not put the airplanes back together before going home because I was not aware of this flight when leaving for home. I was very fatigued and did not feel safe to work on an airplane in this condition.

What happened last week could have been avoided with just another Mechanic being sent here. I was pushed beyond my limit and could not go anymore. What the people at Maintenance Control were pressuring me to do was pushing the limits of safety. I could not think straight and was barely keeping my eyes open. Also, to go work on the planes I was going to have to use a Belt Loader, which I do use on a daily basis, but the winds were gusting at 30-mph and I did not feel comfortable gaining access to the planes. I feel no one in Maintenance Control could care less about the person on the line doing the work in the weather, they just want to be able to say that a plane is up. They also need to let the Mechanic do his job and not tell us what is broke on the plane. I think it is very hard to fix an airplane by just talking to a Captain and saying "You need to change this." Aircraft X had an air turnback on my first day, with the altimeter and IAS flagged.

Maintenance Control called me and recommended that I check and make sure that the pitot covers were not still on the pitot tubes. I was more offended than anything after being told this. What fixed the plane was a new Air Data Computer (ADC) from my stock. This is something that has happened more and more with the new people coming into Maintenance Control. I did tell the maintenance controllers that I was tired and needed sleep. They just kept insisting that I get out there and fix those planes. I was also asked while the storm was going on, what the status of Aircraft Y was and why I was not working on it. The pressure on the mechanics from these guys is bad and can become frustrating and irritating. This results in mechanics having to fight back and cause arguments between Maintenance Control and mechanics.

Synopsis

A Line Mechanic reported he was the only Mechanic available, working five days of extended hours with little rest and constant interruptions from Maintenance Control. A First Officer adds his report about the same Line Mechanic's fatigue, confusion and the lack of adequate rest requirement rules for mechanics.

ACN: 927510

Narrative: 1

My report addresses a safety concern regarding pressure from this air carrier's Upper Management for on time departures that is directly compromising safety. Earlier this month flying a 757 aircraft we departed with a hydraulic defect that was not repaired as cleared in our maintenance release. This was the first flight of the day for us and this aircraft had just arrived at the gate. At the gate I performed the exterior aircraft preflight inspection. As I exited the jet bridge door prior to walking down the steps I could see a large pool of fluid under the left main landing gear wheels. Inspected fluid and determined it was hydraulic fluid pooled on ground. Entire truck and the rear main brakes and wheels were saturated with hydraulic fluid. We verbally called in the defect and also wrote it up via ACARS. The aircraft had a recent prior write up for the same issue. Since the plane was late inbound it was now close to departure time.

The write up and repair/sign off proceeded as follows: 1) After we sent the ACARS hydraulic write up, a few minutes later we received a new maintenance release clearing the problem, which struck me as very unusual to get a new maintenance release so quickly especially with a large hydraulic leak, we received a new release at XA:36 for our XA:40 departure clearing the write up even before a Mechanic had repaired the problem. No Mechanic had been to the cockpit up to this point. The Customer Service Representatives actually closed the cabin door and pulled the jet bridge and then later brought the jet bridge back to the aircraft. 2) The maintenance release document showed that the Mechanic had pressurized the hydraulic system to inspect for further hydraulic leaks, however, no Mechanic entered the flight deck to perform such task prior to our receipt of the maintenance release. The right electric hydraulic pump would have had to been powered for that brake system to have been inspected for leaks and it was not pressurized. The release clearly states that the system was pressurized and inspected for leaks and that the area was cleaned. 3) The document showed that the hydraulic leak was inspected and cleaned with 3 drops of hydraulic fluid per minute evident at the brake hose assembly per maintenance manual XX-XX-XX. However, the Captain went back downstairs to inspect the area and it looked the same with the same areas saturated in hydraulic fluid and no notable clean up having been performed. 4) Upon arriving the gate at the destination our aircraft was met by a Mechanic who said that he could see hydraulic fluid leaking from the left main gear wheel area as we taxied in at night. It would have been difficult to see this during the day and definitely not possible to see hydraulic fluid leaking from the wheel area at night as we taxied in!

I questioned, why was a Mechanic meeting the aircraft specifically looking for a hydraulic leak as we taxied in? My guess is that this Mechanic received a phone call from the previous station's Maintenance to meet our plane and take it out of service because of the known hydraulic defect that was not repaired before departure. This Mechanic said, "This airplane is not going anywhere tonight." 5) There was a heavy line of hydraulic fluid on the ground along our taxi path right up to the left wheels where we were parked at the gate. We arrived at night. 6) Maintenance removed the aircraft out of service and replaced the left main landing gear tilt actuator line, which has nothing to do with the #2 brake line leaking 3 drops per minutes. 7) The plane was cleared at the departure airport of the hydraulic leak, however it was clearly "pencil whipped" to achieve an on time departure, thus completely sacrificing safety. There is a huge push at this carrier from the top down for on time departures. This pressure on our pilots, mechanics, gate agents and ramp personnel is clearly creating a chain of events that is severely compromising safety at any cost. The time line and sequence of events were evident at the departure airport as to what was transpiring. I neglected to put all of the pieces together until our arrival and then with further investigation by talking to Maintenance Control today as to the history of the aircraft and what Maintenance did to correct the leak after the aircraft was pulled out of service in our destination that night. After putting all of the pieces together I now recognize the severity of the event in regard to jeopardizing in-flight aircraft operational safety and thus am writing a report.

This following information also directly relates to the above hydraulic issue in regard to pressure I feel pertaining to this carrier's on time departures and whether or not a defect found on my preflight inspections will cause a delay: On the first flight of this same trip, described above, I wrote up the radome on my walk around. I could see day light shining through where the radome attaches to the front bulkhead of the aircraft, which I have never seen before. The Mechanic inspected the radome and cleared the item, however, our departure was delayed a few minutes. After takeoff, while inflight, we received an ACARS from the Chief Pilot questioning the "timing" or "timeliness" of the write-up because it caused a delay. Again, I am experiencing pressure in regard to noting defects on my walk around and whether to write them up or not because it may be too close to departure time to note a defect and thus possibly cause a delay. This ACARS message from the Chief Pilot made me question my write-up and exerted pressure on me so that later on the same trip, when I saw the hydraulic leak, I momentarily considered ignoring the leak for fear of not achieving an on time departure since the plane came in late. It was close to departure time and writing up the leak would in fact cause another departure delay. I wrote up the hydraulic leak and as it turned out we departed with the same hydraulic defect anyway because Maintenance is feeling the same exact pressure and fear for their job as I am feeling as a pilot, in regard to on time departures and defects that are found during the exterior preflight walk around.

So, my report not only pertains to the hydraulic leak event, but just as much in regard to the pressure that Upper Management is clearly exerting on the employees for on time departures. As a front line employee and a pilot there is no better view than mine to see that this pressure for on time departures is directly compromising the lives of passengers and crew members. [This is because] each employee group that is responsible for the safe operation of aircraft is now willing to compromise their duties to achieve on time departures and even send an aircraft out for a transcontinental flight full of passengers with a known hydraulic defect! No, I am not a disgruntled employee. No, I am not angry or bitter. No, I don't have an axe to grind. No, I don't have a personal or union agenda to delay flights. No, I am not imagining things and I don't think anyone is out to get me at the company. I do feel that safety is being compromised for the sake of the precious on time departures!

Synopsis

A B757 Captain reported that a landing gear hydraulic leak reported prior to departure was not repaired even though the maintenance release indicated that it was. This air carrier management's push for on time departures is forcing flight crews and mechanics to not report defects or fake defect repairs.

ACN: 849218

Narrative: 1

I am a reserve on call from XA:00-XP:00. At XA:10 crew scheduling "released me into rest" and assigned me to fly a continuous duty over night trip that night with a XM:25 show. I tried to sleep during the day to prepare myself to be able to fly all night. I was unable to get much sleep since I had gotten a good nights sleep the night before. I felt alert and ready to fly at XM:25 when I showed up for my flight. I had had a strong cup of coffee and was ready to go. During the flight that night I began to feel the effects of fatigue about halfway through the flight. We landed without any further problems or incidents. We were scheduled to have 5:34 on the ground between flights. That night during the continuous duty over night I was unable to get much sleep. I was woken up in the middle of the night and had a hard time going back to sleep. I then called crew scheduling and told them I was fatigued and unable to fly the flight that morning. I had had around 2.5 hours of sleep in the last 24 hours and was exhausted. This schedule is a very unsafe schedule although it is perfectly legal per the FAR's. Crew scheduling continues to use this "released into rest" loophole in order to get around the FAR's even though it doesn't make any sense. I don't understand why the crew scheduling department would have a morning reserve pilot flying continuous duty over night instead of a late reserve pilot. I was on a morning/afternoon flying sleep cycle and was unable to adjust to a fly all night sleep cycle in such a short period of time. The crew scheduling department continues to assign trips that have no respect for sleep cycles or circadian rhythm. How can the scheduling department expect you to adjust your sleep cycle to be ready for duty at XA:00 AM only to switched to a PM, fly all night schedule? This kind of scheduling practice is very dangerous and leads to flight crews flying while severely fatigued. Hire new scheduling management and obtain new scheduling software to prevent these types of assignments

Synopsis

B737-700 reserve Captain was released into rest by crew scheduling at the beginning of his on duty period and assigned a CDO (continuous duty overnight) departing that night. The reporter was unable to get any sleep prior to departure, but felt alert for the first leg into the over night. Reporter was unable to get sufficient rest in the hotel and called in fatigued.

ACN: 848945

Narrative: 1

Assigned to fly a trip with a scheduled duty time of 16 hrs, 21 min. The crew desk called my cell phone at four hours before report time and left a message that the departure time for had been changed to five hours after the original scheduled time. I did not receive the crew message until three and one half hours before the original report time. I then contacted crew scheduling and spoke with scheduler at that time and I was informed that flight was delayed with the new departure five hours late. I asked if the Company would provide a hotel rest room during the delay and my request was denied. I indicated to the scheduler that by not providing the appropriate rest facility that it could be a factor later in the duty day with regard to over 19 hr.30min. duty day, and fatigue. The hotel rest room was denied again. It was suggested that I take a rest at my point of residence. I elected not to sit at my home airport, and continued to the departure airport, arriving in the Flight Office at seven and one half hours before the new departure time. Four hours later the Flight Office informed me that flight had been changed a second time, now proposing a two hour longer delay for departure. I had a brief conversation with a Flight Manager while he was on the phone with the Duty Manager. I expressed my concern with regard to the over extended duty day, and the possibility of fatigue later in the flight. At that time I was offered a hotel room for rest. I felt it would not help at this point to secure a hotel rest room for an hour.

At about the same time another First Officer on our crew contacted Crew Scheduling to inquire about the duty day being extended beyond the 19hr. 30min. The conversation was eventually transferred to the Crew Supervisor who said he would "get back to us" and would contact us at the Flight Operations room. I checked in with the Maintenance supervisor who was working the flight, and was told that an aircraft swap had been done, and the aircraft would be the inbound arriving two hours forty minutes before the new departure time. Based on this information, I relayed my thoughts on the time it would take to turn that aircraft since it would have to be repositioned from the International terminal, undergoing a maintenance check, and then fueled, that the new departure time was not likely possible based on pure time alone.

Three hours before the newly scheduled departure time I was told that I was being relieved from the assignment. Crew scheduling updated my work calendar to show I was absent and docked my pay of 27hr. 42min. reference to FTG (fatigue). A remark was added that I did not return calls. I was never asked this at anytime, and I never left Flight Operations so as to be fully available. Upon seeing the change in my calendar, I contacted the crew desk and informed them that after a legal rest I would be available to fly. In conclusion, I am submitting this report based solely on Safety. The fact that the Company extended the duty day well beyond the 19 hours and 30 minutes, the fatigue factor was a concern towards the end of the duty day, not at the beginning of the day. Failing to provide proper rest facilities (with disregard to FAA and the National Transportation advisories on duty/fatigue and safety) it is clearly a safety issue. As I stated above, my monthly compensation has been adjusted lower, because I objected to a safety issue, and Company's claim is that I was "unfit to fly". I was not. My concern was the safety of flight 14 hours later following the 10 hour delayed departure.

Narrative: 2

After an on time check in and looking around for the crew, I discovered in computer a new departure time that was over four hours later than planned. Talked with the Crew Desk to be informed they had left a message on my phone of a departure time delay of four hours fifteen minutes earlier that morning-which I didn't receive. I calculated my duty day to be projected at 23hrs and 47 minutes with the new departure time. I called back with my concerns for the safety of an extremely long duty day and was forwarded to an Operations Manager. Was told that even though I had not been informed of the departure time until check in, sufficient notification was given since an attempt had been made. Regardless, my concern was the nearly 24-hour duty day and questioned the safety of this type of operation. The Manager said he'd get back to me but never did. One hour and twenty minutes later, I called back for the Manager who I was told had gone home? I spoke with another manager regarding the safety of my projected 23hr, 47 minute duty day. He said, "I needed to call in fatigued." I feel that the trip as projected (19:30 duty day) was an illegal assignment, and was forced to use fatigue (No Pay) to have myself removed vs. the correct Crew Desk action of being removed on duty time grounds. When I checked the computer entries, it showed "absent no show" with no time indicated as when I would be available to fly. I had provided the second Manager a time of 12 hours from the time we talked. I called the crew desk to have this corrected even though I'd been speaking with the Crew Desk since I checked in with flight operations. It was also discovered later that the Crew Desk converted two standby Reserve First Officers to cover this trip, well before the time I was forced to use Fatigue (NO PAY) to correct the problem. The Flight departed after maintenance work was complete.

Synopsis

An air carrier international pilot related an incident involving a creeping delay before a long international flight that led to the pilot expressing concern about the safety of the length of the duty day. The company relieved the pilot from the trip with a pay impact.

ACN: 843526

Narrative: 1

Operational deficiencies at (my) International Carrier: A) Ramp refueling, B) Maintenance, C) Human Factors, D) General. The following list is a guide to help you understand them. A) Ramp procedures. Refueling: The Lack of training and proper equipment for the fuel truck Operators has been an issue for a long time. Not only in handling their own gear, but the airplane fuel station as well. The status of the fire extinguishers at some of the fuel trucks and The training of fuel Operators has been a big problem. The proper orientation of the fuel truck and obstructions in escape pathway are common errors. After a front galley has been supplied, its corresponding door (R-1) is being improperly left open. This would affect the passenger Emergency Evacuation Procedures if needed. Usually occurs not only in this door but in the aft right (R-2) as well. My Carrier has issued a new refueling procedure with passengers on board which allows this type of events to happen almost on a daily basis (against the law and common sense). Common practice, the fuel truck is either misplaced, escape route being blocked or both. Some times the refuel equipment is being placed under the wing fuel vent. This shouldn't be, since if any fuel spill occurs the situation could turn dangerous. B) Maintenance: Logbooks: The lack of planning and extra pages, time pressure, not enough Mechanics, etc. results in a sloppy job being done in the Maintenance Logbooks. C) Human Factors: Over stressed, overburden, overworked...chronic fatigued Crews. Not proper rest period and places to layover, etc... Since 5 years ago our working conditions, labors situation and consequently personal life had been deteriorating rapidly. We have had flying incidents in which the fatigue factors has been involved and needless to say, involving highly trained, qualified and motivated Pilots. D) General: Nose landing gear pins are installed without the "Remove Before Flight" tag. In most International Stations, even in the United States, we have contracted companies with low quality standards and poor training, which sometimes don't meet the requirements. Corporate pressure: Punitive action against the employee who complains, dares to mention what is wrong or unethical and tries to do the right thing. Itinerary, punctuality-first policy: This could be translated to "rushed and throw every thing, shut the airplane door and we see later." My Airline changed the turnaround time from 35-40 minutes to 25 in some airports, many problems developed due to this and after many incidents some small changes were introduced. However the "spirit of punctuality" remains as the final goal. The International stopovers are different, due to security reasons, otherwise the story would be almost the same. Reduce cost no matter what policy. Just to mention an example: The Commercial Approach Plates for the Alternate airports given individuality to the Pilot have been removed; only one set of these airports exists at each airplane, which means if flying to the Alternate, we have to share the information in the Cockpit with high workload.

Synopsis

An Airbus Captain of <edit>an International<edit> Carrier expresses concerns about numerous issues at his airline involving operational deficiencies on the Ramp and refueling procedures, Maintenance Practices, Human Factor stressors and complacency affecting their operational standards.

ACN: 825599

Narrative: 1

If you look at my schedule, from the second half of Dec/08 to the first half of Jan/09, it is obvious that this schedule, though technically legal, is completely unsafe. The current monthly bidding process, which is endorsed by this company's management, does not take into account circadian rhythm, which now has taken its toll on me. I will be unable to fly my next trip due to fatigue. I went to domicile management in the morning at approximately XA30 after completing my trip. I conversed with management. They all supported my position. They said they would try to obtain a paid vacation drop to solve my fatigue issue. Several hours later he called to tell me that he was unable to get me a vacation drop. When the company does then cover the trip, it is clear to me that the company's interest is only covering the trip in the cheapest way possible and is not interested in solving a serious safety issue. So I believe the company is employing a tactic that goes back to the 1930's called pilot pushing. It is time that the FAA takes a stand in favor of safety, as the NTSB has been advocating for sometime, rather than be controlled by the current political climate.

Synopsis

A B767 Captain called off a trip fatigued because the trip bidding software did not take into account circadian rhythm when transitioning from one bid month's last trip to the next month's first trip.

ACN: 816562

Narrative: 1

This trip started with a ZZZ1 turn. On the ZZZ1 flight, we encountered windshear followed by severe turbulence in the go around. We elected to divert to ZZZ2. We had to declare an emergency due to landing with less than 30 minutes of fuel. There was only a report on the ATIS of moderate turbulence below 5000 FT. Nothing was listed on our flight papers. Upon arrival in ZZZ2 it took about 2.5 hours to sort through what to do next. Finally we were given a new aircraft and departed to ZZZ3. On the trip to ZZZ3, the Captain stated that he was finally coming down from the incident and felt it would be the safest course of action to not operate our next flight to ZZZ1 due to fatigue. I told him that I agreed with that assessment. We received support from the Flight Office for this decision. However, our Crew Scheduling was less than cooperative the next day. I think that our Crew Scheduling needs to be trained on the dangers of flight crews working when fatigued. This type of pressure from the crew desk is unacceptable and will result in crews feeling that they cannot call in fatigued.

Synopsis

A320 flight crew reports calling in fatigued after diverting for windshear and turbulence, then declaring an emergency for minimum fuel. Flight is delayed 2.5 hours at the divert airport before continuing on at which point the call is made.

ACN: 797804

Narrative: 1

TRIP INCLUDED A LONG LAYOVER WITH AN EARLY MORNING DEP FROM THE HOTEL AT XA50 PDT. WITH AN XA00 WAKE-UP, BOTH THE FO AND I WENT TO BED EARLY AROUND XQ00. HOWEVER, THE HOTEL FIRE ALARM SYS WENT OFF REPEATEDLY FROM AROUND XR00 XU00, AWAKENING ME AND RESULTING IN ME GETTING LESS THAN 4 HRS OF UNINTERRUPTED REST. WHEN I WORK UP AT XA00 I WAS TIRED BUT FELT THAT I COULD PWR MY WAY THROUGH DAY 4 OF THIS TRIP. THE 1ST LEG OF THE DAY, WAS UNEVENTFUL. ON-TIME DEP, ON-TIME ARR, IN ISSUES, NO PROBS (I DID THE WALKAROUND). PRIOR TO THE 2ND LEG OF THE DAY, THE FO DISCOVERED SEVERAL MINOR MAINT WRITE-UPS (MISSING OR LOOSE AIRFRAME SCREWS AND A DAMAGED/ILLEGIBLE FUEL VENT PLACARD) THAT I HAD MISSED DURING MY WALKAROUND PRIOR TO THE FIRST FLT. WE LOGGED THE WRITE-UPS VIA ACARS AND CALLED MAINT ON THE RADIO. WHEN THE MECH ARRIVED, HE CALLED US ON THE GND-TO-COCKPIT INTERPHONE AND ASKED TO BE SHOWN EXACTLY WHERE THE SCREWS WERE LOCATED. THE FO WENT DOWN THE JETWAY STAIRS AND SHOWED THE MECH. WHEN THE FO RETURNED HE WAS VISIBLY UPSET (ANGRY AND PISSED-OFF). THE MECH HAD PROCEEDED TO OVER-TORQUE AND STRIP THE SCREWS INTO THE METAL (THE SCREWS WERE STILL LOOSE AND HOLDING NOTHING) AND THEN THE MECH TOLD THE FO, 'IT'S JUST A (EXPLICIT) PLACARD, WHO CARES IF IT'S THERE?' IN THE MEANTIME, NO LESS THAN 4 SUPVRS WERE WATCHING EVERYONE'S MOVES AND GLARING MENACINGLY AT US. THE SVC REP KEPT ASKING US WHEN WE'D BE READY TO GO AND WE TOLD HIM SEVERAL TIMES THAT WE WERE WAITING ON THE MECH, ASSUMING HE WAS REPLACING THE PLACARD. WE FINALLY ALLOWED THE SVC REP TO CLOSE THE DOOR AND THEN THE MECH TOOK THAT OPPORTUNITY TO PENCIL-WHIP THE MAINT REQUEST, CLAIMING THE FUEL VENT PLACARD WAS DAMAGED BUT LEGIBLE (IT WAS NOT). THE FO AND I WEREN'T ALL THAT CONCERNED ABOUT THE PLACARD, BUT WE WERE STILL A LITTLE DISAPPOINTED WITH THE SCREW-STRIPPING. WE ELECTED TO FLY THE ACFT ANYWAY BECAUSE THE MECH HAD APPROVED AND SIGNED OFF THE REPAIR AND WE DIDN'T WANT TO GET INTO A PISSING CONTEST WITH THE MECH, THE 4 SUPVRS OR GET PERSONALLY SUED BY THE ACR FOR A JOB ACTION DELAYING THE FLT. AFTER THAT FIASCO, OUR FATIGUE KICKED IN AND WE STARTED MAKING MISTAKES BY THE NUMBERS. I MISSED NO LESS THAN 10 RADIO CALLS, WE DIDN'T IMMEDIATELY ACCELERATE TO CLB SPD (280 KTS) CLBING OUT OF 10000 FOR WHICH WE WERE REPEATEDLY CHASTISED BY THE CTR CTLR. I ASKED THE CTLR SEVERAL TIMES WHAT SPD HE NEEDED AND HE DEMANDED THAT I TELL HIM DURING THE CLBOUT WHAT MY EXPECTED CRUISING SPD AT ALT WOULD BE IN KIAS (KTS IAS), AS OPPOSED TO PLANNED MACH NUMBER (% OF MACH). IT'S BEEN A WHILE SINCE I'VE DONE AN ICET (INDICATED-CALIBRATED-EQUIVALENT-TRUE) AIRSPD PROB AND SO WE INFORMED HIM WE WERE PLANNING MACH .73 WHICH WOULD BE AROUND 250 KIAS. AGAIN, I ASKED HIM WHAT SPD HE NEEDED, WE WOULD HAVE BEEN HAPPY TO OBLIGE. WE'RE GETTING DUMPED ON BY MECHS AND SUPVRS FOR MAKING LEGITIMATE WRITE-UPS, WE'RE GETTING DUMPED ON BY ATC FOR FLYING LEGITIMATE AIRSPDS AND WE'RE TIRED FROM LACK OF SLEEP DUE TO FIRE ALARMS AT THE HOTEL. OBVIOUSLY, THE FO AND I WERE A DANGER TO THE NATL AIRSPACE SYS. SO, IMMEDIATELY AFTER LNDG, TAXI-IN AND SHUT DOWN OF THE ACFT, WE CALLED IN **FATIGUE**D FOR THE BAL OF THE TRIP. 'WHAT PART OF, THE SYS IS BROKEN, THERE ARE NOT ADEQUATE SAFETY BUFFERS AND SOMEONE'S GOING TO CRASH AN AIRPLANE, SO LET'S BLAME IT ON A JOB ACTION BY UNIONS AND THE PLTS. DOESN'T ACR OR THE FAA GET ?' ACR AND ATC MAY DRIVE SOMEBODY ELSE INTO THE GND, BUT IT AIN'T GONNA BE ME! HAVE A NICE DAY.

Synopsis

B737 CAPT REPORTS FIRE ALARMS AT LAYOVER HOTEL RESULTING IN INSUFFICIENT REST. LOW MORALE AND LACK OF SUPPORT FROM MANAGEMENT AND OTHER EMPLOYEE GROUPS IS ALSO DESCRIBED IN THIS FATIGUE RPT.

ACN: 797800

Narrative: 1

I WAS SCHEDULED TO FLY AT XA45 LCL. THE NIGHT PRIOR, I HAD NOT SLEPT WELL DUE TO A LONG AND EMOTIONAL DISCUSSION WITH MY WIFE REGARDING OUR FUTURE. WE HAVE A STRONG RELATIONSHIP, HOWEVER THE ENVIRONMENT AT ACR HAS PUT MORE STRESS ON AN ALREADY STRESSFUL YEAR, BOTH FINANCIALLY AND PERSONALLY. THE IMPENDING NOTIFICATION OF MY SECOND FURLOUGH HAS CAUSED MUCH ANXIETY AND STRESS IN OUR HOME. THE MORNING OF MY FLT, I DID NOT FEEL AS THOUGH THE ISSUES HAD BEEN RESOLVED, EITHER WITH MY WIFE, OR MYSELF, TO THE POINT THAT I COULD LEAVE WITH A CLEAR MIND ON A 4-ON, 1-OFF, 4-ON, 1-OFF, 3-ON, SCHEDULED LINE. THE LACK OF SLEEP THE NIGHTS BEFORE HAD LEFT ME CONGESTED WITH A RUNNY NOSE, AND AN OVERALL FEELING OF LISTLESSNESS, FATIGUE, AND EXCESSIVE STRESS. BASED ON THESE SYMPTOMS, I ELECTED TO CALL IN SICK

FOR MY TRIP THAT AFTERNOON. I DID NOT FEEL THAT I COULD OPERATE AT MY OPTIMUM LEVEL. I SPENT THE NEXT 2 DAYS SORTING OUT OUR OPTIONS AND DEALING WITH THE EMOTIONAL ASPECTS AND FEELINGS THAT MY CHOSEN CAREER HAS BECOME A PERSONAL FAILURE TO MYSELF AND MY FAMILY. I CONTACTED A REPRESENTATIVE, AND DISCUSSED MY SITUATION. I FELT THAT SOME SORT OF DISCIPLINARY ACTION WOULD BE WAITING FOR ME, FOR CALLING IN SICK. HE INSTRUCTED ME TO GET A DR'S NOTE AND HAVE IT AVAILABLE FOR THE FLT OFFICE. MY EXPERIENCE GETTING THE DR'S NOTE WAS DIFFICULT, AS THEY DIDN'T FULLY UNDERSTAND WHY I NEEDED A NOTE, IF I FELT WELL ENOUGH TO WORK 3 DAYS AFTER THE INITIAL SICK CALL. I AM WRITING THIS REPORT TO IDENTIFY THAT STRESS AND EMOTIONAL ISSUES ARE AMPLIFIED BY THE ON-GOING FATIGUING SCHEDULE, AND THAT THE PRESSURE WE CONTINUE TO RECEIVE FROM THE COMPANY SERVES ONLY TO MAKE THINGS WORSE. THE COMPANY AUTOMATICALLY ASSUMED THAT THERE WAS A 'JOB ACTION,' BUT NOBODY BOTHERED TO ASK US HOW WE WERE FEELING, KNOWING THAT WE WOULD BE LOSING OUR JOBS IN THE COMING MONTHS. AS A PLT WHO FACES FURLOUGH AGAIN, STRESS AND EMOTIONALLY UPSETTING PROBS RESULTING FROM EMPLOYMENT, FAMILY ISSUES, AND OTHER PERSONAL ISSUES, MAKE ME WISH THE COMPANY WOULD DO MORE TO SUPPORT US AND OUR PROBS, RATHER THAN CRACKING THE WHIP AND TELLING US TO WORK HARDER.

Synopsis

FO DESCRIBES FATIGUE AND FAMILY ISSUES LEADING UP TO A SICK CALL.

ACN: 789893

Narrative: 1

THIS IS A CONTINUATION FROM A PRIOR FATIGUE RPT EARLIER TODAY. AFTER TALKING WITH THE FLT DUTY MGR, I CALL A FLT MGR. I EXPLAIN EVERYTHING I JUST SAID TO THE FLT DUTY MGR AND ASKED HIM WHY WE HAVE TO STAY IN THE HOTEL. HE SAID HE WOULD FIND OUT AND CALL ME BACK. A LITTLE LATER, I RECEIVE A CALL FROM ANOTHER FLT MGR REGARDING GETTING BACK HOME EARLIER. HE EXPLAINED THE PROCESS AND THEN WAS ABLE TO GET ME AND MY COPLT BACK HOME THAT AFTERNOON. ALTHOUGH I WAS VERY PLEASED WITH THE WAY THE LAST FLT MGR HANDLED THIS SITUATION, I FIND THE PROCESS TO CALL IN FATIGUED TO BE VERY TIME CONSUMING AND TIRING! FROM THE TIME THAT I STARTED THE PROCESS WITH THE INITIAL CALL TO THE CREW DESK, THEN THE FLT DUTY MGR, THEN A FLT MGR, THEN A CALL BACK, IT WAS 1 1/2 HRS ON THE PHONE. THIS PROCESS NEEDS TO BE MORE STREAMLINED. WHY WOULD A PLT WANT TO GO THROUGH THIS PROCESS VERSUS CALLING IN SICK AND JUST GOING HOME. THE FAA, THE COMPANY AND THE PLTS ARE GOING TO LOSE IMPORTANT INFO IF THIS PROCESS ISN'T CHANGED. IT SEEMS THAT I WAS DISCIPLINED FROM THE COMPANY FOR BEING FATIGUED WHEN IN FACT MANY OF THE FACTORS THAT ATTRIBUTED TO MY FATIGUE CALL WERE DUE TO ACTIONS BY THE ACR. ON THE FIRST DAY OF OUR TRIP WE FLT PLANNED WITH AN ACFT THAT HAD 4 DEFERRALS THAT BASICALLY SHUT OFF THE FORWARD HALF OF THE ACFT FROM POTABLE WATER IN GALLEY AND LAVATORIES, COFFEE MAKERS AND CHILLERS. I REFUSED THE ACFT AND AFTER ARRIVING AT THE GATE FOUND OUT I WAS THE FOURTH CAPT TO TURN THIS ACFT DOWN TODAY FOR THE SAME WRITE-UPS. SO ALL DAY WE WERE TRYING TO MAKE UP TIME FROM WAITING FOR A NEW ACFT FOR THE 3 LEG DAY. THE SECOND DAY WE ENDED UP FLYING 8 HRS 39 MINS ACTUAL FLT TIME WITH A 15 HR 30 MIN LAYOVER THAT IS NOT REFLECTED IN THE TRIP. THE THIRD DAY WE HAVE ANOTHER MECHANICAL CONCERNING THE POTABLE WATER SUPPLY GOING DRY WITH NO WATER IN THE ACFT THE LAST HALF OF THE FLT. THIS WAS A CHRONIC ITEM AND THIS WAS ALSO THE FOURTH TIME IT HAPPENED IN 2 DAYS. WITHOUT GOING IN GREAT DETAIL, THE PRESSURE APPLIED TO TAKE AN ACFT BY MECHS, MECH SUPVRS, FLT MGMNT, FLT DUTY MGR, AND ZONE CTL HAS INCREASED OVER THE LAST FEW YRS AT THIS ACR. TODAY WAS JUST ANOTHER EXAMPLE THIS ACR WANTING TO DEFER ITEMS BECAUSE IT PASSES THE MEL DEFERRAL. NO ONE -- ESPECIALLY THE MECHS -- COULD TELL ME WHERE THIS WATER WAS GOING, BUT THEY SAID THAT IT COULD BE DEFERRED. THE 5 HRS OF CONSTANT RETELLING MY STORY AND THE REASON FOR NOT TAKING THE ACFT IS MORE TIRING THAN ACTUALLY FLYING THE ACFT. IT SEEMS THAT WHEN THE CAPT SAYS 'NO' HE IS NOT TAKING ACFT, THE CAPT HAS TO EXPLAIN HIS POS TO DISPATCH, FLT DUTY MGR, FLT MGR, ZONE CTL, PAX SVC, MECH, MECH SUPVR AND FLT ATTENDANTS, AND FOR MOST OF THESE PEOPLE, 'NO' MEANS 'WHAT CAN I DO THAT WILL MAKE YOU TAKE THE ACFT WITHOUT EXPLICITLY STATING THAT I WANT YOU TO TAKE THE ACFT?' THIS PROCESS CAN WEAR OR FATIGUE A PLT TO THE POINT WHERE HE MAY NOT FEEL IT RIGHT NOW BUT AFTER THE CONSTANT BOMBARDMENT 10-12 HRS LATER YOU FEEL LIKE YOU JUST RAN A MARATHON. AFTER WE GOT A NEW AIRPLANE WE PROCEEDED TO DEST, WE ENCOUNTERED MODERATE TURB AND TSTM DEVS FOR ABOUT 1 1/2 HRS. THIS ALSO CONTRIBUTED TO THE FATIGUE ISSUE. WE ARRIVED IN DEST AT XA11 WHICH OPERATING ON THE BACKSIDE OF OUR BODY CLOCK ALSO CONTRIBUTED TO THE FATIGUE.

Synopsis

AN ACR CAPT DISCUSSES THE REASONS AND RAMIFICATIONS FOR A FATIGUED PILOT CALLING HIS ACR TO BE REMOVED FROM A TRIP.

ACN: 772488

Narrative: 1

WHILE DSNDING VIA THE EAGUL 2 RNAV ARR INTO PHOENIX, WE MISSED AN ATC XING RESTR. WE WERE GIVEN THE CLRNC ABOUT 5 MINS PRIOR TO THE RESTR. I BELIEVE THE MAIN FACTOR OF THIS ERROR WAS CHRONIC PLT FATIGUE. DUE TO A PLT SHORTAGE AT OUR ACR, WE HAVE BEEN FLYING THE MAX HRS PER MONTH WITH MINIMUM DAYS OFF AND FLIP-FLOP SCHEDULES (EARLY MORNING WAKEUPS FOLLOWED BY ALL NIGHT FLYING). THIS LEADS TO A DEGREE OF FATIGUE WHERE I FORGET SOMETHING I WOULD NOT IF I WERE AWAKE. THE OTHER PROB IS THAT BOTH OF THE PLTS WERE SICK WITH FLU-LIKE SYMPTOMS FOR DAYS BEFORE THE INCIDENT. IF A PLT CALLS IN SICK WITH OUR ACR, THE PLT WILL IMMEDIATELY BE DIRECTED TO A CHIEF PLT IN AN ATTEMPT TO FORCE THE PLT TO WORK. THIS IS A VERY UNSAFE WAY TO RUN A COMPANY.

Synopsis

ACR FO REPORTS FAILURE TO MEET CROSSING RESTRICTION WAS DUE TO FLT CREW FATIGUE WHICH RESULTED FROM PHYSIOLOGICALLY PUNISHING FLT CREW SCHEDULING AND PRESSURE TO FLY WHEN SICK BY THE ACR.

ACN: 768455

Narrative: 1

THIS REPORT IS NOT ABOUT ONE SPECIFIC EVENT, BUT ABOUT A SERIES OF EVENTS THAT TAKEN ON THE WHOLE ILLUSTRATE THAT CHRONIC FATIGUE IS, IN MY OBSERVATION, HAVING A SIGNIFICANT IMPACT ON OPERATIONS AND SAFETY AT ACR IN THIS FLEET. THE AVERAGE LINE AND RESERVE PILOT THAT I FLY WITH, INCLUDING MYSELF, HAS BEEN FLYING/DEADHEADING OVER 90 HOURS MONTH AFTER MONTH. THIS QUANTITY OF FLYING IN AND OF ITSELF IS CHALLENGING, BUT HAS BEEN MADE MORE CHALLENGING DUE TO DELAYS, RE-ASSIGNMENTS, FLOW CONTROL, MAINTENANCE ISSUES, COLD WEATHER OPERATIONS, BAD WEATHER, AND CREW SCHEDULING, (E.G. THE PRACTICE OF CALLING IN THE MIDDLE OF THE NIGHT TO 'RESET' PILOT REST AND THE PRACTICE OF 180 DEGREE CIRCADIAN RHYTHM SWAPS). THE SYMPTOMS OF CHRONIC FATIGUE I HAVE EXPERIENCED, OBSERVED, OR HEARD CONFESSIONS OF INCLUDE: FORGETTING THAT AN ALTITUDE WAS CHANGED EVEN AFTER IT IS SET IN THE WINDOW AND VERIFIED (SO ONE PILOT THINKS THAT WE ARE BLOWING THROUGH AN ALTITUDE AND YELLS OUT OR PUSHES OVER), PILOTS PUTTING ALTITUDE CHANGES IN THE RADIO FREQUENCY WINDOW, PILOTS NOT CARING ENOUGH TO ENTER THE WEIGHT AND BALANCE INFO AFTER RECEIVING FINAL WEIGHTS, PILOTS FALLING ASLEEP AT THE STICK DUE TO MICRO SLEEP (WHEN THEY CANNOT PHYSICALLY STAY AWAKE), AND PILOTS ROUTINELY ASKING IF I MIND IF THEY TAKE A NAP BECAUSE THEY CANNOT KEEP THEIR EYES OPEN, PILOTS' INABILITY TO RETAIN THE RADIO FREQUENCY LONG ENOUGH IN THEIR HEAD TO REPEAT IT BACK, AND SEVERAL ALMOST MISSED ALTITUDE AND/OR SPEED RESTRICTIONS. I THINK THE TWO THINGS THAT ARE PREVENTING A HULL LOSS OR CRITICAL INCIDENT AT ACR ARE SOP AND MUSCLE MEMORY FROM HAVING SO MUCH EXPERIENCE IN THESE AIRPLANES. SO I AM SEEING ERRORS MOSTLY OF 'OMISSION' VS. ERRORS OF 'COMMISSION,' BUT OF COURSE, EVERY ACCIDENT IS CAUSED BY A CHAIN OF EVENTS. WHILE I AM ZZZ BASED, I OFTEN FLY WITH OTHER DOMICILES AND THE FATIGUE FACTOR SEEMS TO APPLY ACROSS THE BOARD. AT ZZZ, OUR TRIPS ARE NORMALLY FIRST OUT AND LAST IN TO SAVE ON HOTEL COSTS, WHICH WE UNDERSTAND, BUT THIS MEANS THAT YOUR BODY DOES A 180 TURN IN TWO DAYS TYPICALLY. IN ADDITION, THE LAST TWO FINAL LEGS I'VE FLOWN INTO ZZZ1 WERE DELAYED OVER TWO HOURS BECAUSE OUR AIRPLANE WAS GIVEN TO ANOTHER CREW. THIS, ACCORDING TO MY LINE HOLDING CO-PILOTS IS STANDARD PRACTICE OUT OF ZZZ2. THE OTHER FACTOR THAT ADDS TO FATIGUE IS THAT OFTEN TIMES THE NARROW BODY FLEETS, EVEN ON RESERVE, GIVE A BLOCK OF DAYS (MORE THAN FOUR) OFF AND THEN BUNCH UP FLYING IN ONE HALF OF THE MONTH. WHILE MOST PEOPLE LIKE A LONG BREAK, THE DAY AFTER DAY FLYING IN THE ENVIRONMENT WE NOW FLY IN WITH MAINTENANCE ISSUES (I DO NOT REMEMBER THE LAST FLIGHT WHEN I DID NOT HAVE TO RESET A CIRCUIT BREAKER OR DEAL WITH A MAINTENANCE ISSUE), COLD WEATHER OPS, FLOW CONTROL DELAYS, PASSENGER ISSUES EACH FLIGHT BECOMES 'PC LIKE,' AND THIS ADDS TO THE STRESS AND DISTRACTION LEVEL. IN ADDITION, NUMEROUS CREWS I HAVE FLOWN WITH HAVE HAD ISSUES WITH FOOD POISONING, MYSELF INCLUDED, DUE TO FOOD BEING BOARDED AND NOT CHILLED BETWEEN FLIGHTS, AND IN MY CASE, OJ BEING LEFT OUT ALL DAY. IT IS NOT UNCOMMON TO FIND MOLD ON THE FRUIT. THE ADDITIONAL STRESSOR IS THAT MANY OF THE CREWS ARE FLYING WHILE 'MARGINALLY' HEALTHY DUE TO FEELING PRESSURE TO FLY. EVERY CO PILOT I FLEW WITH IN THE LAST 17 DAYS WAS SICK, OR HAD BEEN SICK WITHIN THE LAST TWO WEEKS DUE TO A COLD OR STOMACH VIRUS. I PERSONALLY HAD THE DRY HEAVES FROM BAD OJ FOR MY TWO DAYS OFF, AND WAS UNABLE TO EAT MUCH FOR A WEEK AFTER. I FLEW 14 DAYS IN THE LAST 17 DAYS. EVERY CO PILOT I FLEW WITH, WITH THE EXCEPTION OF THE LAST SENIOR CO PILOT ON MY REASSIGNED FINAL LEG, HAD BEEN FLYING AS HARD AS I HAD. TODAY I SIGNED INTO COMPUTER TO CHECK WHETHER I WOULD FLY TOMORROW AND I FOUND AN E-MAIL FROM THE SYSTEM CHIEF PILOT ABOUT 'ABSENTEEISM.' WHILE I HAVE INTENDED TO WRITE THIS REPORT SINCE MY LAST TRIP, I WANTED TO DECOMPRESS FOR

A FEW DAYS AND TALK WITH OTHER ACR CAPTAINS TO MAKE SURE WHAT I WAS EXPERIENCING WAS NOT SIMPLY A FUNCTION OF BEING A RESERVE PILOT. THE E-MAIL FROM

Synopsis

AN AIR CARRIER PILOT ALLEGES SERIOUS FATIGUE ISSUES CAUSED BY OVER SCHEDULING, WX, SICKNESS, AND SLEEP LOSS. REPORTER FEARS SERIOUS CONSEQUENCES MAY OCCUR.

ACN: 764628

Narrative: 1

CAPT AND I HAD JUST COMPLETED FLT AND ARRIVED ZZZ1 OVER 2 HRS LATE. WE HAD JUST FINISHED A 12 HR 45 MIN DUTY PERIOD IN VERY CHALLENGING WINTER WX CONDITIONS. WE WERE VERY FATIGUED HAVING COME ALL THE WAY FROM ZZZ2 EARLIER THAT DAY. BECAUSE OUR FLT HAD BEEN VERY DELAYED IN ZZZ3 WE WOULD NOT HAVE BEEN ABLE TO RECEIVE ADEQUATE REST TO DEPART ON-TIME FOR THE NEXT LEG. WE CALLED THE CREW DESK TO INFORM THEM OF OUR PROB AND THE CAPT SPOKE TO A CREW SCHEDULER ON DUTY. THE SCHEDULER INFORMED US THAT THE COMPANY WAS UNWILLING TO DELAY THE DEP OF THE OUTBOUND ZZZ-ZZZ3. WE WERE SCHEDULED TO FLY A 10+ HR DUTY DAY THAT DAY AND WERE VERY CONCERNED ABOUT FATIGUE. THE SCHEDULER INFORMED US THAT WE COULD EITHER TAKE THE FLT AS SCHEDULED OR LOSE THE PAY AS A RESULT OF ANOTHER CREW BEING ASSIGNED TO THE TRIP. I DON'T BELIEVE THAT THE CREW SCHEDULER HAD THE INTENT TO PRESSURE US TO DO SOMETHING UNSAFE BUT THAT WAS THE NET RESULT. WE COULD EITHER FLY THE TRIP FATIGUED AND NOT LOSE ANY PAY, OR GET THE APPROPRIATE CREW REST AND LOSE THE PAY. WE DECIDED TO GIVE UP THE PAY AND OPTED FOR SAFETY. PAY CAN BE A BIG INCENTIVE TO DO SOMETHING UNSAFE OR PUSH THE BOUNDARIES OF SAFETY, ESPECIALLY IN THE CURRENT ENVIRONMENT OF HOSTILE PLT WORK CONTRACTS.

Synopsis

AN ACR CREW WAS THREATENED WITH PAY LOSS FOR REFUSING TO FLY A TRIP THE NEXT DAY BECAUSE OF INADEQUATE REST FOLLOWING WX DELAYED FLTS THAT DAY.

ACN: 672366

Narrative: 1

DANGEROUSLY DESIGNED PLT SCHEDULE ON B777. I PREDICT INCIDENT/ACCIDENT DUE TO FATIGUE ON THIS IDENT. FATIGUE FACTOR DUE TO BACK SIDE OF CLOCK FLYING WITH INADEQUATE REST FACILITY IS BEING NEGLECTED AS A CONSIDERATION. I RECOMMEND PROVIDING AN ADEQUATE REST FACILITY AT NRT. CURRENT REST FACILITY IN OPS IS ADJACENT TO FLT OPS CTR WHICH STAFF ARE FORCED TO SHOUT INTO THEIR COMS GEAR TO MAKE THEMSELVES HEARD OVER RAMP NOISE. PLT'S BODY CLOCK IS XA00 AT REST BREAK BTWN FLTS AT WHICH TIME REST WOULD BE BENEFICIAL. I HAD SERIOUS DOUBTS AS TO MY ALERTNESS. WE DELAYED THE FLT TO ASSESS OUR FITNESS TO CONTINUE THE OP. WE MADE MULTIPLE MENTAL ERRORS SUCH AS LOADING THE WRONG SID TRANSITION AFTER MISUNDERSTANDING THE CLRNC, FAILING TO SECURE THE APU AFTER ENG START. OPS MADE REPEATED ATTEMPTS TO PRESSURE US INTO GETTING OUT ON TIME. OUR CREWS ARE BEING PUT INTO A SEVERELY DANGEROUS SIT WITH FATIGUE AND PRESSURE FROM OPS TO OPERATE THIS FLT. PROVIDING AN ADEQUATE REST FACILITY WOULD ELEVATE THIS EXTREMELY DANGEROUS SIT.

Synopsis

FO OF B777 ADVISES THAT FATIGUE DUE TO INADEQUATE REST FACILITIES AT A MULTI-LEG INTL FLT SEQUENCE STOPOVER ARPT RESULTED IN FMC PROGRAMMING ERRORS AND FAILURE TO SHUT DOWN THE ACFT APU AFTER ENG START.

ACN: 662063

Narrative: 1

XA:00 AM WAKE UP TO ARRIVE ORD OPS AT XD:00 AM. ZZZ1 TURN ACFT HAD AN ACARS PROB WHICH WOULD NOT DELIVER PDC. GOT BACK TO ORD FOR ACFT CHANGE AND DESIRE TO GET NEXT FLT UNDERWAY TO ZZZ1. NORMAL SOP FOLLOWED DURING PREFLT. SOMEHOW I MISSED PDC NOT ON. LAUNCHED 2 MINS EARLY FOR ZZZ1. DURING TAXI OUT SAW XPONDER 0000. DID NOT SEE PDC AND DISCOVERED WE DID NOT HAVE IT. GOT PDC ON PRINTER ON TXWY, ALL ELSE NORMAL. FATIGUE IS PART OF THIS. XA:00 AM WAKE UPS WERE GREAT WHEN 30 YRS OLD. NOW THAT MY PAY IS SLASHED, MY PENSION IS GONE, MY FAMILY IS SUFFERING. SO MANY PRESSURES LAID ON MY SHOULDERS, ADD IN A DYSFUNCTIONAL MANAGEMENT WHICH HAS SLASHED SAFETY FOR AN ECONOMIC GOAL, IE NOT ENOUGH MECHANICS TO SAFELY OPERATE THE SYSTEM, LIE ABOUT WX, SHORT FUEL WITHOUT REAL OPERATIONAL CONSIDERATIONS. THIS FLT

I ADDED 3000 LBS OF FUEL BECAUSE I HAVE BEEN TO ZZZ1 ON A CLEAR DAY BEFORE. HAD I NOT ADDED FUEL, I WOULD HAVE LANDED AT ZZZ2 OR ZZZ. I ARRIVED EWR WITH 5600 LBS. THE FLT PLAN FUEL IS A JOKE YOU KNOW. I FULLY UNDERSTAND THE REASONING AND RESPONSIBILITY OF FUEL SAVINGS. DUTY DAY WAS SCHEDULED FOR 10:44 WITH MAX AT 11:00 HRS. XA:00 AM WAKE UP WITH MAJOR DISRUPTIONS TO FAMILY LIFE IS A HORRIBLE AND DANGEROUS MIX. YOU KNOW DARN WELL ZZZ1 FLTS NORMALLY EXCEED PLAN AS DID THIS ONE. THE TOLL OF CHRONIC FATIGUE IS RUNNING THROUGH THIS AIRLINE AND MANAGEMENT LOOKS TOWARD A BEAN COUNTER RATHER THAN BEING OBSERVANT OF ITS RULE OF SAFETY FIRST WHICH MANAGEMENT IS VIOLATING ON A DAILY BASIS. LOOK AT DEFERRED ITEMS ON FLT XXX. THREE DAYS RUNNING APU FOR MEL'D #2 GEN WITH FMGC ISSUES AND HITS ON CPC1??? NOTICE THE CB WX? DO YOU NOT SEE THE EROSION OF SAFETY ON THIS PROPERTY? FATIGUE, STRESS, ILLNESS, FOCUS. MY CREWS ARE GETTING DOG EARED. THEY CAN'T CALL IN FATIGUED BECAUSE IT WOULD PUT THEM IN BANKRUPTCY. THOSE WHO CAN FLY 95 HRS ARE EXHAUSTED AND YOU KNOW IT. PLTS SHOULD BE FRESH FOR THEIR FLTS AS A MATTER OF SAFETY. DID YOU FORGET THAT PART OR IS IT PART OF THE ACCEPTABLE EROSION OF SAFETY HERE?

Synopsis

A320 CAPT FORGOT TO OBTAIN PDC BEFORE LEAVING GATE AND REPORTS FATIGUE AS A CONTRIBUTING FACTOR.

Airline X

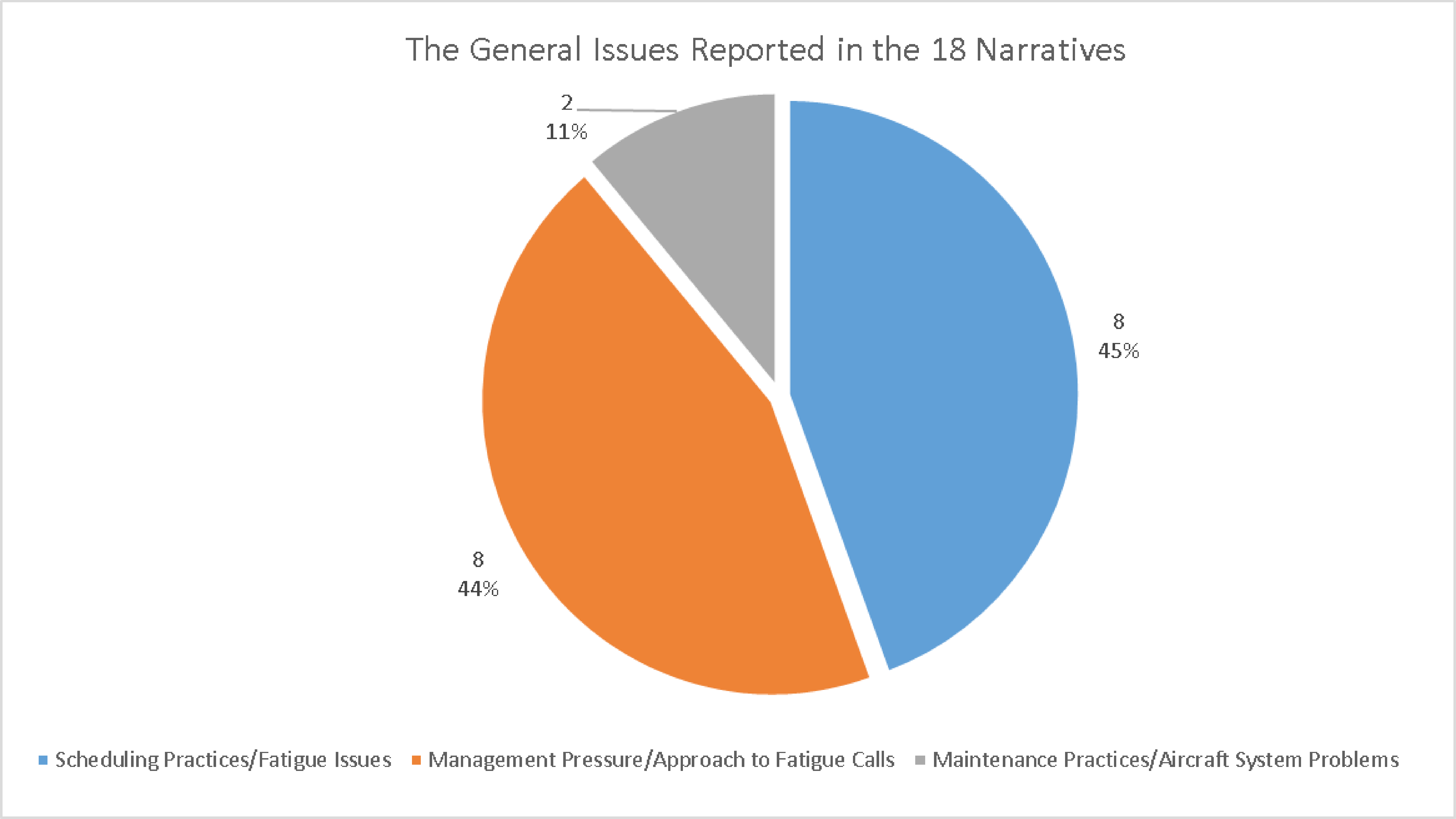
BY: JON MARTIN, NURETTIN DINLER, AND GREG WHELAN

Purpose of the presentation

- **To provide an overview of the organizational culture at Airline X.**

  This presentation covers <u>the following topics</u>:

  - ✓ A Preliminary Assessment of the Airline X's culture grounded in the voluntary report narratives,
  - ✓ Considerations associated with the Airline X's current organizational culture,
  - ✓ A list of the potential areas of inquiry that might assist in developing further organizational study of Airline X, and
  - ✓ A preliminary plan of action to assist in further study of the organizational culture of Airline X.


The General Issues Reported in the 18 Narratives
2
11%
8
45%
8
44%
Scheduling Practices/Fatigue Issues
Management Pressure/Approach to Fatigue Calls
Maintenance Practices/Aircraft System Problems

The Current Operating Culture at Airline X

- Based on the 18 voluntary reports, our committee has found four (main) themes to describe Airline X’s current operating culture:
- **Leadership**
- **Inflexibility**
- **Communication Issues**
- **Job Dissatisfaction**

1-Leadership

- “**Company culture starts with leadership**.”
- The airline leaders seem to be placing profits (or lack of employees) over the well-being of the employees operating for the airline.
- Leaders’ monetary-oriented behaviors shape the middle management’s behaviors as well.
- The management could not create trust among crews and the airline.
- According to some crews,
  - **Airline X’s commitment to aviation safety is untrustworthy, and**
  - **Managers appear to only care about fiduciary responsibility to stockholders and labor relations instead of the priority of safety.**

2. Inflexibility

- **Airline X’s working schedules are inflexible, which ultimately creates fatigue calls**
- Scheduling will manipulate crew’s schedules to maximize efficiency at the cost of human factors (fatigue).
- Pilots/Mechanics/Flight Attendants are commonly working long duty days with minimal rest (12.5 hour shifts for mechanics, upwards of 17-hour duty days for crew),
  - “With this company I've missed birthdays, weddings, funerals, anniversaries, etc., and have done so because my work schedule.”
- This is combined with a culture centered around punishment for “calling in fatigued”
  - Several violations of the "ask no question fatigue policy."

3- Communication

- The management seems to have focused on only whether tasks are completed in a timely manner.
- It makes it difficult to build an effective relationship with an employee(crew) unless tasks are completed in a timely manner.
- Communication channels and procedures at Airline X are problematic and insufficient when having to deal with fatigue calls.
- Airline X does not provide crews with an environment to let their opinion be heard when it comes to adjusting work schedules,
- Crews and middle management do not know what is the appropriate tone and language in the workplace (i.e., “Dude” and “Listen son”)

4- Job dissatisfaction

- The crews are dissatisfied at their jobs.
  - …”morale is at an all time low.”
- Crews are not able to balance between work and life.
- Employees (crews) are often worried about losing their jobs given the airline’s uncertain financial future.
- When faced with an unsafe decision, if the crew decides to exercise their right to “call in fatigued” management will punish or try and strong arm the crew into flying at the risk of safety

Potential areas of inquiry

- **Top Management**
  - The current operating culture of Airline X might be related to the perceived power of the airline's owner(s) and stakeholders.
- **Organizational Structures**
  - To understand norms, rules and cultural values, it might be beneficial to have a look at the type of organizational structure (tall and highly centralized vs flat and decentralized
- **Employees' Professional Backgrounds and National Characteristics**
  - Although employees of this airline are generally newer entrants into the industry, they may come from different professional backgrounds and national characteristics.

Potential areas of inquiry

- **Communication Styles**
  - An analysis of the managers’ and leaders’ communication styles at Airline X might facilitate further study of the airline.
- **Customers**
  - The entire experience of Airline X’s passengers might provide important clues as to what the airline values most (i.e., costs, customer satisfaction etc.)
- **Competitors**
  - The airline industry is a highly competitive industry. The fixed costs are extremely high in this industry. An analysis of the competitors might facilitate further organizational study of the airline.

The plan of action for further study

- **Conduct a survey of flight crews, dispatchers, maintenance, and schedulers**
  - Provide a voluntary, deidentified survey for people to express feelings about the organizational culture
- **Direct observations of operations**
  - Witness first-hand how personnel follow established procedures when abnormal circumstances arise
  - Document how all parties involved conducted themselves during the process

Improvement Recommendations for the Organizational Culture

- **Work-Life Balance**
  - Provide the opportunity for the employees to equally prioritize the demands of their career and the demands of their personal life,
  - Adjust work schedules to fit employees’ interests and needs as well.
- **Management Commitment**
  - Create a clear management commitment to safety,
  - Create a workplace that can productively deal with conflicts among employees and middle managers.

Improvement Recommendations for the Organizational Culture

- **Communication**
  - Increase the communication methods related to quality, safety, efficiency at work,
  - Develop an open-door policy in which all crews can contribute to scheduling practices without fear or judgment,
  - Make interviews with the employees to understand conflicts in the workplace or hold weekly team meetings,
- **Documentation**
  - Review the current fatigue policy,
  - Restructure company's communication plan in the workplace .
- **Employee-Oriented Managers**
  - Conduct training programs for middle managers to learn about best people management practices,
  - Allow managers to promote a different way of thinking regarding fatigue calls,
  - Insist on fairness and respect for the fatigue calls.

Improvement Recommendations for the Organizational Culture

- **Respect**
  - If managers treat crews with care and respect in the case of fatigue calls, it is likely that crews will be happy in their jobs and will be more actively engaged in their jobs.
- **Alternative Work Schedules**
  - Airline X should reduce hours worked each day by hiring new employees or alternate weeks worked(i.e., one week on, one week off)
- **Encourage work-life balance**
  - Employees are human. They have kids, doctor appointments and everything that makes life what it is. Thus, employees should be given periodic wellness days.

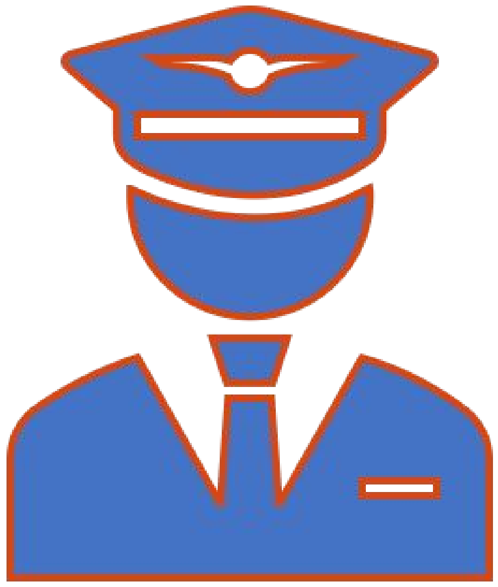
Improvement Recommendations for the Organizational Culture

- **Open Communication**
  - If Airline X implements an open-door communication policy, it may help foster communication between middle management and crews.
- **Focus**
  - Airline X focuses on the stakeholders' interests and purposes, while employees have an intention of only building experience for better paying positions with a major airline. Therefore, employees and managers should be promoted to work towards one mission, one vision, and the same goals.
- **Motivation**
  - Employees' morale levels and loyalty to the company should be increased.

Conclusion:

- The role management is playing in the organizations culture will be the primary focus as we move forward
- Fixing the tension between the employees and the airline should improve productivity and efficiency to some degree
- Further “rest rules” changes may be required and will be the secondary focus of the study

AIRLINE Y



Katie Bosman

Michael Chertude

BOTTOM LINE UP FRONT (BLUF)

- Recent trends in voluntary reporting data from Airline Y has created safety concerns from within the FAA.
- Airline Y is a major airline operating aircraft with 100 or more seats in domestic and international flights where most of the flights are of longer lengths with just under 50% to international destinations.
- A preliminary assessment has been conducted by our firm where we have reviewed 17 ACNs and have found 4 major problem areas which requires further investigation:
  - Maintenance Malpractice
  - Fatigue
  - Retribution from Management
  - Loop Holes/Spirit of the Law

MAINTENANCE MALPRACTICE

- B757 Captain notes a fraudulent maintenance release for a landing gear hydraulic leak.
  - "Each employee group that is responsible for the safe operation of aircraft is now willing to compromise their duties to achieve on time departures and even send an aircraft out for a transcontinental flight full of passengers with a known hydraulic defect".
- Maintenance:
  - Time pressure, not enough mechanics. Sloppy logbooks.
- Maintenance improperly signed off (pencil-whipped) missing placard.

FATIGUE

- “Reserves are expected to cover INTERNATIONAL trips without regard to the PT restrictions that are required for DOMESTIC trips”.
  - This policy resulted in the Captain being on continuous duty in excess of 24 hours and falling asleep several times momentarily during cruise.
- The mechanic told “maintenance controllers that [he] was tired and needed sleep. They just kept insisting that [he] get out there and fix those planes”.
  - A line mechanic worked five days of extended hours with little to no rest due to Maintenance Control.
- “I am writing this report to identify that stress and emotional issues are amplified by the on-going fatiguing schedule, and that the pressure we continue to receive from the company serves only to make things worse”.
- Pilot shortage at the airline, forcing pilots to fly maximum hours with minimum days off.
- Poor scheduling: Early morning wakeups followed by all-night flying.

RETRIBUTION FROM MANAGEMENT

- First Officers assigned to an International flight expressed concern over duty day due to creeping delays and the company relieved the pilots with a pay impact.
- "Corporate pressure: Punitive action against the employee who complains, dares to mention what is wrong or unethical and tries to do the right thing".
- Crew received support from Flight Office, but Crew Scheduling "was less than cooperative" the next day: "This type of pressure from the crew desk is unacceptable and will result in crews feeling that they cannot call in fatigued".
- Called in sick for trip; discussed with (union) representative.
  - Felt that "some sort of disciplinary action would be waiting for me, for calling in sick".
- "It seems that I was disciplined from the company for being fatigued when in fact many of the factors that attributed to the fatigue call were due to actions by the ACR".
- An ACR crew was threatened with pay loss for refusing to fly a trip the next day because of inadequate rest following wx delayed flights that day.

LOOP HOLES/SPIRIT OF THE LAW

- Upon arrival, Maintenance Control decided to MEL the equipment again and "the intention was to minimize delay, and have the crew continue to fly with an inoperative NDU2, in the interest of "keeping on schedule"" even though there was "a severe weather advisory for thunderstorms" at the destination and enroute.
- Crew scheduling is getting 'around' FAR's by using 'released into rest' loophole, thereby creating a situation where pilots are becoming fatigued.
- Crew Scheduling:
  - "Though technically legal, is completely unsafe".
- "The toll of chronic fatigue is running through this airline and management looks toward a bean counter rather than being observant of its rule of safety first which management is violating on a daily basis".

CULTURE ASSESSMENT

- To define and analyze the safety culture of Airline Y:
  - Analysis of adverse events (ASRS reports, incident/accident reports).
  - Safety climate survey to all operational personnel.
    - Assesses the current attitudes and perceptions of safety.
  - Qualitative analysis: Focus group interviews and operational observations:
    - Identify the prevailing dominant state of the company's safety culture.
    - Identify pressure points and communication gaps in the system.
    - Identify and analyze positive safety cases and stories; what went right?
    - Uncover underlying values and assumptions in the work force and management.

CULTURE ASSESSMENT

- Research has shown that airline organizational policies and procedures influence safety culture, which in turn affects the creation of latent failures that impact safety performance.
- The "dominant states" of an organization's safety culture can be assessed along a continuum (Patankar & Sabin, 2010):

- Preliminary analysis of ASRS reports indicate that the safety culture of Airline Y may be somewhere between the "Secretive" and "Blame" areas of the continuum; certainly far removed from the ideal "just culture" identified by researchers and the FAA as the ideal environment for identifying and containing errors.

RECOMMENDATIONS

- Airline Y:
  - Create Culture Committees.
  - Revamp sick call/fatigue reporting to remove management for fear of retribution.
  - Revamp current scheduling software to take into account circadian rhythm and domestic/international callout times.
  - Properly staff maintenance outposts with personnel and parts.
  - Conduct culture survey company wide to further identify problems, and conduct a deep dive into already identified problems.
- FAA:
  - Immediate maintenance audit and review of logbooks.
  - Review FAR/AIM to close loopholes Airline Y is exploiting.
  - Conduct a review of Airline Y's SMS.

Grading Rubric for the Organization Theory Paper (100 Points)

Course Term Paper: Describe the organizational culture of a particular airline or other organization within the transportation industry, including the impact of their specific organizational culture on performance and safety. Describe how you would use an understanding of organization theory to improve the organization (16-18 pages, standard APA format; approx. 5000-6000 words). The final paper should be of sufficient quality to be suitable in the student's final program portfolio and aspire to quality consistent with a journal submission.

		Unacceptable (1)	Poor (2)	Fair (3)	Good (4)	Excellent (5)
Contribution (10)	Originality	Presents a concept, theory or perspective that directly duplicates prior knowledge	Presents a concept, theory or perspective that highly mimics prior knowledge	Presents a concept, theory or perspective that is consistent with prior knowledge	Presents a concept, theory or perspective that is unique	Provides a new concept, theory or perspective non-existent
	Uniqueness	Presents an analysis that fails to contribute to existing knowledge	Presents an analysis that minimally contributes to existing knowledge	Presents an analysis that generally contributes to existing knowledge	Presents an analysis that moderately contributes to existing knowledge	Presents an analysis that makes a significant contribution to existing knowledge
)(15onuctiodIntr	Audience Engagement	Fails to engage the audience within the introduction	Minimally engages the audience within the introduction	Succeeds at engaging the audience within the introduction	Provides an introductory story or situation that engages the audience	Provides a unique story or situation that engages the audience
	Problem Significance or Contribution	Fails to illustrate the significance or contribution of the paper	Minimally illustrates the significance or contribution of the paper	Adequately illustrates the significance or contribution of the paper	Provides supporting evidence of the significance or contribution of the paper	Provides strong supporting evidence of the significance or contribution of the paper
	Purpose Statement	Fails to provide a purpose statement in the introduction	Provides a purpose statement that is vague, unclear and poorly written	Provides a purpose statement that is vague, unclear or poorly written	Provides a clear, well written purpose statement in the introduction	Provides a clear, specific, and well written purpose statement in the introduction
)(20snceereRef	Quality of Sources	Fails to use citations from scholarly sources	Provides citations from 1 or less scholarly sources	Provides citations from at least 3 scholarly sources	Provides citations from at least 5 scholarly sources	Provides citations from at least 8 scholarly sources
	Relevance of Sources	Sources used are irrelevant to the discussion or theme	Supporting sources weakly contribute to or support the discussion or theme	Supporting sources are relevant to the discussion or theme	Supporting sources contribute to and support the discussion or theme	Supporting sources strongly contribute to the discussion or theme
	Evidence of Timely & Seminal Sources	The use of relevant literature fails to use seminal or current sources	The use of relevant literature minimally uses seminal or current sources	The use of relevant literature uses seminal or current sources	The use of relevant literature uses both seminal and current sources	The use of relevant literature heavily utilizes seminal and current sources
	Comprehensive Sources	The references used fail to summarize or add to the topic or theme	The references used summarize or add to the topic or theme	The references used generally identify and add to the topic or theme	The references used provide a general overview of the topic or theme	The references used provide a comprehensive overview of the topic or theme
	Relevance of the Study to Aviation Organization Theory	The chosen study does not apply to aviation organization theory	The chosen study minimally applies to aviation organization theory	The chosen study has direct relevance to aviation organization theory	The chosen study strongly contributes to aviation organization theory	The chosen study provides new or original application to aviation organization theory

Assignment Compliance (30)	Demonstrates a Connection between the Analysis and Industry Knowledge	Fails to use other sources to connect the analysis with industry knowledge	Minimally uses other sources to connect the analysis with industry knowledge	Uses other sources to connect the analysis with industry knowledge	Uses other sources to illustrate a direct connection to industry knowledge	Uses other sources to connect with and add to industry knowledge
	Demonstrates an Understanding of Organization Theory	The paper fails to illustrate an understanding of organization theory	The paper minimally illustrates an understanding of organization theory	The paper illustrates an understanding of organization theory	The paper illustrates the nuances and complexities of organization theory	The paper illustrates the nuances and complexities of organization theory
	Use of Industry Examples	Fails to use industry examples to provide examples or application	Minimally uses industry examples to provide examples or application	Uses industry examples to provide examples or application	Uses multiple industry examples to provide examples or application	Uses more than 4 industry examples to provide examples or application
	Recommendations for Organizational Improvement	Recommendations for organizational improvement are not included	Recommendations for organizational improvement are included but are vague or not correlated to supporting evidence	Recommendations for organizational improvement are included and are relevant to the supporting evidence	Recommendations for organizational improvement, which contribute to a greater understanding of the organizational analysis	Recommendations for organizational improvement are included, which lend support to to a greater understanding of the organization theory
	Abstract	A suitable summary is not submitted	A suitable summary is submitted by the end of week 10	A suitable summary is submitted by the end of week 8	A suitable summary is submitted by the end of week 8 that summarizes the topic and identifies the selected organization	A suitable summary is submitted by the end of week 8 that summarizes the topic and outlines the application to organization theory
Conclusions (10)	Consistency of Results and Conclusions with Supporting Evidence	Results and conclusions are unsupported by the presented information	Results and conclusions are inconsistent with the presented information	Results and conclusions generally reflect the presented information	Results and conclusions clearly reflect the presented information	Results and conclusions are clearly linked to the presented information
	Results and Conclusions Discussion	Results and conclusions are not discussed	Results and conclusions are poorly discussed	Results and conclusions are discussed without recommendations for future application	Results and conclusions are clearly discussed with recommendations for future application	Results and conclusions are clearly discussed and provide a foundation for future application
Format (15)	Adherence to the Word Count Limits	Fails to provide a manuscript of at least 3500 words	Provides a final manuscript that is less than 4000 words	Provides a final manuscript that is less than 4500 words	Provides a final manuscript of less than 5000 words	Provides a final manuscript between 5000 & 6000 words including references
	Free of Editorial Errors	Provides a final manuscript containing sufficient errors to be unreadable	Provides a final manuscript with 10 or less significant errors	Provides a final manuscript with 5 or less significant errors	Provides a final manuscript with 3 or less significant errors	Provides a final manuscript with no significant errors
	Appropriate Adherence to APA Guidelines	Consistently fails to adhere to APA guidelines	Demonstrates numerous instances of non-compliance with APA guidelines	Generally adheres to APA guidelines	Consistently adheres to APA guidelines	Correctly adheres to APA guidelines in all cases

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Rubric Statistics Report

Frequency Distribution

Research Paper

Criteria		Unsatisfa	Poor	Fair	Good	Excellent	Number Evaluatior	Average	Median	Mode	Std. Deviation
Originality	Points	1.00	2.00	3.00	4.00	5.00					
		0%	0%	20%	0%	80%	5	4.60	5.00	5.00	0.89
Uniqueness	Points	1.00	2.00	3.00	4.00	5.00					
		0%	0%	0%	20%	80%	5	4.80	5.00	5.00	0.45
Audience Engagement	Points	1.00	2.00	3.00	4.00	5.00					
		0%	0%	0%	0%	100%	5	5.00	5.00	5.00	0.00
Problem Significance	Points	1.00	2.00	3.00	4.00	5.00					
		0%	0%	0%	40%	60%	5	4.60	5.00	5.00	0.55
Purpose Statement	Points	1.00	2.00	3.00	4.00	5.00					
		0%	0%	20%	20%	60%	5	4.40	5.00	5.00	0.89
Scholarly Sources	Points	1.00	2.00	3.00	4.00	5.00					
		0%	0%	0%	60%	40%	5	4.40	4.00	4.00	0.55
Source Relevance	Points	1.00	2.00	3.00	4.00	5.00					
		0%	0%	0%	40%	60%	5	4.60	5.00	5.00	0.55

Final Student Term Paper

Rubric Statistics Report

Criteria		Unsatisfac	Poor	Fair	Good	Excellent	Number Evaluation	Average	Median	Mode	Std. Deviation
Source Timeliness	Points	1.00	2.00	3.00	4.00	5.00					
		0%	0%	20%	20%	60%	5	4.40	5.00	5.00	0.89
Source Comprehensiv	Points	1.00	2.00	3.00	4.00	5.00					
		0%	0%	0%	40%	60%	5	4.60	5.00	5.00	0.55
Course Relevance	Points	1.00	2.00	3.00	4.00	5.00					
		0%	0%	20%	20%	60%	5	4.40	5.00	5.00	0.89
Application of Industry Knowledge	Points	1.00	2.00	3.00	4.00	5.00					
		0%	0%	0%	0%	100%	5	5.00	5.00	5.00	0.00
Understanding of Aviation Organization Theory	Points	1.00	2.00	3.00	4.00	5.00					
		0%	0%	40%	20%	40%	5	4.00	4.00	3.00	1.00
Industry Examples	Points	1.00	2.00	3.00	4.00	5.00					
		0%	0%	0%	0%	100%	5	5.00	5.00	5.00	0.00
Abstract	Points	1.00	2.00	3.00	4.00	5.00					
		0%	0%	0%	0%	100%	5	5.00	5.00	5.00	0.00

Final Student Term Paper

Rubric Statistics Report

Criteria		Unsatisfac	Poor	Fair	Good	Excellent	Number Evaluatior	Average	Median	Mode	Std. Deviation
Evidence for Conlusions	Points	1.00	2.00	3.00	4.00	5.00					
		0%	0%	0%	40%	60%	5	4.60	5.00	5.00	0.55
Discussion of Conclusions	Points	1.00	2.00	3.00	4.00	5.00					
		0%	0%	20%	60%	20%	5	4.00	4.00	4.00	0.71
Word Count	Points	1.00	2.00	3.00	4.00	5.00					
		0%	0%	0%	0%	100%	5	5.00	5.00	5.00	0.00
Editorial Errors	Points	1.00	2.00	3.00	4.00	5.00					
		0%	0%	0%	0%	100%	5	5.00	5.00	5.00	0.00
Adherence to APA	Points	1.00	2.00	3.00	4.00	5.00					
		0%	0%	0%	0%	100%	5	5.00	5.00	5.00	0.00
Recommenda for Organizationa Improvement	Points	1.00	2.00	3.00	4.00	5.00					
		0%	0%	20%	60%	20%	5	4.00	4.00	4.00	0.71

Organizational Changes and Public Private Partnerships (PPPs) at National Aeronautics and Space Administration (NASA)

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Abstract

The historical and present culture of NASA was examined to identify organizational characteristics. Through effective utilization of organizational theories such as ‘Culture and Leadership,’ ‘Organizational Economics Theory,’ ‘Power and Organizational Safety,’ and ‘Theories of Organizations and Environments,’ a common thread emerged. For the past decade, NASA has been undergoing a positive change resulting in a cultural/organizational shift and the recent utilization of PPPs.

Keywords: organization, theory, culture, leadership, economics, power, safety, environments, PPP

Organizational Culture Shift at NASA

Over the past decade, NASA has undergone a drastic organizational cultural shift. NASA is currently comprised of ten centers throughout the United States, and each center has their own culture. Historically, these separate cultures have posed a problem at NASA because there has been a lack of communication and integration of the sister centers. Because NASA is a government agency, there are also multiple levels of concerns which affects how NASA operates. One of the primary hurdles NASA faces is inherent to the fact that it is a public organization. Take how the organization handles budgetary issues and administration turnover, because with administration turnover comes a different set of priorities and can ultimately turn budgets on their heads thus changing the way forward for the organization. Also, this high dependency on budgetary funding and timelines has caused a historical problem at NASA where safety sometimes finds itself in the back seat.

Because of the complex organizational problems NASA has faced in the past, expert advice was sought out from Steve Clarke, who is the current Deputy Associate Administrator for Aeronautics Research Mission Directorate (ARMD) at NASA headquarters. His current responsibilities are responsibility "for leading long-term strategic, portfolio, and budget planning and analysis for ARMD to guide long-term portfolio requirements and program balance to meet national needs" (NASA Bio, n.d.). His previous roles include being "the deputy associate administrator for exploration in NASA's Science Mission Directorate as well as serving as a senior policy analyst with the Office of Science and Technology Policy (OSTP) in the Executive Office of the President" (NASA Bio, n.d.).

This paper will take you through the challenges that NASA has faced during the Shuttle era, as well as the response to their shortcomings. The NASA of 2020 is much different from the

NASA of the 80’s and 90’s, and their reliance on PPPs is a fundamental organizational culture change which has taken decades to accomplish. During this transitional phase of the organization, NASA has successfully utilized organizational theory to implement a deep cultural change in how they operate their business.

Culture at NASA During Challenger and Columbia

On October 1, 1958 NASA opened their doors for business where they “accelerated the work already started on human and robotic spaceflight” (NASA History, n.d.). NASA was initially created as a response to the Soviet Union’s October 4, 1957 launch of Sputnik I; the first manmade satellite launch. Over the following years, important projects such as Project Mercury, Gemini, Apollo, Skylab, Space Shuttle, International Space Station, and currently Crew Dragon (Space X) have trudged their way through the NASA organizational machine with multiple successes, but also some failures. After each of these major failures, specifically those which resulted in the loss of life, investigations identified multiple important lessons. One common thread throughout, specifically with the Challenger and Columbia disaster, was a deeper examination into the organizational culture and leadership at NASA.

Following Space Shuttle Challenger, mission 51-L, explosion on January 28, 1986, a Presidential Commission was convened via executive Order 12546 of February 3, 1986 to investigate the causes. Ultimately,

> the consensus of the Commission and participating investigative agencies is that the loss of the Space Shuttle Challenger was caused by a failure in the joint between the two lower segments of the right Solid Rocket Motor. The specific failure was the destruction of the seals that are intended to prevent hot gasses from leaking through the joint during the propellant burn of the rocket motor. The evidence assembled by the Commission indicates that no other element of the Space Shuttle system contributed to this failure. (Presidential Commission on the Space Shuttle Challenger Accident, 1986, p. 40)

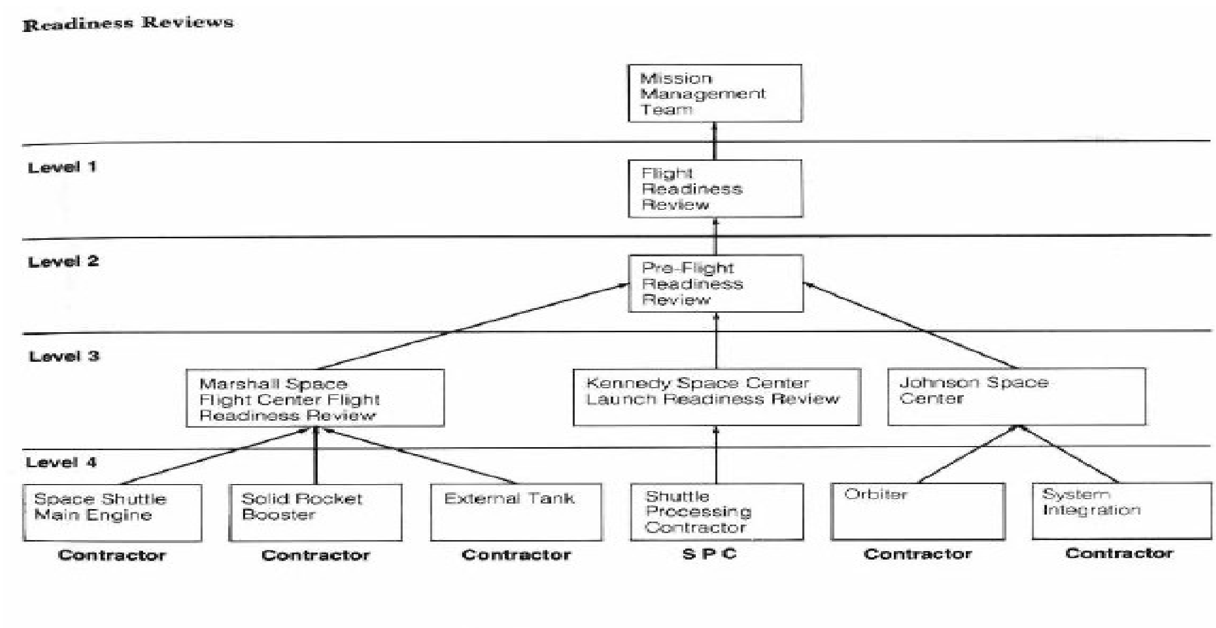
While this mechanical failure caused the explosion, the culture of NASA was also under intense scrutiny.

Prior to any shuttle launch, there are multiple levels of review which occur prior to flight approval. Figure 1 below shows the hierarchy of the review process which was designed to properly evaluate risks to the mission and make a final determination for launch. On January 23, 1986, the Associate Administrator for Space flight, Jesse Moore,

> issued a directive stating that the Flight Readiness Review had been conducted on the 15h and that 51-L was ready to fly pending closeout of open work, satisfactory countdown, and completion of remaining Flight Readiness Review action items, which were to be closed out during the L-1 meeting. No problems with the Solid Rocket Booster were identified. (Presidential Commission on the Space Shuttle Challenger Accident, 1986, p. 85)

With such a ‘thorough review process’, how could Challenger possibly have launched with such a fatal flaw?

Figure 1 (Presidential Commission on the Space Shuttle Challenger Accident, 1986).



Readiness reviews for both the launch and the flight of a Shuttle mission are conducted at ascending levels that begin with contractors.

NOTE: See Chart on page 102 for description of management "levels" and organization chain of command.

“Culture is to the organization what personality is to the individual – a hidden, yet unifying theme that provides meaning, direction, and mobilization” (Shafritz et al., 2015, p. 292).

Organizational cultures often consist "of the beliefs, values, norms, customs, and practices of the organization," good and bad (McCurdy, 1992, p. 189). Steve Clarke stated that the culture at NASA in the 80's and 90's was that they managed everything, and contractors did as they were told. He went as far to also say that NASA told their contractors to "do what your told, we pay you, anything different and we will get lawyers involved" (Clarke, 2020). Unfortunately, this was one of the main causal factors into why Space Shuttle Challenger was launched on an unprecedented cold day.

During the Level III review for Challenger, which consisted of NASA personnel and element contractors, "objections to launch voiced by Morton Thiokol c engineers about the detrimental effect of cold temperatures on the performance of the Solid Rocket Motor joint seal" never made it to Level I or II reviews (Presidential Commission on the Space Shuttle Challenger Accident, 1986, p. 85). "NASA operates in the realm of high technology, where small errors can produce huge accidents," and overlooking/not passing up information regarding the predicted launch temperature and its impact on the Solid Rocket Motor produced a huge accident (McCurdy, 1992, p 190). During the Presidential Commission, Allan McDonald, stated that the initial recommendation from Morton Thiokol "was not to launch below 53 Fahrenheit because that was [their] lowest acceptable experience base and had demonstrated some blowby from a year ago" (McDonald, 1992, p. 230). Up until that point during the investigation, NASA officials had been less then forthright, and the commission "was irritated with NASA management about their lack of forthrightness and reluctance to be upfront with all the information" (McDonald, 1992, p. 238). Unfortunately, organizational culture at NASA had allowed the Challenger accident to occur, and even during the Presidential Commission, they were still trying to deceive and pass off blame.

Years later, the Columbia accident occurred in which the investigation board stated that not much had changed at NASA since the Challenger accident. On February 1, 2003, Space Shuttle Columbia, STS-107, exploded on re-entry killing all seven crew members. The cause of Columbia's loss was:

> a breach in the Thermal Protection System on the leading edge of the left wing, caused by a piece of insulating foam which separated from the left bipod ramp section of the External Tank at 81.7 seconds after launch, and struck the wing in the vicinity of the lower half of Reinforced Carbon panel number 8. During re-entry this breach in the Thermal Protection System allowed superheated air to penetrate through the leading edge insulation and progressively melt the aluminum structure of the left wing, resulting in a weaking of the structure until increasing aerodynamic forces caused loss of control, failure of the wing, and breakup of the Orbiter. (Columbia Accident Investigation Board, 2003, p. 9)

When the board first convened to begin the investigation, they acknowledged that this accident was most likely not a random event, but rather was somehow rooted deep in NASA's organizational culture. Because of this belief, the board ensured that the investigation would cover "a wide range of historical and organizational issues, including political and budgetary considerations, compromises, and changing priorities over the life of the Space Shuttle Program" (Columbia Accident Investigation Board, 2003, p. 9).

During the early 2000s, NASA and the Space Shuttle program were facing intense scrutiny. Launches were behind schedule, and the International Space Shuttle completion date was continuing to slip. Due to budgetary cuts, the Space Shuttles cost-effectiveness had even slimmer margins, and any delay in launches would continue to be an issue. Because of this undue pressure, NASA officials appeared to be more concerned about the implications of the foam strike on future Shuttles launches vice the one currently in flight. If NASA would have determined that the foam strike on Columbia was a safety of flight issue, then STS-114 "would have to be delayed per NASA rules that require serious problems to be resolved before the next flight. An STS-114 delay could in turn delay completion of the International Space Station's Node 2, which was a high-priority goal for NASA managers" (Columbia Accident Investigation Board, 2003, p. 148). The high-pressure environments created by NASA Headquarters "unquestionably affected *Columbia*, even though it was not flying to the International Space Station" (Columbia Accident Investigation Board, 2003, p. 131).

During Columbia's flight, there were options on the table to obtain inflight imagery of the damaged tiles to further assess the foam strike damage. One of the more troubling personal notes obtained during this time period by the investigation board was that of Linda Ham who was a NASA program integration manager. "Linda Ham said that [further imagery of Columbia in flight] was no longer being pursued since [because] even if we saw something, we couldn't do anything about it. The Program didn't want to spend the resources" (Columbia Accident Investigation Board, 2003, p. 154). Not only were poor decisions about Columbia being made because NASA officials didn't want to impact future Shuttle flights, but they didn't want to spend the limited amount of resources they had to verify that Columbia's damage was minimal.

The overall safety culture at NASA is also clear to see when examining an email exchange between Bob Daugherty and Carlisle Campbell, both engineers at Johnson Space Center. When discussing the possible implications of the foam strike, Daugherty stated, "Any more activity today on the tile damage or are people just relegated to crossing their fingers and hoping for the best?" (Columbia Accident Investigation Board, 2003, p. 165). This displays the organizational culture problem at NASA that sometimes they were simply relegated to crossing their fingers and hoping for the best, even if they could examine the issue further.

A common theme of communication issues after the Challenger accident was also present in the Columbia accident. There were multiple engineers who were concerned about the foam strike damage while NASA officials tried to downplay it. Even after communication errors were highlighted during the Challenger accident, “managers [still] did not seem to understand that as leaders they had a corresponding and perhaps greater obligation to create viable routes for the engineering community to express their views and receive information” (Columbia Accident Investigation Board, 2003, p. 169). While engineers were behind the scenes conducting experiments of possible issues revolving around the foam strike, NASA officials insisted that this was not a safety of flight issue. While it may seem that a simple replacement of these flawed NASA officials is the answer, this is not the answer. “Peoples actions are influenced by the organizations in which they work, shaping their choices in directions that even they may not realize,” and are subject to the organizational concept of ‘power’ (Columbia Accident Investigation Board, 2003, p. 170).

Theories of Organizational Culture and Change

“When we examine culture and leadership closely, we can see that they are two sides of the same coin; neither can really be understood by itself (Shafritz et al., 2015, p. 304). Problems with the Shuttle era stem all the way back to its inception. The Shuttle was initially approved by former President Nixon, but there were fatal leadership errors from the beginning. John Logsdon in 1986 cited the Space Shuttle as “an example of a poor quality national commitment to a major technological undertaking” (Lambright, 1992, p. 193). In general, NASA is not possible without presidential backing. The initial problem with the Shuttle was that former President Nixon sat on the sidelines until he could enter the fold when it became ‘cost-effective’. Instead of being an organization which undertook intense technological goals, NASA became part of the bargaining process where other departments “(e.g. the Office of Management and Budget and the Defense Department) negotiated designs reflecting their interests” (Lambright, 1992, p. 193). “Technical rationality was subordinated to financial and political expediency,” and years later, the Challenger and Columbia accident would be the result from these this bargaining process (Lambright, 1992, p. 193). The "unique talent of leaders is their ability to understand and work with culture; and that is an ultimate act of leadership to destroy culture when it is viewed as dysfunctional" which several Presidents failed to realize (Shafrtiz et al., 2015, p. 304). It is however difficult to place all of the blame on the Presidents in office during the Shuttle era because NASA was also guilty of promising something they couldn't deliver safely.

Rather than listening to their engineers' concerns, NASA officials were more concerned about making their schedule and keeping costs down. One of the main recommendations from the Challenger accident was for NASA to establish an independent safety/quality assurance oversight office. In July of 1986, then NASA administrator James Fletcher established Headquarters Office of Safety, Reliability, and Quality Assurance, but this ended up being more of a gesture then an earnest attempt. "NASA's response to the Rogers Commission recommendation did not meet the Commission's intent: the Associate Administrator did not have direct authority, and safety, reliability, and mission assurance activities across the agency remained dependent on other programs and Centers for funding" (Columbia Accident Investigation Board, 2003, p. 178). James Fletcher failed to "distinguish leadership from management or administrator…leadership creates and changes cultures, while management and administration act within a culture" (Shafritz et al., 2015, pp. 304-305). Rather than trying to create change through an earnest attempt and changing NASA's safety culture, James Fletcher simply acted within it.

Organizational culture can be considered abstract, and "if we don't understand the operation of these forces, we become victim to them" (Shafritz et al., 2015, p. 301). Unfortunately, NASA fell victim to ignoring it's organizational culture in the 80's, 90's, and early 00's. It was clear after Challenger and Columbia that organizational reform was required at NASA, and this "[required] changes in organizational culture" (Shafritz et al., 2015, p. 292). One of the main organizational changes which NASA has since undergone has been the implementation of Public Private Partnerships (PPP). Former President Obama turned to PPPs during his administration, and started the Commercial Crew Transportation Capability (CCtCap) contracts after canceling former President Bush's Constellation program. After a thorough review of Constellation, the final reports deemed it to be significantly behind schedule and over budget. Looking at Figure 2 below, the Constellation's program development would be viewed as an 'Early Space Age Approach' whereas PPPs would be viewed as a 'Commercial-Oriented Approach'.

Figure 2 (Heracleous et al., 2019, p.3).

The early space and commercial-oriented development approaches.

Program characteristic	Early space age approach	Commercial-oriented approach
Owner	NASA	Industry
Contract fee type	Cost plus	Fixed price
Contract management	Prime contractor	Public-private partnership
Customer(s)	NASA	Government and nongovernment
Funding for capability demonstration	NASA procures capability	NASA provides investment via milestone payments
NASA's role incapability development	NASA defines "what" and "how"	NASA only defines "what", industry defines "how"
Requirements definition	NASA defines detailed requirements	NASA defines top-level capabilities needed
Cost structure	NASA incurs total cost	NASA and industry cost share

It is these types of "reform movements [which] have sought to increase performance, productivity, flexibility, responsiveness, accountability, and customer service by reshaping organizational cultures" (Shafritz et al., 2015, p. 296). The past organizational culture at NASA was one where they had a hierarchical relationship with contractors. Part of the reason for this hierarchical relationships was that "there was a cultural belief in technological superiority and exceptionalism" (Heracleous et al., 2019, p. 3). Figure 2 listed above shows the differences in development approaches NASA has adopted, and the drastic change from early space age to commercial-oriented approach is very different.

Organizational Economics Theory

PPPs are inherently different from traditional government contracting because the government is sharing both cost and risk with industry partners whereas traditional government contracting, the government holds all the risk and funds the entire project. PPPs are able to "spur innovation in the space sector but also accomplish things more efficiently given critiques of NASA's levels of efficiency as well as the state's own budget constraints" (Heracleous et al., 2019, p. 2). As an example, NASA utilized their cost estimation methodology and determined that it would have cost them nearly US$ 4 bn. to develop the Falcon 9 rocket. Instead, "Space X announced that the development costs of the Falcon 9 (plus an earlier version, Falcon 1) were US$ 390 m" (Heracleous et al., 2019, p. 2).

Steve Clarke spoke about the difficulties NASA encountered while shifting to PPPs after former President Obama instructed to follow this path. Because of the initial difficulties they encountered, NASA looked to organizational economics theory to provide a good framework for the implementation. "Transaction cost theory provides a general framework for understanding the origin of organizations and mechanisms to reduce transaction costs and support management decisions under conditions of high uncertainty and opportunism (Shafrtiz et al., 2015, p. 206). A major challenge NASA had to deal with was making sure their PPPs were abiding by the terms of the contract. The way NASA has dealt with this has been through a careful selection of PPPs. This has been accomplished through Announcement of Collaboration Opportunities (ACOs) where NASA informs vendors what they are looking for. The responses they get back from the vendors allows NASA to understand what these vendors can supply, as well as what they contribute financially. "The costs of managing the challenge include obtaining information about the service quality of partners and alternatives, negotiating and policing agreements, and settling and preventing disputes" (Shafritz et al., 2015, p. 206). This is where the trust begins between NASA and PPPs.

After the ACO responses are reviewed by a board at NASA, the contracts are awarded to the selected PPPs. As an example, “Space X and NASA had to work at building a relationship” because Space X was concerned about proprietary information. Over the years of development though, Space X has seen the mutual benefit of working closely together and seeks out “NASA for help to solve safety problems they encounter” (Clarke, 2020). Clarke also remarked how these newer/smaller companies are more willing to build a close relationship with NASA. Unfortunately, some of the large more traditional companies are still less willing to show complete transparency with NASA, and NASA officials have to “read the tea leaves” (Clarke, 2020). Overall, the cultural change at NASA of being more transparent resulted after the Shuttle Era issues, and this journey for NASA to incorporate PPPs into their organization has been a long one.

Power and Organizational Safety

Figure 3 (Antonsen, 2008, p. 186).

	Three-dimensional view		
	Two-dimensional view		
	One-dimensional view		
Key elements	**First dimension**	**Second dimension**	**Third dimension**
Object of analysis	- Behaviour - Concrete decisions - Issues	Interpretive understanding of intentional action Non-decisions Potential issues	Evaluative theorization of interests in action Political agenda Issues and potential issues
Indicators	Overt conflict	Covert conflict	Latent conflict

The concept of power is an important factor when examining NASA. Figure 3 above is a visual representation of a three-dimensional power view. The first dimension of power states that “A has power over B to the extent that he can get B to do something that B would not otherwise do” (Antonsen, 2008, p. 184). This is a type of causal force which is sufficient to change another’s actions, and ultimately has six different types of sources:

1. Position power: “The division of labour in an organization inevitable creates power differences since the various tasks and activities are not equally critical to organizational survival” (Antonsen, 2008, p. 185).
2. Information and expertise: This is a ‘know-how’ and ‘know-what’ type of power.
3. Control of rewards and resources: “Control over material (e.g. money and/or employment) and immaterial (e.g. recognition, political support) resources, are perhaps the most visible and common sources of power” (Antonsen, 2008, p. 185).
4. Coercive power: “Closely connected to actors’ or groups’ control over sanctions, as it rests on ‘the ability to constrain, block, interfere or punish’” (Antonsen, 2008, p. 185).
5. Alliances and networks: This is a ‘know-who’ type of power.
6. Personal power: “Charisma, energy, political skills and verbal facility are among the individual characteristics that constitute a source or power” (Antonsen, 2008, p. 185).

When examining the Challenger disaster and the first dimension of power, ‘control of rewards and resources’ was a power at play between Congress and NASA as well as between NASA and Morton Thiokol. NASA was already behind on the year for scheduled shuttle launches, and “NASA officials feared that their credibility and future funding was at stake with the Challenger launch” (Antonsen, 2008, p. 186). Because of the resource power Congress had over NASA, misinformed decisions were made which ultimately cost lives. “Morton Thiokol’s existence [was] very much dependent on the NASA contract” which can explain the flip-flop decision on their initial recommendation to not launch, and then turn to launch (Antonsen, 2008, p. 187). A different interesting power at play was between Morton Thiokol and their own engineers. This manifested as position power where the managers ‘pulled rank’ over the engineers who were adamant not to launch.

The second dimension of power can be seen as the face of 'non-decisions'. This type of power is kind of a 'covert tug-of-war' "where groups or actors struggle to set the agenda for which potential issues that are included or excluded in the political processes that create decisions" (Antonsen, 2008, p. 186). While much of the blame from the Challenger Presidential Commission centered on the first dimension of power, there are also traces of second dimension of power. The lack of communication from the Marshall Center and their "poor judgment in not informing the NSTS Program Manager of the Level I Manager of the events that took place the night before the launch, specifically the stated concerns of the Thiokol engineers" can be viewed as a 'non-decision' (Presidential Commission on the Space Shuttle Challenger Accident, 1986, p. 148).

The third dimension of power is where "not all instances of power presupposes conflict of interests" (Antonsen, 2008, p. 186). This is where the dominant is able to influence the dominated; somewhat change the culture of organizations. The Challenger Presidential Commission did a good job investigating the first two dimensions of power, but failed to adequately examine the third. It was this third dimension of power which were able to influence the values and culture of NASA. Essentially, the managers and politicians which insisted on meeting the flight schedule no matter what unduly influenced the final decision. This third dimension of power can be backdated all the way to former President Nixon where for the Shuttle "to be cost-effective, the shuttle had to fly quite frequently and launch satellites as well as people" (Lambright, 1992, p. 183). While he didn't intentionally set the Shuttle program down a dangerous path, this was ultimately the outcome.

While many will say that an abuse of power occurred in the Challenger tragedy (which there are clear indications of), there was a more serious issue; normalization of deviance. While looking back at past Shuttle launches, there were O-ring flaws found on multiple rocket motors.

While these previous launches did not end in catastrophe, there were still indication of one of the two O-rings failing on a consistent basis (often in colder weather launches). Even though NASA and Morton Thiokol were aware of these previous O-ring failures, neither organization sought to correct this and "the pressure of cost effectiveness influenced the organizational culture by pushing the boundaries for what was regarded as acceptable risk" (Antonsen, 2008, p. 188).

In order to prevent future catastrophic accidents, organizations have to look at the sources of power at play as well as the implications on culture/safety. While organizations acknowledge that there may be a hierarchical chain of command or other sources of power, this was not taken into consideration when developing launch criteria or safety thresholds at NASA. Within another governmental organization, military aviation commands, anyone directly involved with the flight can cancel it regardless of what power source they have. This can range from the most junior maintainer all the way to the most senior officer. If engineers who were directly involved with the Challenger mission were afforded this convenience as well, Challenger may have been postponed, and lives would have been saved.

Theories of Organizations and Environments

The early years of NASA could be viewed almost through a classical lens, when in reality, open systems theories is more realistic. Open system theorists "see organizations as always-changing processes of interaction among organizational and environmental elements. Organizations are not static, but are rather in constantly shifting states of dynamic equilibrium" (Shafritz et al., 2015, pp. 340-341). This was one point which Steve Clarke emphasized. NASA realized that during the Shuttle era, they did not properly adapt to the changing environment. NASA also identified a major flaw in their structuring during the Shuttle era after Challenger and Columbia; what happened if the fleet was grounded? NASA realized that in order to adapt to this ever changing environment, they must ultimately have more than one space vehicle or logistical supply company.

Today, organizations "are restructuring themselves in network forms and also establishing larger external networks with their partners" (Shafrtiz et al., 2015, p. 343). "Success today depends on how promptly organizations respond to rapidly changing environments," and in the 80's and 90's, the culture at NASA was to manage everything themselves (Shafritz et al., 2015, p. 5). It was this culture at NASA which prevented the acceptance of the recommendation from Morton Thiokol to not launch. Early on, "companies built the hardware for NASA, and NASA owned the property rights" (Clarke, 2020). Looking at programs such as Gemini, Mercurcy, Apollo, and the Space Shuttle, these companies had "no skin in the game" money wise (Clarke, 2020).

NASA has transformed their organizational culture and are looking to 'buy services' vice managing everything themselves. Steve Clarke states that by flexing to this PPP relationship, NASA has established larger external networks with their partners where everyone has 'skin in the game'. This has allowed NASA to retain more flexible interactions among units, people, problems, solutions, and resources" (Shafritz et al., 2015, p. 343). NASA has also tapped into the private sector where companies depend on innovation to survive. They do not have the budgetary funding that NASA does, and they constantly have to adapt to their environment and determine what is required.

There are currently several projects at NASA which highlights this willingness to adapt to the environment and seek out industry experts (i.e. Space X, Boeing, Blue Origin, etc.). By looking to 'buy seats' on rockets such as Space X's Falcon 9/Crew Dragon, NASA is able to focus more of their energy on big picture items such as going back to the Moon and stepping foot on Mars vice the logistics aspects. By allowing NASA's partners to develop the rocketry and logistics of the mission, the "risk reward relationships is better," and ultimately safer/more productive (Clarke, 2020).

The Commercial Lunar Payload Services (CLPS) is a project where NASA has increased their PPPs to more than a dozen; this is a fundamental paradigm shift which has taken several decades to accomplish. Steve Clarke said that this "does incur more risk, but the cost benefit is worth the additional risk" (Clarke, 2020). On top of this, "there will be failures," but this is deemed acceptable in an unmanned program which ultimately saves NASA billions of dollars and frees up budgetary resources to be applied toward manned programs.

Conclusion

"There is no such thing as the theory of organizations Rather, there are many theories that attempt to explain and predict how organizations and the people in them will behave in varying organizational structures, cultures, and circumstances" (Shafritz et al., 2015, p. 1). The reviewed literature and interview with Steve Clarke show how multiple organizational theories, when effectively applied, are able to explain the failures and successes at NASA. One of the most important steps which NASA has taken to solve many of their problems was incorporating PPPs. While this process has proven to be long, complicated, and has challenges of its own, NASA has been able to sidestep many of the communication, budgetary, and power issues of the Shuttle era which resulted in the unfortunate tragedies of Space Shuttle Challenger and Columbia. As NASA and their PPPs embark on the renewed age of space exploration, the tragedies of Challenger, and Columbia will not be forgotten.

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The Role of Groupthink in Aviation Organizations' Business Failures

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Abstract

In the aviation working environment, individuals work within groups. For instance, airline pilots work as a crew, air traffic controllers and aircraft maintenances work as a team, and the ground staff works as a departmental group. However, groupthink might result in organizational failures by undermining group decision making. This study examined the effect of groupthink on organizational failures within the context of aviation. An explanatory and descriptive approach was undertaken utilizing published research articles on groupthink, books, media reports, and the preliminary accident report of Pegasus Airlines PC2193.The findings revealed that groupthink might have contributed to the flight crew's decision-related error in the crash landing of Pegasus Airlines flight PC2193. The research suggested that the directive leadership, group cohesiveness, and stressful working conditions would induce groupthink to occur in aviation organizations. Based on this, it was concluded that groupthink might be one of the causes of organizational failures within the aviation industry.

Keywords: groupthink, organizational culture, leadership styles

Table of Contents

List of Figures

List of Tables

Introduction

The airline industry has been viewed as a safety-critical industry. However, airline operators have been conflicted about balancing flight safety and operating costs as the airline industry has become more and more competitive over the years (Ates, Kafali, & Kilicoglu, 2018; Szabo, Vittek, Lalis, & Cervena, 2015). When it comes to strategies designed to cope with high competition in the airline industry, there is no topic more sensitive than fuel, a major contributor to airlines' operational costs. For this reason, airline operators are continually seeking ways to achieve better fuel efficiency while offering air transportation services (Ates et al., 2018). Nonetheless, some airline operators' fuel policies established to minimize pilot extra fuel has brought attention to the role of organizational factors in aviation accidents once again.

Take, for example, the accident of Turkish low-cost carrier Pegasus Airlines flight PC2193 on February 05, 2020. According to the preliminary report, the flight crew of PC2193 was told to hold off from landing due to harsh weather and massive tailwind. Nevertheless, the flight crew of PC2193 decided to proceed with the landing, while a major airline's two flights preceding PC2193 executed a go-around. The plane landed at the airport but skidded over sixty meters on the runway breaking into three parts, left three dead and one hundred seventy-nine injured (Charpentreau, 2020; Gumrukcu, 2020).

As Pegasus Airlines recorded a second runway accident in less than a month, the company's safety precautions and regulations were strongly criticized by safety practitioners. In particular, "the news that two flights before the Pegasus aircraft decided to go around, or abort the landing left people wondering whether the airline was pressuring pilots to take riskier approaches to avoid costly delays and redirections" (Daily Sabah, 2020, para. 6).

Some retired pilots speaking to Turkish media suggested that Pegasus's flight crews experienced psychological pressures from management to get aircraft landed at destination airports rather than initiating a go-around maneuver or re-routing the flight to alternate airports. Those pilots also added that Pegasus Airlines established a fuel policy to minimize extra fuel, which is fuel added at the discretion of pilots for specific operational constraints at the destination, so the management pressure occurs to pilots. Overall, the media reports suggested that Pegasus's flight crews were exposed to extreme stress due to the company's pressures towards a minimum amount of fuel consumption. Therefore, Pegasus's employees were claimed to accept whatever is offered by the company's leaders in terms of safety-critical decisions even if they are risky for a safe flight completion (Hradecky, 2020; Akturk, 2020; Charpentreau, 2020; Eiselin, 2020; Gumrukcu, 2020).

Hellriegel and Slocum (2011) assert that groupthink exists when a group faces a highly stressful and anxiety-provoking situation, which decreases the possibility of a good decision in decision-making processes. Hellriegel and Slocum (2011) further add that leaders adapting directive leadership style that discourages diverse perspectives in team deliberations might lead to groupthink in organizations. Janis (2016) argues that groupthink exists in organizations when decision-making groups are inclined to avoid being too harsh in their judgments of their leaders' ideas. Epifini (2020) claims that groupthink might cause business failures and catastrophes in organizations. With this in mind, the purpose of this paper was to discuss the effect of groupthink on organizational failures in the aviation industry.

The most obvious significance of this study is the practical benefit it provides to the aviation industry. Identifying the root causes of organizational problems is desirable to prevent similar errors or failures in the future. A better understanding of the potential causes of pilots' decision-related errors has a significant impact on aviation organizations' operations and survival. Another significance of the study comes in terms of its contribution to the current body of knowledge. To the best of my knowledge, no research was conducted to investigate the role of groupthink in flight-crews' decision-related errors in the low-cost airline industry. This study can be used to induce further research on groupthink within the airline industry.

The remainder of the paper was organized as follows. First, the conceptual framework of groupthink was introduced. Following the discussion of the causes of groupthink in organizations, the possible effects of groupthink on organizational performance were determined. Next, the impact of leadership styles on groupthink was discussed. Finally, the possible role of groupthink in the accident of Pegasus Airlines flight PC2193 was analyzed by evaluating the company’s organizational and safety culture.

The Concept of Groupthink

Organizations tend to use groups rather than individuals to make decisions because they can lead to more effective decisions (Duyan, 2019; Robbins & Judge, 2017; University of Minnesota, 2015; Hellriegel & Slocum, 2011). Group decision-making does not guarantee a perfect decision but increases the possibility of it.

Robins and Judge (2017) listed the strengths and weaknesses of group decision making as follows. Strengths of the group decision-making include (a) more complete information and knowledge, (b) increased diversity of views, and (c) acceptance of a solution. Weaknesses of group decision-making include (a) conformity pressures, (b) a few members' dominations, and (c) ambiguous responsibilities (Robbins & Judge, 2017).

Robbins and Judge (2017) point out that different criteria (e.g., accuracy, speed, creativity, and acceptance) must be considered when it comes to group effectiveness. In terms of accuracy, group decisions tend to be more accurate than individual decisions. However, if speed is a consideration, individual decisions are superior. In terms of creativity, group decisions are more likely to be creative. And if the effectiveness is measured by the degree of acceptance of achievable solutions, groups are more effective than individuals.

In summary, most of the critical decisions are made by groups as they are considered superior to individuals in today's organizations (Duyan, 2019; Robbins & Judge, 2017). Nevertheless, as Umana and Okafor (2019) noted, groupthink may arise in nearly any situation that involves a group, minimizing the possibility of good decisions made by groups in organizations.

For the first time in a 1952 *Fortune* magazine article by William H. Whyte Jr, the term groupthink was used as a threat to individuality and innovation in public organizations and decision-making groups (Ricciuti, 2014). However, groupthink was theorized by Irving L. Janis in his seminal work, *Victims of Groupthink: A psychological study of foreign-policy decisions and fiascoes*, in 1972 (Ricciuti, 2014). Originally, Janis defined groupthink as follows: "the mode of thinking that persons engage in when concurrence seeking becomes so dominant in a cohesive in-group that it tends to override realistic appraisal of alternative courses of action." (Janis, 1972, p. 9). However, as some scholars found Janis's definition confusing, Janis later provided a model for the causal connections among antecedents, indicators, and consequences. Following Janis's operational formulation, groupthink was simply described as concurrence-seeking (Hart, 1991). Figure 1 shows Janis's groupthink theory model. According to Janis's groupthink theory model, the probability of risky decisions increases when groupthink arises in organizations.

According to Hellriegel and Slocum (2011), groupthink refers to "an agreement-at-any-cost mentality that results in the ineffective group or team decision making and poor decisions." (p.374). Hellriegel and Slocum (2011) propose that groupthink is possible to occur in organizations when a group is confronted with a highly stressful and anxiety-provoking situation.

According to Robbins and Judge (2017), "groupthink relates to norms and describes situations in which group pressures for conformity deter the group from critically appraising unusual, minority, or unpopular views." (p.334). Robbins and Judge (2017) assert that many groups suffer from groupthink symptoms, impeding their performance.

When groupthink occurs in organizations, the possibility of alternative ideas is ignored. A groupthink occurrence due to the lack of awareness of alternative ideas can be seen closer in the case of Boeing 737Max disasters. The investigations launched into the Boeing 737Max disaster demonstrated that Boeing's leaders often ignored the company's knowledgeable individuals who try to warn them during the development of the MCAS anti-stall system (Epifini, 2020).

The consequences of groupthink can also be fatal in organizations. The 1986 Challenger space-shuttle disaster can be a salient example of the fatal consequences of groupthink. In 1986, the space shuttle Challenger exploded immediately after liftoff, left all seven astronauts aboard dead. The decision to launch Challenger that day in spite of the mechanical problems and severe weather conditions can be cited as an example of groupthink (University of Minnesota, 2015).

Groupthink can also be a contributing factor to organizations' collapse, as seen in the case of Swissair, the national airline of Switzerland. The company was known as a *flying bank* due to its financial stability. Despite this, the company was obliged to cease its operations in 2002. Hermann and Rammal (2010) posited that the company's small board size resulted in a lack of knowledge and defective reasoning in organizational decisions, which catalyzed the company's collapse.

Thusly, it is crucial to understand the hazards of groupthink that may lead or contribute to organizational failures within the aviation industry.

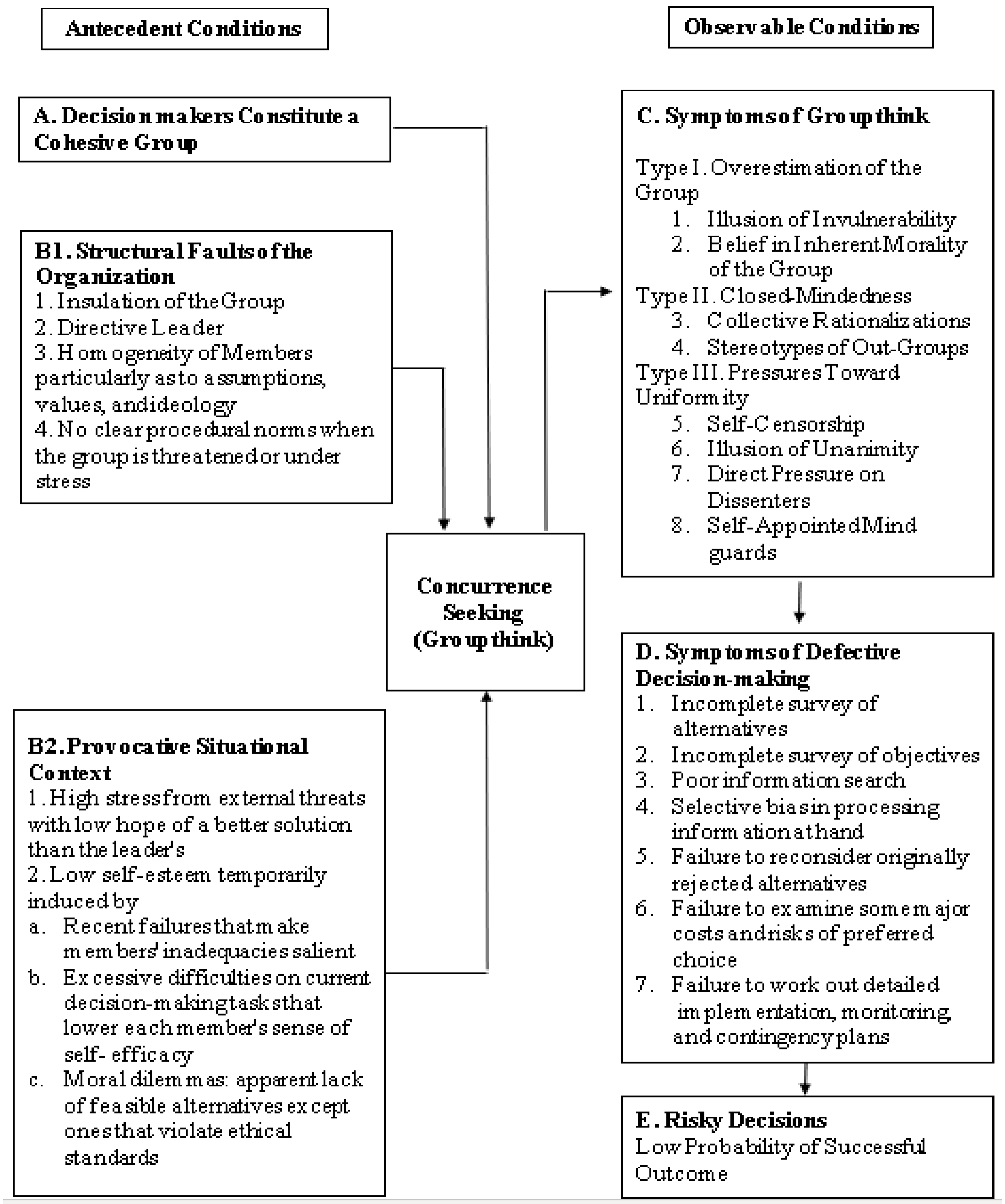

Figure 1. **Janis's Groupthink Model**
Source: (Adapted from Hart, 1991).

Groupthink symptoms occur when decision-making groups are inclined to avoid being too harsh in their judgments of their leaders' ideas (Janis, 2016). The symptoms of groupthink can be characterized as follows (Janis, as cited in University of Minnesota, 2015):

1. *Illusion of invulnerability* shared by most or all of the group members that creates excessive optimism and encourages them to take extreme risks.
2. *Collective rationalizations* where members downplay negative information or warnings that might cause them to reconsider their assumptions.
3. *An unquestioned belief in the group's inherent morality* that may incline members to ignore ethical or moral consequences of their actions.
4. *Stereotyped views of out-groups* are seen when groups discount rivals' abilities to make effective responses.
5. *Direct pressure* on any member who expresses strong arguments against any of the group's stereotypes, illusions, or commitments.
6. *Self-censorship* when members of the group minimize their own doubts and counterarguments.
7. *Illusions of unanimity* based on self-censorship and direct pressure on the group; the lack of dissent is viewed as unanimity.
8. *The emergence of self-appointed mindguards* where one or more members protect the group from information that runs counter to the group's assumptions and course of action. (p. 481).

Groups that possess mind guard symptom of groupthink are highly cohesive but too prone to poor decision making (Wexler, 1995). However, Duyan (2019) pointed out that groupthink does not always result in a poor decision but increases its possibility.

Individuals also work as a group in the aviation working environment. For example, airline pilots work as a crew, and air traffic control and maintenance work as a team. Groupthink is more likely to occur in the cabin crew (Wan, 2010). Hopkins (2012) asserted that some symptoms of groupthink can be seen in flight crews. Hopkins (2012) exemplified the symptoms of groupthink in flight crews by saying:

> *Feelings of Invulnerability*: Invulnerability is one of the hazardous attitudes that is common among flight-crew members…. Flight crews often experience pressure from management, customers, and other crew members to get to the destination on time. *Collective Efforts to Rationalize or Discount Warnings:* …This tendency can be reinforced in a crew situation as one pilot convinces the other pilot that an evident risk factor is nothing to worry about. *Not Speaking Up:* Even though one or more crew members think the crew is headed down a wrong and perhaps dangerous path, they may not speak up to avoid upsetting the group's cohesiveness because they think the others will get mad at them and ostracize them, or simply because they don't feel they will be able to consider any other factors and still depart on time. *The Illusion of Agreement:* With one or more people holding back on expressing their true feelings and opinions, a false illusion of agreement can develop. *Discounting Contrary Viewpoints:* If someone such as a flight service briefer or air traffic controller expresses an opinion or provides information that is contrary to the group's desired outcome, group members may attempt to discredit that person or viewpoint. (para. 2).

Janis (2016) maintained that the strengths of group decisions are often lost due to psychological pressures that arise when the members closer together, share the same set of values, and face a crisis that puts everyone under intense stress. Arguably, the low-cost airline industry is more vulnerable to groupthink as pilots flying for a low-cost carrier are under greater stress due to commercial pressures than those flying for a major airline. Moreover, low-cost airlines' cost-reduction pressures on a person in charge of a given task might induce the occurrence of groupthink. Specifically, low-cost airlines' leaders value employees who can accomplish a given task on time and with the least cost. Otherwise, employees often experience psychological pressures resulting from management to get things done on-time and with the least cost, which might increase the possibility of groupthink occurrence in organizations.

However, groupthink can be avoided by recognizing the antecedents of groupthink described in Figure 1(Janis, 1972; Hart, 1991; Hellriegel & Slocum 2011; Robbins & Judge, 2017).

The Causes of Groupthink in Organizations

Janis (1982) asserted that groupthink occurs in organizations when a group is highly cohesive, compromised of individuals from similar backgrounds, and is managed by a directive leader. Hart (1991) argued that three types of causes (e.g., group cohesiveness, structural faults, and situational context) might impact organizations' decision-making process, considering Janis's groupthink model shown in Figure 1. According to Sims (1992), organizations suffer from groupthink when the group is cohesive, and that a leader offers unethical solutions or ideas.

High group cohesiveness: A highly cohesive group is viewed as the primary antecedent condition necessary for groupthink. Janis (1972) pointed out that "the more amiability and esprit de corps among the members of an in-group of policymakers, the greater the danger that independent critical thinking will be replaced by groupthink …" (p. 13). In a cohesive group, members are prone to approve of their group members and leaders by ignoring problems with preferred alternatives (Sims, 1992). According to Janis (1972), a high degree of group cohesiveness relates to a high frequency of decision-making defects.

Structural Faults: Janis (1982) stressed that group cohesiveness is a necessary but not a sufficient condition of groupthink. To this end, Janis postulated some additional requirements needed for groupthink, as shown in Figure 1. One of Janis's other conditions is the lack of a tradition of impartial leadership within the organization. Janis (1982) proposed that the leader pushes the group members to adopt their solutions to whatever problems the group discusses because of this structural fault. Groupthink may arise in organizations when leaders adopt directive leadership (Chen, Lawson, Gordon, & Mclntosh, 1996). Hellriegel and Slocum (2011) stated that the directive leader often discourages diverse perspectives in group deliberations. Thus, directive leadership may result in more groupthink symptoms and more observable defects in the group decision-making process than other leadership styles (Chen et al., 1996).

Situational context: The chances of groupthink in organizations significantly increase when decision-makers are under stress, dealing with a crisis (Hart, 1991). In these circumstances, decision-makers may perceive threats to their self-esteem because of failures, extreme difficulties on decision-making tasks, and moral dilemmas (Hart,1991). Janis (1972) highlighted that excessive time pressure is a source of stress that will induce group cohesiveness and groupthink. Janis (1982) also asserted that the group members become highly dependent on social support under high stress conditions. Umana and Okafor (2019) argued that groups are more likely to make errors when under pressure.

In summary, Janis (1982) argued that high group cohesiveness, structural faults (e.g., insulation of the group, directive leadership, etc.), and situational context (e.g., high stress from external factors and low self-esteem) could result in organizational constraints for groupthink.

The Effects of Groupthink on Organizational Performance

Janis (1972) posited that groupthink causes group members to make poor decisions because of a strong-concurrence tendency that suppresses their way of critical thinking. Groupthink is often viewed as a negative phenomenon that affects the group's ability to make decisions (Pautz & Forrer, 2013). Groupthink is undesirable because it eliminates critical thinking concerning the various decision options' pros and cons (Ahlfinger & Esser, 2001). The effects of groupthink on organizational structure can be listed as follows (Rose, as cited in Umana & Okafor, 2019, p. 15):

a) Bad decisions due to lack of opposition,
b) Lack of creativity and innovation may sometimes be oppressed,
c) Overconfidence in groupthink negatively impacting the profitability of an organization,
d) Optimal solutions to problems may be overlooked,
e) Lack of feedback on decisions and hence poor decision-making,

f) It can ruin relationships over a long period, especially when one's opinions are always sidetracked because of what the majority favors,
g) Problems could be solved inefficiently because not all possibilities are considered.

Pautz and Forrer (2013) added that the adverse effects of groupthink include (a) failing to provide the group with opportunities for creativity; (b) failing to offer unique opportunities for the group; (c) encouraging the use of short cuts by the group; and (d) leading the group to negative stereotyping.

Vien (2016) suggested that the benefits of diversity can be lost when groupthink occurs, which today's organizations are often the victim of this type of negative groupthink.

On the other hand, groupthink might also have a positive effect on an organization. The positive effects of groupthink include (a) the ability to help subordinates learn and improve their skills; (b) encouraging teamwork to enhance productivity and efficiency; and (c) motivating subordinates to work together (Pautz & Forrer, 2013, p.4).

Janis (1982) argued that concurrence-seeking might positively affect their members and their organizations in rare instances. For example, “it may make a crucial contribution to maintaining morale after a defeat and to muddling through a crisis when prospects for a successful outcome look bleak” (Janis, 1982, p. 175). Groupthink can also help a new organization improve its performance by concentrating a coordinated effort toward a single goal (Blank, 2020).

In summary, groupthink is likely to occur in most organizations, whether positive or negative. Therefore, managers need to understand groupthink symptoms to develop a positive culture in organizations (Pautz & Forrer, 2013).

Leadership and Groupthink

The literature repletes with research on leadership and groupthink. Many scholars have observed that leadership styles influence the level of groupthink in an organization (Neck & Moorhead, 1995; Ahlfinger & Esser, 2001; Pautz & Forrer, 2013).

Ahlfineger and Esser (2001) asserted that groups with promotional leaders produce more groupthink symptoms, discuss fewer facts, and reach a decision more quickly than groups with nonpromotional leaders. Neck and Moorhead (1995) maintained that Janis’s groupthink model is an incomplete explanation for groupthink in organizations. As a result, Neck and Moorhead (1995) recommended that leadership style be added to the model on groupthink because they argued that closed leadership style behaviors affected groupthink in small organizations. Pautz and Forrer (2013) proposed that leadership behaviors determine whether groupthink can positively and negatively influence an organization.

Janis (1982) prescribed three suggestions for preventing groupthink in organizations. The following two groupthink prevention suggestions described by Janis reflect some aspect of the role of leadership styles in groupthink (Janis, 1982):

1. The leader of a policy-forming group should assign the role of the critical evaluator to each member, encouraging the group to give high priority to airing objections and doubts. This practice needs to be reinforced by the leader's acceptance of criticism of his or her judgments to discourage the members from soft-pedaling their disagreements.

2. When assigning a policy-planning mission to a group, the leader in an organization's hierarchy should be impartial instead of stating preferences and expectations at the outset. This practice requires each leader to limit their briefings to unbiased statements about the scope of the problem and limitations of available resources, without advocating specific proposals they would like to see adopted. This allows the conferees the opportunity to develop an atmosphere of open inquiry and to explore a wide range of policy alternatives impartially. (p.262-263)

In general, the research articles associated with groupthink and leadership stress that leadership behaviors influence groupthink in organizations. The remainder of the paper thus discussed leadership styles.

With regard to management, leadership plays a critical role in organizations' success or failure (Gutterman, 2017). However, it has been argued that there is no universally accepted definition for leadership. In general, leadership can be defined as “the ability to influence a group toward the achievement of a vision or set of goals” (Robbins & Judge, 2017, p.420). Leaders hold influence over group members (Duyan, 2019). One or more of the leadership styles described below are adopted by leaders to motivate employees and groups in organizations (House, as cited in Duyan, 2019, p. 173):

Directive Leadership: Just as task-oriented leaders focus on success, so directive leaders focus on success in order that the work within the group is completed successfully. Directive leaders’ priority is whether tasks are accomplished on-time. To this end, the directive leaders expect their subordinates to perform a high level of achievement in their assigned tasks (Duyan, 2019). “Directive leaders often discourage diverse perspectives and promote a favored solution early in the team deliberations” (Hellriegel and Slocum, 2011, p. 375). According to the path-goal theory developed by Robert House, “directive leadership is likely to be perceived as redundant among employees with the high ability or considerable experience” (Robbins & Judge, 2017, p.427).

Supportive Leadership: Just like people-oriented leaders, supportive leaders take into consideration subordinates' satisfaction of needs and preferences and well-being of them (House, as cited in Duyan, 2019).

Participative Leadership: Participative leaders promote subordinates to participate in the decision-making process. They also receive feedback form their subordinates and value their opinions (House, as cited in Duyan, 2019).

Achievement-Oriented Leadership: Achievement-oriented leaders promote subordinates to reach the highest performance by settings clear and challenging goals. These leaders focus on excellent performance and improvement over current performance (House, as cited in Duyan, 2019).

In addition to the leadership styles described above, the promotional leadership style is often addressed in the concept of groupthink. Promotional leaders can be defined as leaders who promote their personal preferences and assigned solutions in team deliberations (Janis, 1972; Ahlfinger & Esser, 2001). Promotional leaders’ ideas are embedded in the company culture (Novis, 2019).

Directive and promotional leaders are also called closed leaders. According to Chen et al. (1996), closed leaders promote a particular alternative and ignore others in team deliberations, causing groupthink symptoms and more observable defects in the group decision-making process.

Neck and Moorhead (1995) argued that closed leaders discourage member participation and divergent opinions from all group members, which reduces the possibility of good decisions.

In summary, directive and promotional leadership styles have been consistently identified as playing a critical role in the occurrence of groupthink in organizations (Janis, 1972; Janis, 1982; Neck & Moorhead, 1995; Chen et al., 1996; Ahlfinger & Esser, 2001).

The Analysis of Pegasus Airlines Accident in the context of Groupthink

Many factors can threaten a pilot's actions during a flight, which increases the possibility of an adverse outcome in aviation organizations. Enomoto and Geisler maintain that there might be a causal relation correlation between company culture and organizational failures in the aviation industry. As asserted in the media investigations, the accident of Pegasus Airlines flight 2193 may have also arisen from the deficiencies in the company's organizational culture. In the following section, an evaluation was made to understand the company's organizational culture and its impact on groupthink that is deemed one of the factors contributing to the accident of flight 2193.

The Company's General Description

Pegasus Airlines is Turkey's leading low-cost airline. It was initially founded in 1991 as a charter airline with the help of Aer Lingus. After its acquisition by Esas Holding in 2005, the company changed its business model, introducing a low-cost network carrier model for Turkey's first time (Pegasus Airlines, 2020a). Pegasus Airlines organization chart is depicted as follows:

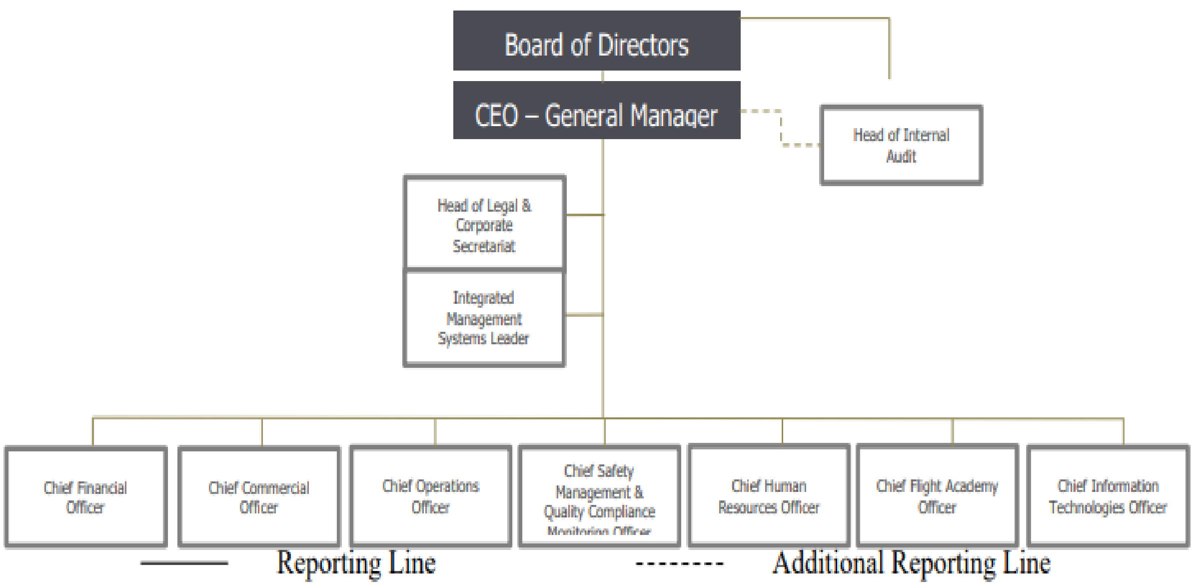

Figure 2. **Pegasus management organization chart.**

Source: (Adapted from Pegasus Airlines, 2020b)

The Company's Mission Statement: "We believe that everybody has the right to fly. The Pegasus Family, our suppliers, and our partners work together in cooperation to achieve this goal." (Pegasus Airlines, 2020c)

The Company's Vision Statement: "To be the leading low-cost airline in our region with our innovative, rational, principled and responsible approach." (Pegasus Airlines, 2020c)

The Company's Operational Information

With the successful implementation of a low-cost strategy since 2005, Pegasus experienced rapid growth of its operations both in domestic and international routes. Between 2015 and 2019, the company continued its expansion, as shown in Table 1. Pegasus also became the fastest-growing airline in Europe in terms of seat capacity in 2011, 2012, and 2013 (Pegasus Airlines, 2020a).

Table 1
Pegasus Market Share Data (2015-2019)

	2015	2016	2017	2018	2019
Domestic	28.5%	29.9%	30.8%	31.3%	31.3%
International	9.6%	11.6%	12.4%	12.2%	12.9%

Source: (Pegasus Airlines, 2020b)

By creating a modern fleet, Pegasus aims to be the leading low-cost airline in the region (Pegasus Airlines, 2020a). Table 2 indicates information relating to the company's current fleet size and age.

Table 2
Pegasus Airlines Fleet Overview as of December 31, 2019

Aircraft Type	**Number of Aircraft**			**Seat Capacity**			**Average Fleet Age**
	2019	**2018**	**Growth**	**2019**	**2018**	**Growth**	**31.12.2019**
B737-400	0	1	-	0	168	-	-
B737-800	39	47	-17.0%	7,371	8,883	-17.0%	8.23
A320CEO	12	12	0.0%	2,172	2,172	0.0%	5.83
A320NEO	31	22	40.9%	5,766	4.092	40.9%	1.87
A321NEO	2	0	-	478	0	-	0.19
TOTAL	**84**	**82**	**2.4%**	**15,787**	**15,315**	**3.1%**	**5.35**

Source: (Pegasus Airlines, 2020b)

As of December 31, 2019, the company employed 6164 full-time employees (Pegasus Airlines, 2020a).

Pegasus Airline's Safety Policy

Management commitment to safety refers to the degree of attention to which managers show their subordinates' safety. An organization's senior management plays a vital role in making safety culture internalized (Seymen & Bolat, 2010). Pegasus leaders believe that the Safety Management System (SMS) can only be obtained with all management levels and all employees, starting with the CEO. The company's safety commitment policy was attached to the Appendix. Please refer to it.

The Summary of the Crash Landing of Pegasus Airlines Flight PC2193

On February 05, Pegasus Airlines flight PC2193 arrived from Turkey's Aegean province of Izmir when it skidded off the runway while landing at the Sabiha Gokcen International Airport in Istanbul. During the landing in Istanbul, a thunderstorm hit the region. Upon contacting the tower, the crew was told there had been two go-arounds before them. In Turkish Tower added, the immediately preceding aircraft had reported massive tailwind and had gone around. However, the flight crew decided to proceed with the landing. Unfortunately, the Turkish low-cost airline's Boeing 737 had overshot the runway, slipped down a slope, and broke into three pieces. Figure 3 depicts the crash landing of flight PC2193. Following the accident, the Anatolian Chief Public Prosecutor's Office opened an investigation into the accident. And the flight crew was interviewed for negligence, causing death and injuries to more than one person (Hradecky, 2020; Akturk, 2020; Charpentreau, 2020; Eiselin, 2020; Gumrukcu, 2020). Figure 3 depicts the crash landing of flight PC2193.

Official investigation results are still not available. However, the Transport Safety Investigation Center's initial report said that the lightning that struck the airplane six minutes before landing increased the pilots' stress level. This was because the flight-crew wanted to land as soon as possible and avoid any potential problems in the landing. (Akturk, 2020; Eiselin, 2020; Gumrukcu, 2020).

***Figure 3*. The Picture of the Crash Landing of Flight PC2193**
Source: (Simsek, 2020)

However, as Pegasus recorded the second runway accident in less than a month, the crash of flight PC2193 raised questions about the airline's safety precautions and regulations. Specifically, “the news that two flights before the Pegasus aircraft decided to go around, or abort the landing, left people wondering about whether the airline was pressuring pilots to take riskier approaches to avoid costly delays and redirections” (Daily Sabah, 2020, para. 6).

Some chief pilots flying for a major airline and speaking to the Turkish media on condition of anonymity claimed that their counterparts who fly for Pegasus Airlines were under management pressure regarding fuel-saving. Those chief pilots also added that Pegasus Airlines established a fuel policy to minimize pilot extra fuel, so the management pressure occurs to pilots. Another chief pilot flying for a foreign airline and speaking to the Turkish media pointed out that fuel and time were meant money for all low-cost airlines; in turn, such airlines often expected pilots to fly with the minimum amount of fuel. The foreign chief pilot, who said that low-cost airlines do not want extra fuel to be carried on board but that the final decision belongs to pilots, added that if pilots anticipate delays or operational constraints at destination airports, they take extra fuel. But if a pilot wants extra fuel for each flight, low-cost airlines' operators will undoubtedly ask for the account, the chief pilot further added (Simsek, 2020; Ozbek, 2020).

Nevertheless, even if pilots who fly for Pegasus Airlines are under management pressure, they should not initiate a landing process to the destination airport in such extreme weather conditions. There is no doubt that the flight crew of flight PC2193 made an error in the decision-making process. There might be various causes of the flight crew's decision-related error. As noted by Hellriegel and Slocum (2011), groupthink exists when a group is confronted with a highly stressful and anxiety-provoking situation, which decreases the possibility of a good decision. Additionally, some groupthink symptoms, such as an illusion of invulnerability, encourage group members to take extreme risks (Janis, 1972). The feeling of invulnerability might also occur to flight-crews when they often experience pressure from management to get to the destination on time (Hopkins, 2020). To this end, an evaluation was made regarding the company's organizational culture and its impact on groupthink in the following section.

The Accident Analysis in the context of Groupthink

From the media reports and the researcher's contact with employees within the organization, it was observed that the directive leadership style, one of the initial conditions of groupthink, shaped Pegasus managers’ behaviors in the organizations. Directive leaders' behaviors are embedded in the company culture. Pegasus managers’ practices of questioning pilots who took extra fuel might be a good example of understanding how the company's corporate culture looks. Another example that might give us a clue about the company’s culture is that Pegasus leaders value employees who accomplish cost-savings tasks. That is why the flight crew of flight PC2193 may not have initiated a go-around.

Gutterman (2017) noted that the cultural values of a society significantly influence leadership styles. Gutterman (2017) further noted that just as cultural values impact leaders' behaviors, they also affect how employees perceive and ultimately accept or reject their leaders' behaviors. Table 3 indicates the differences between Turkish managers and Western ones based on cultural values.

In cultures with a high-power distance, such as Turkey, people tend to demonstrate an autocratic leadership style. And employees in such cultures accept inequality between superiors and subordinates as a natural part of the organizations (Hofstede, Hofstede, and Minkov, 2016). As such, it may be inferred that Pegasus’s flight-crews are prone to accept whatever is offered by their leaders, even if they are risky for a safe flight completion, because of society's cultural values in which they involve.

Table 3
Differences between Turkish managers and Western ones

	Turkish managers	**Western ma**
Leadership style	Very authoritative. Too many directives.	Less emphasis on the personality of the manager and more on style and performance.
Organizational structure	Very bureaucratic super-centralized. Vague relations. Environment is unpredictable and ambiguous.	Less bureaucratic, more delegation. Relatively centralized structure.
Decision making	Ad hoc planning. Decisions are taken at a higher level. Avoiding high risk.	Sophisticated planning techniques. Modern tools for decision making.
Evaluation and performance control	The informal control mechanism, routine. Lack of strong performance evaluation systems.	The modern control system, focusing on cost reduction and efficiency of the organization.
Personnel Policies	Heavy emphasis on people and engaging "healthy social origin" people.	Solid policies staff. Trained employees are usually an essential selection criterion.
Communication	The tone depends on the social position, power, and influence of the family. The chain of command must be followed strictly. Friendships are strong.	Emphasis on equality and reducing disparities. Friendship is not so strong.

Source: (Adapted from Sasu & Andries, as cited in Norina & Camelia, 2014. p. 369)

Moreover, in collectivistic societies such as Turkey, children are taught to respect their groups. When these children become an adult, they remain members of their in-groups and expect the in-groups to protect and support them when they are in need. In return, they are expected to provide a tremendous degree of loyalty to their in-groups (Halub, Sauber, & Stuck, 2012). Janis (1972) stressed that a highly cohesive group is the primary antecedent condition necessary for groupthink. As such, it may be concluded that Pegasus employees are prone to integrate into cohesive in-groups from birth onwards.

Finally, as stated by Hart (1991), the chances of groupthink significantly increase when decision-makers are under stress. In these circumstances, decision-makers are likely to make poor decisions. Janis (1982) asserted that the group members become highly dependent on the group for social support under conditions of high stress. As such, it can be assumed that management's commercial pressures that cause Pegasus's pilots to be exposed to extreme stress may have induced groupthink.

Findings

Based on the literature explored and accident analysis of flight PC2193, the following findings were made:

a) Groupthink might lead to bad decisions, which increases the possibility of organizational failures,
b) Groupthink might encourage flight-crews to take extreme risks, which can threaten the quality of the decision,
c) Groupthink might be linked to cultural values (e.g., high power distance and collectivist societies),
d) Groupthink might help explain some of the pressures placed on employees,
e) Groupthink might contribute to unethical behaviors in organizations.

Conclusion

As noted throughout this research, group decisions might reduce the possibility of making poor decisions in organizations as they are composed of complete information and knowledge. However, the concept of groupthink can minimize or eliminate the critical thinking evaluation in making group decisions.

In the aviation working environment, people work in groups as well. For example, airline pilots work as a crew or air traffic control work as a team. Groupthink is more likely to occur in the cabin crew (Wan, 2010). For instance, making adjustments en route due to weather or other operational constraints need the alternatives to be considered carefully. However, groupthink might cause pilots to approve of their group members and leaders by ignoring the alternatives.

The current research suggests that groupthink occurred in Pegasus Airlines given the management's directive leadership behaviors, high group cohesiveness resulting from cultural values, and stressful working conditions resulting from the fuel-saving pressures, which might have contributed to the crash of PC2193 by affecting the flight crew's decision-making skills.

Based on the findings, it was concluded that groupthink might be one of the causes of organizational failures within the airline industry.

The Recommendations for Combatting Groupthink in Aviation Organizations

The reviewed literature indicates that scholars have widely tested groupthink theory. Some scholars' research findings have supported groupthink theory, whereas others' findings have claimed that groupthink theory is incomplete, thereby necessitating to be added new antecedents to the model. As a result, there is no universal approach to combatting groupthink in organizations. Janis (1971, 1982) indicated that open discussions to promote differing opinions and the devil's advocate technique, which involves someone in the group being assigned the role to critique and identify risks in any actions, are methods for combatting groupthink. In addition to Janis's methods, a few suggestions for combatting groupthink in aviation organizations include: (a) recognizing the role leadership plays in the occurrence of groupthink, (b) promoting safety practitioners in the organizations to critique cost-cutting strategies without fear of being reprimanded, (c) providing guidelines on aeronautical decision-making processes and (d) reducing commercial pressures on employees.

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Appendix

flypgs.com PEGASUS	Safety and Emergency Response Management	Document No:	PG-EM-PO-001
		Revision No:	1
	SAFETY POLICY	Revision Date:	29.06.2020
		Page:	1 / 1

We believe that Safety Management System can only be obtained with the participation of all employees. All levels of management and all employees are accountable for the delivering of this highest level of safety performance, starting with the CEO.

Our commitment is to:

Support the management of safety with the provision of all appropriate resources that will result in an organizational culture that fosters safe practices, encourages effective safety reporting and communication.

Encourage the management of safety as a primary responsibility of all managers and employees.

Clearly define for all staff including managers and employees, their accountabilities and responsibilities for the delivery of the organization's safety performance and the performance of the safety management system.

Establish and operate hazard identification and risk management processes, including a hazard reporting system, in order to eliminate or mitigate the safety risks of the consequences of hazards.

Implement "Just Culture" and ensure that no action will be taken against any employee who discloses safety concern through the hazard reporting system, unless such disclosure indicates, beyond any reasonable doubt, an illegal act, gross negligence, or a deliberate or wilful disregard of regulations or procedures which are considered as unacceptable behaviours. Apart from these unacceptable acts, disciplinary action would not apply.

Comply with and, wherever possible, exceed, legislative and regulatory requirements and standards.

Ensure that sufficient skilled and trained Pegasus employees are available to implement safety strategies and processes.

Ensure the effective implementation of Human Factor Principles into operational practices.

Establish and measure our safety performance against realistic safety performance indicators and safety performance targets.

Ensure externally supplied systems and services to support our operations are delivered meeting our safety performance standards.

Publish procedures, assign responsibilities and provide necessary authorization and equipment to ensure a coordinated execution of the corporate Emergency Response Plan.

Carry out implementing and monitoring activities within the scope of identifying fatigue hazards, determining and assessing fatigue risks, promoting fatigue reporting and analysis processes in order to maintain the company safety performance by managing the fatigue effect of flight duties on the flight crews.

Continuously improve our safety performance.

Mehmet Tevfik NANE

Accountable Executive / President and CEO

Prepared By	Checked By	Approved By
Emniyet ve Acil Durum Yönetimi Kıdemli Uzmanı	EYS Onay Ekibi Emniyet ve Acil Durum Yönetimi Müdürü Emniyet Yönetimi ve Kalite Uyumluluk İzleme Direktörü	Genel Müdür

Source: (Pegausus Airlines, 2020d).

The Organizational Culture of SkyWest Airlines

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Abstract

The organizational culture of SkyWest Airlines is driven by several guiding principles such as, "Health and safety, excellent service and quality, personal and operational reliability, fairness and consistency, respect and teamwork, personal and corporate integrity, and superior profitability and efficient use of all resources" (SkyWest Airlines, 2020). This paper is focused on the organizational theories behind SkyWest's culture relating to operational performance. This includes a focus on the Z-Organization Theory. With over 14,000 employees and nearly 500 aircraft, oversight is critical in maintaining a standard of safety and performance, and this paper provides detailed insight into the organizational culture of SkyWest.

Successes of SkyWest Airline's culture have been reported by Glassdoor Employees' Choice Award as a "Best Place to Work in 2020," and the results came directly from SkyWest employees before strict analysis from Glassdoor (PR Newswire, 2019). Employee satisfaction, profitability, and survivability are all focal points of many modern organizations, and SkyWest's commitment to each of these is rooted with the strong foundation of a positive culture.

The Organizational Culture of SkyWest Airlines

The organizational foundation laid forth by the establishing members of SkyWest Airlines has transcended to its current management structure. The strength of SkyWest's culture has withstood 48 years of operation, and while the core elements remain the same, the company has been able to adapt to many unexpected challenges. The management styles of Jerry Atkin, Ron Reber, and Chip Childs have all focused upon the principles of treating employees well, maintaining the highest reliability in the industry, and above all, doing it safely. The growth of SkyWest Airlines, focus on organizational relations, and security and reliability in difficult times are key components of why SkyWest is a desired company to work for, work with, and travel on.

The origins of SkyWest Airlines began in 1972 with three aircraft and less than three hundred people transported to a limited selection of cities. Three years later, Jerry Atkin became the youngest president of an airline in history, and he helped build the company into a nationally renowned airline. The development of SkyWest can be broken down into 5 sections. The hiring of Jerry Atkin was a pivotal moment for the struggling company as he came in as the Director of Finance. With a doubtful future existence and no ability to even sell the bleeding airline, Atkin knew SkyWest had to persevere. At the time, there were twenty employees and three airplanes, and Atkin's fix was to ensure air service reliability to Salt Lake City and Las Vegas (Sadlier, 2014). After a few layoffs and filling in the gaps wherever he could, Atkin helped turn a profit. In return, he was promoted to President of SkyWest, and his focus on future successes revolved around consistency in organizational behavior: "Take care of your customers and take care of your team" (Sadlier, 2014). This mentality would be a cornerstone for SkyWest management. The following years yielded exponential growth with the company free of all debts by 1976. The next major leap in SkyWest history occurred with the procurement of three Metroliner II aircraft in 1979 which helped grow passenger travel 38% higher than the previous year. The Metroliner expanded SkyWest's operational limits to eight destinations across four states (SkyWest Airlines).

The next major milestone for the company was the 1984 acquisition of Sun Aire which expanded SkyWest's fleet to become the largest Metroliner operator in the world, and the 1986 public offering of SkyWest paid off a majority of the debt accrued from the Sun Aire transaction. SkyWest officially became a part of Delta Air Lines' Code Share operation in 1986 which allowed them to double in size with over one thousand employees (SkyWest Airlines). SkyWest continued to grow and operate a reliable airline, and the company expanded to new markets. In 1987, SkyWest no longer dealt with passenger reservation operations as it was taken over by Delta. This year was record breaking as SkyWest's revenue increased to $56 million with over $3 million in profit, and the company earned the Air Transport World award of Regional Airline of the Year (SkyWest Airlines; Air Transport World). Profits grew to nearly $22 million by the end of 1999, and SkyWest was positioned for success.

When the September 11th terrorist attacks occurred, air travel was left reeling in its wake; furloughs, layoffs, and a 20% cut to capacity decimated many airlines across the industry. Fortunately for SkyWest, Atkin had previously built a reliable foundation of transportation for the major carriers, and with a large purchase order of 64 new regional jets planned to arrive within the next few years, United Airlines pursued alternatives to their dwindling 727 and 737 operations. This allowed SkyWest to operate without furloughing employees, but they still were significantly impacted financially from the lack of demand in flying from the lack of trust in the system (Seidenman, 2008). With their newfound jets in the few years to follow, SkyWest took over the market by flying 100% of their operation as contract flights (SkyWest Airlines). Atikin reassured his company that they will persevere through the difficult times. "This situation will pass. In the meantime, there will still be a demand for service, and we are well positioned to provide it" (Seidenman, 2008). Seidenman further illustrated the situation stating, "SkyWest's solid market position and equipment deliveries allowed it to begin moving Canadair Regional Jets from Salt Lake City to Dallas-Fort Worth International Airport (DFW) in October as part of a realignment strategy devised to compensate for Delta's drop in capacity" (2008).

Through the aftermath of the September 11 attacks, SkyWest's resilience and reliability was recognized by Aviation Week and Space Technology Magazine as the "Best Managed Regional Airline of the World," and SkyWest was again named "Regional Airline of the Year" in 2002 (SkyWest Airlines; Air Transport World).The ability of SkyWest to become a solely contract flying company in 2002 allowed the main carriers to take advantage of the smaller market and take control of the logistics behind filling seats. SkyWest's role was to provide the aircraft and crew and to do it with the highest performance standards possible at a lower cost. Contract flying allows for lower demand, but still necessary, flights to be operated at a reduced cost because regional flight crews are not compensated hourly nearly as much as mainline flight crews (Schlappig, 2016).

The following years brought innumerable success for SkyWest, and the final notable milestone was the onboarding of Chip Childs and his subsequent career advancement. Atkin stepped away from the company after the humble beginnings with 13 employees and growth to nearly 17,000 employees, and the company's success can be attributed to his leadership and dedication to excellence (Macrotrends). Atkin established a solid foundation with which Childs was able to capitalize on. Armed with a Masters degree from Brigham Young University, Childs took what he learned from Atkin and incorporated an additional focus of being a high reliability organization (HRO). Childs entered the aviation industry days before the September 11th attacks, and he learned from Atkin how to deal with the uncertainty to follow. Childs learned how Atkin had positioned SkyWest well and how to avoid furloughing employees during times of financial hardship (Seidenman, 2008). Childs was promoted to President and Chief Operating Officer in 2007, replacing Ron Reber. Reber helped grow the company from 42 cities and 1,500 employees to 137 cities and 10,000 employees, and Childs now had the opportunity to excel in a leadership role.

Childs' first managerial challenge came in the form of an economic collapse in 2008; oil prices peaked at $147 per barrel and eight airlines in the U.S. folded or declared bankruptcy (SkyWest Airlines). The recession of 2008 left many airlines struggling to make money, but SkyWest's management dealt with the fallout of the ruptured economy. SkyWest's 2009 quarterly report indicated to investors that not only did they survive the difficult year, they also strengthened their investments and positioned themselves for a successful future (2010). Childs was faced with a 15% reduction in operational capacity, but avoided furloughing pilots. His new responsibilities lay as the head of SkyWest's operational, strategic and fiscal functions, as well as managing contract partnerships with United Airlines, Delta and Midwest (2010). With the transition, Atkin said,

> Chip brings an exceptional balance of operational experience, financial discipline and strong leadership to the role. As we redefine key leadership roles at the company to encourage top operational performance, improved contract efficiency and profitability, Chip's extensive operational and financial background will be critical to moving SkyWest Inc. forward, and to maintaining its leadership in a challenging and dynamic environment (2014).

Eight successful years filled with company growth passed, and Chip Childs was named Atkin's successor. In those years, SkyWest entered contracts with AirTrain and US Airways as well as capitalized off of the United and Continental merger in 2010 (SkyWest Airlines).

Childs is the current Chief Executive Officer, and SkyWest is the largest regional airline in the United States flying contracts for American, Alaska, Delta and United. In a presentation at Utah Valley University (UVU), Childs outlined the focus of his leadership style: “My main responsibility in my business model is to have outstanding people that are willing and able to deliver better than anybody else, take care of their passengers, make sure they do that on time, and by far the most important thing is to do it safely” (UVU, 2016). This concentration on ensuring SkyWest maintains high performing employees means that management must incentivize their people through a positive work environment.

SkyWest Airlines has notoriously produced a positive climate for employees and, in turn, customers. According to a 2019 study conducted by Ragan and Carder,

> Positive workplace cultures tend to improve more than simply the targeted management system. When employees trust management to do the right thing in safety, they tend to trust them to do the right thing in labor relations, environmental actions, community relations and business management. Trust and respect are contagious, and once an organization builds them in one area, they tend to spread to others. Building a joyful, happy place to work is an objective that benefits all involved (2019).

Childs and his surrounding management focus on ensuring that their employees are happy working in their environment, and because of this, individual and organizational performance increased significantly. SkyWest takes great pride in their culture, and it has long been recognized.

Successes of SkyWest Airline’s culture have been reported by Glassdoor Employees’ Choice Award as a “Best Place to Work in 2020,” and the results came directly from SkyWest employees before strict analysis from Glassdoor (SkyWest, 2019). The reviews given to Glassdoor regarding SkyWest included metrics such as satisfaction with the company, career advancement and opportunities, company culture, senior management, and the work/life balance (SkyWest, 2019). It is notable that SkyWest was the only U.S. regional airline to be included in the list published by Glassdoor. The culture at SkyWest is a construct 48 years in the making, and the originating members established their commitment to employees as a cornerstone in company management. As illustrated by Schein,

> In any given firm the history will be somewhat different, but the essential steps are functionally equivalent: 1. A single person (founder) has an idea for a new enterprise. 2. A founding group is created on the basis of initial consensus that the idea is a good one: workable and worth running some risks for. 3. The founding group begins to act in concert to create the organization by raising funds, obtaining patents, incorporating, and so forth. 4. Others are brought into the group according to what the founder or founding group considers necessary, and the group begins to function, developing its own history. In this process the founder will have a major impact on how the group solves its external survival and internal integration problems. Because the founder had the original idea, he or she will typically have biases on how to get the idea fulfilled — biases based on previous cultural experiences and personality traits.

Jerry Atkin's impression while establishing SkyWest forged the way for success. As the lead founder in the company, surrounding employees saw his commitment of service and care for others as desirable attributes. The Director of Corporate Communications and People Programs, Marissa Snow, shared that, "Atkin's commitment to his employees and customers is a large part of what has made the company successful" (Sadlier, 2014). Atkin also attributed SkyWest's success to not being afraid of taking risks and being persistent with business (Sadlier, 2014). Similar to Herb Kelleher's plan with Southwest Airlines of changing the traditional relationship between company and employee, Atkin combined Human Resources, Marketing and Recruitment, Corporate Development, Internal and External Communications, and Community Service and Culture into one department: the People Department (SkyWest Airlines). These two evolutionary adaptations by Atkin and Kelleher align with Human Resource Theory in that, "The essence of the relationship between organizations and people is redefined from dependence to codependence. People are considered to be as important as or more important than the organization itself (*Herb Kelleher,* 2019; Shafritz et al., 2016). Furthermore, the relationship between employees and the organization can be mutually beneficial due to an organization's need of ideas and employee talent coupled with the employee's need of stability and opportunity (Shafritz et al., 2016). Along with Human Resource Theory, SkyWest partially exhibits behavior of a Z Organization, as illustrated in 1981 by Ouchi:

> Type Z companies generally show broad concern for the welfare of subordinates and of co-workers as a natural part of a working relationship. Relationships between people tend to be informal and to emphasize that whole people deal with one another at work, rather than just managers with workers and clerks with machinists. This holistic orientation, a central feature of the organization, inevitably maintains a strong egalitarian atmosphere that is a feature of all Type Z organizations… An organization that maintains a holistic orientation and forces employees at all levels to deal with one another as complete human beings creates a condition in which de-personalization is impossible, autocracy is unlikely, and open communication, trust, and commitment are common (Shafritz et al., 2016).

This strong sense of community was not lost on Atkin's successor. Childs has pursued similar organizational tactics as CEO, and conforming to previous methodologies has helped Childs adapt to unprecedented events. Childs' focus on SkyWest people was reflected in his speech to UVU students:

> Part of our challenge is to try and make sure we can take care of people in such a volatile environment. Part of it is being very creative and working face to face with them. I rarely want to go have a conversation with employees with an attorney in the room on either side. The sooner we can get to what the transparent concerns of the company and what the transparent concerns of the people and employees are, the faster we can make a connection in a business model that has sustainability. What we have found with our people is that… beyond pay there are some very very important factors. One of them is stability and predictability. People want to know that they're going to work for a company that is not going to go away. A lot of that weighs on us to make the right decisions to where our model can be more predictable. But that requires a significant amount of communication and transparency with our employees, we think is a very paramount way of making sure that you take care of your people. We're not talking just about the economics of taking care of people, it's how they're treated, how they're communicated with, it's how they're informed because the tools for them to do their job is not just cool technology…the tools they need are communication, direction, communication, strategy, which is a very strong paramount for how we take care of our people (UVU, 2016).

Childs mirrors Atkin's approach with relation to fundamentals of Theory Z Organizations: promotion of egalitarianism with an understanding of some established hierarchy, mutual trust, and a community revolving around the idea that everyone is equally cooperating towards a common goal (Shafritz et al., 2016). However, because certain SkyWest airline pilots had previously attempted to unionize with the Air Lines Pilot Association (ALPA), the company had to delicately handle concerns of pilots. One of the weaknesses that led to Childs mentioning discussions with lawyers came with the lawsuit of ALPA and SkyWest. To summarize, SkyWest management attempted to discourage any and all mentions of pilots unionizing, and this came in the form of disallowing pilots to wear ALPA insignia while working. SkyWest does have their own pilot oversight program that looks after the well-being of pilots, but they are not an established union and are paid SkyWest representatives. Their program is known as the SkyWest Airline Pilot Association (SAPA). The role of SAPA was outlined in the documentation of the 2007 lawsuit between the SkyWest ALPA Organizing Committee and SkyWest Airlines Inc..

> SAPA was founded by SkyWest pilots in the mid-1990s, but has never been certified by the National Mediation Board (NMB) as the SkyWest pilots' official representative. SAPA purports to negotiate with SkyWest over rates of pay, rules, and working conditions upon which it reaches agreements which are then presented to the pilots for a vote. SAPA works with management in maintaining the crew member policy manual; the manual covers areas such as vacation time, compensation, training issues, employee discipline and more. It is not, however, binding on SkyWest as it includes a clause which states that no policy in the manual will remain in effect if it violates the company policy manual (*SKYWEST PILOTS ALPA ORG. COM. v. SKYWEST AIRLINES,* 2007).

The conclusion of the lawsuit provided assurance for SkyWest pilots that they would be allowed to wear ALPA insignia without reprisal, and Childs was further incentivized to avoid having a union by creating a culture in which a union was not needed. Although there was an organized vote with 904 out of 911 favoring organization of a union for SkyWest, the turnout was nearly 400 pilots too few, and that vote emphatically illustrated how pilots appreciate the company's labor management relations (Bloomberg News, 2007). Childs' holistic approach with the desire to avoid unions stems from the pursuit of solid relationships with all company personnel, and his reasoning is that employees who do not feel threatened by their company should not unionize. It is the organization's duty to ensure stability and predictability, and this mentality should lead to lower costs for employees and the company because it would avoid union dues and arbitration.

Childs' next speaking point regarding customer satisfaction has been demonstrated through a focus on reliability and employee performance. Because SkyWest operates flights for the Major airlines, their reputation is also affecting the reputation of whichever carrier they are contracting for. Childs stated:

> Even though we're flying 50 million passengers a year, they're really Delta, United, American, Alaska's passengers, and we take great care in making sure that we protect their brand with our level of service and our people for the betterment of both of our business models (UVU youtube).

The 2017 incident of United Express 3411 operated by Republic Airways is evidence that negative behaviors of employees and personnel involved in operations of Regional airlines can significantly impact the face of the Major carriers; in this case, it was United Airlines. The chaotic removal of a passenger because of an oversold flight on Republic operating on behalf of United led to global outcry against United, a drop in United stock prices, and U.S. Congressional inquiries (Zanona, 2017). SkyWest's reliability and positive customer engagement reviews continuously makes that organization a desired airline for passengers and partners, and Childs and the surrounding management focus on ensuring high company standards that benefit the shareholders, customers, and company partners (Hethcock, 2017; UVU, 2016). Childs' focus on maintaining an HRO reputation allows for stronger relationships with vendors, parts suppliers, aircraft manufacturers, and other industry partners, and should SkyWest maintain predictability and stability, prices and service from partners will be better (UVU, 2016). Childs' further demonstrated in his speech that with a strong reputation in the industry, negotiation of contracts with Major airlines will be more manageable because of SkyWest's "great people, investors willing to give the right capital for the right scenario, and operating credibility with top operating performance in our back pocket" (UVU, 2016).

Operational success is only complete with utmost consideration of safety, and safety is SkyWest's ultimate responsibility and focus. SkyWest's Safety Management System (SMS), which is mandated for all U.S. airlines, is composed of the Aviation Safety Action Program (ASAP), Flight Operational Quality Assurance (FOQA), and Safety Concern Reporting (SCR) (FAA, 2019). SAPA administers the ASAP program which protects pilots and enhances safety due to the anonymity of reports. SAPA's close relationship with SkyWest management and pilot group has established significant trust within the system that allows it to work effectively.

Though SkyWest has been affected by several tragic accidents, no reports filed by the NTSB found SkyWest at fault. The environments in which all airlines operate produce hazardous conditions where consequences reach catastrophic levels, and enhancing the focus of SkyWest's organization towards being an HRO encourages the push toward the highest safety standards and reliability as possible. Cantu et al. researched the evolution of the HRO since its origins and assessed effectiveness of pursuits within the Critical Infrastructure industries, and their results concluded that a culture that strives for HRO attributes leads to higher performance and delivery objectives (Cantu et al., 2021). SkyWest's pursuit of maximum operational reliability within varying environments emphasizes the dedication towards safety. In the UVU presentation, Childs discussed the importance of operational control, and even though they may operate aircraft for other companies, it is still the responsibility of SkyWest to ensure everything is within normal operating parameters (UVU, 2016).

No organization is without flaws, and SkyWest has made substantial mistakes that caused damage to their reputation. In 2015, SkyWest was fined and restricted by the FAA due to a stall that occurred during cruise flight on one of its Canadair Regional Jets (CRJ), but SkyWest initially declared it as an “isolated slow speed event” (Plautz, 2015). This incident caused the FAA to restrict altitude and airspeed limitations for SkyWest CRJ operations. Another problem arose with discrimination claims due to SkyWest’s employee benefits policy for same-sex couples. The employee reported that their husband was classified as a “companion” rather than a “spouse” and therefore was required to pay additional fares for travel. This 2009 complaint was addressed in 2010 with a policy change, but SkyWest did blame the policy on Delta Airlines’ policy (LGBTQ Nation, 2013; Warnke, 2010). Combined with a societal shift in acceptance, SkyWest learned from that incident and began to support equal opportunities for their employees. Large organizations tend to shift values slowly, and while SkyWest was ridiculed for their LGBTQ stance, they have progressed to now being a large sponsor of the National Gay Pilots Association (NGPA) (Shafritz et al., 2016; Pettit, 2020).

Contributing to their communities is an important characteristic that SkyWest maintains. As a part of their commitment to equal opportunities, SkyWest also emphasizes community engagement. “SkyWest makes positive contributions to the communities we serve, and encourage our employees to do the same. SkyWest internship programs, scholarship programs and our participation in various civic and charitable activities are of paramount importance” (SkyWest Airlines). Frances et al. studied the engagement strategies of institutions, and they found that community engagement can greatly enhance longer-term organizational legitimacy (Frances et al., 2010). Giving back to their communities increases employee satisfaction and retainment, and it is a contributing factor in SkyWest's organizational success and desirability for potential employees to seek careers at this company.

SkyWest understood the need to be an attractive company to work for, and with the growing need for airline pilots, they began the Pilot Pathway Program in 2013 to incentivize up and coming pilots looking to begin their careers in the airline industry (Milbourn, 2014). A 2013 Boeing forecast of pilot demand stated that North America will need over 85,000 pilots within 20 years, and in order to get ahead of the curve, SkyWest started the Pilot Pathway Program as a recruiting tactic to preemptively compensate for the predicted hiring surge of airline pilots (Boeing, 2013). This program allows future airline pilots to learn about and engage with SkyWest's culture, and it allows selected pilots to participate in various programs while fulfilling requirements for pilot positions (SkyWest Airlines). This foresight by SkyWest's management team shows the dedication to ensuring future success.

Following the highest rates of airline pilot hiring in airline industry history, COVID-19 brought the worst drop of passenger airline travel in aviation history. This led to several airlines collapsing and many struggling to survive. Now faced with another crisis, Childs and SkyWest management has fallen back on proven practices. Because of industry positioning, SkyWest was able to turn a first quarter profit (Davis, 2020). Childs stated,

> COVID-19 has caused unprecedented disruption across the airline industry… Our priority is the safety and well-being of our people and passengers, and we have taken numerous steps to that end. We are taking aggressive action to maintain strong liquidity and work collaboratively with our partners on flexible fleet solutions during this period of

> uncertainty. I want to thank our 14,000 employees for their resilience, commitment and flexibility during this pandemic (Davis, 2020).

While the 2020 fourth quarter is upon the industry and a forecast of $250,000 in daily losses for the organization, SkyWest remains resilient. Their projections show a relatively secure position allowing them to acquire new aircraft and hopefully avoid furloughs (SkyWest, 2020). SkyWest's ability to ensure reliability and safety has given it strength to withstand the financial hit to the industry, and the structure of the organization continues to be tested as it has throughout the entirety of its existence.

Organizational resilience is demonstrated throughout the entirety of SkyWest Airlines' history. Weathering adverse industry climates is essential for SkyWest management because their consideration lies with their employees and stakeholders: customers, partners, and shareholders. The foundation established by Jerry Atkin, supported by Ron Reber, and adopted by Chip Childs leaves little room for improvement, but the expansion of inclusion for minorities and women should be considered a high priority for SkyWest moving forward. SkyWest is operating as the largest Regional airline in the United States, and their success can be attributed to high reliability, employee wellbeing and happiness, transparency and communication with partners, and the highest priority on safety. These organizational qualities ingrained in SkyWest's culture give faith to employees that they have assured stability, to customers in that they are assured reliable and safe transportation, and to partners who seek excellence in the resources they utilize. With happy employees, operational performance and customer satisfaction increases, and with that, partnerships are more easily maintained.

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Failure to Merge

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Abstract

Atlas Worldwide Holdings is currently in the process of merging two of the airlines that currently operate under the Holdings company. Southern Air and Atlas are set to become one airline soon. Atlas's failure to merge the companies has left the organizations in a confusing place with multiple chains of command and duplicate positions. The inability for the company to merge is creating tension and loss of efficiency that could be avoided by restructuring the organization and merging into one singular airline.

Keywords: Atlas, Culture, Structure

Failure to Merge

The time is 2:00 AM, you just arrived at your hotel from the airport after being on duty all day to find out scheduling did not reserve a room for you. Your next flight leaves in about nine hours, as you pick up the phone to call scheduling to try and get a hotel room. Scheduling refers you to a different scheduling department, furthering your delay to a proper rest before your next flight. This unfortunately is the case for some pilots who operate for Atlas Air, as the company has several different airlines that operate semi-independent of each other (Atlas Air, n.d.). This type of confusion can be frustrating for the employees that rely on the company to have everything planned out for them on these often-lengthy trips. The difficulties in scheduling and running a cargo airline have already been well noted. This is not helped by a semi-independent operation where certain aspects of the organization are controlled by the original airline, and other aspects fall under the main airline’s control.

Merging airlines is a complex undertaking that is even more challenging as the world struggles through the Covid-19 pandemic. “Despite an ongoing collapse in demand for air cargo, the loss of bellyhold space in passenger aircraft means that global freight capacity is still struggling to cope with the volume of goods that needs transporting, IATA data shows (Chua, 2020).” During these difficult times, employees need guidance, as the demands placed on the organization are difficult to manage. For this reason, Atlas Air needs to restructure their airline to simplify functions and increase their efficiency while improving employee happiness.

History

Atlas Air was founded in 1992, when Michael Chowdry started leasing aircraft and crews to other airlines (Atlas Air, n.d.). Atlas contracted their first plane in 1993 to China Airlines to begin what would eventually become the Atlas Air we know today (Atlas Air, n.d.). By the end of the year 2000, Atlas was operating a total of 36 aircraft (Atlas, 2019). In February of 2001 Atlas Air Worldwide formed its current holding company structure that is still in operation (Atlas, 2019). Not everything was smooth growth, as in early 2004, Atlas entered chapter 11 bankruptcy. The company underwent a restructure and emerged in July 2004 from bankruptcy (Atlas Air, n.d.).

Atlas continued to grow after their bankruptcy back in 2004. In April of 2016, Atlas Worldwide Holdings purchased Southern Air for 110 million dollars (Atlas Air, n.d.). As of today, Atlas Worldwide Holdings has three subsidiaries that operate for them. These include Polar Air Cargo, Titan Aviation, and Southern Air (Atlas, 2019). Atlas Air Worldwide is one of the leading global providers of outsourced aircraft and aviation operating services. Atlas Worldwide Holdings currently offers services to several different companies with some notable companies like FedEx, and UPS being some of the largest companies (Atlas, 2019).

Current Structure

Atlas Worldwide Holdings is a publicly traded organization. Their current chief executive officer (CEO) is John W. Dietrich. Under the CEO, there is a Vice Principle (VP) of flight operations that is the highest flight representation for the company. All of the system chiefs and below report to the VP of flight operations. Each fleet type of aircraft (737, 747, etc...) has their own chief pilot as well as their own Director of Flight operations which oversees the fleet captains and check pilots/instructors. Across all the different airlines that operate under Atlas Worldwide Holdings, there exists five different fleet types (Atlas, 2019). This means that there are five chief pilots and five directors of operations, with duplicates for each “different” airline that flies that specific fleet type (737, 747, etc...).

This system is further convoluted when we factor in that both Sothern Air and Atlas have their own systems chief. The systems chief is responsible for overseeing the flight operations of all the different fleets that operate in that specific airline. As stated before, these systems chiefs report to the VP of flight operations who reports to the CEO of Atlas Worldwide Holdings. This is the basic structure that Atlas Worldwide Holdings currently operates under in relation to the flight department.

At the moment, Southern Air is in the process of fully merging with Atlas as one single airline. This means that departments like human resources fall under Atlas for Southern employees. However, this is not the case for all departments, as the flight scheduling departments are independent of each other. This means that there are duplicate departments that operate independently of each other, most of the time. There are situations where the Atlas scheduling is needed for a Southern Air crew though. These situations are fairly rare, but some crossover does exist as a consequence of the airlines operating under the same holdings company.

Overview

Above is the basic structure of the airline as explained to me through various pilots who work for Southern Air. This structure currently works under the concept of the airlines operating independently under Atlas Worldwide Holdings. The problem with this, is that the airlines are planning to merge into one entity. This means that there needs to be significant change to account for the redundant jobs and positions that are going to be lost because of the merge. Another significant factor is going to be the difference in culture between the two airlines. Based on what information has been made available, there happens to be some cultural differences that can cause issues moving forward with the merge. This paper plans to address these issues by presenting some alternative methods of structuring that can maximize efficiency.

Alternative Structure:

One of the biggest issues to overcome in aviation is that the industry is highly volatile. Even though the pandemic has caused demand for aviation and cargo to plummet, Cargo companies are still struggling with the demand as usual sources of cargo transportation are unavailable (Chua, 2020). This means that the already pressed cargo airlines are having to increase their efficiency to meet the demands. Atlas Worldwide Holdings is one of the companies that is going to have to meet the demand. Their charter style of business means that demand can be sudden and unexpected. This means that the organizational style that Atlas incorporates will be essential to keep the organization efficient. There are two different schools of organizational theory that would apply, the Classical style of efficiency, and the Modern style centered around the employee.

According to Shafritz et al. (2016), there are 4 fundamentals centered around classical organizational theory:

1. Organizations exist to accomplish production-related and economic goals.
2. There is one best way to organize for production, and that way can be found through systematic, scientific inquiry.
3. Production is maximized through specialization and division of labor.
4. People and organizations act in accordance with rational economic principles.

This implies that there is one best way to organize an organization for production. Airlines can be seen as more complex organizations compared to a traditional organization. There are many variables that need to be considered and accounted for, which makes organizing the airline difficult. At the moment, Atlas Worldwide Holdings has several independent airlines operating semi-independently. This system currently works; however, this system will not function when the airlines merge into one airline.

This paper will focus on Southern Air, and Atlas Air as they approach a merge into one airline. Southern Air and Atlas have a chief pilot who oversee the individual employees. There is one key difference, Atlas has regional chief pilots in between the chief pilot and the individual crewmembers. On the other side of the coin, the Director of Flight operations oversees the other flight related departments for each individual airline. The Director of Flight operations has the fleet captains under them, followed by the check pilots/instructors. These departments are separate on paper yet must work together to achieve fluid operations day to day. Individual crewmembers are under the chief pilots, but often times have to go to the fleet commanders for various situations that arise. Once the airlines merge completely, there will be duplicate positions as well as a completely new position for the former Southern Air side of the operations.

Atlas will have to restructure their departments, as there will be a significant increase in employees under the "Atlas airline." One suggestion is to expand the ranks and just put the people from their "old jobs" at Southern Air into the same position at Atlas. This however is not the best idea, as the way the organization is structured, having two chief pilots will only hinder efficiency. According to Shafritz et al. (2016), authority is the right to give orders and the power to exact obedience. If there is a question of authority, then confusion can develop, and the system can become in-efficient. Ultimately, the flight department relies on the VP of flight operations as the final decision. An organization the size of Atlas Worldwide Holdings cannot keep referencing the VP of flight operations for every situation. This means that the authority of the VP gets delegated down the ladder if you will. For most everyday situations, the chief pilot should be in a position to handle whatever needs to be handled. If there are two different people in that position, then there develops a situation where there can be conflicting information. This violates the Unity of Command principle that dictates that uneasiness can manifest when two supervisors wield their power over an employee or department (Shafritz et al., 2016, p. 55). This could simply be avoided by maintaining one chief pilot for flight operations.

One side effect of only maintaining one chief pilot position, is that a decision on who is best to fill that role must be made. Considering that this position is fairly high up the leadership chain, someone who is unfit for the role can cause significant efficiency loss. Atlas has seemingly two equally qualified people to fill that position, as currently two people operate as chief pilot. An employee that holds a position of authority and status is not going to want to relieve that position easily, as stated by Shafritz et al. (2016). If the employees that operate under one of the chief pilots are particularly fond of that manager, then having that person removed might cause the general employee base to be upset. When two companies are merging, upsetting a large portion of the employee base would be counterproductive to an efficient merging.

During a merge, retention of key personnel is desired and mixed signals should be avoided (Gutknecht and Keys, 1993, p. 31). This concept must be kept in mind during the upcoming merge between Southern Air and Atlas Air. The key personnel are going to be the current leaders and personnel who help shape the airlines. During the merging process, mixed signals could create confusing situations which will increase the frustration of the employees in the new “Atlas” airline. Policies that may have been in place for Southern Air may no longer be in place at Atlas. This means that top management needs to be as clear as possible while orchestrating the merge. Desired policies should be correlated into one easy to reach place that allows all of the employees to understand the new structure and how this may affect their position. Currently, one pilot raised concerns that to understand something like pay, they have to reference several different documents in different locations based on the difference in policies at Southern Air and Atlas. This must be mitigated if top management wants a smooth merge to transpire.

One important thing to note, is that once the merge happens, the process of merging does not end. Gutknecht and Keys (1993) suggest that top management administer a survey to evaluate the happiness and culture of the employees in the new company. Merging an airline can be tricky with seniority being such a big component for determining position and status. Seniority is usually determined by how long someone has worked for that particular airline. The longer you work for the airline, the more optimal scheduling, and routes you get. When you take two different airlines and merge them together, someone who had high seniority at the airline taking over the other airline, may now be in a significantly lower position. This is a form of concern for both pilot groups (typically most effected by seniority). Being able to understand how this change is going to impact the overall happiness of your employees is essential. Adams (2008) explains the impact of seniority on pilots as the difference between a 40,000-dollar job and a 200,000-plus senior job. A Southern Air captain that is very senior will be very unhappy if they lose all of their seniority and have to essentially start over from the beginning. This merging issue with seniority has been prevalent in several airline merges, including Piedmont Airlines and Pacific Southwest Airlines (Adams, 2008).

Essentially, this creates a hot topic that representatives from each pilot group deliberate to come to an agreement on terms for merging pilot seniority. Atlas and Southern Air are already owned by the same holdings company, but still operate independently. This means they are not sheltered from the issues of merging seniority. The most ideal plan would be to go based off hire date for each individual airline. This would be easy to understand and be ultimately the fairest for both pilot groups. Not reaching an agreement can cause internal conflict for years, even though the airlines merged in theory. Internal conflict hinders efficiency and hurts moral, so to avoid this is of the utmost importance.

Culture

The culture of an organization can be one of the most important things for management to understand for a successful organization to thrive. If culture is toxic or negative, then employees will be less productive, and risks associated with safety can manifest. Merging two companies means that you merge two cultures. The greater the difference, the more difficult the merge will be. Simple things like pilots reporting that scheduling people from Southern Air are nicer than the scheduling department at Atlas should be concerning for management about to enter a merge. The difference between the two airlines cultures can create friction during the merge. Management needs to understand this and be proactive to help ease the transition from two airlines into one.

One of the most difficult things for an airline to do is schedule effective routes (Yan and Chen, 2006, p. 175). Effective routing can increase efficiency and profitability for the airline. The unfortunate thing about this is that optimal scheduling can be not ideal when human factors are applied. Cargo operations tend to fly the “back side of the clock.” This means that the flights are often during nighttime, meaning crews operate from very late/early at night/morning. This can create difficulties for crews who have their normal sleep cycle messed up due to flying when they would normally be sleeping. After several days, this fatigue can add up and become chronic fatigue. Besides being a safety hazard on its own, crews who are constantly fatigued at work will be more likely to be upset with the organization. This may contribute to a negative culture at the airline.

Cargo airlines rarely have the luxury of flying ideal schedules centered around human factors. Atlas Worldwide Holdings does not better this by operating on a contract system with some really small contracts mixed in with larger ones. This obligates the organization to perform certain flights, which can make scheduling really complex. For this reason, organizations may be tempted to overcome this by stretching their crew's duty time, or time spent on the job. This would be an organizational practice centered in the classical school of thought, where efficiency and productivity reign supreme. Aviation is inherently a risk filled industry, so governing bodies in aviation have enacted rest rules under like part 117 of the Federal Aviation Regulations. Part 117 is centered around fatigue and the crew's ability to perform flight operations as safely as possible (49 C.F.R.§ 117.1, 2020). A study was done where 43 percent of pilots surveyed found Part 117 useful in reducing fatigue (Rudari et al., 2016). Unfortunately, Atlas does not have to abide by these rules, and their rest rules are completely company dependent. Often, the pilots report that Atlas does a good job resting them in between flights, but not always. With no protection for the crews, less than ideal schedules can be created by the scheduling department to meet the demands placed on the airline.

Culture is one of the most important things to gauge success of managerial practices. Unfavorable schedules mixed with confusing power structures as two airlines flirt the line of being one airline can frustrate the everyday employee base. This is furthered by the uneasy feeling of the upcoming merge with seniority most likely being affected. The longer the potential merge stays potential, the more likely these everyday annoyances the employees have to deal with add up into general unhappiness with the organization. This has potential to adversely affect the organization's safety record, as fatigued crews that are upset with the company may make rash decisions. As recently as November 15th, 2020, Southern Air had a crew operating the Boeing 777-200 enter a stall after departing JFK airport (Ben, 2020). Luckily the crew was able to recover and continue the flight without incident to Seoul South Korea. With little information available about what caused the crew to get into a stalling situation, people are left to speculate. Fatigue could have been a contributing factor here, unfortunately as stated above, this is little more than speculation at this point.

One aspect that this paper has largely ignored until now, is the ground handling portion centered around cargo airlines. Handling of cargo and properly securing the cargo in the airplane is essential for safety of flight. One study found that the safety culture "is somewhat poorer than the estimated and desired by the managers (Ek and Akselsson, 2007, p.59)." Most of this is largely outside of Atlas's control, as the loading and unloading are usually accomplished by the organization that charted the flight. This would mean that Amazon would be largely responsible for how the plane is loaded and unloaded, however the crew ultimately has to work with the load masters to ensure the cargo is secured safely for the flight. Let us say that a situation arises where an overworked flight crew has to work with an overworked loadmaster. The communication between the crew and the load master might breakdown, and a potentially unsafe situation may develop. The external pressures put on the crews and ground handlers from their respective companies hinder a positive safety minded culture.

A more modern approach to organizational theory is needed when dealing with an organization in aviation. Aviation has a very high risk associated with everyday operations. Aviation however maintains one of the highest degrees of safety through resilient safety programs and regulations designed to protect people. This concept is extremely important for successful aviation organizations. These programs cannot function properly without proper communication and dedication from management. Southwest airlines have developed an extremely positive work environment through dedication of top management to make the employees feel like part of the family (Gittell, 2005, p. 57). According to Gittell (2005), other airlines like American Airlines have breakdowns in communication that cause frustration among their employee groups. This is something that is plaguing Atlas at the moment. One pilot explained the structure as essentially having four chains of command for each different fleet type. Simple tasks and questions now become needlessly complex, which has a negative impact on culture. Day to day operations now become a chore if anything goes wrong, and with aviation, the possibilities and variables are endless for something to go wrong. Consolidating chains of command to create an efficient communication structure similar to what Southwest Airlines has accomplished would benefit Atlas significantly.

Culture can be difficult for an organization to evaluate. For this reason, Atlas should consider utilizing an outside source to help assess their culture after the merge. Once the merge actually happens, the culture is likely to change at the new singular Atlas. Being able to identify what changes were made will allow management to make the proper decisions on how to best move the culture towards the desired culture. Having an organization that is efficient and has a positive work environment could be a significant improvement for Atlas's profit margin. These new profits can then be used to better compensate the employees to promote even better work ethic and happiness. Management cannot ignore the effects monetary compensation has on employee performance. Delta for example, offers the employees that work for them profit sharing. Delta amassed 1.67 Billion dollars that would be distributed to all of the employees that were eligible under the profit-sharing policy (Writer, 2020). This concept can be adapted by Atlas to show the appreciation for all of the hard work the employees put in day to day. This would help ease the concerns of some of the line pilots who have stated that their compensation for a 737-type rating is significantly lower than the market average for that particular type rating. Raising compensation, a bit and enacting a profit-sharing policy could help calm the minds of the employees that currently work for the company.

One positive aspect of Atlas is the safety culture they have fostered. Atlas meets all of the Federal Aviation Administration, International Civil Aviation Organization, and the International Air Transport Association's safety standards (Atlas, n.d.). The organization seems to be committed to safety and implemented these programs before they were even required. These practices are desired, as this makes Atlas appear to be safety focused to someone viewing the organization from the outside. The employees tend to agree that Atlas does a good job taking safety seriously. This is a success from an organizational theory point of view. Management has invested and promoted a positive safety culture and implemented several different programs to empower the employees to take action against unsafe actions or practices. This should be encouraged, and once the merge takes place, should be emphasized to really take hold in the new bigger Atlas airline. Different managers may be appointed during the merge and making sure they are properly trained in the safety management systems that Atlas utilizes should be a priority. This will help maintain the positive safety culture and prevent unnecessary confusion and frustration from employees who may no longer feel like they can report unsafe practices.

Organizational culture can be difficult to predict, especially entering a merge. During the merging process, competitors to Atlas might try and acquire additional contracts and flying that Atlas might benefit from. Competitors will take advantage of the instability of Atlas during the merge to better themselves, especially since aviation is highly competitive (Hennessey, 2014). The customers might also try to gain the upper hand while the merge happens. This is something that Atlas will need to be aware of during the merging process. Making sure the culture of the airline is stable and the employees are adapted to the merge quickly will help ensure that competitors do not get the better of Atlas. Confusion in an organization can make that organization week and unable to adapt to the changes in the environment the organization exists in. With more companies trying to enter the cargo side of aviation to survive during passenger lows, the environment Atlas exists in has become highly volatile. A faulty merge could cost contracts that might be permanently lost to competition. This is why Atlas needs to merge successfully with as few headaches as possible.

Conclusion:

Atlas Worldwide Holdings is currently about to merge two independent airlines that they currently own, Southern Air and Atlas. The current structure that the organization utilizes is inefficient and needs to be adjusted to better suit the needs of the organization. As one employee put it, “having to discern which chain of command out of four I am supposed to go up with questions is incredibly confusing.” The company has been in a state of merging for years now and would benefit from moving ahead with the merge. Borenstein (1990) found that merging airlines usually increased market dominance. That being said, Atlas Worldwide Holdings needs to be carful about how they choose to merge the airlines. Merging airlines has left several pilots furloughed and back at the bottom of seniority lists that they spent half of their career advancing. Causing mass confusion or anger with a rash or unfair merge will set the new Atlas on the wrong path.

The first area that Atlas needs to improve is the structure of the organization. Multiple chains of commands for one group of employees goes against conventional organizational theory suggestions. The multiple avenues of information traveling down can cause confusion amongst the employees and even frustration. Once the merge happens, positions will need to be consolidated, as there will be duplicate positions. Having multiple people share the same role for one airline will cause even more confusion, as two people wielding power over an employee base can cause a loss of efficiency and general uneasiness. Figuring out who is the best candidate for that position will be difficult, but not impossible.

The next area that Atlas needs to address is the culture shift that is expected during the merge. Culture is one of the most important aspects of organizational theory, and a positive culture is usually reflected by increased profit margins. A positive culture needs to start from the top and work down to the lowest level of employee in the organization. This is even more prevalent when the organization is going through a big change like a merge. If top management approaches the merge as a way to instill the desired culture, then they can foster the culture through the years after the merge. The organization needs to understand the culture that develops due to the merge, and should issue surveys or some sort of method to assess culture shortly after the merge to have a better understanding of the policies that are working or failing. This will help the organization develop an ideal working environment that employees enjoy similar to how Southwest Airlines developed a community through dedicated management.

Third, safety culture needs to be maintained. When the organization undergoes a merge, the safety systems that are in place might be tested. New managers, or new power structures might strain the safety systems that Atlas has been successfully utilizing leading up to the merge. If Atlas allows the safety culture to deteriorate, the employees will feel powerless and unmotivated as an avenue to report unsafe practices will no longer be available. This could destabilize the safety of the airline, and ultimately cause a breakdown of the system and an accident could happen. An accident in the complex environment of aviation could have devastating effects on the airline's reputation and ability to maintain contracts that are necessary for the airline to operate at all.

Finally, the airline needs to re-evaluate the pay structure for the employee base. Atlas flies some of the most universally available airplanes, which makes the type rating required to fly them extremely valuable. When compared to the industry average, Atlas offers lower compensation for these in demand type ratings. This should be addressed, especially as the cargo side of aviation becomes more competitive. If Atlas cannot acquire enough employees, then they will be unable to meet contract requirements and will eventually lose business by being unable to staff the required routes. This combined with a fatigue heavy schedule does not promote employee retention. The merge is an opportunity to reassess employee contracts and become competitive with the rest of the aviation market.

Atlas Worldwide Holdings is in a complicated position where they are attempting to merge two airlines, they own into one entity. Currently, they have a hybrid structure in place that creates confusion and frustration amongst the employees. This structure has duplicate positions that could be eliminated to save money, and ultimately simplify the power structure. The biggest thing that is hindering the organization is their hesitation to complete the merge. Airlines generally seek mergers to reduce costs and improve revenues (Dillingham, 2013). This process has been going on for awhile now, and the organization would benefit greatly from finalizing the merge. Sometimes an organizations willingness to do nothing is their greatest downfall, and if Atlas does not move forward, they may end up in bankruptcy like during their early years of operation.

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SECTION:	01
CREDIT HOURS:	3 Credit Hours
INSTRUCTOR:	William Irwin
SCHEDULE:	TBD
MDD:	TBD
INSTRUCTOR OFFICE:	TBD
INSTRUCTOR OFFICE HOURS:	TBD
INSTRUCTOR CONTACT INFO:	618-559-5468; bill.irwin@slu.edu or via ***SLU Global*** (new Blackboard)

PRE-REQUISITE: None

TEXTS, MATERIALS, EQUIPMENT (required):

- Shafritz, J. M., Ott, J. S., & Jang, Y. S. (2015). *Classics of Organization Theory*. (8th ed.). Belmont, California: Wadsworth Publishing.
- Gittell, J.H. (2005). *The Southwest Airlines Way*. Columbus, Ohio: McGraw-Hill.
- Dekker, Sidney. (2007). *Just Culture: Balancing Safety and Accountability*. Burlington, Vermont: Ashgate Publishing Company
- Computer access to SLU Global
- Computer software suitable for developing course projects and presentations

TEXTS, MATERIALS, EQUIPMENT (recommended):

- None

INSTITUTION MISSION STATEMENT

The mission of Saint Louis University is the pursuit of truth for the greater glory of God and for the service of humanity. The University seeks excellence in the fulfillment of its corporate purposes of teaching, research, health care and service to the community. It is dedicated to leadership in the continuing quest for understanding of God's creation and for the discovery, dissemination and integration of the values, knowledge and skills required to transform society in the spirit of the Gospels. As a Catholic, Jesuit university, this pursuit is motivated by the inspiration and values of the Judeo-Christian tradition and is guided by the spiritual and intellectual ideals of the Society of Jesus.

MISSION OF PARKS COLLEGE

The mission of Parks College of Engineering, Aviation and Technology is to prepare students for careers in aviation, engineering, science, technology, and related fields. Satisfying this mission requires joining applied technology and traditional academics with an emphasis on excellence. The aim of these efforts is to help students to:

- Mature intellectually;
- Remain abreast of advances in technology;

- Learn about themselves and their world; and
- Develop as whole persons adaptable to change.

PROGRAM MISSION STATEMENT

The mission of the department of aviation science is to actively engage in the fulfillment of Saint Louis University's mission so that our students are formed as global citizens who are intellectually, technically, and ethically prepared to be responsible leaders in the profession and their community.

FIVE DIMENSIONS OF THE SAINT LOUIS UNIVERSITY EXPERIENCE

Scholarship and Knowledge: By developing a well-rounded educational foundation which incorporates learning through experience, by becoming scholars in their chosen fields, and by dedicating themselves to the advancement of knowledge, students are prepared for advanced study, for their careers, and for lifelong learning.

Intellectual Inquiry and Communication: By developing the abilities of intellectual inquiry and communication, students are able to learn effectively, express ideas and concepts clearly, and apply their knowledge to new situations they encounter.

Community Building: By welcoming and working with others, regardless of race, ethnicity, religion, or gender, students build an inclusive community which leads to respect and compassion for human life and the dignity of each person.

Leadership and Service: By serving others and by promoting social justice, students become men and women for others who lead by their example.

Spirituality and Values: By developing their spirituality, values, and openness to the transcendent, students determine principles to guide their actions and their relationships with others.

GENERAL OUTCOMES

SKILLS. Graduates of the Aviation Science program will **demonstrate** proficiency in the following skills:

1. Oral, written and team **communication** skills to plan, execute, and present team projects in a peer-review setting.
2. **Research** skills to collect data via appropriate literature searches, apply appropriate analytical techniques, synthesize professional-quality reports, and present the research results.
3. **Critical thinking** and **analytical** skills to solve problems.
4. **Decision-making** skills to evaluate and proactively resolve aviation-related challenges.
5. **Team building** skills that apply interpersonal communication skills and decision-making skills to resolve conflicts, manage challenges, and build high-performing teams.

ABILITIES. In general, graduates of the Aviation Science program will have the ability to succeed in life, regardless of their chosen career field. They will **demonstrate** the following key abilities:

1. They will be able to **learn to learn**; therefore, they will be able to acquire new knowledge, solve

new problems, and adapt to new environments.
2. They will maintain their **curiosity** for new knowledge, their **imagination** for innovative solutions, and their **creativity** in applying their knowledge and skills in novel ways.
3. They will develop their ability to **self-motivate** and **dedicate** themselves to every endeavor with **passion**.
4. They will apply **sound ethical judgment** in their personal and professional lives marked by integrity and trust.
5. They will strive to **serve others** in the personal, professional, and communal responsibilities.

ATTITUDE. Ultimately, the graduates of the Aviation Science Program are products of a Jesuit university. As such, they will **demonstrate** the following attitudes:

1. They will **respect the universality**—the inclusiveness—of a variety of intellectual disciplines that synergistically enrich each other as well as the multitude of spiritual paths that open one's mind to the transcendent.
2. They will strive toward service to their fellow human beings as **men or women for others** and in so doing, they will strive to apply prepared to be their technical knowledge and skills for the betterment of humanity.
3. Always give more – **MAGIS**. These graduates will be whole-heartedly charged to make a contribution toward their family, their organization, and their society—they will be inspired to choose to **do what is most needed** among the multitude of things that they are trained, skilled, prepared, or gifted to do.

Program-Level Outcomes: Graduate Program in Aviation Science	
Assess relevant literature or scholarly contributions in the aviation field of study.	
Apply the major practices, theories, or research methodologies in the aviation field of study.	
Apply knowledge from the aviation field of study to address problems in broader contexts.	
Articulate arguments or explanations to both a disciplinary or professional aviation audience and to a general audience, in both oral and written forms.	X
Evidence of scholarly and/or professional integrity in the aviation field of study.	

COURSE CATALOG DESCRIPTION: Explores the various models of organizational structure and culture including the implications for organizational leadership, project management and employee motivation. Topics include contingency theory, systems theory, group dynamics, and change management.

<u>Course objectives:</u> The expectations of a student in terms of knowledge, value and skills when the course is completed.

1. Be able to identify and explain the conceptual theories within organization theory
2. Be able to apply organization theory concepts to aviation industry challenges including airline management and aviation safety
3. Be able to apply organization theory to everyday practice within industry
4. Demonstrate the ability to articulate organization theory perspectives within the aviation industry in oral and written forms.

Course Content:

• Classic Organization Theory	8%
• Neoclassical Organization Theory	8%
• Human Resource Theory	8%
• Modern Structural Organization Theory	8%
• Organizational Economics Theory	8%
• Power and Politics Organization Theory	8%
• Organizational Culture Theories	8%
• Organizational Change Theories	14%
• Application of Organization Theory to Aviation Management	15%
• Application of Organization Theory to Managing Safety Culture	15%

Learning Outcomes. The accomplishments of a student completing this course in terms of specific knowledge, value and skills. *"Here is what you will learn and achieve in this class."*

1. The student will be able to identify and explain the various conceptual theories (schools) within the field of organization theory through the study of the related literature and scholarly contributions.
2. The student will be able to apply organization theory concepts to aviation industry challenges, including airline management and aviation safety
3. The student will be able to apply organization theory concepts to everyday practice within the aviation industry
4. The student will be able to articulate organization theory perspectives within the aviation industry in oral and written forms.
5. The student will be able to apply concepts of corporate social responsibility to the aviation field.

TEACHING METHODOLOGY

This course utilizes online learning and computer media. Course materials may be supplemented by online discussions, group projects and message board assignments.

Successful students are expected to have completed each course module by completing reading and studying assignments and required projects prior to the scheduled end of the course module.

METHOD OF ASSESSMENT-EVALUATION-MEASUREMENT-EVIDENCE

Course Grading will be as follows:

- Course Participation (discussion board contributions) 34%
- Class Assignments and Projects (Assigned course projects) 34%
- Culminating Course Research Paper 32%

Course Research Paper: Describe the organizational culture of a particular airline or other organization within the transportation industry, including the impact of their specific organizational culture on performance and safety. Describe how you would use an understanding of organization theory to improve the organization (16-18 pages, standard APA format; approx. 5000 - 6000 words). The final paper should be of sufficient quality to be suitable in the student's final program portfolio and aspire to quality consistent with a journal submission. A more detailed grading rubric will be provided by the course instructor.

ADDITIONAL INFORMATION FOR THE STUDENT

Last Day to Drop Without a "W":	Sunday, August 30, 2020
Last Day to Receive Partial Refund of Tuition:	Friday, September 20, 2020
Last Day to Withdraw from Classes:	Sunday, October 25, 2020

E-MAIL RESPONSE: Course instructors will respond to your e-mail communication only on weekdays. There will be no responses from Friday evening through Sunday evening. Unless we are out of the office on a business trip or illness, every attempt will be made to respond within 24 hours. I do not respond to communications from my home or while out of the office.

COURSE MANAGEMENT WEBSITE: ***SLU GLOBAL*/Blackboard Learning System** will be utilized extensively for management of this course.

This Syllabus represents a contract between you, the student officially enrolled in this course, and your course instructor. It outlines what I expect from you and what you expect from me, your instructor. My job is to engage you in airline economics; to engineer an environment in which you learn. This syllabus ensures you understand the relevance of course requirements. It enhances retention by setting appropriate expectations and this syllabus proactively manages classroom issues. Finally, it articulates the value of a Saint Louis University undergraduate education.

Course Participation Policy

- Class participation is mandatory. All students are expected to complete course assignments prior to the schedule end of the course module. Late completion of coursework will have a negative impact on the final grade.

Assignments/Homework: Assignments or homework are due on the date and time issued by the instructor

Exams and Tests: The test material will be taken from the texts, supplemental reading assignments, handouts, videos, material posted on Blackboard, as well as from the material covered in classroom lectures, student presentations, and discussions. Each examination will be comprehensive; that is, with each test replacing the previous one. In other words, *"the next test will cover everything this one did and then some. Knowledge of systems and limitations is just as important at the end of the course as it is at the beginning."* The content of each examination is cumulative.

Dates for Exams/Tests and Makeup Policy: Exams missed, for unexcused reasons, *must* be taken **within 24 hours** of the original scheduled date and time for the exam. The only exception to this policy will be in the case of an *excused absence*. The student is responsible for making exam makeup arrangements with the instructor *prior to* the original scheduled test date and time.

Quiz: A quiz is a short oral or written test. Quizzes will be given periodically during the semester in class. The quizzes will be based on homework assignments, reading assignments and lectures from the previous week or weeks. Make-up for quizzes is **not** permitted and will **not** be made available to students who miss the period in which the quiz was administered.

Writing Center: Students are encouraged to take advantage of the Writing Center's services. Receiving feedback benefits writers at all skill levels. The Center assists with writing projects, multimedia projects, and oral presentations. They offer one-on-one consultations that address everything from brainstorming and developing ideas to crafting strong sentences and documenting sources. For more information, call **977-2930** for an appointment or contact at writingcenter@slu.edu.

Problem-based Learning (PBL). What is problem-based learning? It addresses directly many of the recommended and desirable outcomes of an undergraduate education: specifically, the ability to do the following:

- Think critically and be able to analyze and solve complex, real-world problems
- Find, evaluate, and use appropriate learning resources
- Work cooperatively in teams and small groups
- Demonstrate versatile and effective communication skills, both verbal and written
- Use content knowledge and intellectual skills acquired at the University to become continual learners

Test and course assignments will require you to make decisions based on facts, information and reasoning. Some problems will be multi-stage with additional material provided as information is obtained. They will be complex enough to lack obvious solutions and require collaboration/team-effort among the students in the class. Divide and conquer strategies will not be effective. The problems may be open-ended, ill-structured to resemble the nature of problems as they occur in the air carrier flight environment. Concrete enough for you to investigate thoroughly but narrow enough for you to grasp important details; to generate multiple hypotheses. The attempt is to draw you into discussion, invite a range of responses, and focus on controversial or unresolved issues. It will promote critical thinking skills.

Academic Integrity: Academic integrity is honest, truthful and responsible conduct in all academic endeavors. The mission of Saint Louis University is "the pursuit of truth for the greater glory of God and for the service of humanity." Accordingly, all acts of falsehood demean and compromise the corporate endeavors of teaching, research, health care, and community service via which SLU embodies its mission. The University strives to prepare students for lives of personal and professional integrity, and therefore regards all breaches of academic integrity as matters of serious concern.

The governing University-level Academic Integrity Policy was adopted in Spring 2015, and can be accessed on the Provost's Office website at: https://www.slu.edu/provost/policies/academic-and-course/policy_academic-integrity_6-26-2015.pdf.

Additionally, each SLU College, School, and Center has adopted its own academic integrity policies, available on their respective websites. All SLU students are expected to know and abide by these policies, which detail definitions of violations, processes for reporting violations, sanctions, and appeals. Please direct questions about any facet of academic integrity to your faculty, the chair of the department of your academic program, or the Dean/Director of the College, School or Center in which your program is housed.

The University is a community of learning, whose effectiveness requires an environment of mutual trust and integrity. Academic integrity is violated by any dishonesty such as soliciting, receiving, or providing any unauthorized assistance in the completion of work submitted toward academic credit. While not all forms of academic dishonesty can be listed here, examples include

- Copying from a book or class notes during a closed book exam,
- Submitting materials authored by or revised by another person as the student's own work,
- Copying a passage or text directly from a published source without appropriately citing or recognizing that source,
- Taking a test or doing an assignment or other academic work for another student,
- Securing or supplying in advance a copy of an examination without the knowledge or consent of the instructor, and
- Colluding with another student or students to engage in academic dishonesty.

Any clear violation of academic integrity will be met with appropriate sanctions. Possible sanctions for violation of academic integrity may include, but are not limited to, assignment of a failing grade in a course, disciplinary probation, suspension, and dismissal from the University. Students should review the policy on Academic Honesty.

Plagiarism. The appropriation of imitation of the language or ideas of another person and presenting them as one's original work; sometimes occurs through carelessness or ignorance. If you are uncertain about proper documentation of sources, please communicate with the instructor. If you quote or paraphrase someone else's work you must give the source credit.

Your research paper requires collaboration between you and your sources. To be fair and ethical, you must acknowledge your debt to the writers of those sources. If you don't, you are guilty of plagiarism, a serious academic offense.

Three different acts are considered plagiarism: (1) failing to cite quotations and borrowed ideas, (2) failing to enclose borrowed language in quotation marks, and (3) failing to put summaries and paraphrases in your own words.

Student Success Center: In recognition that people learn in a variety of ways and that learning is influenced by multiple factors (e.g., prior experience, study skills, learning disability), resources to support student success are available on campus. The Student Success Center assists students with academic-related services and is located in the Busch Student Center (Suite, 331). Students can visit https://www.slu.edu/life-at-slu/student-success-center/ to learn more about tutoring services, university writing services, disability services, and academic coaching.

Disability Services Academic Accomodations: Students with a documented disability who wish to request academic accommodations must contact Disability Services to discuss accommodation requests and eligibility requirements. Once successfully registered, the student also must notify the course instructor that they wish to access accommodations in the course.

Please contact Disability Services, located within the Student Success Center, at Disability_services@slu.edu or 314.977.3484 to schedule an appointment. Confidentiality will be observed in all inquiries. Once approved, information about the student's eligibility for academic accommodations will be shared with course instructors via email from Disability Services and viewed within Banner via the instructor's course roster.

Note: Students who do not have a documented disability but who think they may have one are encouraged to contact to Disability Services.

University Writing Services: Students are encouraged to take advantage of University Writing Services in the Student Success Center; getting feedback benefits writers at all skill levels. Trained writing consultants can help with writing projects, multimedia projects, and oral presentations. University Writing Services offers one-on-one consultations that address everything from brainstorming and developing ideas to crafting strong sentences and documenting sources. For more information, visit https://www.slu.edu/life-at-slu/student-success-center/ or call the Student Success Center at 314-977-3484

Title IX Syllabus Statement: Saint Louis University and its faculty are committed to supporting our students and seeking an environment that is free of bias, discrimination, and harassment. If you have encountered any form of sexual harassment, including sexual assault, stalking, domestic or dating violence, we encourage you to report this to the University. If you speak with a faculty member about an incident that involves a Title IX matter, that faculty member must notify SLU's Title IX Coordinator and share the basic facts of your experience. This is true even if you ask the faculty member not to disclose the incident. The Title IX Coordinator will then be available to assist you in understanding all of your options and in connecting you with all possible resources on and off campus.

Anna Kratky is the Title IX Coordinator at Saint Louis University (DuBourg Hall, room 36; anna.kratky@slu.edu; 314-977-3886). If you wish to speak with a confidential source, you may contact the counselors at the University Counseling Center at 314-977-TALK or make an anonymous report through SLU's Integrity Hotline by calling 1-877-525-5669 or online at http://www.lighthouse-services.com/slu. To view SLU's policies, and for resources, please visit the following web addresses: https://www.slu.edu/about/safety/sexual-assault-resources/index.php and https://www.slu.edu/general-counsel.

Basic Needs Security: Students in personal or academic distress and/or who may be specifically experiencing challenges such as securing food or difficulty navigating campus resources, and who believe this may affect their performance in the course, are encouraged to contact the Dean of Students Office (deanofstudents@slu.edu or 314-977-9378) for support. Furthermore, please notify the instructor if you are comfortable in doing so, as this will enable them to assist you with finding the resources you may need.

Disruptive Student Behavior: Disruptive student behavior will not be tolerated by this instructor. Such behavior makes teaching and learning difficult in the class. Students whose behavior makes teaching and learning difficult for others in the class.

What is disruptive student behavior:

- Violations of syllabus expectations
- Repeated or habitual classroom (or discussion board) interruptions or interference
- Personal insults, harassment, or threats
- Physical assault or violence

As your classroom instructor, my goal is to provide you with an environment in which you feel at ease in being an active participant but also one in which you are stimulated to push the boundaries of your knowledge, skill and understanding. It is *your responsibility* to maintain respect for yourself, your fellow students and your instructor during this learning process. The right for you to learn is your responsibility and it is also your responsibility to not deprive others of this right. You and you alone are accountable for your actions.

Distance Learning Etiquette Your actions in distance education contexts are just as important as in on-ground, face-to-face educational contexts – and sometimes require additional attention and commitment, as some distance education technologies might be less familiar to us. Accordingly, all students are expected to follow the guidelines below:

Synchronous Video Contexts (Zoom, etc.)

1. Mute your microphone when you are not speaking. Remember to "un-mute" yourself just prior to speaking. Identify yourself when you begin speaking.
2. Expect a few seconds of delay in getting a response from the instructor or another class member to a question; wait before repeating your question or assuming it was not heard.
3. If possible, position your camera such that your video feed does not capture too much of your surroundings or other activity/sound from your home/location. Be conscious of posters, art, or other surroundings that others might find offensive or inappropriate for an educational context.
4. Use the "Raise Hand" and "Chat" (or similar) features of your video-conferencing tool. This limits verbal interruptions and the confusion generated when multiple people try to speak at once.
5. Just as in an on-ground, face-to-face class, limit side conversations, multi-tasking (on your computer or otherwise), and use of your cellphone.
6. Temporarily turn off your video feed and mute your microphone when engaged in any non-class conversation or activity.
7. Respect and be attentive to the diversity of your classmates and instructor. Before communicating, consider your message in the context of the class' diversity in race, ethnicity, religion, disabilities, gender, sexual orientation, age, social class, marital status, geography, etc. Consider the diversity you can see or know – as well as that you cannot.
8. Remember that video-based class sessions (including chat transcripts) may be recorded and retrieved for later viewing.

Non-Video & Asynchronous Contexts (Blackboard, Canvas, Online Chats, Discussion Boards, etc.)

1. When using the "Chat" or "Discussion Board" (or similar) features of your course management system, remember that your course-related communications to the instructor or other students should be considered "professional" (they are not like texts to your friends). Remember that course context and all related written work – including chat and discussion board transcripts – can be recorded and retrieved.
2. Be cautious when using humor or sarcasm; without the context of facial expressions or other body language, your tone or intent could be missed or misunderstood by others.
3. Respect and be attentive to the diversity of your classmates and instructor. Before communicating, consider your message in the context of the class' diversity in race, ethnicity, religion, disabilities, gender, sexual orientation, age, social class, marital status, geography, etc. Consider the diversity you can see or know – as well as that you cannot.
4. Respect others' time and life circumstances, which often don't allow for an immediate response to a question or comment.

Mandatory Statement on Face Masks (Fall 2020)

The University's Interim Policy on Face Masks governs all students, faculty, staff, and campus visitors in all University-owned, leased, or operated facilities. All persons physically present in any such University facility associated with this course shall comply fully with this policy at all times. Masks must be worn before entry to all such University facilities (as well as outdoors on all University property when six feet of distance is unpredictable or cannot be maintained).

Saint Louis University is committed to maintaining an inclusive and accessible environment. Individuals who are unable to wear a face mask due to medical reasons should contact the Office of Disability Services or Human Resources to initiate the accommodation process identified in the University's ADA Policy. Inquires or concerns may also be directed to the Office of Institutional Equity and Diversity. Notification to instructors of SLU-approved ADA accommodations should be made in writing prior to the first class session in any term (or as soon thereafter as possible).

As the instructor of this course, I shall comply fully with SLU's policy and all related ADA regulations.

Students who attempt to enter a classroom without wearing masks will be asked by the instructor to wear masks prior to entry. Students who remove their masks at any time during a class session will be asked by the instructor to resume wearing their masks.

Note: Accordingly, no consumption of any food will be allowed in class.

Students who do not comply with a request by a SLU instructor to wear a mask in accordance with the University's Interim Policy on Face Masks may be subject to disciplinary actions per the rules, regulations, and policies of Saint Louis University, including but not limited to the Student Handbook. Non-compliance with this policy may result in disciplinary action, up to and including any of the following:

- dismissal from the course(s)
- removal from campus housing (if applicable)
- dismissal from the University

To immediately protect the health and well-being of all students, instructors, and staff, instructors reserve the right to cancel or terminate any class session at which any student fails to comply with faculty or staff request to wear a mask in accordance with University policy.

Students are strongly encouraged to identify to their instructor any student or instructor not in compliance. Non-compliance may be anonymously reported via the SLU Integrity Hotline at 1-877-525-5669 (or confidentially via the Integrity Hotline's website at http://www.lighthouse-services.com/slu.

In Person Class Attendance (COVID) The health and well-being of SLU's students, staff, and faculty are critical concerns. Accordingly, the following University policy statements on in-person class attendance are designed to preserve and advance the collective health and well-being of our institutional constituencies.

- Students who exhibit any potential COVID symptoms (those that cannot be attributed to some other medical condition the students are known to have, such as allergies, asthma, etc.) shall absent themselves from any in-person class attendance or in-person participation in any class-related activity until they have been evaluated by a qualified medical official. Students should contact the University Student Health Center for immediate assistance.
- Students who exhibit any potential COVID symptoms (those that cannot be attributed to some other medical condition the students are known to have, such as allergies, asthma, etc.) but who feel well enough to a) attend the course synchronously in an online class session or b) participate in asynchronous online class activities, are expected to do so. Those who do not feel well enough to do so should absent themselves accordingly.

- Students (whether exhibiting any of potential COVID symptoms or not, and regardless of how they feel) who are under either an isolation or quarantine directive issued by a qualified health official must absent themselves from all in-person course activity per the stipulations of the isolation or quarantine directive. They are expected to participate in synchronous or asynchronous online class activities as they feel able to do so, or absent themselves accordingly.
- Students are responsible for notifying each instructor of an absence as far in advance as possible; when advance notification is not possible, students are responsible for notifying each instructor as soon after the absence as possible.
- As a temporary amendment to the current University Attendance Policy, all absences due to illness or an isolation/quarantine directive issued by a qualified health official shall be considered "Authorized" absences (effective August 2020 through May 2021).

In the event of any on-campus lecture or other formal course related activities, the following additional policies will apply:

Cell Phones, Mobile Communication Devices, iPODs and Pagers: As a courtesy to the instructor and other students, iPODs, PDAs, Blackberries, Bluetooth, pagers and cell phones must be *"off"* or set to *"silent"* or *"vibrate"* modes during the lecture session. Noise interruptions of this nature during lecture or examinations *will not be tolerated by the instructor.* Do not text message during class lecture. You must accomplish this before class begins or during the instructor's designated break time period.

Use of Personal Laptop Computers: Students may use computers in class to take notes and for legitimate classroom purposes. Any student found using the laptop for personal purposes may be required to turn off and store the computer at the discretion of the instructor.

Student Dress. You have chosen to enter into the aviation career field. Dress appropriately to reflect this choice. Traditional dress in U.S. air carriers is conservative. Do not dress in such a manner that will be distracting to the lecturer, guest lecturers, and other students. Do not call attention to yourself through inappropriate dress in this classroom.

Emergency Phone Call Policy. If you are expecting an emergency phone call during scheduled class sessions, you must notify the instructor at the start of class.

Weather Policy: Please be sure to call **977-SNOW** for information related to on-campus school activities or class sessions during times of bad winter weather conditions.

Office Hours. You may drop by the office at any time, but scheduled appointments or a phone call are recommended. Office hours on campus are by appointment only.

Syllabus and course schedules are subject to modification at the instructor's discretion. The instructor will footnote each document indicating the revision number and/or revision date to aid in determining currency of modified documents.

Grade Negotiation. Any opportunities for extra credit will be at the discretion of the instructor and will be equally available to all students. Bargaining for grades will not be accepted behavior.

Grade	Grade Points	Interpretation
A	4.0	High achievement and intellectual initiative

B+	3.5	Above average, approaching high achievement
B	3.0	Above average achievement
C+	2.5	Midway between B and C
C	2.0	Average achievement
D	1.0	Inferior but passing achievement
F	0.0	Failure
AF	0.0	Failure due to unauthorized withdrawal or excessive absence
I		Course work incomplete at last session due to extraordinary circumstances. Must be removed within 1 year after course is taken or grade is converted to "F"

New undergraduate grading scale effective Fall 2005/Office University Registrar:

Grade Scale	Instructor's percentage	Transcript Pts
A	93% - 100%	4.0
A-	90% - 92%	3.7
B+	87% - 89%	3.3
B	83% - 86%	3.0
B-	80% - 82%	2.7
C+	77% - 79%	2.3
C	73% - 76%	2.0
C-	70% - 72%	1.7
D	60% - 69%	1.0
F	≤ 59%	0.0

Discussion Board evaluations will utilize the following grading rubric. Students will be evaluated based on their general contributions to class (discussion board) discussions and respect for other members of the class within course discussions. Students will also be evaluated on their knowledge and understanding of key organization theory concepts based on the quality and depth of their discussion board contributions.

ASCI 5210 Organizational Theory and Management Course Outline & Schedule (Fall 2020)			
Date	**Lesson Topics**	**Reading List**	**Module Assignments**
8/17 – 8/23	Module 0 • Introductions • Review of Course Outcomes and Expectations • Basics of Organization Theory	Classics of Organization Theory, Introduction; Instructor assigned articles;	Upload a brief introduction, including a summary of your background, aviation experience, interest in the course material, and desired course outcomes.
8/24 – 9/6	Module 1 • Classic Organization Theory • Neoclassical Organization Theory	Classics of Organization Theory Chapters 1 & 2; Instructor assigned Articles;	Module 1 Reading list summary assignments and discussion board follow ups. Module 1 Discussion questions and discussion board follow ups.
9/7 – 9/20	Module 2 • Human Resource Theory • Modern Structural Organization Theory	Classics of Organization Theory Chapters 3 & 4; Instructor assigned articless;	Module 2 Reading list summary assignments and discussion board follow ups. Module 2 Discussion questions and discussion board follow ups.
9/21– 10/4	Module 3 • Organizational Economics Theory • Power and Politics Organization Theory	Classics of Organization Theory Chapters 5 & 6; Instructor assigned rticless;	Module 3 Reading list summary assignments and discussion board follow ups. Module 3 Discussion questions and discussion board follow ups.
10/5 – 10/18	Module 4 • Organizational Culture Theory • Changing Organizational Culture	Classics of Organization Theory Chapters 7 & 8; Instructor assigned Articles;	Module 4 Reading list summary assignments and discussion board follow ups. Module 4 Discussion questions and discussion board follow ups. Module 4 Culture Assessment Proposal Assignment
10/19 – 11/1	Module 5 • Application of Organization Theory to Aviation Management	The Southwest Airlines Way; Instructor provided materials	Module 5 Discussion questions and discussion board follow ups. Module 5 Essay assignment.
11/2 – 11/15	Module 6 • Application of Organization Theory to Managing Safety Culture	Just Culture, Balancing Safety and Accountability	Module 6 Discussion questions and discussion board follow ups. Module 6 Essay assignment.
11/16 – 11/29	Module 7 • Corporate Social Responsibility	Classics of Organization Theory Chapter 9; Instructor assigned articles;	Module 7 Discussion Questions and discussion board follow ups. Final Course Projects are due by the end of the module.

Discussion Board Grading Rubric (48 points per module)				
Category	Poor (0)	Fair (2)	Good (4)	Excellent (6)
Promptness/ Initiative	Fails to contribute to message board discussions	Contributes to message board discussions only once per week and only one time per thread	Contributes to message board discussions at least 2 times per week and at least 3 times per thread	Contributes to message board discussions at least 3 times per week and at least 5 times per thread
Style and Grammar	Fails to demonstrate appropriate spelling and grammar or engages in inappropriate language or inappropriate discussions	Demonstrates appropriate spelling and grammar consistent with personal emails, social media or other similar correspondence	Demonstrates appropriate spelling and grammar consistent with business emails and other similar correspondence	Demonstrates appropriate spelling and grammar consistent with publications and other similar formal correspondence
Application	Posts are irrelevant to the current discussion, theme of the thread, or course content	Posts lack relevance to the current discussion or theme of the thread	Posts are somewhat relevant to the current discussion and theme of the thread	Posts are highly relevant to the current discussion and theme of the thread
Relevance	Fails to address the posted question or follow up discussion	Presents facts, evidence or counter arguments to posted questions or follow up discussion in a few postings	Presents facts, evidence or counter arguments to posted questions or follow up discussion in several postings	Presents facts, evidence or counter arguments to posted questions or follow up discussion in a majority of postings
Depth	Posts completely lack specificity and detail	Posts are generally are not specific or detailed	Posts are somewhat specific and detailed	Posts are highly specific and detailed
Quality	Posts are lacking in organization and forethought	Posts illustrate some organization and forethought	Posts are generally organized and well thought out	Posts are highly organized well thought out
Stimulation	Fails to address the posted question	Adequately addresses the posted question (and any follow up questions)	Adequately addresses the posted question and contributes to further discussion	Adequately addresses the posted question and stimulates further discussion
Synthesis	Fails to synthesize key concepts from the readings or previous posts within the posting	Synthesizes 2-3 key concepts from the readings or previous posts within the posting	Synthesizes 3-4 key concepts from the readings or previous posts within the posting	Synthesizes at least 3 key concepts from the readings or previous posts within the posting
Discussion Board evaluations will utilize the above grading rubric. Students will be evaluated based on their general contributions to class (discussion board) discussions and respect for other members of the class within course discussions. Students will also be evaluated on their knowledge and understanding of key course concepts based on the quality and depth of their discussion board contributions. In order to attain a satisfactory score, students are strongly encouraged to engage in discussion board activity within each thread on at least 3 different occasions per week.				

Reading Summary Assignments Grading Rubric (48 points per module)				
Category	Poor (0)	Fair (2)	Good (4)	Excellent (6)
Promptness	Fails to upload a suitable summary by the first half of the second week	Uploads a suitable summary in the first half of the second module week	Uploads a suitable summary in the second half of the first module week	Uploads a suitable summary in the first half of the first module week
Style and Grammar	Fails to demonstrate appropriate spelling and grammar or engages in inappropriate language or inappropriate discussions	Demonstrates appropriate spelling and grammar consistent with personal emails, social media or other similar correspondence	Demonstrates appropriate spelling and grammar consistent with business emails and other similar correspondence	Demonstrates appropriate spelling and grammar consistent with publications and other similar formal correspondence
Comprehensiveness	Fails to present the key facts, concepts, and arguments of the assigned article	Presents some of the key facts, concepts, and arguments of the assigned article	Presents the majority of key facts, concepts, and arguments of the assigned article	Presents all the key facts, concepts, and arguments of the assigned article
Engagement	Fails to introduce the class to the article in an engaging way	Introduces the class to the article	Introduces the class to the article in an engaging way	Introduces the class to the article in a highly engaging way
Depth	Article summaries completely lack specificity and detail	Article summaries are generally are not specific or detailed	Article summaries are somewhat specific and detailed	Article summaries are highly specific and detailed
Quality	Article summaries are lacking in organization and forethought	Article summaries illustrate some organization and forethought	Article summaries are generally organized and well thought out	Article summaries are highly organized well thought out
Stimulation	Fails to adequately summarize the assigned article	Adequately summarizes the assigned article	Adequately summarizes the assigned article and contributes to further discussion	Adequately summarizes the assigned article and stimulates further discussion
Synthesis	Fails to synthesize key concepts from the article with the broader theme of the module or course	Synthesizes at least 1 key concepts from the article with the broader theme of the module or course	Synthesizes at least 2 key concepts from the article with the broader theme of the module or course	Synthesizes at least 3 key concepts from the article with the broader theme of the module or course

Grading Rubric for the Organization Theory Paper (100 Points)						
Course Term Paper: Describe the organizational culture of a particular airline or other organization within the transportation industry, including the impact of their specific organizational culture on performance and safety. Describe how you would use an understanding of organization theory to improve the organization (16-18 pages, standard APA format; approx. 5000-6000 words). The final paper should be of sufficient quality to be suitable in the student's final program portfolio and aspire to quality consistent with a journal submission.						
		Unacceptable (1)	Poor (2)	Fair (3)	Good (4)	Excellent (5)
Contribution (10)	Originality	Presents a concept, theory or perspective that directly duplicates prior knowledge	Presents a concept, theory or perspective that highly mimics prior knowledge	Presents a concept, theory or perspective that is consistent with prior knowledge	Presents a concept, theory or perspective that is unique	Provides a new concept, theory or perspective non-existent
	Uniqueness	Presents an analysis that fails to contribute to existing knowledge	Presents an analysis that minimally contributes to existing knowledge	Presents an analysis that generally contributes to existing knowledge	Presents an analysis that moderately contributes to existing knowledge	Presents an analysis that makes a significant contribution to existing knowledge
Introduction (15)	Audience Engagement	Fails to engage the audience within the introduction	Minimally engages the audience within the introduction	Succeeds at engaging the audience within the introduction	Provides an introductory story or situation that engages the audience	Provides a unique story or situation that engages the audience
	Problem Significance or Contribution	Fails to illustrate the significance or contribution of the paper	Minimally illustrates the significance or contribution of the paper	Adequately illustrates the significance or contribution of the paper	Provides supporting evidence of the significance or contribution of the paper	Provides strong supporting evidence of the significance or contribution of the paper
	Purpose Statement	Fails to provide a purpose statement in the introduction	Provides a purpose statement that is vague, unclear and poorly written	Provides a purpose statement that is vague, unclear or poorly written	Provides a clear, well written purpose statement in the introduction	Provides a clear, specific, and well written purpose statement in the introduction
References (20)	Quality of Sources	Fails to use citations from scholarly sources	Provides citations from 1 or less scholarly sources	Provides citations from at least 3 scholarly sources	Provides citations from at least 5 scholarly sources	Provides citations from at least 8 scholarly sources
	Relevance of Sources	Sources used are irrelevant to the discussion or theme	Supporting sources weakly contribute to or support the discussion or theme	Supporting sources are relevant to the discussion or theme	Supporting sources contribute to and support the discussion or theme	Supporting sources strongly contribute to the discussion or theme

	Evidence of Timely & Seminal Sources	The use of relevant literature fails to use seminal or current sources	The use of relevant literature minimally uses seminal or current sources	The use of relevant literature uses seminal or current sources	The use of relevant literature uses both seminal and current sources	The use of relevant literature heavily utilizes seminal and current sources
	Comprehensive Sources	The references used fail to summarize or add to the topic or theme	The references used summarize or add to the topic or theme	The references used generally identify and add to the topic or theme	The references used provide a general overview of the topic or theme	The references used provide a comprehensive overview of the topic or theme
Assignment Compliance (30)	Relevance of the Study to Aviation Organization Theory	The chosen study does not apply to aviation organization theory	The chosen study minimally applies to aviation organization theory	The chosen study has direct relevance to aviation organization theory	The chosen study strongly contributes to aviation organization theory	The chosen study provides new or original application to aviation organization theory
	Demonstrates a Connection between the Analysis and Industry Knowledge	Fails to use other sources to connect the analysis with industry knowledge	Minimally uses other sources to connect the analysis with industry knowledge	Uses other sources to connect the analysis with industry knowledge	Uses other sources to illustrate a direct connection to industry knowledge	Uses other sources to connect with and add to industry knowledge
	Demonstrates an Understanding of Organization Theory	The paper fails to illustrate an understanding of organization theory	The paper minimally illustrates an understanding of organization theory	The paper illustrates an understanding of organization theory	The paper illustrates the nuances and complexities of organization theory	The paper illustrates the nuances and complexities of organization theory
	Use of Industry Examples	Fails to use industry examples to provide examples or application	Minimally uses industry examples to provide examples or application	Uses industry examples to provide examples or application	Uses multiple industry examples to provide examples or application	Uses more than 4 industry examples to provide examples or application
	Recommendations for Organizational Improvement	Recommendations for organizational improvement are not included	Recommendations for organizational improvement are included but are vague or not correlated to supporting evidence	Recommendations for organizational improvement are included and are relevant to the supporting evidence	Recommendations for organizational improvement, which contribute to a greater understanding of the organizational analysis	Recommendations for organizational improvement are included, which lend support to to a greater understanding of the organization theory

	Abstract	A suitable summary is not submitted	A suitable summary is submitted by the end of week 10	A suitable summary is submitted by the end of week 8	A suitable summary is submitted by the end of week 8 that summarizes the topic and identifies the selected organization	A suitable summary is submitted by the end of week 8 that summarizes the topic and outlines the application to organization theory
Conclusions (10)	Consistency of Results and Conclusions with Supporting Evidence	Results and conclusions are unsupported by the presented information	Results and conclusions are inconsistent with the presented information	Results and conclusions generally reflect the presented information	Results and conclusions clearly reflect the presented information	Results and conclusions are clearly linked to the presented information
	Results and Conclusions Discussion	Results and conclusions are not discussed	Results and conclusions are poorly discussed	Results and conclusions are discussed without recommendations for future application	Results and conclusions are clearly discussed with recommendations for future application	Results and conclusions are clearly discussed and provide a foundation for future application
Format (15)	Adherence to the Word Count Limits	Fails to provide a manuscript of at least 3500 words	Provides a final manuscript that is less than 4000 words	Provides a final manuscript that is less than 4500 words	Provides a final manuscript of less than 5000 words	Provides a final manuscript between 5000 & 6000 words including references
	Free of Editorial Errors	Provides a final manuscript containing sufficient errors to be unreadable	Provides a final manuscript with 10 or less significant errors	Provides a final manuscript with 5 or less significant errors	Provides a final manuscript with 3 or less significant errors	Provides a final manuscript with no significant errors
	Appropriate Adherence to APA Guidelines	Consistently fails to adhere to APA guidelines	Demonstrates numerous instances of non-compliance with APA guidelines	Generally adheres to APA guidelines	Consistently adheres to APA guidelines	Correctly adheres to APA guidelines in all cases

Performance Indicator Rubric

1. Assess relevant literature or scholarly contributions in the aviation field of study.

Course: ASCI 5220 AVN Safety Programs   Semester Taught: Fall 2020   Number of Students Scored: __2__

For each item below, please mark the appropriate box to rate the students' strength on a scale of 1 to 4 where 1: beginning, 2: developing, 3: accomplished, and 4: exemplary.

Type of Student Work Used for Assessment* (e.g. Homework #4; Exam #2 problem 3; final project): __Paper

Performance Indicator	Beginning	Developing	Accomplished	Exemplary
Student can list the main journals in the field.			X	
Student can outline the main areas of research in the aviation field of study.			X	
Student can identify notable research groups and investigators. Student can demonstrate broad knowledge of areas outside of their sub-specialty, and specific knowledge of publications in their field.			X	
Student can indicate the current key issues and highly-cited papers in the aviation field and identify emerging trends and new research directions.		X		
Student can identify the most important historical contributions in the aviation field and outline their importance.			X	
Comments: The assignment evaluated is used early in the semester to aid students in understanding how historical developments in Aviation Safety Programs contribute to current safety trends, including Safety Management Systems, while sharpening their skills in assessing relevant literature for future assignments.				

*Attach description of assignment used for assessment and samples of student work.

Performance Indicator Rubric

3. Apply knowledge from the aviation field of study to address problems in broader contexts.

Course: ASCI 5220 AVN Safety Programs   Semester Taught: Fall 2020   Number of Students Scored: _2_

For each item below, please mark the appropriate box to rate the students' strength on a scale of 1 to 4 where 1: beginning, 2: developing, 3: accomplished, and 4: exemplary.

Type of Student Work Used for Assessment* (e.g. Homework #4; Exam #2 problem 3; final

Performance Indicator	Beginning	Developing	Accomplished	Exemplary
Student can identify the main areas of societal relevance in Aviation.			X	
Student can explain how the aviation field impacts society.				X
Student can apply their knowledge to current policy debates.				X
Student can create an engaging presentation for the general public about their research.			X	
Student can evaluate policy prescriptions and political debates in the light of their discipline.			X	
Comments: The assignment evaluated prompts students to assess both policy and social implications of Aviation Environmental and Sustainability Safety Programs.				

project): __Discussion Board Assignment____

*Attach description of assignment used for assessment and samples of student work.

"Yet by assigning blame or pointing to specific causes we disregard the fact that the whole system only worked because everyone made approximate adjustments to their work."
— Erik Hollnagel, [The ETTO Principle: Efficiency-Thoroughness Trade-Off] (2000)

Why take the Aviation Safety Programs (ASCI 5220) course?

If you are interested in advancing your career as an aviation professional this would be a good course to take. Of significant importance, no matter where your aviation career takes you, is ensuring safety of personnel and equipment. Whether your interests are in flying, ground operations, cargo, maintenance, safety management, the environment, or any of the many associated aviation fields, this course sets the foundation by exploring several of the formal safety initiatives.

Through research and discussion, we collectively tap into modern trends in safety across the aviation community. The course begins with a brief review of the literature surrounding safety initiatives including the history of safety programs, role of ICAO/FAA/NTSB, regulations, then moves into Safety Management Systems, reporting systems, quality assurance programs, and a host of other aviation safety topics promoting understanding of safety programs, theory, and application toward improvements in the industry.

Who will be in the course?

This is a graduate level course, although some ungraduated students may be accepted, as such you can expect a diverse group of aviation professionals with experience that informs the current state of the aviation industry. Along with traditional students moving from bachelor's to the master's programs, there may be international students, veterans, career pilots, management, maintenance professionals, military members, as well as a host of other aviation professionals. It is a rare opportunity to share and learn from dedicated professionals in a non-threatening environment.

Prerequisites: Undergraduate Degree or instructor/department approval

Where and when to attend class?

This is an online course conducted on SLU Blackboard Learn, https://blackboard.slu.edu, which offers students flexibility in meeting course requirements. There are no scheduled lectures or online meetings, but students are expected to participate in the discussion boards and meet coursework, activities, and exam due dates.

While there is no set schedule homework, projects, quizzes, and presentations are usually due on a Sunday. Depending on the size of the class, I try to have these items reviewed and graded by the following Wednesday. If you are unable to meet the scheduled due date, accommodation may be made provided you notify me in advance.

What is expected of you as a student in the Aviation Safety Programs course?

The key element of being a successful student in the Aviation Safety Programs (ASP) course is:

- Participating in class is critical to the success of each student in ASP. Helping each other learn is the goal. Your experience, even as a new SLU student, matters in this course. Participating in ASP means – being engaged, working with others, answering questions, joining in activities, contributing on the discussion boards, helping other students who may have different learning styles and abilities, as well as those with English as a second language, sharing ideas, information, lecture notes, and advice. **I**n addition, these expectations of a student in terms of knowledge, value, and skills are included in the course objectives outlined below.

Course description:

Aviation Safety Programs (ASCI 5220) explores a number of formal safety initiatives available to the aviation safety professional. Beginning with a review of the literature surrounding safety initiatives, specific topical content will be leveraged to develop an understanding of systems safety with a focus on application and improvement.

Course Objectives:

1. The student will describe in written assignments the historical development of safety theory and its application in aviation.
2. The student will accurately describe the attributes of a high consequence work environment.
3. The student will outline the general tenants of a Safety Management System in written form, class discussions, presentations, and test.
4. The student will review, evaluate, and present data retrieved from the Aviation Safety Reporting System (ASRS/NASA Reports).
5. The student will evaluate the strengths and weaknesses of Aviation Safety Action Program (ASAP) or other non-punitive/voluntary reporting systems.
6. The student will describe the environment surrounding a positive safety culture in written reports and assignments
7. The student will address differences in safety theory between Safety 1 and Safety 2, also referred to as Safety Discreetly.

8. The student will prepare a paper on either
    a. a fictional organization transitioning from a “Blame Culture” to a “Just Culture”
    b. a fictional organization transitioning from Safety I to Safety II (Safety Differently)
9. The student will lead/participate in class discussions on safety programs and issues surrounding incidents and accidents described in case studies and reports

Course Information:

Schedule: 17 AUG – 4 DEC 2020. All online.

Instructor: Jan McCall, PhD, Department of Aviation Science
Cell Phone: +49 152 29819709
Text Messages: 1 (314) 606-8049
Email: jan.mccall@slu.edu
Alt. Email: janmccall@hotmail.com

Materials required or recommended for course:

Required: Internet access and Microsoft Office Word (or other MS Word compatible office suite)

Recommended/suggested Text:

- Stolzer, A. J., Halford, M. C. D., & Goglia, M. J. J. (2015). *Safety management systems in aviation*. Ashgate Publishing, Ltd.
- Dekker, S. (2014). *Safety differently: human factors for a new era*. CRC Press.
- Patankar, M. S. (2020). *Safety ethics: Cases from aviation, healthcare and occupational and environmental health*. Routledge.
- Hollnagel, E. (2014). *Safety-I and safety–II: the past and future of safety management*. Ashgate Publishing, Ltd.

Learning Outcomes: The student learning outcomes upon completion of this course in terms of specific knowledge, value, and skills are:

1. Ability to recognize and analyze various safety programs that enhance safety within the aviation industry.
2. Ability to explain the operation and value of aviation safety programs.
3. Recognize the current role of government influence in safety programs.
4. Compare safety programs across 14 CFR, Part 91, 121 and 135.
5. Ability to explain, illustrate, and evaluate factors affecting safety programs.
6. Understanding of safety culture within aviation organizations.

7. Recognize safety issues affecting the aviation industry.
8. Assess the value of Safety Management Systems, including voluntary safety reporting systems.
9. Develop awareness of competing, or contrasting, safety ideology and the influence on organizational safety.

Teaching Methodology:

This is an online course. Students are expected to sign in and post relevant comments to the message board no less than **three times per week**. Questions will be posed by faculty in effort to generate conversation. Students are encouraged to critically analyze all post and express agreement or disagreement, and corresponding rational. Civil discourse allows for disagreement and professional criticism based on fact, and even opinion, so long as it is made in a professional and courteous manner intended to strengthen or lend credence to the discussion.

Reading assignments will be posted, followed by study questions, intended to stimulate thought and critical thinking surrounding safety program content. Responses should be prepared in Microsoft Word and attached to the assignment link on Blackboard. The course may include journal assignments allowing the student to discuss and share insights with the instructor privately.

Course Methodology:

The course uses participatory approaches as much as possible. A variety of methodologies will be used, including recorded lectures/presentations, discussions, group work, video discussions, question and answers, demonstrations, written or oral reports, testing, and when possible guest presenters from the aviation industry.

Course Content (may vary depending on class size and experience levels):

1. A History of Safety Programs (17- 30 AUG)
    a. History of Safety Programs
    b. History of Aviation Safety Programs
2. Safety Management Systems (SMS) (31 AUG -13 SEP)
    a. The ICAO Model
    b. SMS structure and elements
    c. Safety management in high consequence industries
3. Safety Culture (14 -27 SEP)
    a. Voluntary Safety Reporting (VSRP) Non-Punitive Reporting Systems
    b. NASA ASRS
    c. Aviation Safety Action Program (ASAP)
    d. Voluntary vs. non-punitive reporting systems

4. Threat and Error Management, LOSA - Aviation Quality Programs (28 SEP -4 OCT)
    a. Flight Operations Quality Assurance
    b. Line Operation Safety Audits
    c. Data collection and evaluation
5. Just Culture (5 -18 OCT)
    a. Just Culture and safety
    b. Accountability
    c. Trust
    d. Recklessness and intentional disregard for safety
6. Environmental Safety Programs (19- 25 OCT)
    a. Substances
    b. Noise
    c. Wildlife
7. Employee Safety Programs (26 OCT - 1 NOV)
    a. OSHA compliance
    b. Safety & health
    c. Regulation
8. Emergency Response Plans (2- 8 NOV)
    a. Regulatory requirements
    b. Elements
    c. Insurance
9. Aviation Security Programs (9 -15 NOV)
    a. Threats
    b. Government/TSA
    c. Private Security
10. Safety Theory (16-30 NOV)
    a. Safety I
    b. Safety II

Fall Classes end 24 NOV; Study days 25-30 NOV; Finals week 30 NOV - 4 DEC; Grades due 8 DEC

Students will be expected to submit short papers detailing different aspects of the topical content covered in class. In addition, I will provide required, as well as, suggested reading material followed by group discussion.

Method of Assessment:

Students will be expected to submit short papers or presentations (particulars to follow) detailing an aspect of the topical content covered in class. Select reading will be provided by the faculty followed by group discussion. Personal perspective papers are submitted and graded based on the background, reasoning, and cogence of the subject matter under discussion. Students will **choose FIVE topic areas** from the table below for submission. Due dates are included in the schedule above but may be adjusted due to changes in the university schedule resulting from response to the COVID-19 pandemic.

METHOD OF ASSESSMENT-EVALUATION-MEASUREMENT-EVIDENCE			
Assignment	***Measure***	***Points***	***Deliverable***
#1 due 30 AUG Instructor assigned time periods to cover	Paper or Presentation History of Aviation Safety 1901-1925; 1926-1950; 1951-75	100 points	Paper or presentation of assigned time period in history of aviation safety
#2 due 27 SEP All – topic in SMS	Paper Safety Management Systems	100 points	Aspects of U.S./ICAO SMS programs
#3 due 18 OCT Students choose topic from these areas	Paper Non-Punitive/ Voluntary Reporting Systems	100 points	Aspects of ASAP, ASRS, or other non-punitive voluntary reporting systems
	Paper Aviation Quality Programs (FOQA)		Air carrier FOQA and similar programs
	Paper Just Culture		Safety culture, trust, organizational behavior
#4 due 8 NOV Students choose topic from these areas	Paper Environmental Safety Programs	100 points	Choose one aspect of environmental safety programs to explore
	Paper Employee Safety Programs		Contemporary employee safety programs
	Paper Emergency Response Plans		Elements of an Emergency Response Plan
#5 due 28 NOV Students choose topic from these areas	Paper Aviation Security Programs	100 points	Government requirements and private organization security needs
	Paper Safety I vs Safety II		How theory is influencing safety in aviation today

Assessment: Papers/Presentation 500 points possible
Class Participation 500 points possible
1,000 Maximum Possible Points

Grading Scale:

Resources for International Students and English as Additional Language:

For assistance with coursework, language, accommodation requests, contact the Office of International Services at Des Peres Hall, Room 102, via email at internationalservices@slu.edu, or call 314-977-2318.

Resources for Students with Disabilities:

Students with disabilities who believe that they may need accommodation in this class are encouraged to contact the Office of Disabilities Services at disability_services@slu.edu or 314-977-3484 as soon as possible to ensure that such accommodations are implemented in a timely fashion.

Academic Integrity

Academic integrity is honest, truthful, and responsible conduct in all academic endeavors. The mission of Saint Louis University is "the pursuit of truth for the greater glory of God and for the service of humanity." Accordingly, all acts of falsehood demean and compromise the corporate endeavors of teaching, research, health care, and community service through which SLU fulfills its mission. The University strives to prepare students for lives of personal and professional integrity, and therefore regards all breaches of academic integrity as matters of serious concern. The full University-level Academic Integrity Policy can be found on the Provost's Office website at: https://www.slu.edu/provost/policies/academic-and-course/policy_academic-integrity_6-26-2015.pdf.

Additionally, each SLU College, School, and Center has its own academic integrity policies, available on their respective websites.

SLU Policy on Plagiarism:

Involves the representation of someone else's thoughts, words, and/or data as if they were one's own or "self-plagiarism" which is the use of material prepared for one class and submitted to another without proper citation and without the permission of the instructor. Instances include (Refer to SLU Academic Integrity Policy and the 2019-2020 Student Handbook):

1. Quoting directly from someone else's written, artistic or spoken work without using quotation marks or indented quotations and without giving proper credit to the author or artist; for example, cutting and pasting text from the internet and making it appear to be your own work.

2. Paraphrasing or incorporating someone else's ideas, concepts, arguments, observations, images, objects, music, or statements without giving proper credit; 3. Submitting as one's own work a paper or other assignment/project that has been prepared, either wholly or in part, by another person, group, or commercial firm without citation or acknowledgment.

3.0 Recommended Syllabus Statement on Distance Education Etiquette

Your actions in distance education contexts are just as important as in on-ground, face-to-face educational contexts – and sometimes require additional attention and commitment, as some distance education technologies might be less familiar to us. Accordingly, all students are expected to follow the guidelines below:

Synchronous Video Contexts (Zoom, etc.)

1. Mute your microphone when you are not speaking. Remember to "un-mute" yourself just prior to speaking. Identify yourself when you begin speaking.
2. Expect a few seconds of delay in getting a response from the instructor or another class member to a question; wait before repeating your question or assuming it was not heard.
3. If possible, position your camera such that your video feed does not capture too much of your surroundings or other activity/sound from your home/location. Be conscious of posters, art, or other surroundings that others might find offensive or inappropriate for an educational context.
4. Use the "Raise Hand" and "Chat" (or similar) features of your video-conferencing tool. This limits verbal interruptions and the confusion generated when multiple people try to speak at once.
5. Just as in an on-ground, face-to-face class, limit side conversations, multi-tasking (on your computer or otherwise), and use of your cellphone.
6. Temporarily turn off your video feed and mute your microphone when engaged in any non-class conversation or activity.
7. Respect and be attentive to the diversity of your classmates and instructor. Before communicating, consider your message in the context of the class' diversity in race, ethnicity, religion, disabilities, gender, sexual orientation, age, social class, marital status, geography, etc. Consider the diversity you can see or know – as well as that you cannot.
8. Remember that video-based class sessions (including chat transcripts) may be recorded and retrieved for later viewing.

Non-Video & Asynchronous Contexts (Blackboard, Canvas, Online Chats, Discussion Boards, etc.)

1. When using the "Chat" or "Discussion Board" (or similar) features of your course management system, remember that your course-related communications to the

instructor or other students should be considered “professional” (they are not like texts to your friends). Remember that course context and all related written work – including chat and discussion board transcripts – can be recorded and retrieved.

2. Be cautious when using humor or sarcasm; without the context of facial expressions or other body language, your tone or intent could be missed or misunderstood by others.
3. Respect and be attentive to the diversity of your classmates and instructor. Before communicating, consider your message in the context of the class’ diversity in race, ethnicity, religion, disabilities, gender, sexual orientation, age, social class, marital status, geography, etc. Consider the diversity you can see or know – as well as that you cannot.
4. Respect others’ time and life circumstances, which often don’t allow for an immediate response to a question or comment.

Title IX

Saint Louis University and its faculty are committed to supporting our students and seeking an environment that is free of bias, discrimination, and harassment. If you have encountered any form of sexual harassment, including sexual assault, stalking, domestic or dating violence, we encourage you to report this to the University. If you speak with a faculty member about an incident that involves a Title IX matter, **that faculty member must notify SLU’s Title IX Coordinator and share the basic facts of your experience**. This is true even if you ask the faculty member not to disclose the incident. The Title IX Coordinator will then be available to assist you in understanding all of your options and in connecting you with all possible resources on and off campus.

Anna Kratky is the Title IX Coordinator at Saint Louis University (DuBourg Hall, room 36; anna.kratky@slu.edu; 314-977-3886). If you wish to speak with a confidential source, you may contact the counselors at the University Counseling Center at 314-977-TALK or make an anonymous report through SLU’s Integrity Hotline by calling 1-877-525-5669 or online at http://www.lighthouse-services.com/slu. To view SLU’s policies, and for resources, please visit the following web addresses: https://www.slu.edu/about/safety/sexual-assault-resources/index.php and https://www.slu.edu/general-counsel.

IMPORTANT UPDATE: SLU’s Title IX Policy (formerly called the Sexual Misconduct Policy) has been significantly revised to adhere to a new federal law governing Title IX that was released on May 6, 2020. Please take a moment to review the new policy and information at the following web address: https://www.slu.edu/about/safety/sexual-assault-resources/index.php. Please contact the Anna Kratky, the Title IX Coordinator, with any questions or concerns.

Mission and Vision Statements

Saint Louis University Mission Statement:

The Mission of Saint Louis University is the pursuit of truth for the greater glory of God and for the service of humanity.

Department of Aviation Science Mission Statement:

The mission of the Department of Aviation Science is to actively engage in the fulfillment of the University's mission so that our students are formed as global citizens who are intellectually, technically, and ethically prepared to be responsible leaders in their profession and their community.

Parks College Mission and Vision:

Rooted in the Catholic Jesuit values of Saint Louis University, the mission of Parks College of Engineering, Aviation, and Technology is to form technically proficient and socially responsible engineering and aviation innovators and leaders for the world.

In support of its mission the college vision is:

- To foster professional passion for learning and advance knowledge through curricular and co-curricular, as well as major and non-major, learning;
- To build innovative learning experiences through research and scholarship in the discipline as well as in the pedagogy;
- To influence self and global society through education, research, and service programs; and
- To inspire entrepreneurship, innovation, and uncompromising pursuit of socially responsible solutions to 21st Century challenges.

SLU POLICY STATEMENTS ON COVID-19

Mandatory Statement on Face Masks (Fall 2020)

The University's *Interim Policy on Face Masks* governs all students, faculty, staff, and campus visitors in all University-owned, leased, or operated facilities. All persons physically present in any such University facility associated with this course shall comply fully with this policy at all times. Masks must be worn before entry to all such University facilities (as well as outdoors on all University property when six feet of distance is unpredictable or cannot be maintained).

Saint Louis University is committed to maintaining an inclusive and accessible environment. Individuals who are unable to wear a face mask due to medical reasons should contact the Office of Disability Services or Human Resources to initiate the accommodation process identified in the University's ADA Policy. Inquires or concerns may also be directed to the Office of Institutional Equity and Diversity. Notification to instructors of SLU-approved ADA accommodations should be made in writing prior to the first class session in any term (or as soon thereafter as possible).

As the instructor of this course, I shall comply fully with SLU's policy and all related ADA regulations.

Students who attempt to enter a classroom without wearing masks will be asked by the instructor to wear masks prior to entry. Students who remove their masks at any time during a class session will be asked by the instructor to resume wearing their masks.

Note: Accordingly, no consumption of any food will be allowed in class.

Students who do not comply with a request by a SLU instructor to wear a mask in accordance with the University's *Interim Policy on Face Masks* may be subject to disciplinary actions per the rules, regulations, and policies of Saint Louis University, including but not limited to the *Student Handbook*. Non-compliance with this policy may result in disciplinary action, up to and including any of the following:

- dismissal from the course(s)
- removal from campus housing (if applicable)
- dismissal from the University

To immediately protect the health and well-being of all students, instructors, and staff, instructors reserve the right to cancel or terminate any class session at which any student fails to comply with faculty or staff request to wear a mask in accordance with University policy.

Students are strongly encouraged to identify to their instructor any student or instructor not in compliance. Non-compliance may be anonymously reported via the SLU Integrity Hotline at 1-877-525-5669 (or confidentially via the Integrity Hotline's website at http://www.lighthouse-services.com/slu.

SLU Mandatory Syllabus Statement on In-Person Class Attendance and Participation

The health and well-being of SLU's students, staff, and faculty are critical concerns. Accordingly, the following University policy statements on in-person class attendance are designed to preserve and advance the collective health and well-being of our institutional constituencies.

1. Students who exhibit any potential COVID symptoms (those that cannot be attributed to some other medical condition the students are known to have, such as allergies, asthma, etc.) shall absent themselves from any in-person class attendance or in-person participation in any class-related activity until they have been evaluated by a qualified medical official. Students should contact the University Student Health Center for immediate assistance.

2. Students who exhibit any potential COVID symptoms (those that cannot be attributed to some other medical condition the students are known to have, such as allergies, asthma, etc.) but who feel well enough to a) attend the course synchronously in an online class session or b) participate in asynchronous online class activities, are expected to do so. Those who do not feel well enough to do so should absent themselves accordingly.
3. Students (whether exhibiting any of potential COVID symptoms or not, and regardless of how they feel) who are under either an isolation or quarantine directive issued by a qualified health official must absent themselves from all in-person course activity per the stipulations of the isolation or quarantine directive. They are expected to participate in synchronous or asynchronous online class activities as they feel able to do so, or absent themselves accordingly.
4. Students are responsible for notifying each instructor of an absence as far in advance as possible; when advance notification is not possible, students are responsible for notifying each instructor as soon after the absence as possible.
5. As a temporary amendment to the current University Attendance Policy, all absences due to illness or an isolation/quarantine directive issued by a qualified health official shall be considered "Authorized" absences (effective August 2020 through May 2021).

Instructor Absence due to Illness

Please rest assured the Department of Aviation Science will have an instructor available to complete the course should I become ill during the semester. Each course already has a designated backup instructor who is already with the material, schedule, and syllabus.

LM2: Safety Management Systems

Discussion Board Questions (50 points)

1. All too often, safety initiatives lose momentum and become only marginally effective resulting in their demise. Or, as indicated in the maritime study SMS become burdensome and may even detract from some aspects of safety. Describe, in your professional opinion, the potential longevity of SMS and defend your position.
2. Describe what you believe to be the most compelling aspect of Safety Promotion (in terms of SMS) that supports safety. Why?
3. Using Flight Standards Information Management System (FSIMS) 8900.1, V10 - SAS: Safety Assurance System, describe how an FAA Aviation Safety Inspector (ASI) addresses deficiencies for your employer's operations (Part 121, 135, 91k, Pilot School, Training Center, etc.).

4. Of the four components of an SMS, in your opinion, which represents the greatest potential for improving safety?
5. Does Safety Risk Management, as described in the FAA Safety SMS resources and regulations, really work or is it a more bureaucracy than action?
6. What should be included in Safety Policy according to SMS?
7. Describe your experience with SMS?
8. Describe a situation in your career in which production and protection were at odds with each other. (No names please) Was the tension you described avoidable?
9. Did the FAA fulfill it's role in Safety Assurance in light of the recent Boeing 737 Max aircraft accidents and subsequent grounding of the aircraft?

Intro to LM:

The United States' State Safety Program (AVP300-15-U.S. State Safety Program, 2015) outlines the requirements for Safety Management Systems that meet ICAO standards. The conditions for development of an aviation Safety Management System are further codified the Federal Aviation Administration (FAA), National Policy-Safety Management Systems (FAA Order 800.369C, 2020). From there the policies are implemented through a number of SMS programs and initiatives, many of which are covered in this Learning Module.

As recently as 2019, studies of Norwegian maritime operations have called into question the efficacy of SMS in promoting safety. These studies, including the work of Størkersen, Antonsen, and Kongsvik (2017) covered in LM2, questions if SMS, at least to some degree, has become a bureaucratic burden with overreliance on proceduralization. Could something similar happen in aviation? What studies of this type have been conducted in aviation?

The required readings/videos for this LM include:

- Safety Management Systems Explained (choose video or text)
- Safety Management Systems Components
- One size fits all? Safety management regulation of ship accidents and personal injuries

In addition, there are several Advisory Circulars, CFRs, etc., you should be familiar with as well as links to support your research for Paper #2.

There are two assignments for this LM:

- Discussion Board Posts and Replies (Response due 10 SEP, Replies due 13 SEP, 50 points)
- Paper #2 (Due 27 SEP, 100 points)
    - 3-5 page paper on SMS

Key Concepts:

Safety Policy	Process	Objectives
Safety Risk Management	Safety Promotion	Training
Safety Assurance	Commitment	Safety Culture

Instructions:
I recommend you approach the LM in this order:

1. Complete assigned readings and/or viewings

1. Take time to reflect on the required readings and viewings
2. Review the additional resources for familiarity by paging through the documents and reading items that are new to you, or of interest in your research
3. Choose a few of the additional readings that related to your academic interest
4. Answer the related DB questions
5. Do your own research and begin working on Paper #2
6. Check the DB every few days, review and reply to peers and instructor
7. Complete the paper and have someone (perhaps a class peer) review it for clarity, constancy, and formatting errors.
8. Submit the paper using the assignment link

Learning Outcomes:
At the end of this learning module students will:

- Demonstrate the ability to conduct current review of literature related to assigned topics using a variety of sources
- Identify and describe SMS components, applications, and current issues
- Demonstrate ability to concisely summarize views in a short paper
- Demonstrate the use of correct grammar and various literary devices in drafting concise responses to discussion board questions, and replies to peers and the instructor
- Critically assess peers' posts and engage in professional and respectful discussion

Time Period:
31 AUG -13 SEP 2020, closes at 11:59 pm CT

Paper Assignment (100 points)
3-5 page paper due **<u>NLT midnight on 27 September 2020, 11:59 pm CST</u>**.

Announcement: LM2 Safety Management Systems

For those of you that have completed LM1, the next LM is open early. Please continue to refine your papers or presentations due 30 AUG.

In LM2 students explore Safety Management Systems as part of Aviation Safety Programs and contrast it against current issues in maritime operations.

LM6: Environmental Safety Programs

DB Questions: N/A (case study brief posted on the DB)

Intro to LM:

Learning Module 6, on Environmental Safety Programs, is intriguing to explore as transformation within the aviation industry is rapidly occurring, especially in sustainability initiatives. As an instructor, I thoroughly enjoy that students frequently introduce current sustainability developments and new environmental initiatives through their case studies and discussion.

To get started, review the overarching environmental goals agreed to by the ICAO assembly and top five goals highlighted by the FAA.

ICAO (2019) three major environmental goals (details via link in curriculum resources):

- reduce aircraft noise
- limit or reduce aviation emissions on local air quality
- limit or reduce greenhouse gas emissions on the global climate

FAA (2015) Environmental Goals (details via link in curriculum resources)

- Aircraft noise
- Air quality
- Climate
- Energy
- Water quality

Instead of discussion questions this module requires the student to complete a brief case study of either an airport of flight operation's sustainability and environmental safety program. If you have time, you may want to and contrast two different flight operations, as a multiple case study, and their environmental and sustainability initiatives.

While conducting your case study research, think critically about what they are doing to support ICAO/FAA environmental and sustainability initiatives? Are they motivated by regulatory requirements, passenger expectations, does it enhance profit? What more could they do? This is one area where looking outside the US, where relying on longstanding infrastructure isn't cost effective, may present new ideas.

This LM includes 2 assignments:

- Case study in brief: 5 paragraphs posted on Discussion Board (Due 23 Oct, 40 points)
- Responses to peers' case study and to the instructor (Due 25 Oct, 10 points)

Looking forward: 4th Paper, due 8 NOV

Environmental Safety Programs is one of the three topics students may choose from for Paper #4, due 8 November.

- Paper Environmental Safety Programs

- Paper Employee Safety Programs
- Paper Emergency Response Plans

Key Concepts

noise	air quality	climate
energy	alternative fuels	energy
technology	sustainability	water quality

Instructions:

Approach this lesson in the following order:

1. Read the assigned material in curriculum resources. Note "read for familiarity" is intended for students to look through the material, not read in detail, to gain general awareness of the topic.

2. Research an airport or Part 91k,121,135, 141 flight operation's environmental initiatives.

3. Write a short essay (5 paragraphs) to post on the discussion board, describing a current airport or flight operation's sustainability and/or environmental program. Include in the essay the key strengths and weaknesses, as well as what if anything could improve their program.

   You are welcome to choose your own or pull from the list below:

   - Delta sustainability
   - All Nippon Airways (ANA Group)
   - Virgin Atlantic
   - The world's most environmentally friendly airports (26 April 2018; Last Updated 30 January 2020)
   - ICAO Launches Projects In Cameroon, Kenya To Reduce Aircraft CO2 Emissions (Aviation and Allied Business, 2019)

Written Task:

For Paper #4, chose a topic related to one of the subjects listed below:

- Paper Environmental Safety Programs
- Paper Employee Safety Programs
- Paper Emergency Response Plans

The paper should follow the same requirements as Paper #2 and #3, using 3-5 pages and the formatting guidance provided in the course resources folder found in the menu bar on the left for "short paper." Use Purdue OWL or another APA guide to help with formatting and have someone proofread your paper. The SLU writing center is also a great resource.

Submit Paper #4 by attaching it to the assignment link in the curriculum resources for LM8. The due date for Paper #4 is 8 NOV 2020, by 11:59 CST. If you have questions or concerns, please email or call.

Outcomes Expected:

Environmental Safety Programs are some of the most rapidly changing programs in the aviation industry today. Developing an awareness of the regulatory expectations outlined by ICAO and the FAA is essential to addressing future needs in the industry.

At the end of this module students will:

- The students will identify and define the ICAO top three, and FAA's top five, environmental issues.
- The students will illustrate through a brief case study the application of environmental safety programs at a Part 91k,121, 135, or 141 flight operation.
- Demonstrate the ability to conduct current review of literature related to assigned topics using a variety of sources
- Gain the ability to explain and evaluate an organization's Environmental Safety and Sustainability Programs.
- Demonstrate understanding of aviation operations impact on the environment and mitigating efforts.
- Critically assess peers' posts and case study while engaging in professional and respectful discussion

Time Period: 19-25 OCT 2020, closes at 11:59 pm CST

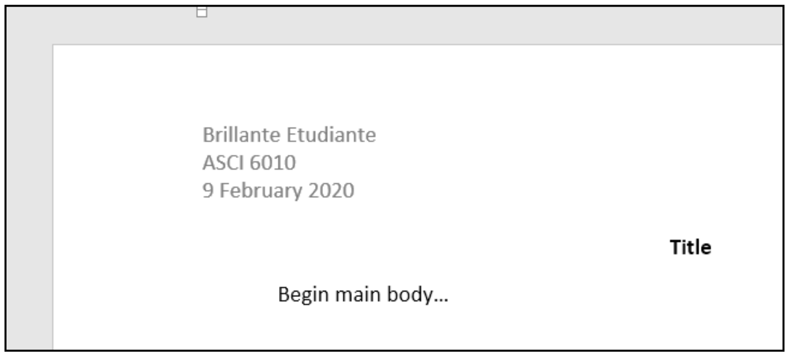
Announcement: LM6 is now open

Learning Module 6 on Environmental Safety Programs is now open. Please note that this is a one-week LM, 18-25 October. The discussion board requirement for this LM has a short case study in lieu of discussion board questions.

In the meantime, I look forward to reading your third papers due later today.

Short papers

- 2-5 pages in length (excluding references)
- In the header of first page, flush left, and single-spaced place:
    - o Your First and Last name
    - o Course number
    - o Date the assignment is due


Brillante Etudiante
ASCI 6010
9 February 2020

Title

Begin main body…

- Title as depicted on page 3 of Purdue OWL APA 7th Student Sample Paper
- Main Body using APA 7th Headings and Seriation
- References
- Times New Roman, 12-point font
- Double Spaced

Long papers of over 10 pages (see Purdue OWL APA 7th Student Sample Paper)

- 10-20 pages in length (excluding references and appendices)
- Title Page
    - o Title of the paper
    - o Author's name
    - o Institutional affiliation
    - o Course number and Course name (ASCI 6010: Federal and International Regulatory Environment)
    - o Instructor title and name
    - o Assignment due date
- Abstract (200 word maximum) with keywords
- Main Body using APA 7th Headings and Seriation
- References
- Appendices if necessary
- Times New Roman, 12-point font
- Double Spaced

Safety Management Systems in Aviation

Introduction and History

Safety Management System (SMS) use in aviation and implications on safety within the aviation industry and other high-consequence industries can be traced through roots dating back to 1903 and the Wright Flyer, marking the beginning of modern-day aviation as we know it. Built by two brothers in the bicycle-building business, the Wright Flyer conducted the first powered, controlled aircraft flight on December 17. However, less than five years later in 1908, brother Orville crashed their Wright Model A while demonstrating it to the U.S. Army. He severely injured himself and killed his passenger, Army Lieutenant Thomas E. Selfridge, resulting in powered flight's first crash and first fatality of a military man (DTIC, 1999). Following an investigation including crash witness interviews and testimony from Octave Chanute, a close family friend and hailed by some as the father of aviation, the first powered aviation accident report involving a fatality was completed in February of 1909. It was Chanute's testimony that largely resulted in the causal findings of a brittle or over-seasoned propeller, snapping in pieces after striking a rudder guy wire and causing loss of aircraft control (DTIC, 1999). The resulting accident investigation report may have been the first SMS seedling planted in the aviation safety community as Chanute's consultancy is an example of safety assurance while providing a glimpse into system safety as he discovered a propeller manufacturing issue.

Following Orville's accident, little was done to advance aviation safety by the U.S. Government until Congress passed the Air Commerce Act of 1926, charging the Department of Commerce with providing safety through regulation along with operations and maintenance of the airway system (Stolzer, 2008, Pg. 43). As aviation safety continued to evolve, other regulatory milestones emerged including creation of the Civil Aeronautics Act of 1938. In 1951, Proceedings from the Convention on International Civil Aviation, also known as the Chicago Convention, and subsequent adoption of Standards and Recommended Practices (SARPs) for aircraft accident inquiries was a direct result of creation of Article 37 of the Convention on International Civil Aviation (Chicago, 1944). Importantly, Annex 13 to the Convention outlined how accident investigation participant States are determined along with the process outlining preliminary and final accident report issuance following a completed accident investigation (ICAO, 2020). As the SMS development continuum matured, the Department of Transportation was created in 1966, incorporating the Federal Aviation Administration. Formation of the National Transportation Safety Board (NTSB) followed in 1975, producing a single authority for transportation accidents and paving the way to 1995 where the Aviation Safety Summit ultimately laid the groundwork for today's SMS programs by producing 173 safety initiatives, and a set of airline safety programs known as proactive safety (Stolzer, 2008, Pg. 44-48).

With over 117 years in the making, SMSs are a cornerstone of the great strides in air safety advancement and clearly illustrate longstanding efforts and use in aviation, even if not formally known by those terms. However, current SMS application and program management issues pose challenges within aviation and other high-consequence industries and are far from perfect. Reviewing the basic components of an SMS will help highlight these challenges.

SMS and the Four Pillars - Defined

Stolzer et al., (2008), in their book Safety Management Systems in Aviation, define SMS as a "dynamic risk management system based on quality management principles, structured and scaled appropriately, and applied in a safety culture environment" (Pg. 19). Further, the International Civil Aviation Organization (ICAO), a United Nations agency specializing in the planning and development of air transport, as well as standardizing principles and techniques of air navigation, has mandated that its 190-plus member States achieve an acceptable level of safety in aviation operations by developing and implementing SMS programs (Stolzer, 2008). According to ICAO and the Federal Aviation Administration (FAA), both State and organizational safety management systems assure the safe operations of aircraft by continuously identifying hazards, collecting, and analyzing data and continuously assessing safety risks (Friend, 2015). Together, these agencies and the high-consequence industries they support have made significant advancements in the development and implementation of SMS through effective management of safety risk, seeking to contain or mitigate risks before they result in accidents and incidents (Friend, 2015). Further guidance suggests safety programs should be scaled to the size and complexity of the operation by incorporating methods for maintaining and evaluating their effectiveness based on the four pillars/components of SMS: Safety Policy, Safety Risk Management, Safety Assurance and Safety Promotion (ICAO, 2020; FAA, 2020).

Safety Policy establishes leadership's commitment to meet safety goals by defining methods, processes, and organizational alignment to meet safety goals. It involves critical subcomponents including policy documentation, employee reporting and resolution processes, clear and open communications across the organization, and a process of accountability for both employees and managers. Safety Risk Management, sometimes embedded in the product/service process, begins with a system description, then identifies, assesses, and analyzes risk to determining the necessary risk controls. Safety Assurance, on the other hand, supports the identification of new hazards by evaluating the effectiveness of current risk control strategies through audits, information analysis, and system assessments. Safety Assurance should be intrusive and inquiring in its efforts to ensure processes and procedures are properly applied. Additionally, Safety Promotion builds a positive safety culture through all levels of the organization by providing training, open communications, safety awareness, and advocating for a strengthened positive safety culture and sharing lessons learned (FAA, 2020). Safety Risk Management and Safety Assurance are arguably the two most important components of the SMS because of their dependence on one another in determining the flow of authority, responsibility, communication, and documented procedures (FAA, 2020).

FAA Advisory Circular AC 120-92B, Safety Management Systems for Aviation Service Providers, dated January 8, 2015 further defines and reiterates SMS as a “comprehensive and preventative approach to managing safety” (FAA, 2015). Additionally stating, “an SMS should be integral to existing business decision making processes and operations, and developed and designed by organizational members, resulting in leadership, management and employee effective, and informed safety decisions” (FAA, 2015).

Implications and Challenges within Aviation and Other High Consequence Industries

Developing, implementing, and refining safety management systems are challenging tasks for the aviation industry, as well as other high-consequence industries, including maritime/shipping, nuclear, rail, and trucking. These industries and operations are inherently risky and involve hazardous work by nature because of the complexity of both the machines and the procedures required to operate them. However, they are all very similar in that failure to manage a safe operation can have devastating consequences including loss of equipment and loss of life. In referring back to the definition of SMS, recall that an SMS is a system to assure safe operations through effective management of safety risk, subsequently containing or mitigating risks before they result in accidents or incidents. An area often overlooked is the follow-up evaluation once SMS is implemented (Friend, 2015). Equally, if not more challenging, are the unpredictable actions of the operators (people). Sound safety, planning, assurance, management, and risk mitigation must be based on a thorough understanding of the processes and activities of people in the system and the environments in which they work. Additionally, two of the biggest challenges are bringing about the necessary changes in organizational safety culture and in developing the discipline of making SMS an integral and fundamental part of business, as well as not treating SMS as one more mandatory compliance but rather as an opportunity to introduce change to significantly benefit the organization (Sofema, 2012; Houston, 2015).

Conclusion

Summarizing SMS use in aviation begins with a review of aviation accidents, reporting, and regulation over the past 117 years. Fueled by public pressure and resulting government legislation, demands for improvement in safety needed to be addressed through development of a structured approach and shared across industries. While not formally known as Safety Management Systems, advancements in safety mindedness, reporting, information sharing, and systems design and integration since the Wright brother's first flight, all indicate both formal and informal efforts culminating in modern-day safety programs. For example, Safety Assurance and systems safety grew out of Chanute's on-site consultancy and discovery of a flawed propeller manufacturing process following the Wright Model A accident through his information analysis, and inquiries to help find the cause of the accident (DTIC, 1999). Additionally, cross-sharing of information and lessons learned in aviation have helped other high-consequence industries such as nuclear, rail, maritime, trucking, and medicine advance SMS applications in their safety cultures and vice versa. Finally, implementing SMS is no simple task nor is it a single source solution to eliminate accidents, it requires commitment at all organizational levels, and only then will the four-pillar framework continue to provide a solid safety structure for organizations.

References

Convention on International Civil Aviation. (1944). Doc-7300 (Also known as the Chicago Convention). Retrieved from ICAO.int https://www.icao.int/publications/pages/doc7300

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FAA.gov. (2020). Safety Management System (SMS) *Components*. https://www.faa.gov/about/initiatives/sms/explained/components/

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Sofema Aviation Services. (May 2, 2012). *The five challenges facing an organization to implement an effective SMS system.* Blog. Retrieved from Sassofia.com. https://sassofia.com/blog/the-five-challenges-facing-an-organization-to-implement-an-effective-sms-system/

Stolzer, A. J., Halford, C. D., & Goglia, J. J. (2008). Safety management systems in aviation. Ashgate.

Grade: 95/100

Student, this is much better, but it reads as though you had an aviation safety history paper and tried to build it into SMS. The second half of your paper is excellent, other than minor formatting, and could have been developed further. Consider in the future how related theories developed, such as Systems Theory, and contributed to SMS. Also, how previous Safety Theories built on each other to become SMS. Nonetheless, this is a good paper and written well, with just some formatting errors.

Jan

Posted on the Discussion Board on October 23rd, 2020.

Student (Grade 49/50 points)

Chicago Aviation Sustainability

The Chicago Department of Aviation has implemented numerous airport industry-leading initiatives to improve natural resource conservation, operational efficiency, social responsibility, and economic viability at O'Hare and Midway International Airports (CDA). The CDA continues to seek creative ways to reduce energy use, conserve water, salvage and recycle materials through the use of vegetated roofs, water efficient water landscapes, and single-stream and battery recycling.

Chicago is the green roof capital of the U.S. with more than 500,000 sq. ft. of vegetated roof installed at Chicago O'Hare Int'l Airport (CDA). Vegetated roofs are beneficial because they not only are cost effective for maintenance and increased longevity of the roof - up to an additional 20+ years, but vegetated roofs also help reduce the amount of storm water runoff (CDA). Vegetated roofs increase storm water retention, filtration, and evaporation. The FedEx Main Sort building at O'Hare is estimated to retain ~2 million gallons of water per year, a building that has over 174,000 sq. ft. of vegetated roof (CDA). This factor is one way the Chicago airports are utilizing to meet the water quality goal to "limit adverse aviation discharges to U.S. waters" and "reduce aviation's contributions to significant water quality impacts" set by the FAA (FAA).

Chicago O'Hare is also utilizing single-stream recycling and reuse of non-hazardous waste with Waste Management. Some of that waste can be used in the production of alternative jet and diesel fuels. In partnership with Waste Management, a bioenergy company, Fulcrum BioEnergy, is able to harvest and process embedded carbon and hydrogen within waste to turn it into renewable jet and diesel fuels (Jim Macias, Fulcrum). The fuels produced are produced at a lower cost and contain 20% less of the carbon content of fossil fuels (Fulcrum), helping fulfill another goal set by the FAA to develop and deploy alternative jet fuels (FAA).

Chicago airports are also saving on energy use by incorporating green vehicles to the airports' fleets. At Midway, 40% of the airport's fleet consists of hybrid or ethanol (E85) powered vehicles (CDA), with an on-airport fuel tank to providing E85, the blend of 85% ethanol and 15% gasoline (CDA). At O'Hare, more than 60 hybrid vehicles, 10 compressed natural gas (CNG) trucks and vans, and 260 flex-fuel sedans, pickup trucks, and SUVs are currently operated (CDA).

These initiatives enacted, and more, by the Chicago airports are a great place to start to get the ball rolling towards a greener tomorrow. For the size of O'Hare and Midway and the operational demand from the two airports, it would not be totally viable, just yet, to transition to *all* alternative jet fuels because the storage tanks would soon run dry, but these airports are doing a "good" job of helping offset/lower the price of jet fuel by employing the alternative fuels. And while the Chicago airports are a hub or popular airport for most airlines, both domestic and foreign carriers, Chicago O'Hare is where a lot of airlines' newer wide-body aircraft fly out of/in to more often. These newer, more technologically advanced aircraft are more fuel efficient and quieter, helping work toward the FAA's goal of absolute reduction of air quality and welfare impacts (FAA).

Name	Discussion Board Rubric (50 points)
Description	Disscussion Board assignments are worth up to 50 points. The points may be divided up for multiple questions. For examples: LM 3 Disscusion Board contains 5 questions. Each question would be worth 10 points, for a total of 50.

Rubric Detail

Criteria	Levels of Achievement: Proficient	Competent	Adequate	Novice
Formatting	**5 Points** Consistently uses, correct APA formatting; grammatically correct posts with rare misspellings.	**4 Points** Few APA formatting, spelling, and grammatical errors are noted in posts.	**3 Points** Errors in APA formatting, spelling, and grammar evidenced in posts.	**1 Points** Utilizes poor APA formatting, spelling, and grammar in most posts; posts appear to have been hastily conducted.
Replies to peers and instructor	**15 Points** Consistently responds to postings in 24-48 hours; demonstrates good self-initiative.	**11 Points** Responds to most postings within a 24-48 hours; requires occasional prompting to post.	**7 Points** Responds to most postings several days after initial discussion; limited initiative.	**3 Points** Does not respond to most postings; rarely participates freely.

Criteria	Levels of Achievement Proficient	Competent	Adequate	Novice
Participation	**10 Points** 3 days per week Aware of needs of the community; frequently attempts to motivate the group discussion; presents creative approaches to the topic.	**7 Points** 2 days per week Frequently attempts to direct the discussion and to present relevant viewpoints for consideration by the group; interacts freely.	**4 Points** 1 day per week Occasionally makes meaningful reflection on the group's efforts; marginal effort to become involved in the group.	**1 Points** 0-1 day per week Does not make an effort to participate in the learning community as it develops; seems indifferent.
Content	**20 Points** Consistently posts topics that are related to the discussion content; cites additional references related to the topic. Expresses opinions and ideas in a clear concise manner with obvious connection to the topic.	**15 Points** Frequently posts topics that are related to the discussion content; prompts further discussion of topic by peers. Opinions and ideas are stated clearly with occasional lack of connection to the topic.	**10 Points** Occasionally posts off-topic; most posts are short in length and offer no additional insight into the topic. Unclear connection to the topic evidenced by minimal expression of opinions or ideas.	**5 Points** Posts topics which do not relate to the module discussion content; makes short or irrelevant remarks in posts. Does not express opinions or ideas clearly in the post; no connection to the topic.

View Associated Items

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Name	Paper Rubric (100 points)
Description	This paper rubric expands on the original developed by William Irwin, PhD, Department of Aviation Science.

Rubric Detail

Criteria	Levels of Achievement: Superior	Adequate	Marginally Adequate	Inadequate
Breadth of Resources* −Number of citations −Variety of resources listed	**10 Points** An exhaustive search that utilizes a comprehensive number and a full range of types of sources available for the topic were used.	**8 Points** A reasonable number and a variety of sources were used for the topic.	**5 Points** A limited number and a variety of sources were cited.	**2 Points** A limited number of variety or resources available, or both, on the topic were used. The review of the literature did not show awareness of specialized resources.

Criteria	Levels of Achievement: Superior	Adequate	Marginally Adequate	Inadequate
Depth of Understanding −As demonstrated through the citing of historical, theoretical background resources.	**20 Points** The depth of understanding was exemplary as demonstrated through an exhaustive citation of historical and theoretical background resources	**15 Points** The depth of understanding was developed as demonstrated through the citation of a substantial number of historical and theoretical background resources.	**10 Points** A depth of understanding was emerging as demonstrated through the citation of a limited number of historical or theoretical background resources.	**5 Points** The depth of understanding is underdeveloped by a lack of citations from historical or theoretical background resources.
Depth of Scholarliness (Quality of Resources*) −Primary Resources −Empirical research −Peer-reviewed −Seminal/landmark studies	**20 Points** A rich representation of quality, peer-reviewed empirical research resources and very scholarly references were used.	**15 Points** A majority of resources were scholarly, peer-reviewed, and a reasonable number of empirical research studies were used.	**10 Points** A limited number of scholarly, peer-reviewed resources were presented or there were too few empirical resources, or the review was superficial.	**5 Points** The majority of resources are superficial or weak.

Criteria	Levels of Achievement Superior	Adequate	Marginally Adequate	Inadequate
Currency **−Criteria take into consideration the availability of resources on the specific topic being researched**	**10 Points** The review was extremely current with a majority of the references within three (3) years of completion of the paper.	**8 Points** The majority of the resources cited were published five (5) years or less from the completion of the final paper.	**5 Points** A disproportionate number of unnecessarily dated resources (i.e., a majority over five (5) years) were cited.	**2 Points** The review was not current. The majority of the references cited were older than ten (10) years from the date of the completion of the paper
Relevancy **−Relevancy to the topic**	**20 Points** The sources were directly on target and supportive or pertinent to the topic.	**15 Points** Sources generally support or pertain to the topic.	**10 Points** A disproportionate number of sources do not relate or pertain to the topic.	**5 Points** The majority of sources does not relate or pertain to the topic.
Writing Style **−Spelling and grammatical errors** **−Follows APA style and format** **−Logical flow of ideas**	**20 Points** Contains no spelling or grammatical errors. Demonstrates creative use of language. Uses the APA style and format accurately and consistently. Writes extremely clearly and insightful.	**15 Points** Contains no spelling or grammatical errors. Uses the APA style and format with only minor violations. Writes clearly and effectively.	**10 Points** Contains spelling or grammatical errors. Reflects incomplete knowledge of the APA format. Writing style is vague or focused.	**5 Points** Contains spelling or grammatical errors. Does not follow the APA style and format. Fails to communicate any clear or helpful review of the literature.

View Associated Items

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Course Assessment Form

Course: ASCI 3010 Jet Transport Systems I
Semester Taught: Fall 2020
Number of Students in Course: 25

Student Learning Outcome Assessed	Assessment Results: (Indicate what % of class achieved a minimum 70%)	Benchmark achieved? (Benchmark: 80% of students will score a minimum of 70% = "C")
H. Use the techniques, skills, and modern technology necessary for professional practice.	Test 1: Q10 – 92.0%; Q11 – 100.0%; Q21 – 96.0%; Q39 – 72.0%; AVG = 90.0% Test 2: Q5 – 88.0%; Q18 – 96.0%; Q32 – 76.0%; Q38 – 92.0%; AVG = 88.0% Test 3: Q5 – 72%; Q10 – 92.0%; Q25 – 84.0%; Q30 – 88.0%; AVG = 84.0% Final Exam: Q3. 76.0%; Q12 – 100.0%; Q17 – 68.0%; Q41 – 88.0%; AVG = 83.0%	Embedded test questions to analyze the students' ability to use the techniques, skills and modern technology necessary for professional practice yielded an average of 86.25%, achieving the benchmark.
J. Apply pertinent knowledge in identifying and solving problems.	Test 1: Q7 – 100.0%; Q14 – 92.0%; Q26 – 92.0%; Q35 – 76.0%; AVG = 90.0% Test 2: Q2 – 96.0%; Q12 – 84.0%; Q21 – 88.0%; Q48 – 72.0%; AVG = 85.0% Test 3: Q12 – 100.0%; Q22 – 100.0%; Q33 – 76.0%; Q44 – 88.0%; AVG = 91.0% Final Exam: Q6 – 96.0%; Q10 – 80.0%; Q25 – 80.0%; Q32 – 84.0%; AVG = 85.0%	Embedded test questions to analyze the students' ability to use the techniques, skills and modern technology necessary for professional practice yielded an average of 87.75%, achieving the benchmark.

Course Assessment (Intended Use of Results)
The following will be used for recommendations to improve the quality of course delivery based on assessment results. These recommendations may include prerequisite change; changing course outline and adding more topics; adding a third assessment; changing the course sequence, etc.

H. USE THE TECHNIQUES, SKILLS AND MODERN TECHNOLOGY NECESSARY FOR PROFESSIONAL PRACTICE

This semester's assessment produces an average score of 86.25%, which exceeds the department's established benchmark of 70%. Student scores have increased as compared to the scores of the last year's course assessment. Additional modifications/coverage of materials in this course will be implemented in subject areas in which students scored lower than 80% this semester.

J. APPLYING PERTINENT KNOWLEDGE IN IDENTIFYING AND SOLVING PROBLEMS

This semester's assessment produces an average score of 87.75%, which exceeds the department's established benchmark of 70%. Student scores have increased as compared to the scores of the last year's course assessment. Additional modifications/coverage of materials in this course will be implemented in subject areas in which students scored lower than 80% this semester.

**Attach description of assignment used for assessment and samples of student work.*

Individual Student Performances

Student #1

GRADE INFORMATION

Item	Grade
Weighted Total	-
Total	418.00
External Midterm Grade.	A
External Final Grade	A
Respondus Practice Test 1- Requires Respondus LockDown Browser	10.00
ASCI 3010 Test 1 Fall 2020	102.00
Extra Credit Spkr Ser 1	5.00
ASCI 3010 Test 2	105.00
Extra Credit Spkr Ser 2	-
ASCI 3010 Test 3	99.00
Extra Credit Spkr Ser 3	-
Less Absence Points	-
ASCI 3010 Final Exam Fall 2020	97.00

Student #2

GRADE INFORMATION

Item	Grade
Weighted Total	-
Total	364.00
External Midterm Grade.	B+
External Final Grade	A-
Respondus Practice Test 1- Requires Respondus LockDown Browser	10.00
ASCI 3010 Test 1 Fall 2020	72.00
Extra Credit Spkr Ser 1	-
ASCI 3010 Test 2	94.00
Extra Credit Spkr Ser 2	-
ASCI 3010 Test 3	99.00
Extra Credit Spkr Ser 3	5.00
Less Absence Points	-
ASCI 3010 Final Exam Fall 2020	84.00

Student #3

GRADE INFORMATION

Item	Grade
Weighted Total	-
Total	387.00
External Midterm Grade.	A
External Final Grade	A
Respondus Practice Test 1- Requires Respondus LockDown Browser	10.00
ASCI 3010 Test 1 Fall 2020	94.00
Extra Credit Spkr Ser 1	-
ASCI 3010 Test 2	91.00
Extra Credit Spkr Ser 2	-
ASCI 3010 Test 3	93.00
Extra Credit Spkr Ser 3	-
Less Absence Points	-
ASCI 3010 Final Exam Fall 2020	99.00

Class Performance on Tests (Including Optional Extra Credit Assignments)

ASCI 3010 Test 1 Fall 2020 (Test)

1. Column

   ASCI 3010 Test 1 Fall 2020 (Test)

2. Points Possible

   104

3. Description

STATISTICS

Count	26
Minimum Value	0.00
Maximum Value	102.00
Range	102.00
Average	92.92307
Median	99.00
Standard Deviation	19.63694
Variance	385.60946

STATUS DISTRIBUTION

Null	0
In Progress	0
Needs Grading	0
Exempt	0

GRADE DISTRIBUTION

Greater than 100	0
90 - 100	21
80 - 89	3
70 - 79	0
60 - 69	1
50 - 59	0
40 - 49	0
30 - 39	0
20 - 29	0
10 - 19	0
0 - 9	1
Less than 0	0

Respondus Practice Test 1- Requires Respondus LockDown Browser (Test)

ASCI 3010 Jet Transport Systems I – Fall 2020 Course Evidence

1. Column

   Respondus Practice Test 1- Requires Respondus LockDown Browser (Test)

2. Points Possible

   10

3. Description

STATISTICS

Count	25
Minimum Value	0.00
Maximum Value	10.00
Range	10.00
Average	9.20
Median	10.00
Standard Deviation	2.71293
Variance	7.36

STATUS DISTRIBUTION

Null	1
In Progress	0
Needs Grading	0
Exempt	0

GRADE DISTRIBUTION

Greater than 100	0
90 – 100	23
80 – 89	0
70 – 79	0
60 – 69	0
50 – 59	0
40 – 49	0
30 – 39	0
20 – 29	0
10 – 19	0
0 – 9	2
Less than 0	0

Extra Credit Spkr Ser 1

1. Column

   Extra Credit Spkr Ser 1 ()
2. Points Possible

   5
3. Description

STATISTICS

Count	5
Minimum Value	5.00
Maximum Value	5.00
Range	0.00
Average	5.00
Median	5.00
Standard Deviation	0.00
Variance	0.00

STATUS DISTRIBUTION

Null	21
In Progress	0
Needs Grading	0
Exempt	0

GRADE DISTRIBUTION

Greater than 100	0
90 - 100	5
80 - 89	0
70 - 79	0
60 - 69	0
50 - 59	0
40 - 49	0
30 - 39	0
20 - 29	0
10 - 19	0
0 - 9	0
Less than 0	0

ASCI 3010 Test 2 (Test)

1. Column

   ASCI 3010 Test 2 (Test)
2. Points Possible

105

3. Description

STATISTICS

Count	26
Minimum Value	0.00
Maximum Value	105.00
Range	105.00
Average	90.07692
Median	93.50
Standard Deviation	19.14905
Variance	366.68639

STATUS DISTRIBUTION

Null	0
In Progress	0
Needs Grading	0
Exempt	0

GRADE DISTRIBUTION

Greater than 100	0
90 - 100	12
80 - 89	11
70 - 79	2
60 - 69	0
50 - 59	0
40 - 49	0
30 - 39	0
20 - 29	0
10 - 19	0
0 - 9	1
Less than 0	0

Extra Credit Spkr Ser 2

1. Column

   Extra Credit Spkr Ser 2 ()

2. Points Possible

3. Description

Extra Credit for attending the Oct. 22, 2020 Speaker Series Event.

STATISTICS

Count	1
Minimum Value	5.00
Maximum Value	5.00
Range	0.00
Average	5.00
Median	5.00
Standard Deviation	0.00
Variance	0.00

STATUS DISTRIBUTION

Null	25
In Progress	0
Needs Grading	0
Exempt	0

GRADE DISTRIBUTION

Greater than 100	0
90 - 100	1
80 - 89	0
70 - 79	0
60 - 69	0
50 - 59	0
40 - 49	0
30 - 39	0
20 - 29	0
10 - 19	0
0 - 9	0
Less than 0	0

ASCI 3010 Test 3 (Test)

1. Column

ASCI 3010 Test 3 (Test)

2. Points Possible

104

3. Description

STATISTICS

Count	26
Minimum Value	0.00
Maximum Value	102.00
Range	102.00
Average	93.11538
Median	98.00
Standard Deviation	19.11569
Variance	365.40976

STATUS DISTRIBUTION

Null	0
In Progress	0
Needs Grading	0
Exempt	0

GRADE DISTRIBUTION

Greater than 100	0
90 – 100	18
80 – 89	7
70 – 79	0
60 – 69	0
50 – 59	0
40 – 49	0
30 – 39	0
20 – 29	0
10 – 19	0
0 – 9	1
Less than 0	0

Extra Credit Spkr Ser 3

1. Column

   Extra Credit Spkr Ser 3 ()

2. Points Possible

   5

3. Description

STATISTICS

Count	8
Minimum Value	5.00
Maximum Value	5.00
Range	0.00
Average	5.00
Median	5.00
Standard Deviation	0.00
Variance	0.00

STATUS DISTRIBUTION

Null	18
In Progress	0
Needs Grading	0
Exempt	0

GRADE DISTRIBUTION

Greater than 100	0
90 – 100	8
80 – 89	0
70 – 79	0
60 – 69	0
50 – 59	0
40 – 49	0
30 – 39	0
20 – 29	0
10 – 19	0
0 – 9	0
Less than 0	0

ASCI 3010 Final Exam Fall 2020 (Test)

1. Column

   ASCI 3010 Final Exam Fall 2020 (Test)
2. Points Possible

   103
3. Description

STATISTICS

Count	26
Minimum Value	0.00
Maximum Value	102.00
Range	102.00
Average	85.65384
Median	87.00
Standard Deviation	18.75949
Variance	351.91863

STATUS DISTRIBUTION

Null	0
In Progress	0
Needs Grading	0
Exempt	0

GRADE DISTRIBUTION

Greater than 100	0
90 - 100	10
80 - 89	11
70 - 79	4
60 - 69	0
50 - 59	0
40 - 49	0
30 - 39	0
20 - 29	0
10 - 19	0
0 - 9	1
Less than 0	0

Class TOTAL Performance on Tests (Including Optional Extra Credit Assignments)

Total

1. Column

   Total ()
2. Points Possible

   786 (may vary by student)
3. Description

The unweighted sum of all grades for a user.

STATISTICS

Count	26
Minimum Value	0.00%
Maximum Value	96.98375%
Range	96.98375
Average	83.70429%
Median	86.94267%
Standard Deviation	17.81601
Variance	317.41022

STATUS DISTRIBUTION

Null	0
In Progress	0
Needs Grading	0
Exempt	0

GRADE DISTRIBUTION

Greater than 100	0
90 - 100	9
80 - 89	13
70 - 79	3
60 - 69	0
50 - 59	0
40 - 49	0
30 - 39	0
20 - 29	0
10 - 19	0
0 - 9	1
Less than 0	0

External Final Grade

1. Column

   External Final Grade ()
2. Points Possible

   100
3. Description

   This column should be used to send your Final grades from the Blackboard Grade Center to your Banner grades entry sheet.

STATISTICS

ASCI 3010 Jet Transport Systems I – Fall 2020 Course Evidence

Count	26
Minimum Value	55.00
Maximum Value	95.00
Range	40.00
Average	92.42307
Median	95.00
Standard Deviation	7.74806
Variance	60.03254

STATUS DISTRIBUTION

Null	0
In Progress	0
Needs Grading	0
Exempt	0

GRADE DISTRIBUTION

A+	0
A	19
A-	4
B+	2
B	0
B-	0
C+	0
C	0
C-	0
D+	0
D	0
D-	0
F	1

ASCI 3010 Jet Transport Systems I – Test 1

Multiple choice questions: place the letter of your answer on the line next to the question number. Essay questions: write your answer in the space provided; use the back of the page if you need additional room.

_____ 1. The airframe structure must remain substantially intact after experiencing a load equal to:

A. The design load times a 1.5 safety factor.
B. The design limit plus the ultimate load limit.
C. Three times the safety factor.

_____ 2. What is the purpose of the wing main spar?

A. To withstand only the shear loads.
B. To withstand only the compressive loads.
C. To withstand both bending and torsional loads.

_____ 3. What is the purpose of the wing ribs?

A. To withstand the fatigue stresses.
B. The shape the wing and support the skin.
C. To house the fuel and the landing gear.

_____ 4. A “safe life” structure:

A. Will only fail after a specified number of operations or hours of service life
B. Should not fail until a predicted number of fatigue cycles have been achieved.
C. Requires no inspection cycle to identify and rectify faults.

5. Briefly describe the meaning of a “damage tolerant” aircraft structure.

_____ 6. Station numbers and water lines are used to:

A. Provide a means of locating airframe structures and components.
B. Align compass markings.
C. Align the aircraft with runway markings to guide the aircraft to the terminal.

_____ 7. A torsion box is:

A. A structure in the wing to withstand bending and twisting loads.
B. A structure in the fuselage to withstand compression and bending loads.
C. Is a structure within the vertical stabilizer to withstand shear loads.

_____ 8. Control surface flutter is minimized by:

A. Reducing the moment of the critical engine.
B. Mass balancing of the control surface.
C. Changing the wings before they reach their critical life.

_____ 9. The Maximum Zero Fuel Weight (MZFW) or Maximum Zero Fuel Mass (MZFM) of an aircraft is:

A. The maximum permissible takeoff weight (or mass) of the aircraft.
B. The maximum permissible landing weight (or mass) of the aircraft.
C. The maximum permissible takeoff weight (or mass) of the aircraft with no useable fuel.

_____ 10. “Fatigue” is defined as:

A. Progressive, localized structural damage.
B. Damage that is caused by cyclic stresses.
C. Both answers A and B.

_____ 11. An aircraft component failure defined as being “catastrophic” means that:

A. There will be no (zero) safety effect on the safety, operational characteristics or crew workload.
B. There would likely be a loss of the aircraft with multiple fatalities to the crew and passengers.
C. There would be a significant reduction in the safety margin of the aircraft, there would likely be discomfort to the passengers, an increase in the crew workload and would include some injuries to the crew and passengers.

_____ 12. The failure classification “extremely remote” is defined as:

A. A failure which is anticipated to occur more than once during the life of each airplane.
B. A failure which is unlikely to occur to each airplane during its total life, but may occur several times over the total life of a number of airplanes of the type.
C. A failure which is not anticipated to occur to each airplane, but may occur a few times over the total life of all airplanes of this type.

_____ 13. Refer to Figure 1. This illustration shows which type of loading on a component?

A. Tensile loading.
B. Compressive loading.
C. Shear loading.

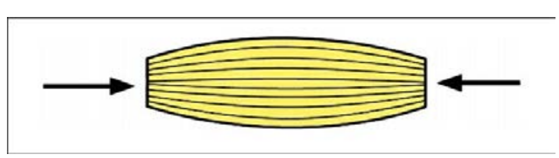

Figure 1

_____ 14. Calculate the pounds of force that can be developed by a hydraulic system that has a pressure of 3000 psi and an actuator with a piston in it that has an area of 1.5 sq. in.

Answer: ______________________________

_____ 15. Calculate the volume of hydraulic fluid in cubic inches needed to displace a piston with an area of 1.5 inches a distance of 8 inches.

Answer: ______________________________

_____ 16. Refer to Figure 2. A shuttle valve is used to:

A. Acts as a non-return valve.
B. Allow two supply sources to operate on unit.
C. Allow one supply source to operate two units.

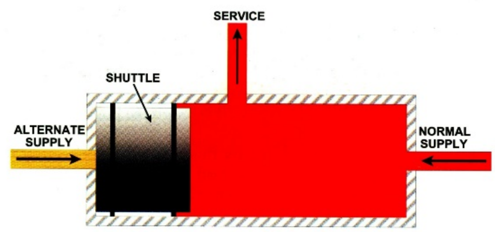

Figure 2

_____ 17. Which of the following hydraulic system components is used to control the rate of movement of an item, such as the landing gear moving from the UP position to a DOWN position?

A. Pressure relief valve.
B. Restrictor valve.
C. Hydraulic fuse.

_____ 18. Servicing an aircraft with the incorrect type of hydraulic fluid could cause:

A. Low operating fluid temperature.
B. Normal operation; it does not matter which type of fluid is used.
C. System failure from leaks and blocked filters, high operating fluid temperatures possible corrosion.

_____ 19. The primary purpose of a hydraulic reservoir is to:

A. Indicate the type of hydraulic fluid in the system.
B. To compensate for hydraulic fluid leaks, thermal expansion and displacement of fluid when a service is used.
C. To provide a storage space for spare hydraulic fluid in the aircraft.

_____ 20. As it pertains to hydraulic operation, Pascal's Law states that:

A. Pressure is inversely proportional to load.
B. Liquid is compressible.
C. An applied force acts equally in all directions.

21. Briefly describe the operation of a hydraulic system pressure relief valve.

_____ 22. The purpose of an accumulator is to:

A. Relieve excess hydraulic pressure in the system.
B. Remove air from the system.
C. Store fluid under pressure for use in the hydraulic system.

_____ 23. In hydraulic pressure within a hydraulic system will be:

A. Greatest near the actuator (jack) due to the imposed load on the actuator (jack).
B. Greatest near the pump then decreases as at the actuator (jack.)
C. Will be equal at all points within the system between the pump and actuator (jack.)

_____ 24. Hydraulic lock occurs when:

A. When fluid flow is stopped and the actuator is unable to move.
B. When fluid bypasses a system and returns to the reservoir.
C. When fluid and air enter the actuator (jack) and only fluid is allowed to bypass to the reservoir.

_____ 25. Skydrol hydraulic fluid:

A. Needs no special safety precautions or treatment.
B. Is flame resistant but is harmful to skin, eyes and some paints.
C. Is highly flammable but not harmful in any other way.

_____ 26. The purpose of a hydraulic fuse is to:

A. Allow the parking brake to remain on overnight if required.
B. Prevent over-pressurizing the reservoir as altitude increases.
C. Prevent total loss of system fluid if a hydraulic line or hose is ruptured or fails.

_____ 27. Refer to Figure 3. Which type of actuator is depicted?

A. Single-acting linear.
B. Double- acting unbalanced.
C. Double-acting balanced.

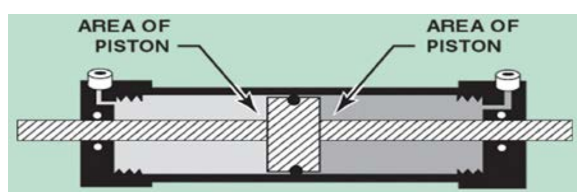

Figure 3

_____ 28. The CRJ700 aircraft incorporates how many and what type of main hydraulic system pumps?

A. Three main pumps; two are engine driven pumps and one is an AC electric pump.
B. Three main pumps; all are engine driven pumps.
C. Three main pumps; all are AC electric pumps.

_____ 29. The movement of the landing gear during the extension operation is normally dampened to:

A. Prevent the fluid from being aerated.
B. Make the extension time less than the retraction time.
C. Counteract the force of gravity which would bring the landing gear down too fast.

_____ 30. Inadvertent retraction of the landing gear on the ground is:

A. Not possible because the system is not powerful enough.
B. Prevented by the ground/air logic system.
C. The responsibility of the first officer when on board the aircraft.

_____ 31. A nose wheel steering control system:

A. Prevents the nose wheel from turning (castering) at all times.
B. Allows the nose wheel to turn (caster) within prescribed limits around the neutral position.
C. Allows the nose wheel to turn (caster) freely at all times.

_____ 32. Refer to Figure 4. What happens if the flight crew of a large transport category aircraft engages this type of landing gear emergency extension system?

A. The hydraulic pressure in the landing gear system will over-pressurize to force the landing gear to the down and locked position.
B. The hydraulic pressure in the landing gear system will be released and the landing gear allowed to free fall into the down and locked position.
C. The hydraulic fluid supply will be transferred to the emergency hand pump by a shuttle valve.

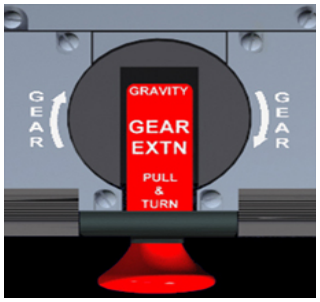

Figure 4

_____ 33. The CRJ700 landing gear position indicators and visual warnings are provided to the flight crew:

A. On the EICAS primary display screen.
B. Via the three green lights and single red light located on the glareshield.
C. Via only with the three green lights located on the glareshield.

_____ 34. Refer to Figure 5. The white marks depicted on the wheel/tire assembly denote:

A. Tire dynamic balancing.
B. Tire creep.
C. Tire and inner tube balancing.

Figure 5

_____ 35. A fusible plug is used:

A. In the tire to rupture the tire in the event of over-pressurization due to excessive heat.
B. In the wheel assembly to allow maintenance personnel to maintain the proper pressure in the tire.
C. In the wheel assembly to open and release excessive tire pressure in the event that overheating due to braking operations during landing occurs.

_____ 36. The best extinguishing agent to use in the event of a wheel or brake fire is:

A. Freon.
B. Water.
C. Dry powder.

_____ 37. The anti-skid system would be used:

A. Only during landing operations.
B. Only during takeoff operations in case of a rejected takeoff.
C. On both takeoff in case of a rejected takeoff and landing operations.

38. Briefly describe the brake pressure modulation circuit of a large aircraft's anti-skid system.

_____ 39. Refer to Figure 6. How much brake cooling time is required if an aircraft lands with a gross weight of 115,000 lbs. and the flight crew applies the aircraft brakes at a speed of 110 knots.

A. 59 minutes.
B. 64 minutes.
C. 67 minutes.

Brake Cooling Time

Gross Weight (1000 pounds)	Indicated Airspeed At Brake Application (knots)									
	70	80	90	100	110	120	130	140	150	160
	Time (minutes)									
130.0	16	32	46	59	68	76	MZ	MZ	MZ	MZ
122.5	13	29	42	55	64	73	MZ	MZ	MZ	MZ
110.0	8	23	36	50	59	67	75	MZ	MZ	MZ
100.0	0	18	30	43	54	63	71	MZ	MZ	MZ
90.0	0	12	25	36	48	58	65	72	MZ	MZ
80.0	0	5	20	31	42	52	60	66	73	MZ

***Note:** Do not interpolate; use next higher indicated airspeed and/or weight.*

Figure 6

_____ 40. The CRJ700 brake system temperature display is indicated on:

A. The main gear struts.
B. The EICAS status display page.
C. Landing gear panel that is part of the center console.

_____ 41. Engaging the parking brake system of the CRJ700 aircraft causes:

A. The main hydraulic system's electric hydraulic pump to remain on to keep the brakes engaged.
B. The hydraulic pressure in the brake system to be trapped to keep the brakes engaged.
C. A mechanical lock to be engaged to prevent the brake rotors from turning.

_____ 42. To roll an aircraft to the right:

A. The rudder control is moved to the right, the right aileron to move up and the left aileron down.
B. The aileron control is moved to the right, the right elevator goes up and the left elevator goes down.
C. The aileron control is moved to the right, the right aileron goes up and the left aileron goes down.

_____ 43. To allow the flight crew to experience the amount of control pressure exerted while moving a flight control of a large, transport aircraft, the aircraft's flight controls:

A. Are rigged with an extra amount of tension to cause friction in the system and make it more difficult to move the control wheel or stick.
B. Are connected to flight control computers.
C. Are equipped with artificial feel systems.

_____ 44. The purpose of pulley wheels in a cable control system is to:

A. Ensure the cable tensions are equal throughout the system.
B. To change the direction of the control cable.
C. To prevent the cable from slackening.

_____ 45. A portion of a wing that is mounted on tracks and is extended forward to delay the separation of the air from the wing in high angle of attack positions is the:

A. Slot.
B. Slat.
C. Trailing edge flap.

_____ 46. Which of the following leading edge devices deflects and changes shape during extension to increase the wing's lift more effectively?

A. Krueger flap.
B. Slot.
C. Variable camber flap.

_____ 47. The type of powered flight control system that connects the control wheel or stick to the flight controls via computer systems is:

A. The fly-by-wire system.
B. The electro-mechanical system.
C. The hydraulic system.

48. Briefly describe what is meant by the term "redundancy" as it applies to powered flight control systems used on transport category aircraft.

_____ 49. A typical boost ratio for a power-boosted flight control system is:

A. One (1) pound of stick force provides fourteen (14) pounds of force at the flight control.
B. Ten (10) pounds of stick force provides twenty (20) pounds of force at the flight control.
C. Fourteen (14) pounds of stick force provides one (1) pound of force at the flight control.

_____ 50. The CRJ700 aircraft uses how many of its hydraulic systems to provide power to the aircraft's left aileron and spoileron?

A. One.
B. Two.
C. Three.

EXTRA CREDIT: You can earn up to three points by correctly answering the following question. Refer to Figure 7. Briefly describe the position of the flight controls as shown.

Ailerons: ___________________

Flaps: _____________________

Flight and ground spoilers:

____

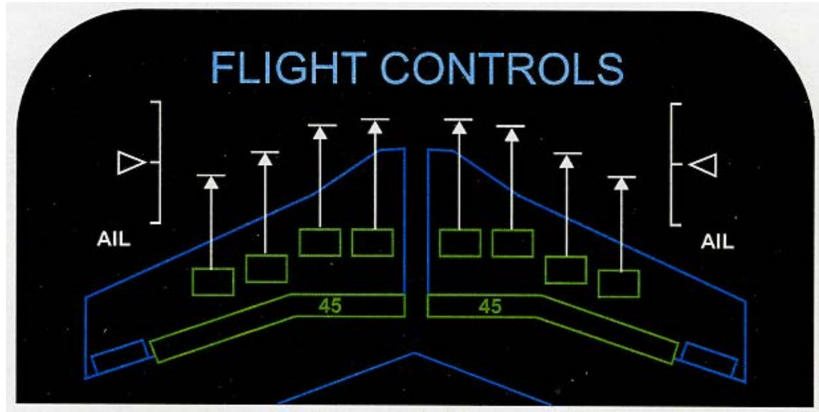

Figure 7

ASCI 3010 Jet Transport Systems – Test 2

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Question 1 Transport category aircraft typically use which of the following systems to provide pneumatic air for operation of different systems in the aircraft?

Answer

✔ Turbine engine compressor bleeds.

Nitrogen bottles stored in the cargo compartment.

An electrically driven compressor located in the nose of the aircraft.

•

Question 2 List at least three aircraft systems or components that utilize a transport category aircraft's pneumatic system?

Answer

Question 3 Which type of valve is used in a pneumatic system to prevent a source of high-pressure bleed air from entering a system that uses low pressure bleed air?

Answer

Filler valve.

Pressure relief valve.

✔ Non-return valve.

Question 4 In the event of a failure of a pneumatic system's shut off valve, which of the following valves will prevent damage from over-pressurization?

Answer

Isolation valve.

✔ Pressure relief valve.

Non-return valve.

Question 5 The system used to monitor the temperature of the ductwork used to route

Answer	pneumatic system air through the aircraft is: ✔ An overheat detection loop system. A series of thermostats located throughout the aircraft. An overheat valve that dumps the hot pneumatic air overboard.

Question 6	The flight crew is typically alerted to pneumatic system malfunctions such as over-pressurization or overheating by:
Answer	An automatic shutdown of the system. ✔ The illumination of warning lights in the cockpit. Constant monitoring of pneumatic system pressure and temperature gauges.

Question 7	Briefly describe how the temperature of the conditioned air in the aircraft cockpit and cabin are maintained at the desired level.
Answer	

Question 8	A leak in the duct work of a pneumatic system will cause:
Answer	A large drop in the air temperature in the area of the leak. A large pressure rise in the area around the duct with no temperature increase. ✔ A large rise in the air temperature in the area of the leak.

Question 9	What is the source of cooling air used to cool the turbine engine bleed air in the turbo-compressor or “bootstrap” system?
Answer	✔ Ram air. Engine bypass air. Compressor air.

Question 10	A cabin humidifier is used:
Answer	Only on the ground when the relative humidity is low. ✔ In flight at high altitudes. Only on the ground when the ambient temperature is high.

Question 11	Which of the following systems are installed to control the moisture content of the air throughout the entire air conditioning system?

Answer	Humidifier only. Dehydrator only. ✔ Dehydrator and humidifier.

Question 12	A heat exchanger functions by:
Answer	Combining ram air with charge air. Mixing the various vapors inside the heat exchanger. ✔ Absorbing the heat of hot air or liquid by passing cold air or fluid over ducts which are carrying the hot air or liquid.

Question 13	A humidifier is fitted to:
Answer	Extract the moisture content in the air. Ensure the cabin air is saturated at high altitude. ✔ Increase the moisture content in the air when operating at high altitude.

Question 14	Pneumatic air used for conditioning and pressurization in transport category aircraft is typically taken from:
Answer	The engine bypass duct or thrust reverser bypass duct. The engine turbine. ✔ The engine compressor section.

Question 15	When air is pressurized by an engine driven compressor, it is also:
Answer	Moisturized. ✔ Heated. Cooled.

Question 16	A typical problem associated with exhaust shroud-type of cabin heaters is:
Answer	Misting over of the inside of the windshield when the defroster is turned on. ✔ Carbon monoxide poisoning due to exhaust leaks in the exhaust system components. The inability of the system to use ram air to mix with the heated air.

Question 17	On what principle of operation does the vapor cycle cooling system work?

Answer	✔ Converting liquid into a vapor. Converting vapor into a gas. Converting cold gas into hot gas.

Question 18	Main and nose wheel wells are:
Answer	Pressurized. ✔ Non-pressurized. Different, with the main wheel well pressurized and the nose wheel well non-pressurized.

Question 19	Which component is used to ensure a stable amount of air flows to the air conditioning packs at all times?
Answer	Air conditioning shut off valve. Gasper valve. ✔ Mass flow controller.

Question 20	The air conditioning packs control which component to ensure an adequate amount of air is present in the ram air ducts?
Answer	Turbocharger air output. Ground service cart. ✔ Mass flow controller.

Question 21	When might the negative differential pressure limit be reached or exceeded?
Answer	✔ During a rapid descent when the aircraft altitude descends below the cabin altitude. During a rapid ascent when the aircraft is climbing. During ground pressure testing.

Question 22	An aircraft is flying in straight and level flight. If the cabin altitude decreases, the pressure differential will:
Answer	Remain the same.

	Decrease.
	✔ Increase.

Question 23	Briefly describe how the pressurization system of the CRJ 700 aircraft maintains a pre-set cabin altitude.
Answer	

Question 24	The fatigue life of a fuselage of a transport category aircraft is based on:
Answer	The number of landings only.
	✔ The number of pressurization cycles.
	The number of cycles at the maximum differential pressure.

Question 25	The rate of change (ΔP) of the cabin altitude is shown on:
Answer	The aircraft vertical speed indicator.
	The Maximum Differential Pressure gauge.
	✔ A special gauge or on the EICAS display.

Question 26	If the aircraft reaches the maximum differential pressure, which component will open fully to prevent the differential pressure from increasing further?
Answer	The negative pressure relief valve.
	The pressurization isolation valve.
	✔ The outflow valve.

Question 27	If the outflow valve of a transport category aircraft is stuck in the closed position:
Answer	The negative pressure differential valve will limit the maximum pressure differential.

The safety valve will limit the maximum pressure differential.

The aircraft will not be capable of reaching the maximum pressure differential.

Question 28
In a pressurization system, the sequence of operation is for the:

Answer

Outflow valve to operate before the safety valve.

Outflow valve to operate after the safety valve.

Outflow valve and safety valve to operate simultaneously.

Question 29
With the aircraft flying straight and level at an altitude of 28,000 ft., if the cabin altitude is adjusted from 4,000 ft. to 6,500 ft.:

Answer

The cabin pressure differential will increase.

The cabin pressure differential will decrease.

The cabin pressure differential will remain the same.

Question 30
An aircraft climbs from sea level to 16,000 ft. at 400 ft./min. with the cabin pressurization set to climb at a rate of 300 ft./min to a cabin altitude of 6,000 ft. The time it takes for the cabin altitude to reach 6,000ft. is:

Answer

The same time it takes the aircraft to reach 16,000 ft.

Half the time it takes the aircraft to reach 16,000 ft.

Twice the time it takes the aircraft to reach 16,000 ft.

Question 31
The aircraft pressurization inhibiting switch connected to the landing gear weight-on-wheel signal:

Answer

Allows the aircraft to be pressurized on the ground.

Stops the aircraft from pressurizing on the ground and ensures that there is

no pressure differential.

Prevents the safety valve from operating on the ground.

Question 32
During a normal pressurized cruise flight, the outflow valve is:

Answer

Fully open.

Fully closed.

Modulated to open and closed positions.

Question 33	When air is pressurized, the percentage of oxygen it contains:
Answer	Increases.
	Decreases.
	✔ Remains the same.

Question 34	If aircraft pressurization is manually controlled from the flight deck during flight:
Answer	A third flight crew member is required to monitor the system operation.
	The climb and descent rates can be adjusted to any desirable limit.
	✔ The climb and descent rates should be adjusted to keep them within safe limits as outlined in the aircraft flight manual.

Question 35	If the cabin pressure increases in level flight, the cabin altitude vertical speed indicator will show:
Answer	A rate of climb.
	No change.
	✔ A rate of descent.

Question 36	Briefly describe what is meant by the term "cabin altitude" as used in pressurized flight.
Answer	

Question 37	A pressurization system works by:
Answer	✔ Using a constant supply of input mass flow and varying the output.
	Using a variable supply of input mass flow and maintaining the output at a fixed level.
	Varying both the supply of input mass and the output to maintain a set pressurization.

Question 38	The effect of frost on an aircraft:
Answer	Can be generally ignored.
	✔ Is to cause an increase in the surface roughness which will increase skin friction,

increase drag and reduce lift.

Is to cause an increase in the kinetic energy of the boundary layer to delay the onset of a stall condition.

Question 39
Answer

Ice detectors are used primarily to warn the crew:

That potential atmospheric icing conditions warrant turning on the aircraft's anti-icing sys

Those atmospheric conditions which are conducive to having ice form on the airframe and

Both answers A & B.

Question 40
Answer

The methods used to provide aircraft anti-icing or deicing in flight can be:

Mechanical or electrical or fluid.

Pneumatic or thermal or fluid.

Electrically heated or air heated or oil heated.

Question 41
Answer

In a pneumatic deicing system:

The boots remain inflated the entire time the system is in operation.

The boots are cycled (inflated and deflated) repeatedly while the system is in operation.

Vacuum inflates the boots and pressure deflates them repeatedly while the system is in operation.

Question 42
Answer

When the pneumatic deicer system is turned off:

The relief valves admit ram air to the boots.

A small flow of hot air continuously flows through the boots.

Vacuum deflates the boots to minimize drag on the aircraft.

Question 43
Answer

Anti-icing fluid is delivered to the propeller by:

Fluid feed tubes and a slinger ring.

A small reservoir contained within the propeller spinner.

Integral passages within the propeller dome.

Question 44	A thermal wing anti-icing system:
Answer	✓ Feeds hot air through the leading edge ducts of the wings.. Feeds hot air through the complete upper wing surface. Relies on the heat generated by kinetic energy of the air moving over the upper wing surface.

Question 45	A problem with the use of windshield wipers on transport category aircraft is:
Answer	The windshield wipers oscillate too slowly and inefficiently remove water from the windshield. ✓ The air loads caused by high aircraft speeds will lift the windshield wiper off the glass and cause the water to be removed from the windshield ineffectively. As the windshield wiper moves across the windshield it smears the water onto the windshield and make it difficult for the pilot to see through the windshield.

Question 46	How does an aircraft pneumatic rain removal system function?
Answer	By spraying a chemical rain repellant onto the windshield to act as a barrier to the prevent rain drops from striking the windshield. By blowing air over the windshield wipers to hold them to the windshield. ✓ By blowing high pressure air over the windshield to create a barrier that prevents the rain drops from striking the windshield.

Question 47	If an aircraft is to be deiced prior to departure:
Answer	The engines' bleed air should not be used to operate the engine cowl anti-ice system during the deicing procedure so as to prevent the boiling of the anti-icing fluid used on the engines. The aircraft's APU's bleed air must be used to operate the wing anti-ice system during the deicing procedure to ensure complete deicing of the aircraft. ✓ It is generally advisable that neither the engines nor the APU should be running during the aircraft deicing procedure to prevent vapors from the fluid being ingested into the bleed air system and entering the cabin air.

Question 48	An aircraft is to be deiced and then enter the line up for departure.

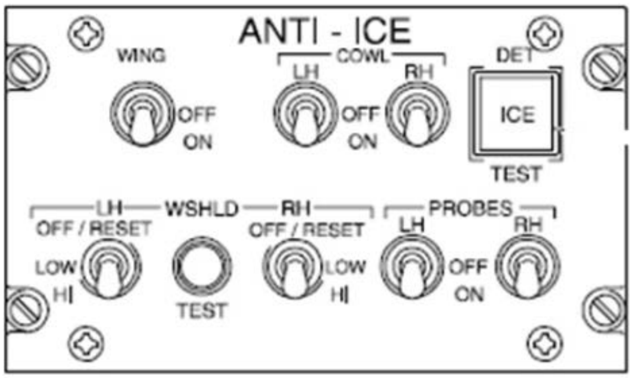
Answer	Which deicing procedure will have the best holdover time at 10°C with precipitation occurring? A cleaning with Type I fluid at 100% cold spray. A cleaning with Type I fluid diluted to a 50/50 mix with water. ✔ A cleaning with Type I fluid at 100% hot spray followed by a coating of Type II fluid at 100% cold spray.

Question 49 **Answer**	The CRJ 700 wing anti-icing system normally operates: By a Roots blower supplying the air needed to inflate the pneumatic deicer boots. ✔ By 10th stage engine bleed air routed to the wing through ducts in the aircraft. By electrically heated panels adhered to the wing leading edges.

Question 50 **Answer**	Which type of system does the CRJ700 aircraft incorporate to prevent the formation of ice on the cockpit windows? ✔ Electrically heated windshields. A pneumatic anti-icing system that uses engine compressor bleed air. A chemical ice repellant is sprayed onto the windshield through tubes.

Extra Credit Question

Refer to the figure. Describe how the pilots of the CRJ 700 aircraft are alerted to icing c conditions from affecting the safe operation of the aircraft.



Anti-Ice Panel
Overhead Panel

Answer

ASCI 3010 Jet Transport Systems I – Test 3

Question 1	The regulations that airlines adhere to governing the location, markings and use of safety equipment in aircraft are contained in:
Answer	British Civil Airworthiness Requirements. ✔ Joint Airworthiness Requirements U.S. Code of Federal Regulations.
Question 2	An automatic escape slide:
Answer	✔ Can be armed from inside the aircraft only. Inflates only when a recovery team opens the door from the outside of the aircraft. Can only be activated from the flight deck.
Question 3	For how long a period must the emergency lighting system be capable of

remaining illuminated?

Answer

5 hours.

90 minutes.

✔

10 minutes.

Question 4

What is the purpose of providing Nomex gloves to the crew of a transport category aircraft?

Answer

To protect the hands during cold weather preflight inspection procedures.

To protect the hands during the removal of hot meal containers from the galley ovens.

✔

To protect the hands from hot materials during emergency firefighting.

Question 5

In the event of the failure of an aircraft's AC electrical system, the emergency lighting system would receive electrical power to operate the system from:

Answer

The AC essential electrical bus bar.

✔

The Vital DC electrical bus bar.

The aircraft's APU electrical bus bar.

Question 6

Emergency lighting:

Answer

Can be switched on only from the flight deck.

✔

Consists of flight deck lighting, passenger cabin internal and aircraft external lighting.

Must only illuminate the inside of the passenger cabin.

Question 7

An aircraft emergency cut-in area:

Answer

✔

Is delineated by external markings having right angle corners.

Is designated as a weaker fuselage area.

Is lit internally by the aircraft's emergency lighting system.

Question 8

Aircraft emergency exits:

Answer

Can only be opened from the inside.

Are painted yellow.

✔

Must be outlined externally by a 2-inch wide band of contrasting color paint.

Question 9

How are life jackets initially inflated?

Answer

By activating the attached CO2 cartridge.

By the user blowing into the red tube.

By connecting the life jacket to the bleed air pump next to the emergency exit.

Question 10

In the event of smoke in the cabin of a CRJ700 aircraft, what type of emergency equipment is available to enable a flight attendant to move through the cabin and assist passengers as needed?

Answer

Protective breathing equipment (smoke hood.)

Oxygen masks dropped down from the passenger service units.

Nothing is available, the flight attendant must remain at the flight attendant station until the aircraft is evacuated.

Question 11

What is an altitude that a typical person can fly to without oxygen and not be seriously impaire

Answer

10,000 ft.

5,000 ft.

7,500 ft.

Question 12

Without added oxygen to breathe, a tyoical person's time of useful consciousness at 25,000 ft is approximately:

Answer

Thirty minutes.

Three minutes.

Forty-five minutes.

Question 13

A temperature rise causing a dangerous pressure rise in an oxygen cylinder:

Answer

Is relieved by a thermostat.

Is relieved by a bursting disc.

Is controlled by a pressure relief valve.

Question 14

Answer

If an aircraft suffers a decompression event, the passenger oxygen masks:

Are manually released from the Passenger Service Unit (PSU) by the passengers.

Are handed out by the flight attendants.

✔ Automatically drop to a half-hung (ready) position.

Question 15

Answer

In the event of a small, uncontrolled cabin pressure leak, at what cabin altitude will the oxyger available?

10,000 ft.

✔ 14,000 ft.

20,000 ft.

Question 16

Answer

When air is pressurized the percent of oxygen:

Increases.

Decreases.

✔ Remains the same.

Question 17

Answer

Aircraft oxygen cylinders are normally charged to:

10,000 psi.

3,600 psi.

✔ 1,800 psi.

Question 18

Answer

The color of an oxygen bottle used in a U.S. certificated aircraft is:

Red.

✔ Green.

Blue.

Question 19
The color of an oxygen bottle used in a British (EASA) certificated aircraft is:

Answer
White with a black neck.

✔ Black with a white neck.

Red with a yellow neck.

Question 20
In a continuous flow oxygen system, oxygen is supplied:

Answer
✔ Continuously to each mask when connected to the oxygen source.

Only when the user inhales.

Only when the cabin altitude is above 18,000 ft.

Question 21
In a pressure demand oxygen system:

Answer
✔ Each member of the flight crew has a regulator in a mask controlling the oxygen flow.

Each member of the crew has a continuously flowing oxygen supply.

Oxygen demand will cause the pressure in the regulator to rise.

Question 22
In a diluter demand oxygen system, selecting the "emergency" position of the \oxygen regulator will result in:

Answer
A flow of a 50/50 mixture of cabin air and oxygen.

A flow of 100% oxygen only when the user inhales.

✔ A flow of 100% oxygen continuously to the user's oxygen mask.

Question 23
The rate of flow of an oxygen system is typically given in units of:

Answer
✔ Liters/minute.

Pounds/minute.

Milliliters/minute.

Question 24
Satisfactory operation of the oxygen system is indicated by:

Answer
Aural reassurance.

Pressure indicators.

✔ Flow indicators.

Question 25

An oxygen flow indicator coupled to an oxygen regulator indicates:

Answer

The correct amount of oxygen is being diluted with cabin air to be used by the crew member.

✔ That oxygen is flowing through the regulator to the oxygen mask.

That the oxygen at a pressure of 1,850 PSI is being inhaled by the user.

Question 26

An emergency chemically produced oxygen supply will produce oxygen for a specified period by:

Answer

The chemical reaction of potassium chlorate within the generator and oxygen in the cabin air.

The chemical reaction of the liquid oxygen in the generator and the oxygen in the cabin air.

✔ The chemical reaction of sodium chlorate and iron contained within the oxygen generator.

Question 27

With the control knob set to the "normal setting" flowing 2 liters per minute, a portable oxygen bottle serviced with 120 liters of oxygen will provide a flow of oxygen to the user for a period of:

Answer

✔ 60 minutes.

4 hours.

10 minutes.

Question 28

The Emergency Regulating Oxygen System (EROS) crew oxygen mask, when in the NORMAL operating mode will:

Answer

✔ Supply a % mixture of oxygen and cockpit air in the diluter demand mode to the mask, based on the aircraft's altitude.

Supply 100% oxygen flow to the mask.

Supply oxygen by changing from a diluter demand mode to a steady continuous flow mode.

Question 29

What can occur if any part of an aircraft's oxygen system is exposed to grease or oil?

Answer

✔ A fire or explosion.

Restricted flow of oxygen to the mask.

An oxygen leak will occur at the sight.

Question 30

The oxygen used for emergency situations by the flight crew in the CRJ700 is:

Answer

High pressure gaseous oxygen

Low pressure gaseous oxygen.

High pressure liquid oxygen.

Question 31

Smoke detectors are typically located in:

Answer

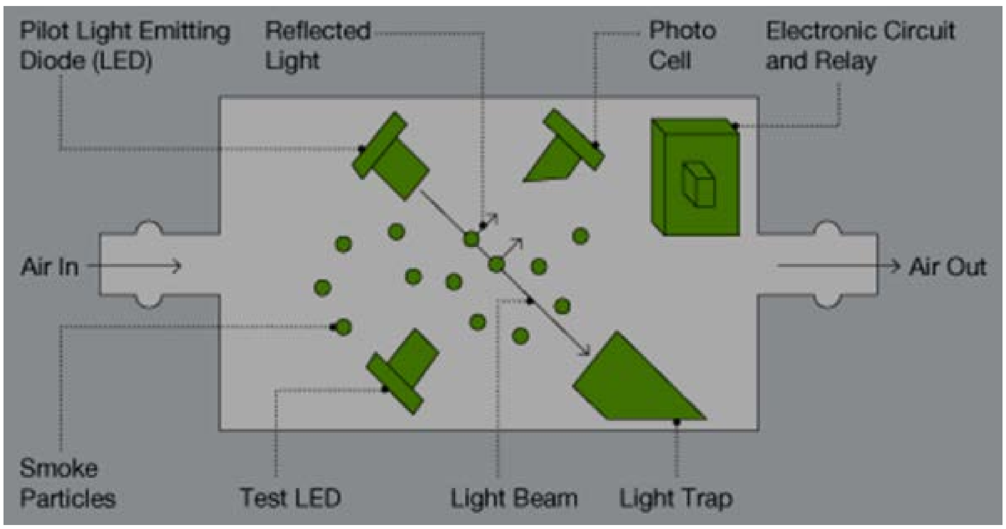
Cargo bays, electrical equipment bays and lavatories

APU compartments, electrical equipment bays and torque box areas.

Landing gear bays, passenger cabins and lavatories.

Question 32

Refer to the figure. Which of the following types of smoke detectors is identified in the figure?



Answer

Ionization type smoke detector.

Light detection type smoke detector.

Change in resistance of semiconductor material type smoke detector.

Question 33

The warnings provided to the flight crew of a CRJ700 are notified by the presence of smoke in the lavatory by:

Answer

A red "smoke" switchlight illuminates and an aural "SMOKE" message from the EICAS system is sounded on the flight deck and an alarm sounds in the lavatory.

A yellow "smoke switchlight illuminates and an aural "SMOKE" message from the EICAS system is sounded on the flight deck and an alarm sounds in the lavatory.

A red "smoke" switchlight illuminates in the lavatory along with an alarm sounding in the lavatory.

Question 34 Which of the following conditions must be met for a fire to occur in-flight on an aircraft?

Answer

Heat and fuel.

Fuel and oxygen.

Heat, fuel and oxygen.

Question 35 A type of extinguishing agent you would expect to find in an aircraft engine high-rate-of-discharge (HRD) fire protection system is:

Answer

Water.

Dry powder chemical.

Halon (or Freon.)

Question 36 A flight deck indication that a fixed fire extinguisher has been used to extinguish an engine fire is:

Answer

A red colored disc has burst.

A low-pressure warning lamp for the associated fire extinguisher bottle illuminates.

The fire warning bell extinguishing.

Question 37 An engine fire extinguisher has been discharged due to an over temperature condition occurring in its vicinity. The indication for this type of discharge is:

Answer

An externally mounted warning light.

An externally mounted discharge disc showing red.

An aural warning.

Question 38 A typical flight deck indication for an engine fire warning system of a transport category aircraft is:

Answer

Flashing red lights for each engine and a common warning horn for all engines.

Steady red light for each engine and a common warning horn for all engines.

Flashing red lights and a different tone bell for each engine.

Question 39

If an engine fire warning is received on the flight deck, the correct procedure to be followed will be:

Answer

Pull the fire handle, fire the fire extinguisher, and shut down the affected engine.

Pull the fire handle (or press in the switchlight) to shut down the affected engine

and then activate the fire extinguisher.

Fire the first fire extinguisher, pull the fire handle, and shut down the affected engine.

Question 40

What term is used to describe aircraft engine nacelles and APU compartments whose compo

Answer

Danger zones.

Fire resistant compartment.

Fire zones.

Question 41

Which of the following types of fire detection systems will only detect an over-temperature condition in a localized area of the aircraft?

Answer

Electrical continuous loop system.

Pneumatic continuous loop system.

Spot-type temperature detector.

Question 42

If the "fire wire" of a continuous loop temperature detection system short circuits, the result will be:

Answer

No overheat indication on the flight deck.

A false fire warning alarm.

A discharge of the fire extinguisher bottle.

Question 43

The computer logic systems as used in a typical aircraft fire/overheat detection system is:

Answer

In the "AND" logic system, either loop A or loop B can activate the alarm function of the system.

In the "AND" logic system, both loop A and loop B must agree to activate the alarm function of the system.

In the "OR" logic system, both loop A and loop B must agree to activate the alarm function of the system.

Question 44

What is used on modern transport category aircraft to break the frangible disk of a fire extinguisher bottle used in an aircraft engine high rate of discharge (HRD) fire extinguishing system?

Answer

A manually operated squib.

An electrically operated squib.

An electrically operated shut off valve.

Question 45

Which external indicator is used to show that a fire extinguisher bottle has been discharged normally by the flight crew?

Answer

An externally mounted warning light.

An externally mounted discharge disc showing yellow.

An aural warning heard by the ground crew.

Question 46

An aircraft lavatory fire extinguisher is activated:

Answer

Automatically by a fire's high temperature in the vicinity melting a fusible plug or link in the lavatory waste bin.

Remotely by the flight attendant pulling a handle in the lavatory fire extinguisher system.

Automatically when the smoke detector is activated.

Question 47

How does the dual loop fire protection system used on the CRJ700 protect the aircraft and ground personnel if a fire occurs within the APU compartment during ground operations?

Answer

Shuts down the APU automatically, after 5 seconds discharges the fire extinguisher bottle and an external horn sounds when the extinguishing agent is released.

Discharges the fire extinguisher bottle and sounds an internal alarm.

Discharges the fire extinguisher bottle, shuts down the APU automatically and sends a signal to the EICAS display.

Question 48

Which type of system does the CRJ700 utilize in the cargo bay for smoke detection and protection?

Answer

A spot-type temperature detector and a conventional CO2 fire extinguisher bottle.

✔ A smoke detector system and a high rate of discharge fire extinguisher system.

A visual cargo smoke camera system.

Question 49

In the event of smoke in the cockpit of the CRJ 700, which of the following delivery systems will be used to supply oxygen to the flight crew?

Answer

✔ Gaseous oxygen from a high-pressure bottle (1,800 psi) to an EROS mask.

Gaseous oxygen from a low-pressure bottle (150 psi) to a rebreather-type mask.

Gaseous oxygen produced by a chemical candle to a rebreather-type mask.

Question 50

Refer to the figure. If the LH ENG FIRE PUSH switchlight comes on illuminated red along with the associated alarms, what occurs when a flight crew member depresses the LH ENG FIRE PUSH switchlight?

Answer

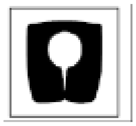
The squib is activated and the extinguishing agent discharges into the LH engine.

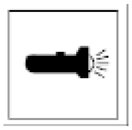
The engine continues to operate so that the fire extinguishing agent flows through the engine to extinguish a fire.

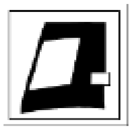
✔ The engine ceases to run, the fuel, hydraulic and bleed air shut off valves are closed, and the squibs are armed on the left engine fire extinguisher bottle.

Question 51

Extra Credit, worth up to four points. Refer to the figures. Identify the emergency equipment symbols shown. Label your answers "A - D."

A. 

B. 

C. 

D. 

Answer

ASCI 3010 Jet Transport Systems I – Final Exam

1. The color of 100LL Avgas is:

   A. Blue.
   B. Colorless or straw-colored.
   C. Green.

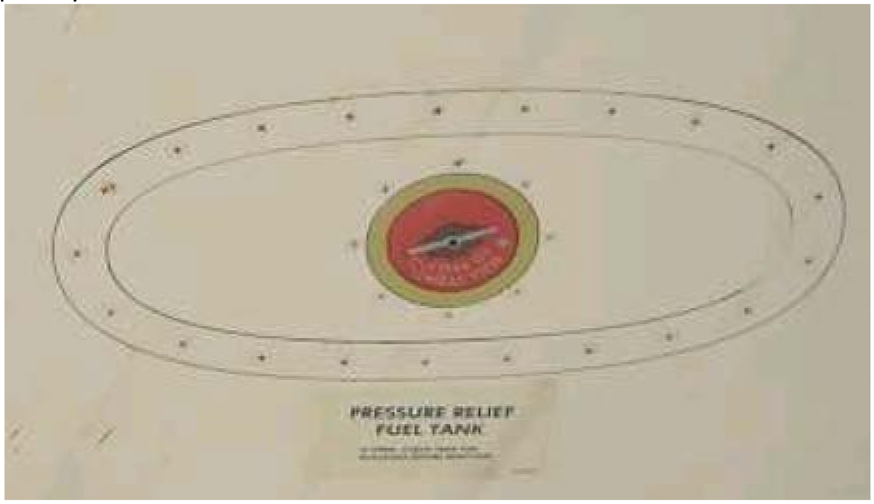
2. The color of Jet A turbine fuel is:

   A. Colorless or straw-colored.
   B. Green.
   C. Red.

3. Why do transport category aircraft monitor the temperature of the fuel entering the engine?

   A. To prevent the water that might be trapped in the fuel from freezing and possibility blocking fuel flow.
   B. So that the fuel system computer can adapt to the changing density of the fuel.
   C. Because colder fuel is harder to combust within the engine than warmer fuel.

4. Refer to the figure. The purpose of the item depicted in the figure is to:



A. Provide the atmospheric venting requirements of the aircraft's fuel tank system.
B. Provide an extra fuel drain to remove water from the aircraft's fuel tank system.
C. Provide an automatic release of excessive fuel pressure within the fuel tank to prevent damage to the fuel tank system.

5. A transport category aircraft's fuel system incorporates which type of filtration system?

A. Single filtration: one fine mesh wire screen.
B. Dual filtration: one coarse mesh and one fine mesh wire screen.
C. Triple filtration: one coarse mesh, one fine mesh and one extra-fine mesh wire screen.

6. What is the purpose of the electrically operated fuel boost pump equipped inside the fuel tanks of modern transport category aircraft?

A. To be sure to use all of the fuel in the tank during flight.
B. To aid in separating out any remaining water in the fuel inside the tank.
C. To supply fuel to the engine driven fuel pumps and prevents cavitation of those pumps.
D.

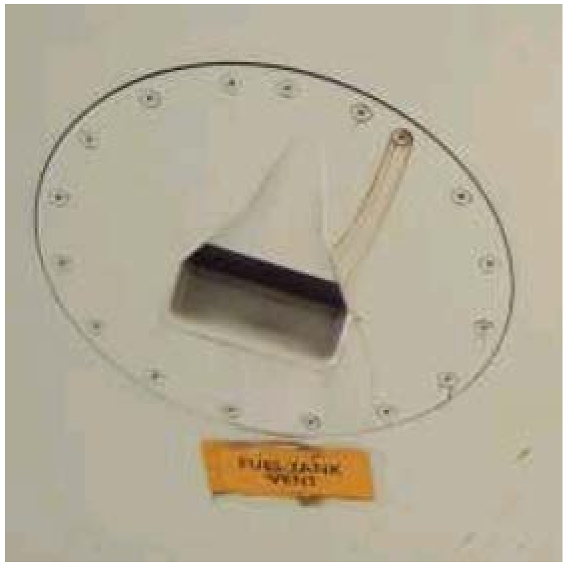
7. During a fuel jettisoning procedure, the aircraft is protected against running out of fuel by:

A. The crew remaining alert.
B. Preset jettison quantity switches.
C. Low fuel level float switches.

8. Why might adjustments have to be made to an aircraft's engine fuel system computer if the aircraft has been serviced with Jet B fuel instead of its normal Jet A fuel?

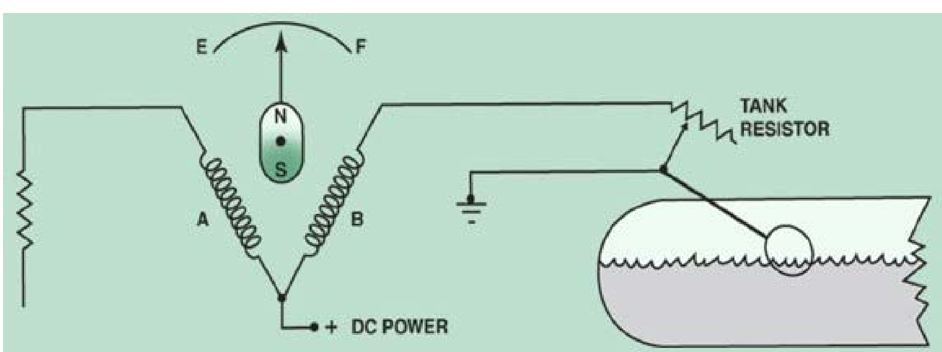
A. The specific gravity of the two fuels is different.
B. The difference in the viscosity of the two fuels.
C. The lack of the HITEC lubricant in the Jet B fuel.

9. Refer to the figure. The purpose of the unit depicted in the figure is to:



A. Provide the atmospheric venting requirements of the aircraft's fuel tank system.
B. Provide an extra fuel drain to remove water from the aircraft's fuel tank system.
C. Provide an automatic release of excessive fuel pressure within the fuel tank to prevent damage to the fuel tank system.

10. Refer to the figure. The type of fuel quantity gauge depicted in the figure will provide which type of readout of fuel quantity in that fuel tank?



A. Volume in gallons.
B. Mass in pounds.
C. Temperature in °C.

11. On an aircraft equipped with a capacitance type fuel quantity indication system that is graduated to read in pounds, the aircraft tanks are filled half-way with fuel and the ambient air temperature increases shortly after. If the fuel expands by 10% volume, the fuel quantity gauges would read:

A. An increase of 10%.
B. A decrease.
C. The same amount.

12. The fuel crossfeed tanks are in the aircraft's fuel system to facilitate:

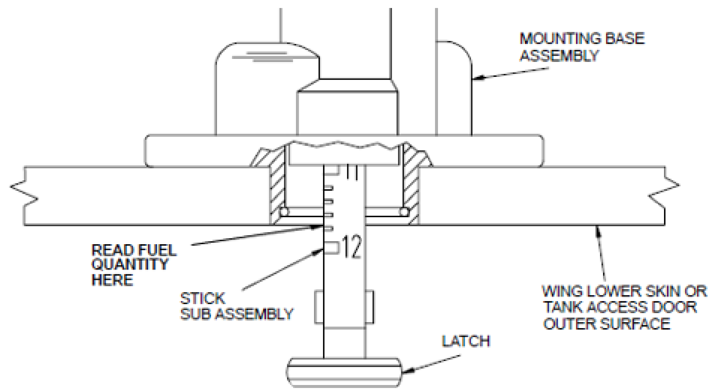
A. Refueling when only one fuel truck is in use.
B. Isolation of the engine from the fuel system in case of an engine fire.
C. The use of fuel to be fed to any engine from any fuel tank in the aircraft.

13. A "wide cut" fuel is:

A. More flammable than standard kerosene-type fuel.
B. Less volatile than a standard kerosene-type fuel.
C. Commonly used in civilian transport aircraft.

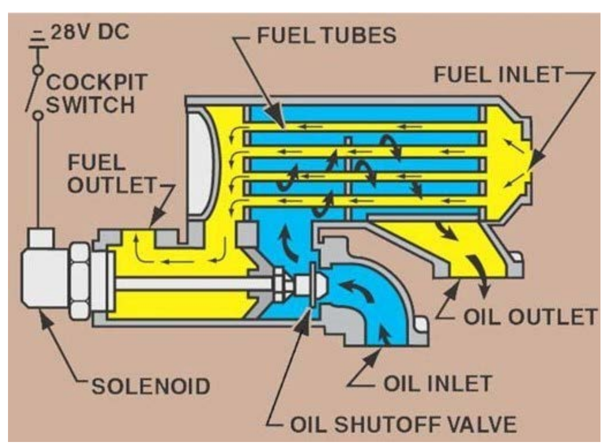
14. Refer to the figure. The type of manual fuel quantity gauge depicted in the figure is known as a:

A. Dripstick fuel quantity indicator.
B. Dropstick fuel quantity indicator.
C. Capacitance fuel quantity indicator.



15. Refer to the figure. The type of heat exchanger shown in the figure is a:

A. Air to liquid heat exchanger.
B. Liquid to liquid heat exchanger.



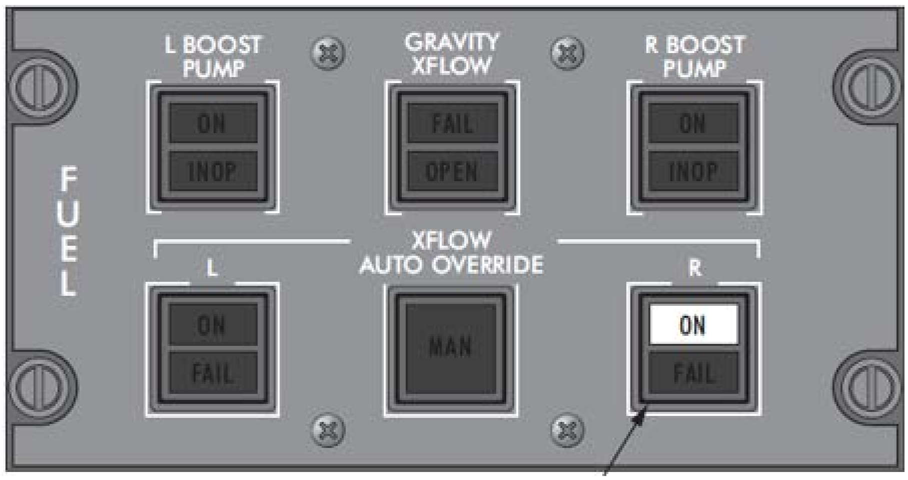
16. The purpose for heating jet fuel used in transport category aircraft is to:

A. Prevent detonation during takeoff.
B. To maintain a constant viscosity of the fuel.
C. To prevent ice from forming in the fuel and restricting or blocking the flow of fuel.

17. What is the function of a collector tank in the fuel system of the CRJ700?

    A. To provide fuel to and prevent cavitation of the fuel boost pumps.
    B. To prevent fuel surge due to extreme aircraft attitude changes.
    C. To provide the fuel to be consumed by the engines.

18. Refer to the figure. The **"ON"** light depicted in the figure is used to show the CRJ700 flight crew which of the following?



    A. The right fuel tank is automatically transferring fuel to the left fuel tank to correct an imbalance if fuel quantity.
    B. The left fuel tank is automatically transferring fuel to the right fuel tank to correct an imbalance if fuel quantity.
    C. The center fuel tank is automatically transferring fuel to the right fuel tank to correct an imbalance if fuel quantity.

19. Refer to the figure. The figure is depicting which type of refueling operation that is being conducted on the CRJ700 aircraft?

A. Gravity refueling of a single fuel tank.
B. Pressure refueling of a single fuel tank.
C. Pressure refueling of all fuel tanks as required.

20. Which of the following procedures is accomplished by the CRJ700 Fuel System Computer to automatically move fuel from the center tank to the left- and right-wing tanks until the center tank is empty?

A. Gravity crossflow.
B. Manual crossflow.
C. Fuel transfer.

21. Ohm's Law is given by the formula:

A. Voltage (V) = Current (I) x Resistance (R).
B. Voltage (V) = Current (I) / Resistance (R).
C. Current (I)= Voltage (V) x Resistance (R).

22. Electrical power is measured in units of:

A. Amperes.
B. Volts.
C. Watts.

23. Refer to the figure. The type of switch depicted in the figure is known as a:

A. Two position rocker switch.
B. Three position toggle switch.
C. One position microswitch.

24. Which type of switch is used in an aircraft to detect the position of a piece of equipment such as a landing gear being up or down?

A. Guarded switch.
B. Microswitch.
C. Bi-metallic switch.

25. Which type of switch is used in an aircraft that will activate an electrical circuit when a certain temperature value is reached?

A. Guarded switch.
B. Microswitch.
C. Bi-metallic switch.

26. Electrical switches that can sense and respond to the presence of material near it and used in systems such as landing gear indicating systems are known as:

A. Microswitches.
B. Proximity switches.
C. Magnetic switches.

27. Circuit breakers and fuses:

A. Protect electrical circuits by opening the electrical circuit before the wire gets hot enough to emit smoke.
B. Protect electrical circuits by reducing the amount of current flowing through the electrical circuit to no more than 50% of the normal amount.
C. Are only used in direct current (DC) electrical circuits.

28. If the reset button is pressed in on a circuit breaker, the circuit with the fault cleared will:

A. Be made and kept made.
B. Only be made if there is a fuse in the circuit.
C. Reset itself only after a delay of 20 seconds.

29. A current limiter:

A. Serves as a fuse with a low melting point that is used to isolate a complete electrical distribution bus in the event of a short circuit to that bus.
B. Serves as a circuit breaker that is used to isolate a complete electrical distribution bus in the event of a short circuit to that bus.
C. Serves as a fuse with a high melting point that is used to isolate a complete electrical distribution bus in the event of a short circuit to that bus.

30. Two 12-volt, 40 amp/hour batteries connected in series will produce:

A. 12 volts, 80 amp/hours.
B. 12 volts, 40 amp/hours.
C. 24 volts, 40/amp hours.

31. To increase electromagnetic force, one would:

A. Increase coil resistance.
B. Reduce current flow.
C. Increase current flow.

32. An electromotive force (EMF) is induced in a conductor rotating in a magnetic field by:

A. Capacitive reaction.
B. Electromagnetic induction.
C. The reverse current relay.

33. An electrical component that is an electromagnet with a fixed iron core that closes movable contact points when activated is referred to as a:

A. Relay.
B. Solenoid.

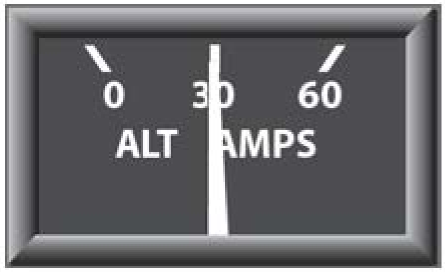
34. The force that produces the rotary motion of an armature in a DC motor is referred to as:

A. Electromotive force.
B. Torque force.
C. Perpendicular magnetic force.

35. A generator failure is usually indicated by:

   A. The current consuming devices failing to operate.
   B. The voltmeter reading increasing, the ammeter reading showing a discharge and a warning lamp illuminating.
   C. The ammeter reading decreasing or showing a discharge and a warning lamp illuminating.

36. Refer to the figure. What information is being displayed to the pilot as shown in the figure?



   A. A discharge of 30 amps in the electrical system.
   B. A load of 30 amps on the electrical system.

37. A short circuit in an electrical circuit would be caused:

   A. By a broken conductor between the power source and the item of equipment.
   B. By an open circuit between loads in parallel.
   C. When wiring between the power source and the item of equipment touches an earth ground.

38. In a single pole electrical circuit, if the positive conductor (wire) breaks and touches a metal aircraft's structure:

   A. The electrical component will continue to operate.
   B. The circuit breaker will pop open and the electrical component will not operate.
   C. The electrical component will only operate at half speed.

39. In a single pole circuit, if the positive conductor (wire) breaks but does not touch a metal aircraft's structure and is open circuited:

   A. The circuit breaker will pop open.
   B. The electrical component will not operate.
   C. The bus bar will overheat.

40. The earth ground return system of an aircraft is one:

   A. In which one lead from the battery and one lead from the component connected to the aircraft's structure.
   B. In which one lead from the battery and both leads from the component are connected to the aircraft's structure.
   C. In which the negative sides of system are connected directly to the positive sides of the battery.

41. Static discharge wicks are used on an aircraft:

A. To smooth the generator output.
B. To discharge static built up on the aircraft into the atmosphere.
C. To act as an earth ground return in a single pole electrical system.

42. The null field type static discharger provides an enhanced ability to do which of the following when compared to a carbon wick static discharger?

A. Radio noise suppression.
B. Quicker static discharge into the atmosphere.
C. Resist breaking due to stronger materials used in manufacturing.

43. Bonding straps are used on aircraft:

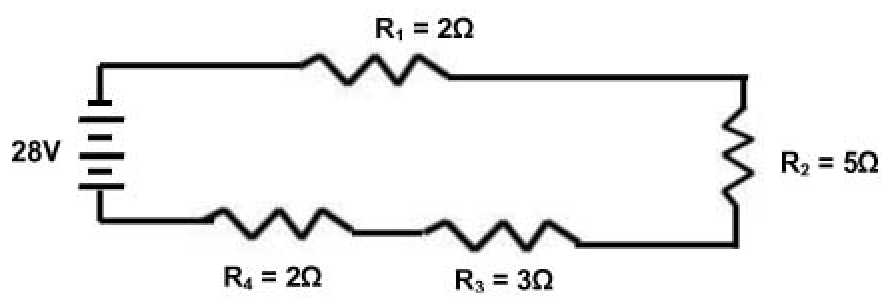
A. To provide an earth ground return.
B. To allow static electricity to flow from the aircraft structure to the static discharge wicks by maintaining the same electrical potential of all metal components.
C. To shorten the negative contact strips.

44. Ignition system wires are shielded:

A. To aid in radio noise suppression.
B. To prevent the high-energy current from reaching an earth ground before it reaches the engine igniter.
C. To maintain the same electrical potential of all metal components.

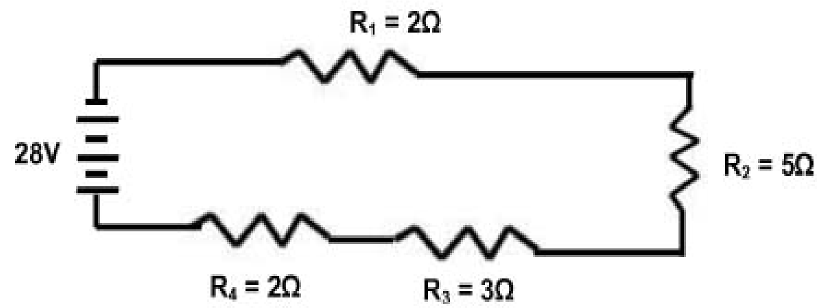
45. Refer to the figure. The total resistance of the electrical circuit in the figure is calculated to be:

A. 12 Ω.
B. 0.65 Ω.
C. 28 Ω.



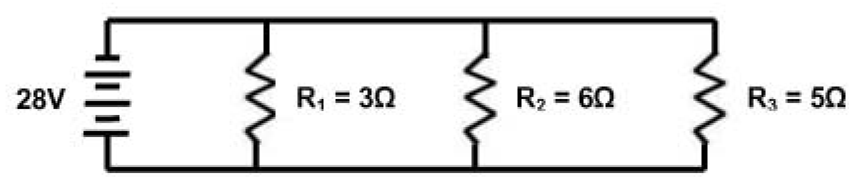
46. Refer to the figure. The total amount of current that would flow through the circuit in the figure is calculated to be:

A. 1 amp.
B. 2.33 amps.
C. 43.07 amps.



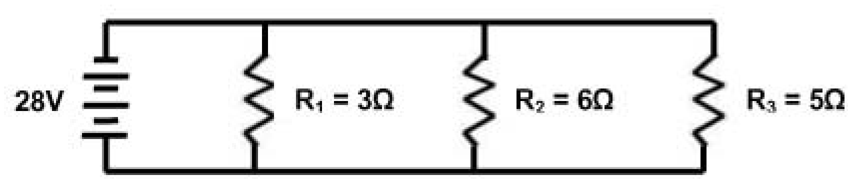
47. Refer to the figure. The total resistance of the electrical circuit in the figure is calculated to be:

A. 1.43 Ω.
B. 14 Ω.
C. 0.7 Ω.



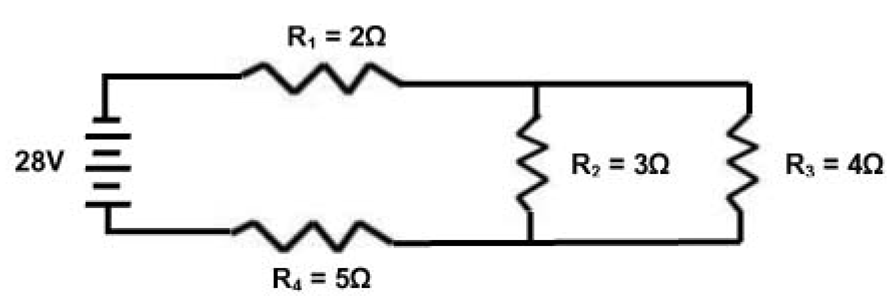
48. Refer to the figure. The total amount of current that would flow through the circuit in the figure is calculated to be:

A. 2 amps.
B. 28 amps.
C. 19.58 amps.



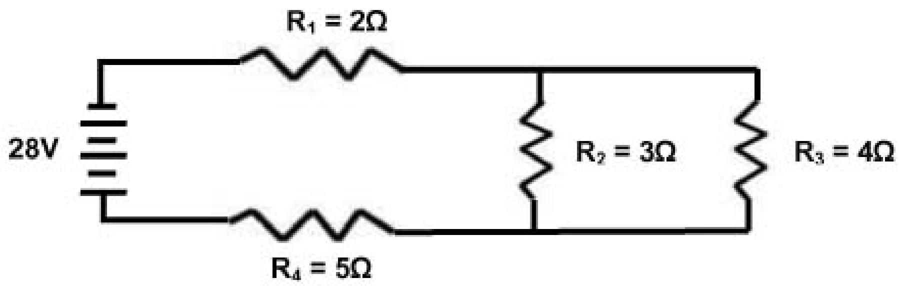
49. Refer to the figure. The total resistance of the electrical circuit is calculated to be:

A. 14 Ω.
B. 7.58 Ω.
C. 8.71 Ω.



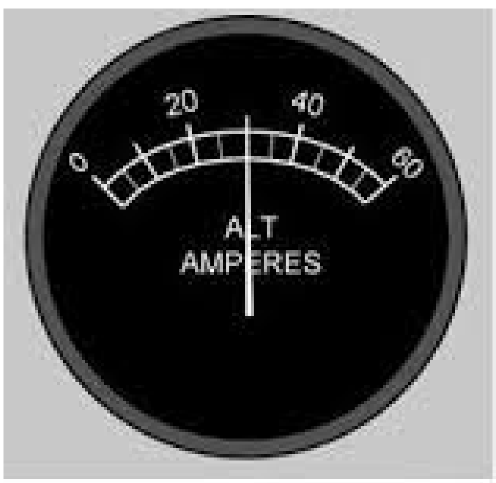
50. Refer to Figure 12. The total amount of power that would be consumed in the electrical circuit is calculated to be:

A. 89.88 watts.
B. 212.24 watts.
C. 56 watts.



51. **EXTRA CREDIT: Please write the answer to the extra credit question on the back side of your answer sheet. The question is worth up to 5 additional points.**

Refer to Figure 13. Describe what an indication of 20 amps if shown on the "Left Zero Ammeter" indicates and what an indication of -10 amps if shown on the "Center Zero Ammeter" indicates if you saw these indications during operation of an aircraft.



Undergraduate Course Assessment Form

Course: FSCI 1250 - Basic Flight Foundations
Semester Taught: Fall 2020
Number of Students in Course: 41

Student Learning Outcome Assessed	Assessment Results: (Indicate what % of class achieved a minimum 70%)	Benchmark achieved? (Benchmark: 80% of students will score a minimum of 70% = "C")
H. Use the techniques, skills, and modern technology necessary for professional practice.	Midterm Exam Question 18: 100% Midterm Exam Question 19: 93% Midterm Exam Question 73: 78% Final Exam Question 7: 90% Final Exam Question 12: 92% Final Exam Question 14: 97%	Overall: 91% Benchmark Achieved

Recommendations: Greater emphasis should be placed on areas determined to be weak in other Private Pilot flight courses to maximize value of content.

Note: Attached are the midterm and final exam given in this course in addition to the highest and lowest-scoring student attempts for these exams.

This Test has 41 attempts. For information on editing questions, click **More Help** below.

Test Canvas: Midterm Exam

The Test Canvas lets you add, edit, and reorder questions, as well as review a test. More Help

Question Settings

You can edit, delete, or change the point values of test questions on this page. If necessary, test attempts will be regraded after you submit your changes.

Description	
Instructions	
Total Questions	80
Total Points	79
Number of Attempts	41

Select: All None Select by Type: - Question Type -

Delete and Regrade Points Update and Regrade Hide Question Details

Multiple Choice: Which statement is true regarding rig...

Points: 1

Question Which statement is true regarding right of way rules?

Answer

- When two airplanes are converging, but not head-on, the faster airplane always has the right of way.
- When overtaking another aircraft traveling in the same direction, you must pass well clear on the left side of the other aircraft.
- ✔ When two airplanes are approaching head-on, you and the pilot of the other aircraft must alter course to the right.

Multiple Choice: Except when necessary for takeoff or ...

Points: 1

Question Except when necessary for takeoff or landing, when operating over open water or sparsely populated areas, an aircraft may not be operated closer than __________ from any person, vessel, vehicle, or structure?

Answer

- ✔ 500 feet
- 1,000 feet
- 2,000 feet
- ½ NM

☐ Multiple Choice: Except when necessary for takeoff or ...

Points: 1

Question	Except when necessary for takeoff or landing, when operating over any congested area of a city, town, or settlement, or over any open-air assembly of persons, no person may operate an aircraft below:
Answer	500 feet above the surface
	500 feet above any obstacle within 2000 feet of the aircraft
	1000 feet above the surface
	✔ 1000 feet above the highest obstacle within 2000 feet of the aircraft

☐ Multiple Choice: You have just started the airplane's ...

Points: 1

Question	You have just started the airplane's engine and are preparing to taxi to the runway for departure. You must contact ground control and receive instructions prior to:
Answer	Leaving the parking spot
	✔ Entering the airport movement area
	Taxiing onto the active runway for departure
	Entering the airport ramp area

☐ Multiple Choice: Runway Aiming Point markings are loca...

Points: 1

Question	Runway Aiming Point markings are located how far from the threshold?
Answer	100 feet
	500 feet
	✔ 1000 feet
	2000 feet

☐ Multiple Choice: Runway Touchdown Zone markings are se...

Points: 1

Question	Runway Touchdown Zone markings are separated by how many feet?
Answer	100 feet
	✔ 500 feet

1000 feet

2000 feet

True/False: Taxiway markings are white, while run...

Points: 1

Question	Taxiway markings are white, while runway markings are yellow.
Answer	True ✔ False

True/False: Runway holding position markings cons...

Points: 1

Question

Runway holding position markings consist of two solid yellow lines and two dashed yellow lines. A pilot needs a clearance prior to crossing when approaching from the side of the solid lines.

Answer

✔ True
False

Multiple Choice: What color are taxiway edge lights?

Points: 1

Question

What color are taxiway edge lights?

Answer

Green

✔ Blue

White

Yellow

Multiple Choice: How is a lighted land airport identif...

Points: 1

Question

How is a lighted land airport identified at night?

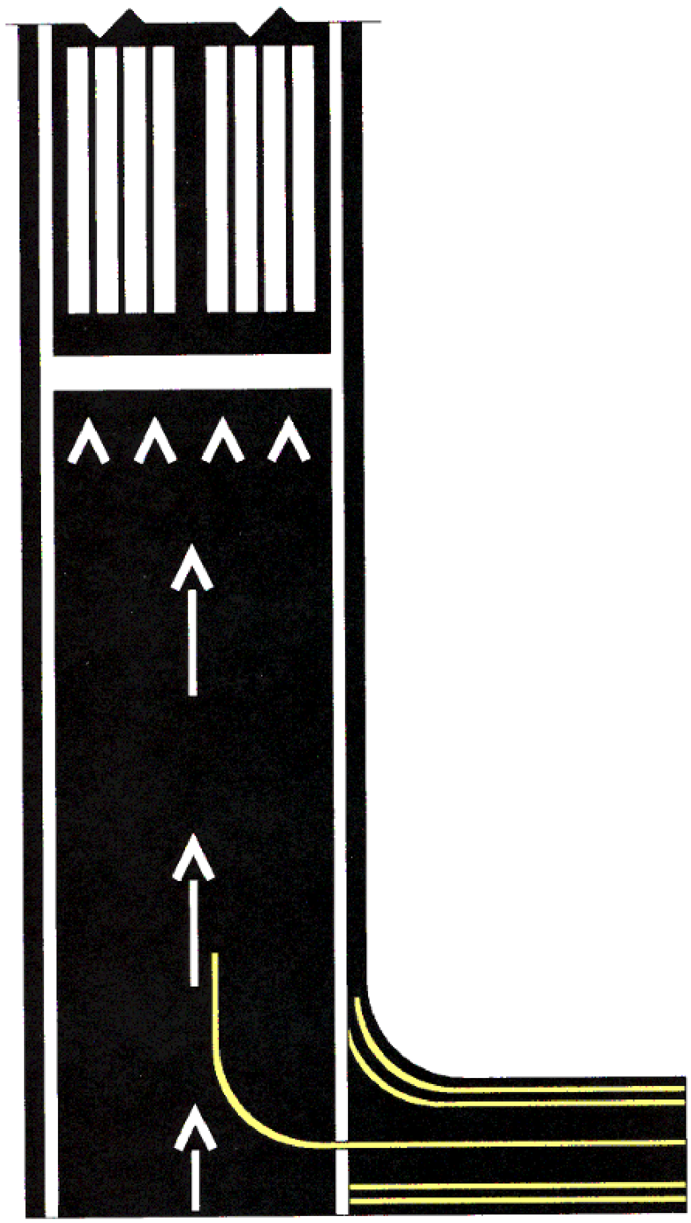
Answer	✔ White and green flashing beacon
	Yellow and white flashing beacon
	Yellow, white, and green flashing beacon

Multiple Choice: In the figure below, what does the ar...

Points: 1

Question

In the figure below, what does the area of pavement marked by white arrows represent?



Answer

✔ A displaced threshold

A blastpad/stopway

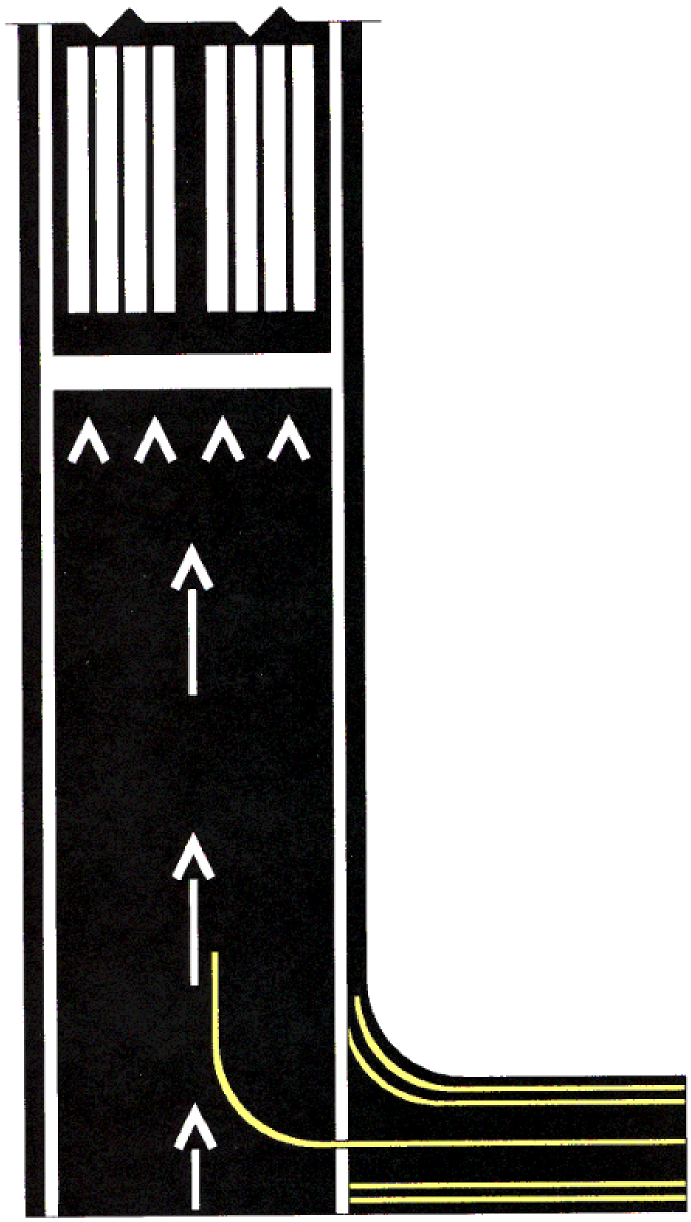
A runway under construction

The runway touchdown zone

Multiple Choice: In the figure below, what may the are...

Points: 1

Question In the figure below, what may the area marked by white arrows be used for?



Answer

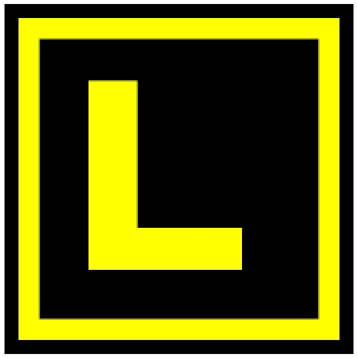
Taxi only

✓ Takeoff in the direction of the arrows

Landing in the direction of the arrows

Points: 1

Multiple Choice: What is the meaning of the sign below?

Question	What is the meaning of the sign below? 
Answer	✔ The aircraft is currently located on taxiway Lima The aircraft is approaching the intersection of taxiway Lima The aircraft is approaching the left of two parallel runways

Multiple Choice: What is an on-glideslope indication f...

Points: 1

Question	What is an on-glideslope indication from a VASI?
Answer	A red light over a red light ✔ A red light over a white light A white light over a white light A single horizontal line of lights made up of two red lights and two white lights

Multiple Choice: You receive the following taxi instru...

Points: 1

Question	You receive the following taxi instructions from Ground Control: “Billiken 20, taxi to runway 12R via A and B1.” This taxi route takes you across runway 5/23. You may legally taxi:
Answer	All the way to runway 12R, but must hold short of runway 12R. ✔ To the intersection of runway 5/23, where a further clearance must be received in order to cross. Onto runway 12R, but may not takeoff until a takeoff clearance is received from the control tower.

Multiple Choice: If ATC instructs you to “Ident,” what...

Points: 1

Question	If ATC instructs you to “Ident,” what do they want you to do?
Answer	✔ Press the “Ident” button on the transponder

Reply with your aircraft callsign

Confirm your location and altitude

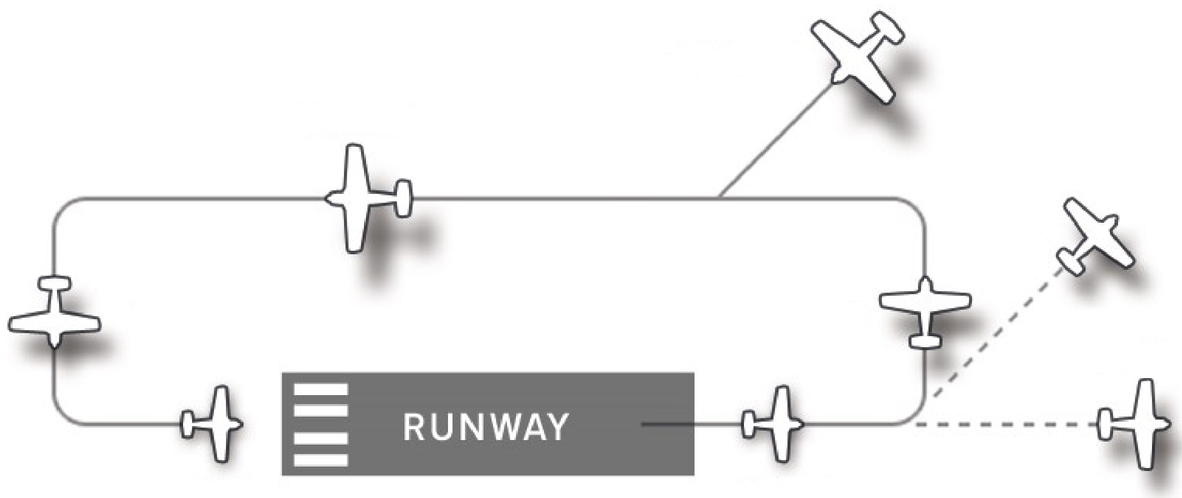
Set your transponder code to 1200

Hot Spot: Click on the airplane symbol located ...

Points: 1

Question Click on the airplane symbol located on a left crosswind.

Answer



Multiple Choice: A transponder code of 7700 should be ...

Points: 1

Question	A transponder code of 7700 should be used in what situation?
Answer	✔ Emergency
	Hijacking
	Loss of communications
	VFR operations

Multiple Choice: Using a network of ground stations an...

Points: 1

Question	Using a network of ground stations and specialized aircraft equipment, this system provides ATC highly accurate position and speed information for all aircraft, and it provides pilots real-time traffic position data and weather information.
Answer	VOR
	WAAS
	RAIM

ADS-B

Multiple Choice: Assume the current time is 2:00 PM (C...

Points: 1

Question	Assume the current time is 2:00 PM (Central Daylight Time). What is the current Zulu time?
Answer	7:00 8:00 14:00 ✔ 19:00

Multiple Choice: What is the meaning of the word “Stan...

Points: 1

Question	What is the meaning of the word “Standby” when used over the radio?
Answer	✔ Wait and I will call you Unable to comply with your request Proceed with your message Hold your present position

Multiple Choice: Which of the following is an appropri...

Points: 1

Question	Which of the following is an appropriate response when asked a yes/no question by ATC over the radio?
Answer	Yes Roger ✔ Affirmative Wilco

Multiple Choice: In the event of suspected communicati...

Points: 1

Question	In the event of suspected communications failure during a VFR training flight when returning to a Class D airport, what is the best course of action?
Answer	Squawk 7700, enter the airspace, and land immediately on the first available runway

✓ Observe the flow of traffic, enter the airspace, and wait for light gun signals

Choose a different airport; you may not enter the Class D airspace

Multiple Choice: In the event of radio communication f...

Points: 1

Question	In the event of radio communication failure, the control tower can provide instructions using a light gun. If while taxiing you saw a flashing red light coming from the tower, what is the appropriate action?
Answer	Stop immediately Takeoff immediately Return to your starting point on the airport ✓ Taxi clear of the runway

Multiple Choice: Additional airport data, such as runw...

Points: 1

Question	Additional airport data, such as runway information, fuel availability, hours of operation, and lighting availability, can be found in what publication?
Answer	✓ Chart Supplement Federal Aviation Regulations Notices to Airmen Publication Aeronautical Information Manual

Multiple Choice: FAR Part 61 deals with which of the f...

Points: 1

Question	FAR Part 61 deals with which of the following subjects?
Answer	✓ Certification of Pilots Pilot Schools Maintenance General Operating Rules

Multiple Choice: FAR Part 91 deals with which of the f...

Points: 1

Question	FAR Part 91 deals with which of the following subjects?

Answer	Certification of Pilots Pilot Schools Maintenance ✔ General Operating Rules

Multiple Choice: On Sectional and Terminal Area Charts...

Points: 1

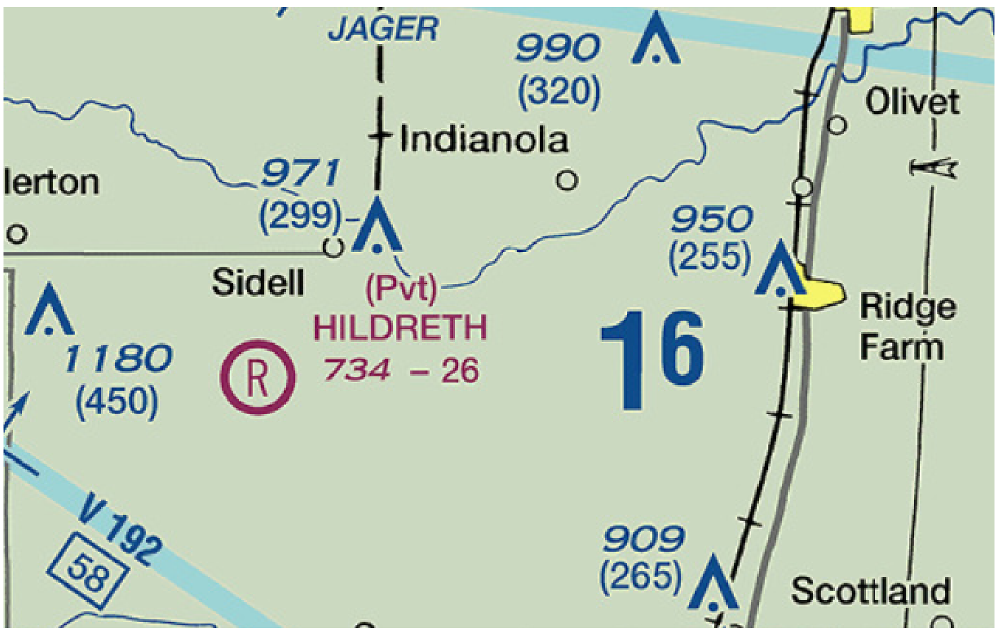
Question	On Sectional and Terminal Area Charts, towered airports are shown in what color?
Answer	✔ Blue Black Magenta Grey

Multiple Choice: Refer to the chart excerpt below. Wha...

Points: 1

Question

Refer to the chart excerpt below. What is the height above the ground (AGL) of the top of the obstacle located in the town of Ridge Farm?



Answer

✔ 255 feet

695 feet

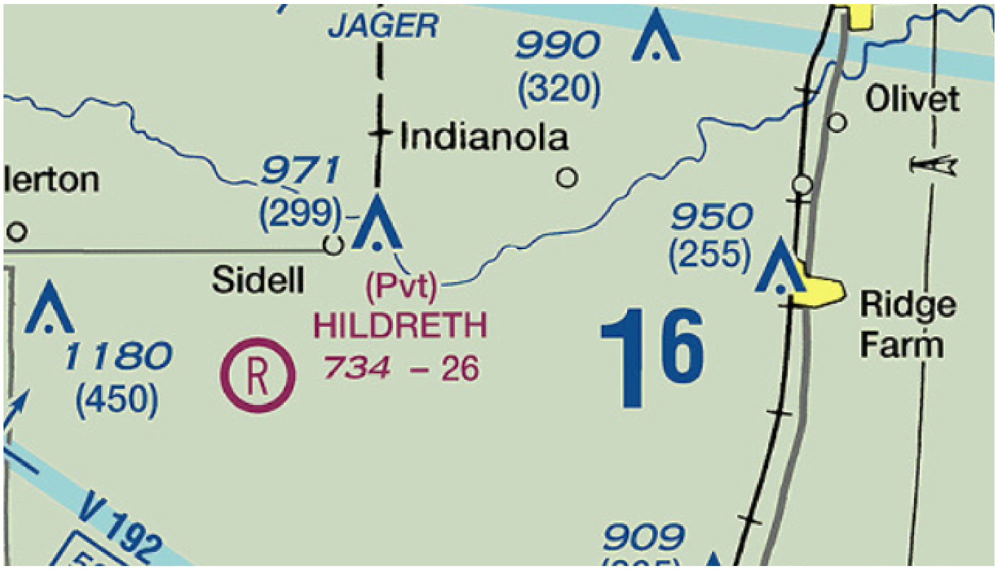
950 feet

Multiple Choice: Refer to the chart excerpt below. Wha...

Points: 1

Question

Refer to the chart excerpt below. What does the circled magenta R indicate?



Answer

A restricted area requiring ATC permission to enter

A private airport requiring the owner's permission to land

A public-use airport with an unpaved runway

Multiple Choice: Refer to the chart excerpt below. Wha...

Points: 1

Question

Refer to the chart excerpt below. What do the numbers 1^6 to the southwest of Ridge Farm indicate?

Answer

- Length in hundreds of feet of the longest runway in that sector
- Average elevation of the airports in the area
- Required visibility in miles for operating in that quadrant
- ✔ The highest elevation in hundreds of feet of terrain or obstacles in that quadrant

☐ Multiple Choice: Refer to the chart excerpt below. Wha...

Points: 1

Question

Refer to the chart excerpt below. What do the tick marks around the TAZ airport symbol indicate?

Answer

A rotating beacon is in operation from sunset to sunrise

Part time operation of the control tower

The runways are hard surface

✅ Services are available at the airport

☐ **Multiple Choice: Refer to the chart excerpt below. Wha...**

Points: 1

Question

Refer to the chart excerpt below. What is the elevation of TAZ airport?

Answer

- 400 feet
- 622 feet
- 860 feet
- 4000 feet

Multiple Choice: Refer to the chart excerpt below. Whi...

Points: 1

Question

Refer to the chart excerpt below. Which of the following statement(s) is/are true regarding TAZ airport?

\

Answer

- Airport lighting is available, but limitations exist
- The length of the longest runway is approximately 4000 feet
- Parachute operations take place in the vicinity of the airport
- All of the above

Multiple Choice: Refer to the chart excerpt below. Whe...

Points: 1

Question

Refer to the chart excerpt below. When operating near TAZ airport, the frequency 122.8 should be used for what purpose?

Answer	✓ Communicating your intentions to other aircraft in the area
	Communicating with the control tower
	Listening to the automated weather
	Reporting your position to approach control

☐ Multiple Choice: Refer to the chart excerpt below. Whi...

Points: 1

Question	Refer to the chart excerpt below. Which of the following best describes the airspace above TAZ airport?
Answer	✓ Class G at the surface extending up to 700 AGL
	Class G at the surface extending up to 1,200 AGL
	Class E at the surface extending up to 700 AGL
	Class E at the surface extending up to 18,000 MSL

☐ Multiple Choice: Where is Class E airspace most common...

Points: 1

Question	Where is Class E airspace most commonly located?
Answer	Surrounding the busiest airports in the nation
	From the surface to either 700 or 1200 AGL
	✓ From 700 or 1200 AGL up to the bottom of the overlying airspace
	At and above FL180 (18,000 MSL)

☐ Multiple Choice: What is magnetic variation?

Points: 1

Question	What is magnetic variation?
Answer	The change in heading required to compensate for the effects of wind
	✓ The angular difference between true and magnetic north
	The compass error caused by interference from electrical equipment in the aircraft

The slow drifting of the heading indicator requiring it to be periodically set to match the compass

Multiple Choice: Which statement is true regarding ope...

Points: 0

Question Which statement is true regarding operations in Class C airspace?

Answer

- A specific clearance must be received prior to entry
- ✔ A pilot may enter as soon as two way radio communications have been established
- A pilot may enter as soon as two way radio communications have been established

Multiple Choice: What are the basic VFR weather minimu...

Points: 1

Question What are the basic VFR weather minimums when operating an aircraft in Class B airspace?

Answer

- 1 mile visibility and clear of clouds
- ✔ 3 miles visibility and clear of clouds
- 3 miles visibility and 500 feet below, 1000 feet above, 2000 feet horizontally from clouds
- 5 miles visibility and 1000 feet below, 1000 feet above, 1 SM horizontally from clouds

Multiple Choice: How is Class A airspace identified on...

Points: 1

Question How is Class A airspace identified on a Sectional or Terminal Area Chart?

Answer

- A dashed blue line
- A shaded blue line
- A dashed magenta line
- ✔ Not depicted

True/False: When approaching a Class D airport fo...

Points: 1

Question When approaching a Class D airport for landing, you contact the tower and they respond with, “Aircraft calling tower, say again.” This is considered to be establishing two-way communication, and the Class D airspace may be entered.

Answer

- True
- ✔ False

Multiple Choice: During operations in Class G airspace...

Points: 1

Question	During operations in Class G airspace below 1,200 AGL during the day, what is the required visibility?
Answer	✅ 1 SM 2 SM 3 SM 5 SM

☐ **Multiple Choice: When operating below 10,000 MSL in Cl...**

Points: 1

Question	When operating below 10,000 MSL in Class E airspace, what are the basic VFR weather minimums?
Answer	1 mile visibility and clear of clouds 1 mile visibility and 500 feet below, 1000 feet above, 2000 feet horizontally from clouds ✅ 3 miles visibility and 500 feet below, 1000 feet above, 2000 feet horizontally from clouds 5 miles visibility and 1000 feet below, 1000 feet above, 1 SM horizontally from clouds

☐ **Multiple Choice: In which of the following areas is a ...**

Points: 1

Question	In which of the following areas is a transponder required?
Answer	Above 10,000 feet, excluding that airspace at and below 2,500 AGL In Class C and Class B airspace and within 30 NM of the Class B primary airport Above Class C airspace ✅ All of the above

☐ **Multiple Choice: Which statement is true regarding ope...**

Points: 1

Question	Which statement is true regarding operating under a special VFR clearance during the day?
Answer	The pilot must be instrument rated in an aircraft equipped for instrument flight ✅ One mile flight visibility is required and the flight must be operated clear of clouds Air traffic control will automatically issue a special VFR clearance if conditions warrant

☐ **Multiple Choice: What is the maximum airspeed allowed ...**

Points: 1

Question	What is the maximum airspeed allowed by regulations when operating below 2,500 AGL within 4 NM of a Class C or Class D airport?
Answer	150 knots ✔ 200 knots 250 knots Mach 1.0

☐ Multiple Choice: Which statement is true regarding fli...

Points: 1

Question	Which statement is true regarding flight in an alert area?
Answer	Permission is required from the controlling agency prior to entering Flight within is not allowed under any circumstances ✔ No authorization is required, but pilots should be extra cautious These areas are not charted, and therefore no specific requirements apply

☐ Multiple Choice: Refer to the chart excerpt below. Whi...

Points: 1

Question	Refer to the chart excerpt below. Which statement is true regarding flight in the special use airspace areas depicted?
Answer	✔ Permission is required from the controlling agency prior to entering Flight within is not allowed under any circumstances No authorization is required, but pilots should be extra cautious

☐ Multiple Choice: Where would a warning area typically ...

Points: 1

Question	Where would a warning area typically be located?
Answer	Around military bases to warn pilots of potentially hazardous military activity Above specific locations in Washington D.C. Above ground facilities that require increased security ✔ Extending from 3 miles outward along the coast

True/False: Generally, pilots are able to operate...

Points: 1

Question	Generally, pilots are able to operate VFR in airspace affected by a Temporary Flight Restriction without any specific clearance or communication requirements. However, extra vigilance is recommended.
Answer	True ✔ False

Multiple Choice: Which statement is true regarding fli...

Points: 1

Question	Which statement is true regarding flight in the vicinity of stadiums with more than 30,000 seats during major league sporting events?
Answer	Depending on the event, flight restrictions may or may not be in place; check the FAA website ✔ Flights are automatically restricted within a 3-mile radius below 3,000 AGL No flight restrictions exist, but pilots should be extra vigilant

Multiple Choice: According to Federal Aviation Regulat...

Points: 1

Question	According to Federal Aviation Regulations, who is responsible for ensuring the aircraft is in a condition for safe flight?
Answer	The mechanics The flight school ✔ The pilot The dispatch department

Multiple Choice: Which aircraft document is required t...

Points: 1

Question	Which aircraft document is required to be visible to passengers or crew?
Answer	Registration Certificate ✔ Airworthiness Certificate Operation Limitations Weight and Balance Data

True/False: An airworthiness certificate never ex...

Points: 1

Question	An airworthiness certificate never expires so long as the aircraft is maintained in accordance with the applicable regulations.

Answer	✔ True False

True/False: The operating limitations found in Se...

Points: 1

Question	The operating limitations found in Section 2 of the AFM function as recommendations from the aircraft manufacturer. Pilots may exceed a limitation if they determine it will be in the interest of operational efficiency.
Answer	True ✔ False

Multiple Choice: For which operation is an annual insp...

Points: 1

Question	For which operation is an annual inspection required?
Answer	✔ Any operation Only operations involving flying for hire Only when providing flight instruction Only when carrying passengers

Multiple Choice: An annual inspection was conducted on...

Points: 1

Question	An annual inspection was conducted on January 3 of this year. When will the next annual inspection be due?
Answer	December 31 of this year January 3 of next year ✔ January 31 of next year

Multiple Choice: Which of the following operations wou...

Points: 1

Question	Which of the following operations would require a 100-hour inspection to be conducted on the aircraft?
Answer	✔ Flights carrying passengers for hire Flights carrying cargo for hire Flights conducted in class B airspace All of the above

True/False: The annual inspection will satisfy th...

Points: 1

Question	The annual inspection will satisfy the 100-hour inspection requirement if the annual was conducted within the previous 100 hours of time in service.
Answer	✔ True False

☐ Multiple Choice: How often must the batteries in an EL...

Points: 1

Question	How often must the batteries in an ELT be replaced?
Answer	Every 12 calendar months Every 24 calendar months ✔ After half of their useful life or one hour of cumulative use

☐ Multiple Choice: How often must an ELT inspection be p...

Points: 1

Question	How often must an ELT inspection be performed?
Answer	Every 100 hours of time in service Every 30 days ✔ Every 12 calendar months Every 24 calendar months

☐ Multiple Choice: How often must a transponder inspecti...

Points: 1

Question	How often must a transponder inspection be performed?
Answer	Every 100 hours of time in service Every 30 days Every 12 calendar months ✔ Every 24 calendar months

☐ True/False: You are planning a 2.5 hour flight in...

Points: 1

Question	You are planning a 2.5 hour flight in an airplane with a recurring airworthiness directive (AD) due in only 1.5 hours. You may proceed without a special flight permit assuming the flight is to a destination where the AD can be complied with.
Answer	True ✔ False

Multiple Choice: After determining that an inoperative...

Points: 1

Question	After determining that an inoperative component is not required, which of the following actions must legally be completed prior to flight?
Answer	Placard the instrument or equipment “INOPERATIVE”
	Deactivate or remove the component
	Determine whether the inoperative equipment will create a safety hazard
	✔ All of the above

Multiple Choice: A list of instruments and equipment r...

Points: 1

Question	A list of instruments and equipment required to be operational for flight can be found in which of the following sources?
Answer	✔ FAR 91.205
	Chart Supplements
	Notices to Airmen
	Chapter 5 of the Aircraft Flight Manual

Multiple Choice: An aircraft that does not currently m...

Points: 1

Question	An aircraft that does not currently meet applicable airworthiness requirements, but is capable of safe flight, may be flown to a point where repairs can be made by obtaining a __________.
Answer	Operating Certificate
	Revised Registration Certificate
	Special VFR Clearance
	✔ Special Flight Permit

Multiple Choice: The alternate air control provides a ...

Points: 1

Question	The alternate air control provides a secondary source of air for what purpose?
Answer	Power for the gyroscopes
	Engine cooling

Carburetor intake

✔ Engine combustion

☐ True/False: Electrical power for starting the eng...

Points: 1

Question	Electrical power for starting the engine is provided by the aircraft battery.
Answer	✔ True False

☐ Multiple Choice: During cruise flight, you notice that...

Points: 1

Question	During cruise flight, you notice that the oil pressure appears to be decreasing, and the oil temperature is gradually increasing. What is the best course of action?
Answer	No need for concern as long as engine is running smoothly; continue the flight Suspect a gauge malfunction, monitor the engine gauges, and return to the airport ✔ Serious engine problems may be present; reduce throttle to minimum required RPM and prepare for potential off-airport landing Immediately shut down the engine and land in any field within gliding distance

☐ Multiple Choice: What is a function of the anti-servo ...

Points: 1

Question	What is a function of the anti-servo tab?
Answer	To act as a trim tab for the ailerons ✔ To reduce the tendency to overcontrol the airplane’s pitch To increase lift without increasing parasite drag To compensate for changes in altitude on the elevator

☐ Multiple Choice: VY is the best __________ of climb sp...

Points: 1

Question	V_Y is the best __________ of climb speed. This airspeed will produce the greatest altitude gain in a given __________.
Answer	✔ rate, time angle, time rate, horizontal distance

angle, horizontal distance

☐ Multiple Choice: The left turning tendency of an airpl...

Points: 1

Question	The left turning tendency of an airplane known as torque is caused by what?
Answer	✔ The clockwise rotation of the engine and the propeller turning the airplane counterclockwise The propeller blade descending on the right, producing more thrust than the ascending blade on the left The gyroscopic forces applied to the rotating propeller blades acting 90 degrees after the point the forces were applied The spiraling airflow from the propeller striking the vertical stabilizer and rudder

☐ Multiple Choice: Assuming a constant altitude is maint...

Points: 1

Question	Assuming a constant altitude is maintained, how does lift in slow flight compare to lift at cruise speeds?
Answer	Lift in slow flight is greater than lift during cruise flight due to the higher angle of attack Lift during cruise flight is greater than lift during slow flight due to the higher airspeed ✔ Lift is approximately the same in slow flight as it is during flight at cruise airspeeds

☐ Multiple Choice: What type of drag would be created at...

Points: 1

Question	What type of drag would be created at the intersection of the wing and the fuselage due to mixing of airflow?
Answer	Form Skin Friction ✔ Interference Induced

☐ Multiple Choice: Why is adverse yaw created during a t...

Points: 1

Question	Why is adverse yaw created during a turn?
Answer	✔ The ailerons are deflected during turn entry, resulting in more lift and more induced drag on one wing The rudder is deflected creating more drag on one side of the airplane

Lift is redirected during a bank, resulting in induced drag acting on one wing more than the other

One wing is moving faster than the other in the turn, creating more lift and more induced drag

Multiple Choice: What is the primary cause of overbank...

Points: 1

Question	What is the primary cause of overbanking tendency in steep turns?
Answer	The ailerons are deflected during the turn resulting in more lift on one wing The rudder is deflected during turns creating an additional force that increases bank angle ✔ One wing is moving faster than the other, creating more lift than the other wing The horizontal component of lift acts on the airplane to increase bank angle

Multiple Choice: Load factor is defined as the ratio o...

Points: 1

Question	Load factor is defined as the ratio of the total load the airplane is supporting to the ___________.
Answer	stall speed in the landing configuration maximum G's the structure can withstand maneuvering speed of the airplane ✔ weight of the airplane

True/False: Load factor and stall speed will alwa...

Points: 1

Question	Load factor and stall speed will always increase in a coordinated, constant-altitude turn.
Answer	✔ True False

Select: All None Select by Type: - Question Type -

Delete and Regrade Points Update and Regrade Hide Question Details

← OK

This Test has 41 attempts. For information on editing questions, click **More Help** below.

Test Canvas: Final Exam

The Test Canvas lets you add, edit, and reorder questions, as well as review a test. More Help

Question Settings

You can edit, delete, or change the point values of test questions on this page. If necessary, test attempts will be regraded after you submit your changes.

Description	
Instructions	
Total Questions	68
Total Points	68
Number of Attempts	41

Select: All None Select by Type: - Question Type -

Delete and Regrade Points Update and Regrade Hide Question Details

Points: 1

1. Multiple Choice: Which transponder code should be used...

Question	Which transponder code should be used in the event of a loss of communication?
Answer	1200
	7500
	✔ 7600
	7700

Points: 1

2. Multiple Choice: Runway Touchdown Zone markings are se...

Question	Runway Touchdown Zone markings are separated by how many feet?
Answer	100 feet ✓ 500 feet 1000 feet 2000 feet

Points: 1

3. Multiple Choice: The portion of a runway designated as...

Question	The portion of a runway designated as a displaced threshold may be used for which of the following operations?
Answer	Taxi only Landing in the direction of the arrows ✓ Taxi and takeoff in the direction of the arrows

Points: 1

4. Multiple Choice: Induced drag increases as the _____ i...

Question	Induced drag increases as the _____ increases.
Answer	Airplane's airspeed ✓ Angle of attack of the wing Total parasite drag

5. Multiple Choice: Vy is the best _____ of climb speed. ...

Points: 1

Question	Vy is the best _____ of climb speed. This airspeed will produce the greatest altitude gain in a given _____.
Answer	✔ rate; time rate; horizontal distance angle; time angle; horizontal distance

6. Multiple Choice: The turning tendency of an airplane k...

Points: 1

Question	The turning tendency of an airplane known as precession is caused by what?
Answer	The clockwise rotation of the engine and the propeller turning the airplane counterclockwise The propeller blade descending on the right, producing more thrust than the ascending blade on the left ✔ The gyroscopic forces applied to the rotating propeller blades acting 90 degrees after the point the forces were applied The airflow from the propeller striking the vertical stabilizer and rudder

7. Multiple Choice: If an airplane is maintaining altitud...

Points: 1

Question	If an airplane is maintaining altitude during a turn at 30 degrees of bank, the airplane will stall at _____ airspeed than during straight and level flight.
Answer	✔ a higher a lower

the same

☐ 8. Multiple Choice: How is adverse yaw created during a t...

Points: 1

Question	How is adverse yaw created during a turn?
Answer	The inside wing is creating more induced drag because it is moving slower The rudder is deflected creating more drag on one side of the airplane ✔ The ailerons are deflected during turn entry, resulting in more induced drag on one wing

☐ 9. Multiple Choice: Which of the following best describes...

Points: 1

Question	Which of the following best describes ground effect?
Answer	A sudden reduction in performance when within one wingspan of the ground A tendency of the airplane to settle to the surface earlier than desired ✔ An increase in lift and a decrease in induced drag when within one wingspan of the ground

☐ 10. Multiple Choice: Assuming the CG is within the allowab...

Points: 1

Question	Assuming the CG is within the allowable limits, what effect would an aft CG have on the airplane?
Answer	Increase in stability compared to an airplane with a forward CG ✔ Increase in performance compared to an airplane with a forward CG Difficulty flaring for landing

☐ **11. Multiple Choice: In an aircraft equipped with a vacuum...**

Points: 1

Question	In an aircraft equipped with a vacuum system, if the suction/vacuum gauge is indicating below the green arc during the engine run-up, what system or equipment will be affected?
Answer	The fuel system
	The oil system
	✔ The gyroscopic flight instruments
	The environmental system

☐ **12. Multiple Choice: In the event of a failure of the airc...**

Points: 1

Question	In the event of a failure of the aircraft's alternator/generator, which of the following indications would you expect to see on the electrical gauges?
Answer	An increase in voltage and a positive indication on the ammeter
	A decrease in voltage and a positive indication on the ammeter
	An increase in voltage and a negative indication on the ammeter
	✔ A decrease in voltage and a negative indication on the ammeter

☐ **13. Multiple Choice: Which of the following instrument ind...**

Points: 1

Question	Which of the following instrument indications would you expect if the static port became blocked?
Answer	Only the airspeed indicator would read incorrectly
	The heading indicator, attitude indicator, and turn coordinator would read incorrectly

The altimeter and VSI would read incorrectly

✅ The altimeter, VSI, and airspeed indicator would read incorrectly

☐ 14. Multiple Choice: In a fuel injected airplane, when wou...

Points: 1

Question	In a fuel injected airplane, when would the alternate air need to be opened?
Answer	✅ When the primary engine air intake becomes blocked When the pitot or static lines become blocked When the engine is operating at higher than normal temperatures due to restricted cooling airflow When carburetor ice is suspected

☐ 15. Multiple Choice: Which of the following best describes...

Points: 1

Question	Which of the following best describes a PIREP?
Answer	A forecast of hazardous conditions, such as wind shear or icing ✅ An in-flight report on current weather conditions made by a pilot A forecast of visibility and cloud heights across a large region making up several states A report of the current frontal activity and pressure systems

☐ 16. Multiple Choice: A SIGMET would be issued for which of...

Points: 1

Question	A SIGMET would be issued for which of the following conditions?

Answer	Light icing
	✓ Extreme turbulence
	Marginal VFR conditions

☐ **17. Multiple Choice: An AIRMET will be issued for which of...** Points: 1

Question	An AIRMET will be issued for which of the following conditions?
Answer	Moderate icing
	Moderate turbulence
	IFR conditions
	✓ All of the above

☐ **18. Multiple Choice: Which of the following wind shear con...** Points: 1

Question	Which of the following wind shear conditions would likely be most hazardous to an aircraft during takeoff or landing?
Answer	A crosswind abruptly shifting to a headwind
	✓ A headwind abruptly shifting to a tailwind
	A tailwind abruptly shifting to a headwind

☐ **19. Multiple Choice: It is typically recommended to remain...** Points: 1

Question	It is typically recommended to remain at least how many miles away from a thunderstorm?

Answer	5 miles 10 miles 15 miles ✔ 20 miles

☐ 20. Multiple Choice: Prior to the passage of a warm front,...

Points: 1

Question	Prior to the passage of a warm front, which of the following weather conditions would be most likely?
Answer	Cumulous clouds and possible thunderstorms ✔ Poor visibility and light-to-moderate precipitation Good visibility and unstable air

☐ 21. Multiple Choice: During the passage of a cold front, w...

Points: 1

Question	During the passage of a cold front, which of the following weather conditions would be most likely?
Answer	✔ Cumulous clouds, rain showers, and possible thunderstorms Stratus clouds and widespread light precipitation Cirrus clouds and possible structural icing

☐ 22. Multiple Choice: A front is best defined as:

Points: 1

Question	A front is best defined as:
Answer	✔ A boundary between two airmasses with different temperatures

A large area of relatively uniform humidity

An extended area of high pressure

☐ 23. **Multiple Choice: Hazards associated with structural ic...**

Points: 1

Question	Hazards associated with structural icing include which of the following?
Answer	Decrease in lift Increase in drag Increase in weight ✅ All of the above

☐ 24. **Multiple Choice: Which of the following conditions mus...**

Points: 1

Question	Which of the following conditions must be in place for the aircraft to accumulate ice on its exterior surfaces?
Answer	Frozen precipitation, such as snow or ice pellets Temperatures below 70 degrees Fahrenheit and high relative humidity ✅ Visible moisture and an aircraft surface temperature at or below freezing

☐ 25. **Multiple Choice: What type of fog forms due to surface...**

Points: 1

Question	What type of fog forms due to surface cooling and is common on clear, calm nights?
Answer	Advection

Radiation

Upslope

Steam

☐ 26. **Multiple Choice: Describe the weather conditions most ...**

Points: 1

Question	Describe the weather conditions most commonly associated with a temperature inversion.
Answer	Stable air and good visibility ✅ Stable air and restricted visibility Unstable air and good visibility Unstable air and restricted visibility

☐ 27. **Multiple Choice: Airflow around a low pressure system ...**

Points: 1

Question	Airflow around a low pressure system is _____ and _____.
Answer	Upward and clockwise Downward and clockwise ✅ Upward and counterclockwise Downward and counterclockwise

☐ 28. **Multiple Choice: In the northern hemisphere, Coriolis ...**

Points: 1

Question

In the northern hemisphere, Coriolis Force causes objects to be deflected to the _____.

Answer	✔ Right
	Left
	East
	West

29. Multiple Choice: According to Part 1 of the Federal Av... Points: 1

Question	According to Part 1 of the Federal Aviation Regulations, "night" begins at what time?
Answer	Sunset
	✔ The end of evening civil twilight
	45 minutes after sunset

30. Multiple Choice: As a private pilot, you may perform c... Points: 1

Question	As a private pilot, you may perform certain maintenance activities on an aircraft you own or operate. What is this known as?
Answer	Minor maintenance
	Minor alteration
	✔ Preventive maintenance
	Preventive alteration

31. Multiple Choice: Private pilots are required to have w... Points: 1

Question	Private pilots are required to have which of the following documents available in the aircraft when acting as Pilot in Command?
Answer	Medical Certificate Pilot Certificate Photo Identification ✔ All of the above

☐ 32. Multiple Choice: A pilot conducting operations requiri...

Points: 1

Question	A pilot conducting operations requiring a private pilot certificate must hold at least what class of medical certificate?
Answer	First Class Second Class ✔ Third Class

☐ 33. Multiple Choice: A 19-year old private pilot is issued...

Points: 1

Question	A 19-year old private pilot is issued a second class medical certificate. For operations requiring a private pilot certificate, how long will this medical certificate remain valid?
Answer	6 calendar months 12 calendar months 24 calendar months ✔ 60 calendar months

☐ 34. True/False: Assume a pilot conducted training and...

Points: 1

Question	Assume a pilot conducted training and completed a Private Pilot checkride in a Diamond DA20. That pilot will be restricted to flying only Diamond DA20 aircraft until passing a type rating in a different make/model.
Answer	True ✔ False

☐ 35. Multiple Choice: A complex airplane is an airplane wit...

Points: 1

Question	A complex airplane is an airplane with flaps, retractable landing gear, and:
Answer	✔ An adjustable pitch propeller A fuel injection system An engine with more than 200 horsepower A maximum operating altitude above 25,000 feet

☐ 36. True/False: Private pilots may log time as "Pilot...

Points: 1

Question	Private pilots may log time as "Pilot In Command" whenever they are the sole manipulator of the controls of an aircraft for which they are rated, even if there is another more experienced pilot in the cockpit.
Answer	✔ True False

☐ 37. Multiple Choice: A private pilot received a flight rev...

Points: 1

Question	A private pilot received a flight review on May 10 of this year. When is the next flight review required?
Answer	May 10, next year May 31, next year ✔ May 31, year after next

☐ 38. Multiple Choice: To act as pilot in command of an airc...

Points: 1

Question	To act as pilot in command of an aircraft carrying passengers, the pilot must have made at least three takeoffs and three landings in an aircraft of the same category and class within the preceding:
Answer	30 days ✔ 90 days 12 calendar months 24 calendar months

☐ 39. Multiple Choice: Which of the following limitations ap...

Points: 1

Question	Which of the following limitations apply to student pilots with a current solo endorsement
Answer	Minimum visibility during the day is always limited to 3 SM The student pilot may not land at any other airport without an additional logbook endorsement The pilot may not operate more 25 NM from the departure airport without an additional logbook endorsement ✔ All of the above

☐ 40. True/False: Private pilots may be compensated for...

Points: 1

Question	Private pilots may be compensated for any flight they conduct as long as that flight does not carry passengers.
Answer	True ✔ False

☐ **41. Multiple Choice: A private pilot conducts a flight car...**

Points: 1

Question	A private pilot conducts a flight carrying three additional passengers. The operating expenses for the flight total $400.00, and the pilot wishes to share these expenses with the passengers as much as possible. At a minimum, how much is the pilot required to contribute?
Answer	No contribution from the pilot is necessary ✔ $100.00 $200.00 $400.00

☐ **42. Multiple Choice: No person may attempt to act as a cre...**

Points: 1

Question	No person may attempt to act as a crewmember of an aircraft within ______ after consuming any alcoholic beverage or with a blood alcohol content of ______ or greater.
Answer	✔ 8 hours; 0.04 8 hours; 0.08 12 hours; 0.04 12 hours; 0.08

☐ **43. True/False: During cruise flight, passengers may ...**

Points: 1

Question	During cruise flight, passengers may remove their safety belt as long as it is refastened prior to landing.
Answer	✔ True False

☐ **44. Multiple Choice: According to regulations, what is the...**

Points: 1

Question	According to regulations, what is the fuel requirement for VFR flight during the day in an airplane?
Answer	Enough to complete the flight to the planned destination at normal cruising speed
	✔ Enough to fly to the first point of intended landing and to fly after that for 30 minutes at normal cruising speed
	Enough to fly to the first point of intended landing and to fly after that for 45 minutes at normal cruising speed
	Enough to fly to the first point of intended landing and to fly after that for 60 minutes at normal cruising speed

45. Multiple Choice: Except when necessary for takeoff or ...

Points: 1

Question	Except when necessary for takeoff or landing, when operating over any congested area of a city, town, or settlement, or over an open-air assembly of persons, no person may operate an aircraft below:
Answer	500 feet above the surface
	500 feet above any obstacle within 2000 feet of the aircraft
	1000 feet above the surface
	✔ 1000 feet above the highest obstacle within 2000 feet of the aircraft

46. Multiple Choice: For which operation is a 100-hour ins...

Points: 1

Question	For which operation is a 100-hour inspection required?
Answer	Any operation
	Any operation for hire
	✔ Only operations carrying persons for hire

Only operations carrying cargo for hire

☐ 47. True/False: The 100-hour inspection can take the ...

Points: 1

Question	The 100-hour inspection can take the place of the annual inspection if the 100-hour inspection was conducted within the previous 12 calendar months.
Answer	True ✔ False

☐ 48. Multiple Choice: How often must a transponder inspecti...

Points: 1

Question	How often must a transponder inspection be performed?
Answer	Every 30 days Every 100 hours of time in service Every 12 calendar months ✔ Every 24 calendar months

☐ 49. Multiple Choice: How often does an aircraft Airworthin...

Points: 1

Question	How often does an aircraft Airworthiness Certificate expire?
Answer	Every 12 calendar months Every 24 calendar months Every 3 years ✔ It does not expire assuming the aircraft is maintained in accordance with the applicable FAR’s

50. Multiple Choice: How often must an ELT inspection be p...

Points: 1

Question	How often must an ELT inspection be performed?
Answer	Every 30 days Every 100 hours of time in service ✔ Every 12 calendar months Every 24 calendar months

51. Multiple Choice: How often must the batteries in an EL...

Points: 1

Question	How often must the batteries in an ELT be replaced?
Answer	Every 12 calendar months Every 24 calendar months ✔ After half of their useful life or one hour of cumulative use

52. Multiple Choice: Where would a warning area typically ...

Points: 1

Question	Where would a warning area typically be located?
Answer	Around military bases to warn pilots of potentially hazardous military activity Above specific locations in Washington D.C. Above ground facilities that require increased security ✔ Extending from 3 miles outward along the coast

☐ 53. Multiple Choice: Which statement is true regarding fli...

Points: 1

Question	Which statement is true regarding flight in a restricted area?
Answer	These areas are not charted, and therefore no specific requirements apply No authorization is required, but pilots should be extra cautious ✔ Permission is required from the controlling agency prior to entry Flight within is not allowed under any circumstances

☐ 54. Multiple Choice: In which of the following areas is a ...

Points: 1

Question	In which of the following areas is a transponder required?
Answer	✔ In and above Class C airspace Airspace within 30 NM of a Class C primary airport In Class D airspace All of the above

☐ 55. Multiple Choice: When operating below 10,000 MSL in Cl...

Points: 1

Question	When operating below 10,000 MSL in Class E airspace, what are the basic VFR weather minimums?
Answer	1 mile visibility and clear of clouds 1 mile visibility and 500 feet below, 1000 feet above, 2000 feet horizontally from clouds

3 miles visibility and 500 feet below, 1000 feet above, 2000 feet horizontally from clouds

5 miles visibility and 1000 feet below, 1000 feet above, 1 SM horizontally from clouds

Points: 1

56. Multiple Choice: What are the basic VFR weather minimu...

Question	What are the basic VFR weather minimums when operating an aircraft in Class B airspace?
Answer	1 mile visibility and clear of clouds 3 miles visibility and clear of clouds 3 miles visibility and 500 feet below, 1000 feet above, 2000 feet horizontally from clouds 5 miles visibility and 1000 feet below, 1000 feet above, 1 SM horizontally from clouds

Points: 1

57. Multiple Choice: Which statement is true regarding ope...

Question	Which statement is true regarding operations in Class C airspace?
Answer	A specific clearance must be received prior to entry A pilot may enter as soon as two way radio communications have been established A private pilot certificate is required to enter; student pilot operations are not authorized

Points: 1

58. Multiple Choice: Where is Class G airspace typically l...

Question

Where is Class G airspace typically located in our area?

Answer

- ✔ From the surface to either 700 or 1200 AGL
- From 700 or 1200 AGL to the bottom of the overlying airspace
- Surrounding the busiest airports in the nation
- At and above FL180 (18,000 MSL)

☐ 59. Multiple Choice: Winds are reported to be from 330° at...

Points: 1

Question Winds are reported to be from 330° at 20 knots. You plan on departing from runway 30R. Which of the following would be the most reasonable estimation of headwind and crosswind components?

Answer

- Headwind: 15 knots, Crosswind: 15 knots
- Headwind: 10 knots, Crosswind: 17 knots
- ✔ Headwind: 17 knots, Crosswind: 10 knots

☐ 60. Multiple Choice: Which of the following conditions wil...

Points: 1

Question Which of the following conditions will result in improved cruise performance?

Answer

- High pressure
- Light airplane
- Cold temperature
- ✔ All of the above

☐ 61. Multiple Choice: If the outside air temperature at the...

Points: 1

Question	If the outside air temperature at the airport is warmer than standard, the density altitude will be:
Answer	Equal to pressure altitude
	✔ Higher than pressure altitude
	Lower than pressure altitude
	Unable to determine without more information

☐ 62. Multiple Choice: At 3,000 feet, the outside air temper...

Points: 1

Question	At 3,000 feet, the outside air temperature is 9°C. How does this compare to the standard temperature at this altitude?
Answer	✔ Equal to standard
	Above standard
	Below standard

☐ 63. Multiple Choice: Refer to the weather products below.&...

Points: 1

Question

Refer to the weather products below. What local (central standard) time was the KCPS METAR issued?

```
KCPS 061553Z 21003KT 10SM BKN055 03/M03 A3027 RMK AO2 SLP253 T00331033

BLV UA /OV TOY180030/TM 1613/FL150/TP MD80/TA M11/IC MOD CLR 080/RM ZKC FDC

KCPS 061140Z 0612/0712 23007KT 5SM SN OVC030
  FM061700 29008KT 2SM SN OVC020
  FM062000 33008KT 6SM OVC028
  FM070000 35007KT P6SM BKN035
  FM070200 35006KT P6SM SKC

FT  3000    6000    9000   12000   18000   24000  30000  34000  39000
COU 3513 3218-06 2641-06 2747-11 2773-22 2896-32 781047 770955 782357
SGF 3210 3019-03 2537-04 2836-07 2773-19 2889-30 289746 770054 772958
STL 3115 2917-06 2640-08 2755-12 2777-23 7801-32 781747 771655 782357
DIK      2915-14 2822-13 2929-20 3234-28 3043-39 305851 296757 296158
GFK 3015 3119-16 3027-18 3036-24 3249-33 3254-41 315953 306456 306456
```

Answer

6:15

✔ 9:53

11:40

15:53

☐ **64. Multiple Choice: Refer to the weather products below.&...**

Points: 1

Question

Refer to the weather products below. What surface temperature was observed at KCPS?

```
KCPS 061553Z 21003KT 10SM BKN055 03/M03 A3027 RMK AO2 SLP253 T00331033

BLV UA /OV TOY180030/TM 1613/FL150/TP MD80/TA M11/IC MOD CLR 080/RM ZKC FDC

KCPS 061140Z 0612/0712 23007KT 5SM SN OVC030
  FM061700 29008KT 2SM SN OVC020
  FM062000 33008KT 6SM OVC028
  FM070000 35007KT P6SM BKN035
  FM070200 35006KT P6SM SKC

FT  3000    6000    9000    12000   18000   24000   30000  34000  39000
COU 3513 3218-06 2641-06 2747-11 2773-22 2896-32 781047 770955 782357
SGF 3210 3019-03 2537-04 2836-07 2773-19 2889-30 289746 770054 772958
STL 3115 2917-06 2640-08 2755-12 2777-23 7801-32 781747 771655 782357
DIK      2915-14 2822-13 2929-20 3234-28 3043-39 305851 296757 296158
GFK 3015 3119-16 3027-18 3036-24 3249-33 3254-41 315953 306456 306456
```

Answer

-3 degrees C

2 degrees C

✔ 3 degrees C

10 degrees C

☐ **65. Multiple Choice: Refer to the weather products below. ...**

Points: 1

Question

Refer to the weather products below. Which of the following is forecast at KCPS for the morning of the 6th?

```
KCPS 061553Z 21003KT 10SM BKN055 03/M03 A3027 RMK AO2 SLP253 T00331033

BLV UA /OV TOY180030/TM 1613/FL150/TP MD80/TA M11/IC MOD CLR 080/RM ZKC FDC

KCPS 061140Z 0612/0712 23007KT 5SM SN OVC030
  FM061700 29008KT 2SM SN OVC020
  FM062000 33008KT 6SM OVC028
  FM070000 35007KT P6SM BKN035
  FM070200 35006KT P6SM SKC

FT  3000    6000    9000    12000   18000   24000   30000  34000  39000
COU 3513 3218-06 2641-06 2747-11 2773-22 2896-32 781047 770955 782357
SGF 3210 3019-03 2537-04 2836-07 2773-19 2889-30 289746 770054 772958
STL 3115 2917-06 2640-08 2755-12 2777-23 7801-32 781747 771655 782357
DIK      2915-14 2822-13 2929-20 3234-28 3043-39 305851 296757 296158
GFK 3015 3119-16 3027-18 3036-24 3249-33 3254-41 315953 306456 306456
```

Answer

Rain

✔ Moderate snow

Gusty winds

Broken cloud coverage

☐ 66. Multiple Choice: Refer to the weather products below.A...

Points: 1

Question

Refer to the weather products below.A pilot in the vicinity of KBLV is reporting what type of flight hazard?


```
KCPS 061553Z 21003KT 10SM BKN055 03/M03 A3027 RMK AO2 SLP253 T00331033

BLV UA /OV TOY180030/TM 1613/FL150/TP MD80/TA M11/IC MOD CLR 080/RM ZKC FDC

KCPS 061140Z 0612/0712 23007KT 5SM SN OVC030
  FM061700 29008KT 2SM SN OVC020
  FM062000 33008KT 6SM OVC028
  FM070000 35007KT P6SM BKN035
  FM070200 35006KT P6SM SKC

FT  3000    6000    9000    12000   18000   24000   30000  34000  39000
COU 3513 3218-06 2641-06 2747-11 2773-22 2896-32 781047 770955 782357
SGF 3210 3019-03 2537-04 2836-07 2773-19 2889-30 289746 770054 772958
STL 3115 2917-06 2640-08 2755-12 2777-23 7801-32 781747 771655 782357
DIK      2915-14 2822-13 2929-20 3234-28 3043-39 305851 296757 296158
GFK 3015 3119-16 3027-18 3036-24 3249-33 3254-41 315953 306456 306456
```


Answer

✔ Moderate icing

Moderate turbulence

Thunderstorms in the vicinity

Wind shear

☐ 67. **Multiple Choice: Refer to the weather products below.&...**

Points: 1

Question

Refer to the weather products below. You have a flight planned for the 6th departing from KCPS at approximately noon local (central standard) time. According to the TAF, what cloud coverage and cloud height should be expected for the time of your departure?

```
KCPS 061553Z 21003KT 10SM BKN055 03/M03 A3027 RMK AO2 SLP253 T00331033

BLV UA /OV TOY180030/TM 1613/FL150/TP MD80/TA M11/IC MOD CLR 080/RM ZKC FDC

KCPS 061140Z 0612/0712 23007KT 5SM SN OVC030
  FM061700 29008KT 2SM SN OVC020
  FM062000 33008KT 6SM OVC028
  FM070000 35007KT P6SM BKN035
  FM070200 35006KT P6SM SKC

FT  3000    6000    9000    12000   18000   24000   30000  34000  39000
COU 3513 3218-06 2641-06 2747-11 2773-22 2896-32 781047 770955 782357
SGF 3210 3019-03 2537-04 2836-07 2773-19 2889-30 289746 770054 772958
STL 3115 2917-06 2640-08 2755-12 2777-23 7801-32 781747 771655 782357
DIK      2915-14 2822-13 2929-20 3234-28 3043-39 305851 296757 296158
GFK 3015 3119-16 3027-18 3036-24 3249-33 3254-41 315953 306456 306456
```

Answer

Overcast 300

✅ Overcast 2000

Overcast 2800

Overcast 3000

☐ 68. **Multiple Choice: Refer to the weather products below.&...**

Points: 1

Question

Refer to the weather products below. What wind speed and direction would be expected for a flight in the vicinity of STL at 6,000 feet?

```
KCPS 061553Z 21003KT 10SM BKN055 03/M03 A3027 RMK AO2 SLP253 T00331033

BLV UA /OV TOY180030/TM 1613/FL150/TP MD80/TA M11/IC MOD CLR 080/RM ZKC FDC

KCPS 061140Z 0612/0712 23007KT 5SM SN OVC030
  FM061700 29008KT 2SM SN OVC020
  FM062000 33008KT 6SM OVC028
  FM070000 35007KT P6SM BKN035
  FM070200 35006KT P6SM SKC

FT  3000    6000    9000   12000   18000   24000  30000  34000  39000
COU 3513 3218-06 2641-06 2747-11 2773-22 2896-32 781047 770955 782357
SGF 3210 3019-03 2537-04 2836-07 2773-19 2889-30 289746 770054 772958
STL 3115 2917-06 2640-08 2755-12 2777-23 7801-32 781747 771655 782357
DIK      2915-14 2822-13 2929-20 3234-28 3043-39 305851 296757 296158
GFK 3015 3119-16 3027-18 3036-24 3249-33 3254-41 315953 306456 306456
```

Answer

- ✔ 290 degrees at 17 knots
- 170 degrees at 29 knots
- 170 degrees at 6 knots
- 320 degrees at 18 knots

Select: All None Select by Type: - Question Type -

Delete and Regrade | Points | Update and Regrade | Hide Question Details

← **OK**

Blackboard learn

Home Blue Course Evaluations Ac Ryan Boyer 39

Grade Center **Grade Test: Midterm Exam** Edit Mode is: ON ?

Grade Test: Midterm Exam

Assign a grade and feedback for the current test attempt. Expand the ***Test Information*** *section to clear the student's attempt or edit the test. More Help*

Jump to... Hide User Names

Viewing 18 of 41 gradable items

(Attempt 1 of 1)

Test Information

Current Grade	47.00000 out of 79 points Grade based on Last Evaluated Attempt
Status	Completed
Attempt Score	47 out of 79 points
Time Elapsed	1 hour, 15 minutes out of 1 hour and 15 minutes
Started Date	10/13/20 8:03 AM Access Log
Submitted Date	10/13/20 9:18 AM LATE
Due Date	10/13/20 9:15 AM
Clear Attempt	Clear Attempt *Click* ***Clear Attempt*** *to clear this user's attempt.*
Edit Test	Edit Test *Click* ***Edit Test*** *to make changes.*
Instructions	

QUESTION 1: MULTIPLE CHOICE 0 **out of 1 points**

Which statement is true regarding right of way rules?

Given Answer: When overtaking another aircraft traveling in the same direction, you must pass well clear on the left side of the other aircraft.

Correct Answer: When two airplanes are approaching head-on, you and the pilot of the other aircraft must alter course to the right.

QUESTION 2: MULTIPLE CHOICE 1 **out of 1 points**

Except when necessary for takeoff or landing, when operating over open water or sparsely populated areas, an aircraft may not be operated closer than __________ from any person, vessel, vehicle, or structure?

Given Answer: 500 feet

Exit Save and Exit

QUESTION 3: MULTIPLE CHOICE

1 out of 1 points

Except when necessary for takeoff or landing, when operating over any congested area of a city, town, or settlement, or over any open-air assembly of persons, no person may operate an aircraft below:

Given Answer: 1000 feet above the highest obstacle within 2000 feet of the aircraft

Correct Answer: 1000 feet above the highest obstacle within 2000 feet of the aircraft

QUESTION 4: MULTIPLE CHOICE

0 out of 1 points

You have just started the airplane's engine and are preparing to taxi to the runway for departure. You must contact ground control and receive instructions prior to:

Given Answer: Taxiing onto the active runway for departure

Correct Answer: Entering the airport movement area

QUESTION 5: MULTIPLE CHOICE

1 out of 1 points

Runway Aiming Point markings are located how far from the threshold?

Given Answer: 1000 feet

Correct Answer: 1000 feet

QUESTION 6: MULTIPLE CHOICE

1 out of 1 points

Runway Touchdown Zone markings are separated by how many feet?

Given Answer: 500 feet

Correct Answer: 500 feet

QUESTION 7: TRUE/FALSE

1 out of 1 points

Taxiway markings are white, while runway markings are yellow.

Given Answer: False

Correct Answer: False

QUESTION 8: TRUE/FALSE

1 out of 1 points

Runway holding position markings consist of two solid yellow lines and two dashed yellow lines. A pilot needs a clearance prior to crossing when approaching from the side of the solid lines.

Exit Save and Exit

Given Answer: True
Correct Answer: True

QUESTION 9: MULTIPLE CHOICE

1 out of 1 points

What color are taxiway edge lights?

Given Answer: Blue

Correct Answer: Blue

QUESTION 10: MULTIPLE CHOICE

1 out of 1 points

How is a lighted land airport identified at night?

Given Answer: White and green flashing beacon

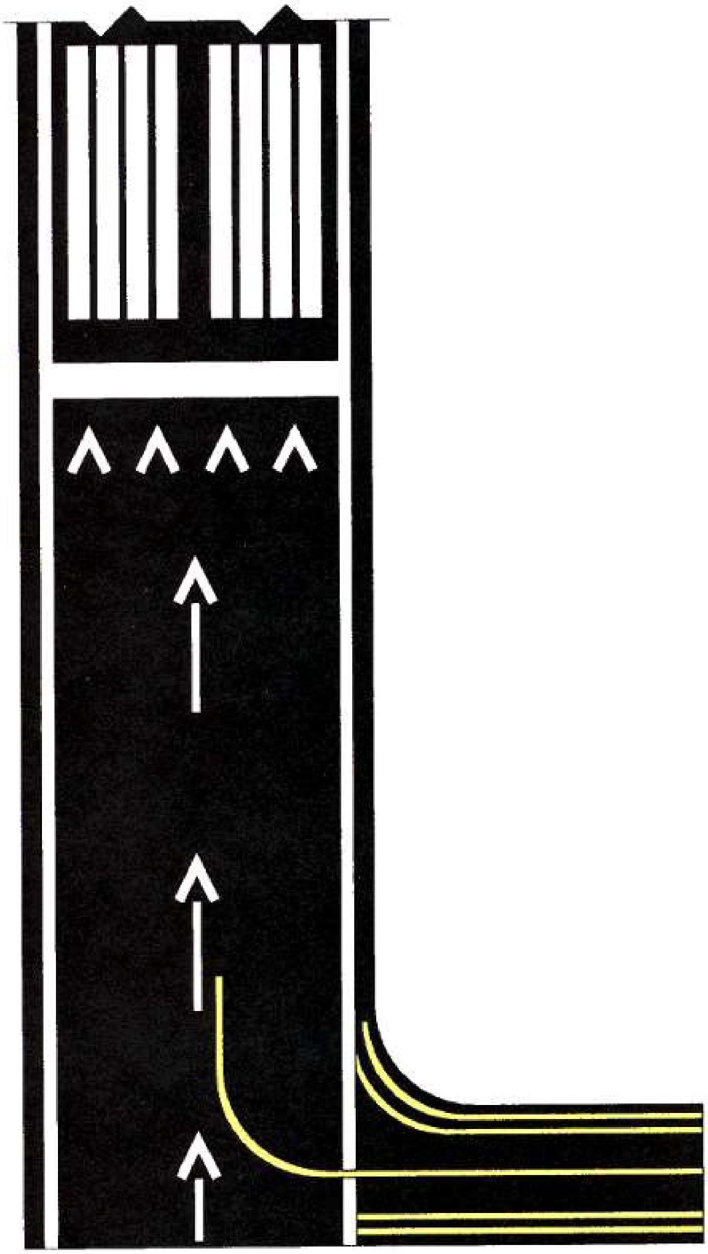
Correct Answer: White and green flashing beacon

QUESTION 11: MULTIPLE CHOICE

1 out of 1 points

In the figure below, what does the area of pavement marked by white arrows represent?

Exit Save and Exit



Given Answer: A displaced threshold

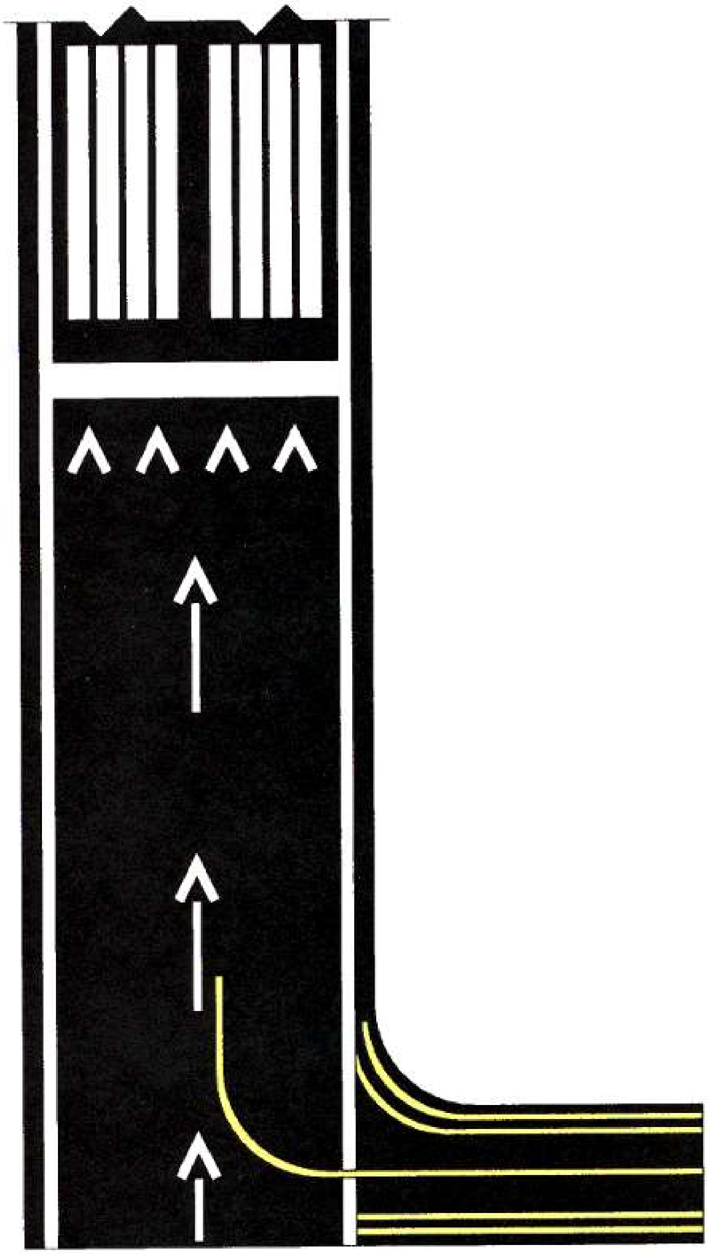
Correct Answer: A displaced threshold

QUESTION 12: MULTIPLE CHOICE

1 out of 1 points

In the figure below, what may the area marked by white arrows be used for?

Exit Save and Exit

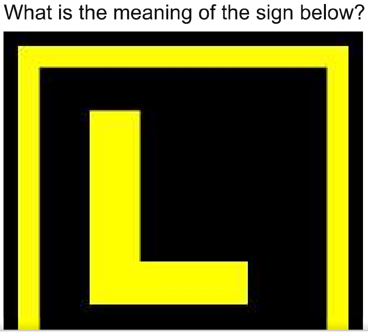


Given Answer: Takeoff in the direction of the arrows

Correct Answer: Takeoff in the direction of the arrows

QUESTION 13: MULTIPLE CHOICE 0 out of 1 points

What is the meaning of the sign below?



Exit Save and Exit

Given Answer: The aircraft is approaching the intersection of taxiway Lima

Correct Answer: The aircraft is currently located on taxiway Lima

QUESTION 14: MULTIPLE CHOICE

0 out of 1 points

What is an on-glideslope indication from a VASI?

Given Answer: A single horizontal line of lights made up of two red lights and two white lights

Correct Answer: A red light over a white light

QUESTION 15: MULTIPLE CHOICE

0 out of 1 points

You receive the following taxi instructions from Ground Control: “Billiken 20, taxi to runway 12R via A and B1.” This taxi route takes you across runway 5/23. You may legally taxi:

Given Answer: All the way to runway 12R, but must hold short of runway 12R.

Correct Answer: To the intersection of runway 5/23, where a further clearance must be received in order to cross.

QUESTION 16: MULTIPLE CHOICE

0 out of 1 points

If ATC instructs you to “Ident,” what do they want you to do?

Given Answer: Set your transponder code to 1200

Correct Answer: Press the “Ident” button on the transponder

QUESTION 17: HOT SPOT

0 out of 1 points

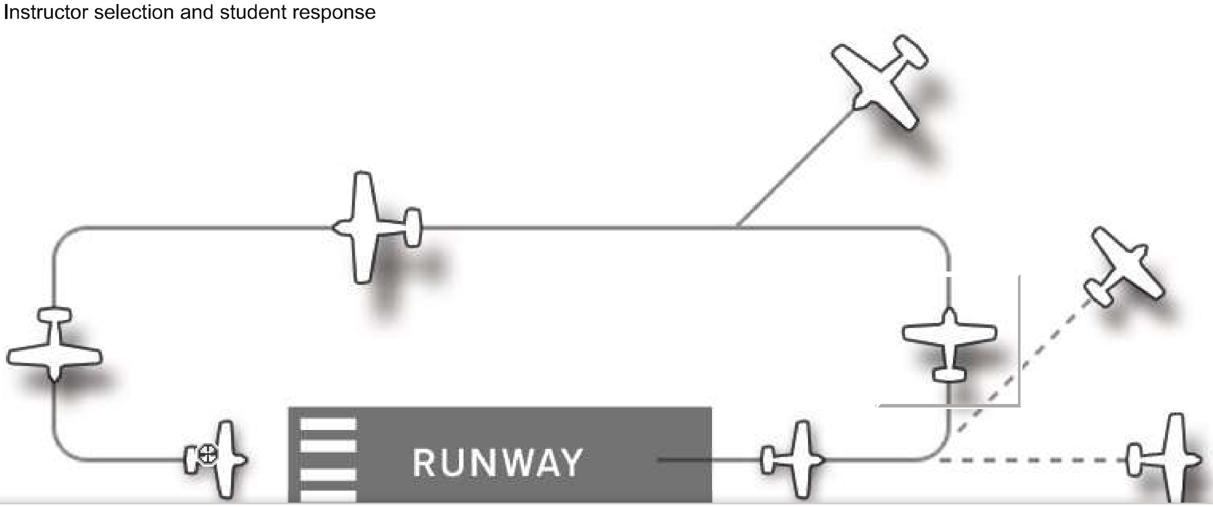
Click on the airplane symbol located on a left crosswind.

Selected Answer: 129, 268

Correct Answer:

Top Left Coordinates (548, 154) Bottom Right Coordinates (640, 240)

Instructor selection and student response



Exit Save and Exit

QUESTION 18: MULTIPLE CHOICE | 1 out of 1 points

A transponder code of 7700 should be used in what situation?

Given Answer: Emergency

Correct Answer: Emergency

QUESTION 19: MULTIPLE CHOICE | 1 out of 1 points

Using a network of ground stations and specialized aircraft equipment, this system provides ATC highly accurate position and speed information for all aircraft, and it provides pilots real-time traffic position data and weather information.

Given Answer: ADS-B

Correct Answer: ADS-B

QUESTION 20: MULTIPLE CHOICE | 1 out of 1 points

Assume the current time is 2:00 PM (Central Daylight Time). What is the current Zulu time?

Given Answer: 19:00

Correct Answer: 19:00

QUESTION 21: MULTIPLE CHOICE | 1 out of 1 points

What is the meaning of the word "Standby" when used over the radio?

Given Answer: Wait and I will call you

Correct Answer: Wait and I will call you

QUESTION 22: MULTIPLE CHOICE | 1 out of 1 points

Which of the following is an appropriate response when asked a yes/no question by ATC over the radio?

Given Answer: Affirmative

Correct Answer: Affirmative

QUESTION 23: MULTIPLE CHOICE | 1 out of 1 points

In the event of suspected communications failure during a VFR training flight when returning to a Class D airport, what is the best course of action?

Given Answer: Observe the flow of traffic, enter the airspace, and wait for light gun signals

Correct Answer: Observe the flow of traffic, enter the airspace, and wait for light gun signals

Exit Save and Exit

1 out of 1 points

In the event of radio communication failure, the control tower can provide instructions using a light gun. If while taxiing you saw a flashing red light coming from the tower, what is the appropriate action?

Given Answer: Taxi clear of the runway

Correct Answer: Taxi clear of the runway

QUESTION 25: MULTIPLE CHOICE

0 out of 1 points

Additional airport data, such as runway information, fuel availability, hours of operation, and lighting availability, can be found in what publication?

Given Answer: Federal Aviation Regulations

Correct Answer: Chart Supplement

QUESTION 26: MULTIPLE CHOICE

1 out of 1 points

FAR Part 61 deals with which of the following subjects?

Given Answer: Certification of Pilots

Correct Answer: Certification of Pilots

QUESTION 27: MULTIPLE CHOICE

1 out of 1 points

FAR Part 91 deals with which of the following subjects?

Given Answer: General Operating Rules

Correct Answer: General Operating Rules

QUESTION 28: MULTIPLE CHOICE

1 out of 1 points

On Sectional and Terminal Area Charts, towered airports are shown in what color?

Given Answer: Blue

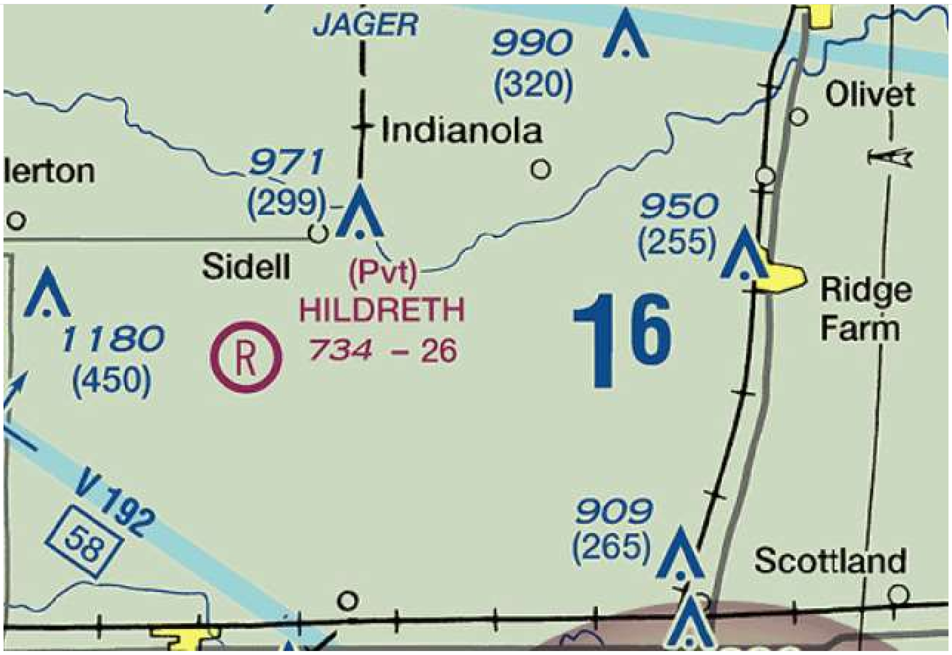
Correct Answer: Blue

QUESTION 29: MULTIPLE CHOICE

0 out of 1 points

Refer to the chart excerpt below. What is the height above the ground (AGL) of the top of the obstacle located in the town of Ridge Farm?

Exit Save and Exit

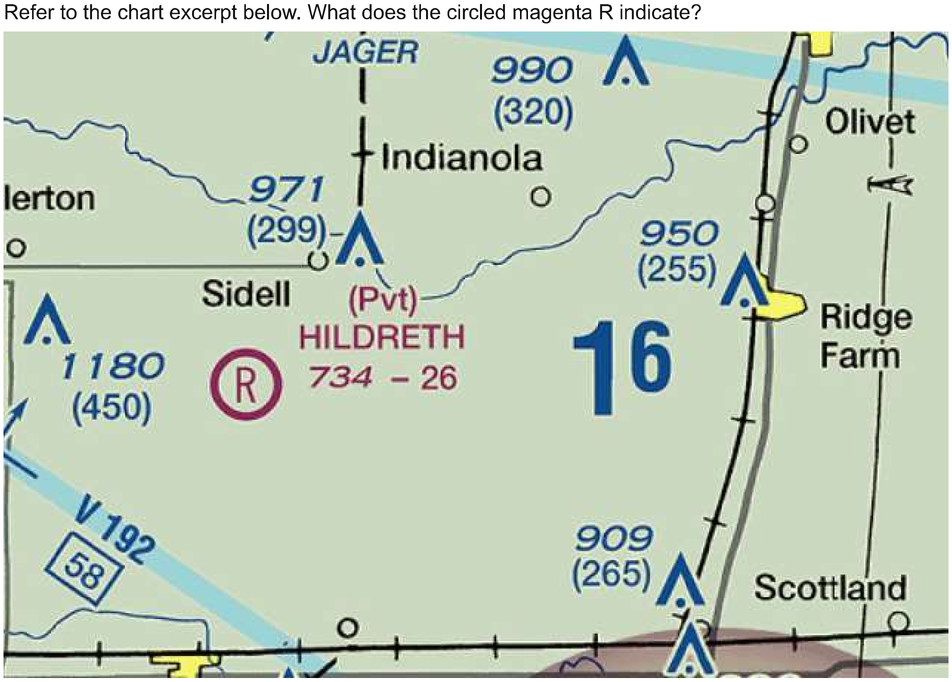


Given Answer: 950 feet

Correct Answer: 255 feet

QUESTION 30: MULTIPLE CHOICE 1 out of 1 points

Refer to the chart excerpt below. What does the circled magenta R indicate?

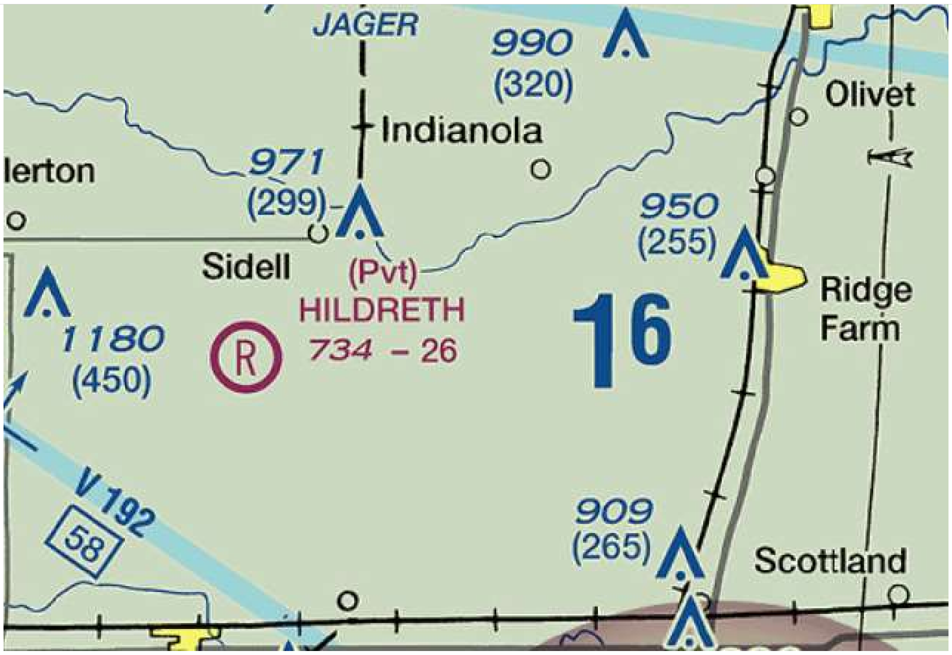


Given Answer: A private airport requiring the owner's permission to land

Correct Answer: A private airport requiring the owner's permission to land

QUESTION 31: MULTIPLE CHOICE 1 out of 1 points

Exit Save and Exit



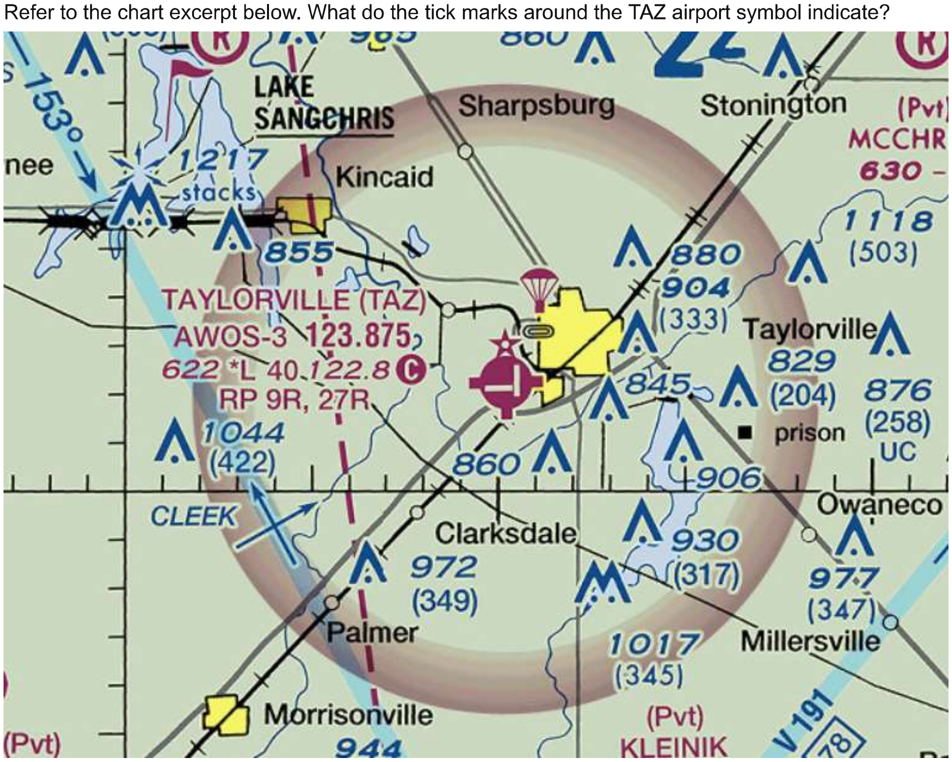
Given Answer: The highest elevation in hundreds of feet of terrain or obstacles in that quadrant

Correct Answer: The highest elevation in hundreds of feet of terrain or obstacles in that quadrant

QUESTION 32: MULTIPLE CHOICE

0 out of 1 points

Refer to the chart excerpt below. What do the tick marks around the TAZ airport symbol indicate?



Given Answer: A rotating beacon is in operation from sunset to sunrise

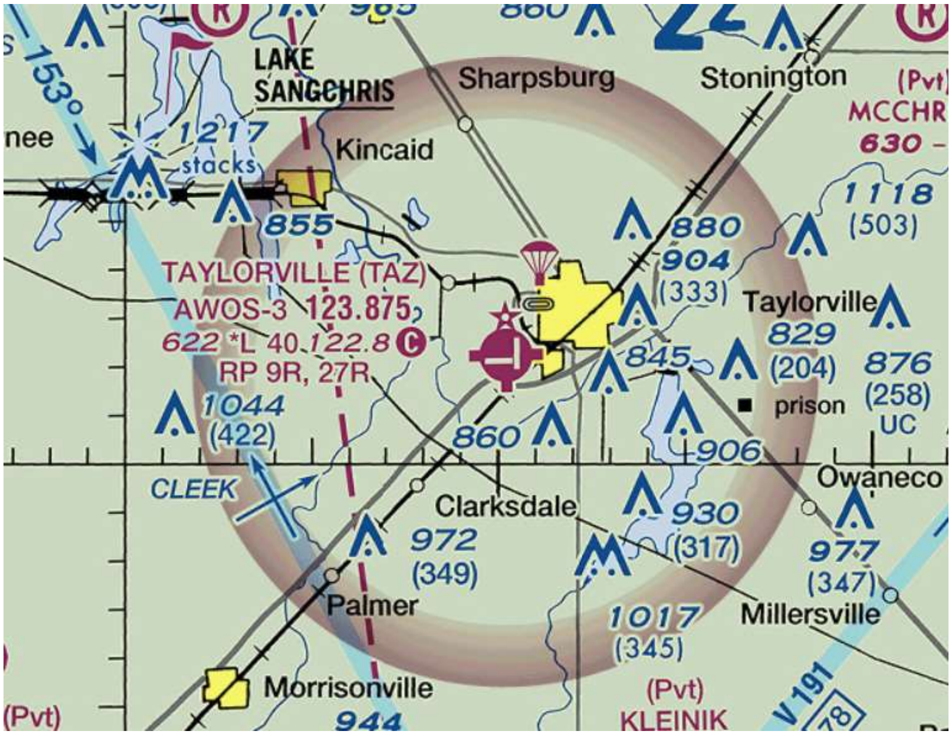
Correct Answer: Services are available at the airport

QUESTION 33: MULTIPLE CHOICE

0 out of 1 points

Exit Save and Exit

Refer to the chart excerpt below. What does the star above the TAZ airport symbol indicate?

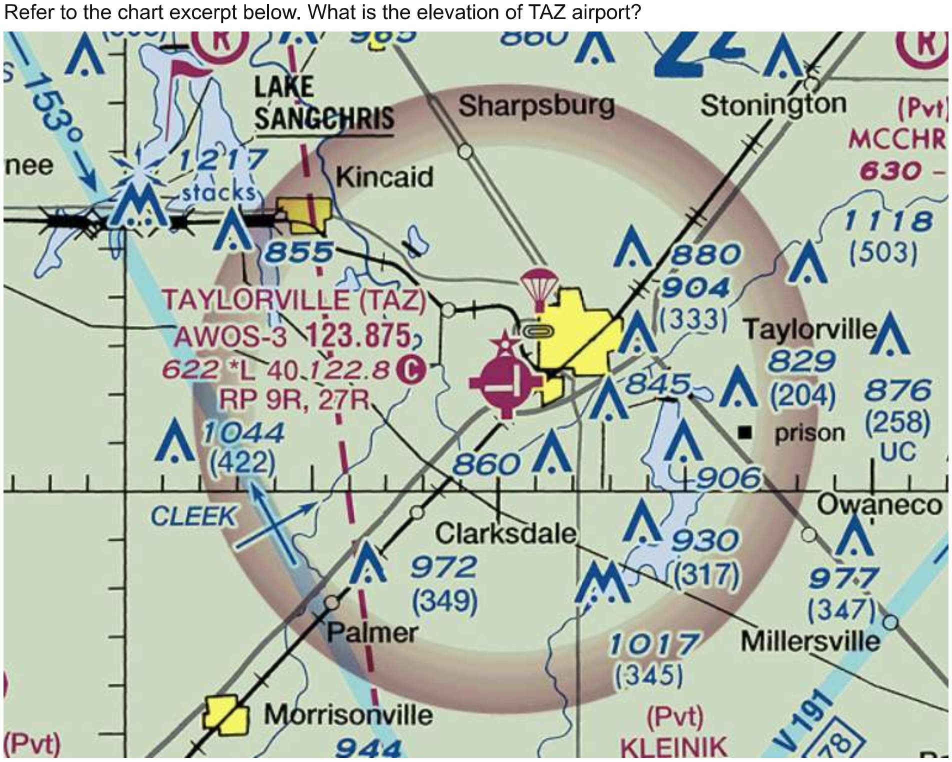


Given Answer: Part time operation of the control tower

Correct Answer: A rotating beacon is in operation from sunset to sunrise

QUESTION 34: MULTIPLE CHOICE | 1 out of 1 points

Refer to the chart excerpt below. What is the elevation of TAZ airport?



Given Answer: 622 feet

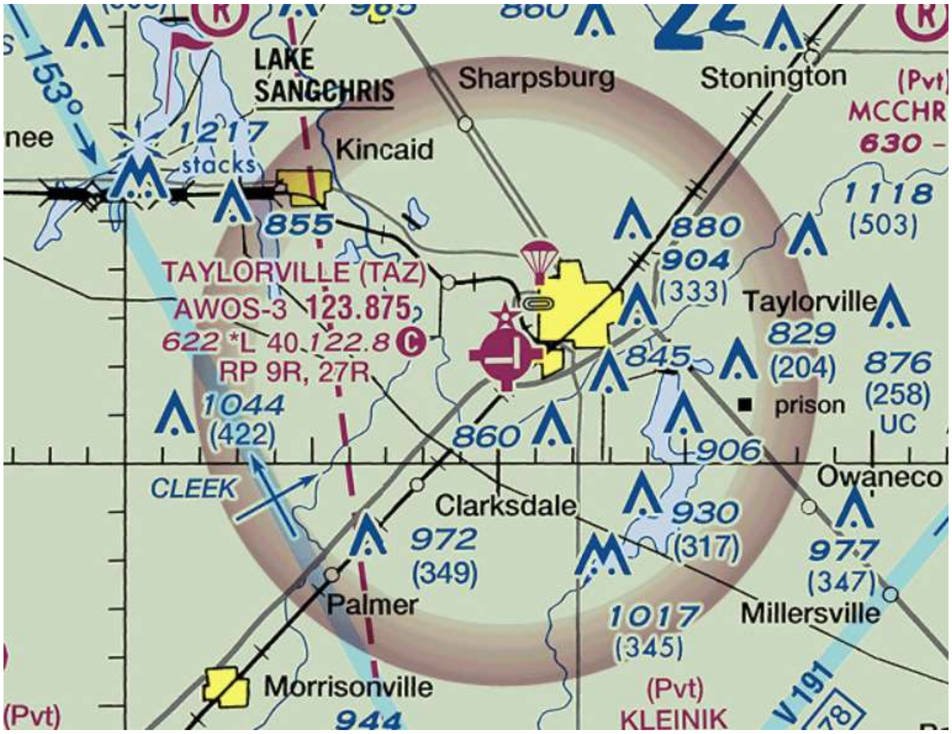
Correct Answer: 622 feet

Exit Save and Exit

QUESTION 35: MULTIPLE CHOICE

1 out of 1 points

Refer to the chart excerpt below. Which of the following statement(s) is/are true regarding TAZ airport?
\



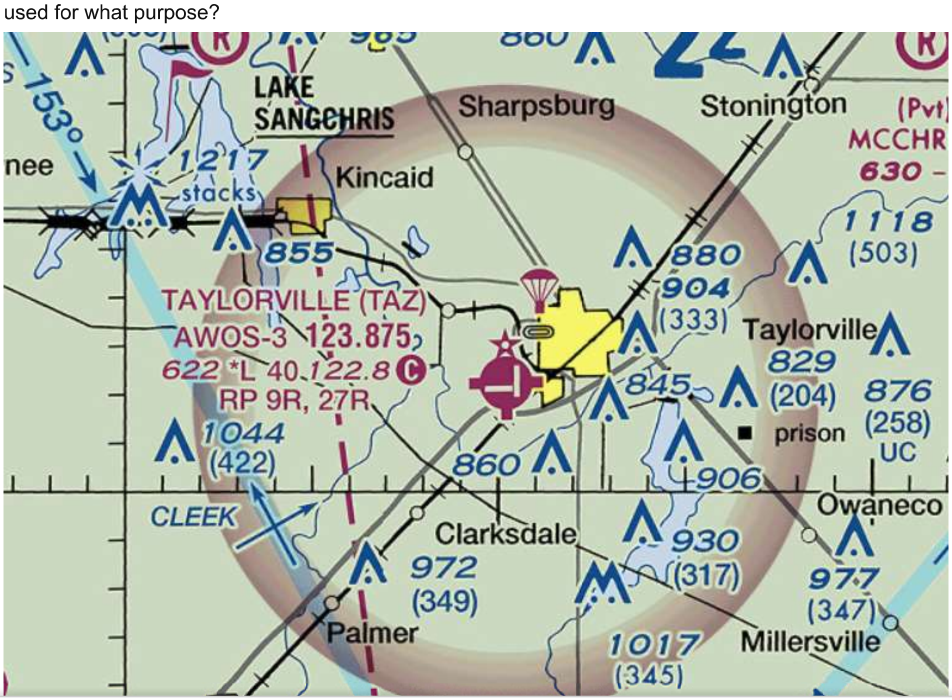
Given Answer: All of the above

Correct Answer: All of the above

QUESTION 36: MULTIPLE CHOICE

0 out of 1 points

Refer to the chart excerpt below. When operating near TAZ airport, the frequency 122.8 should be used for what purpose?



Exit Save and Exit

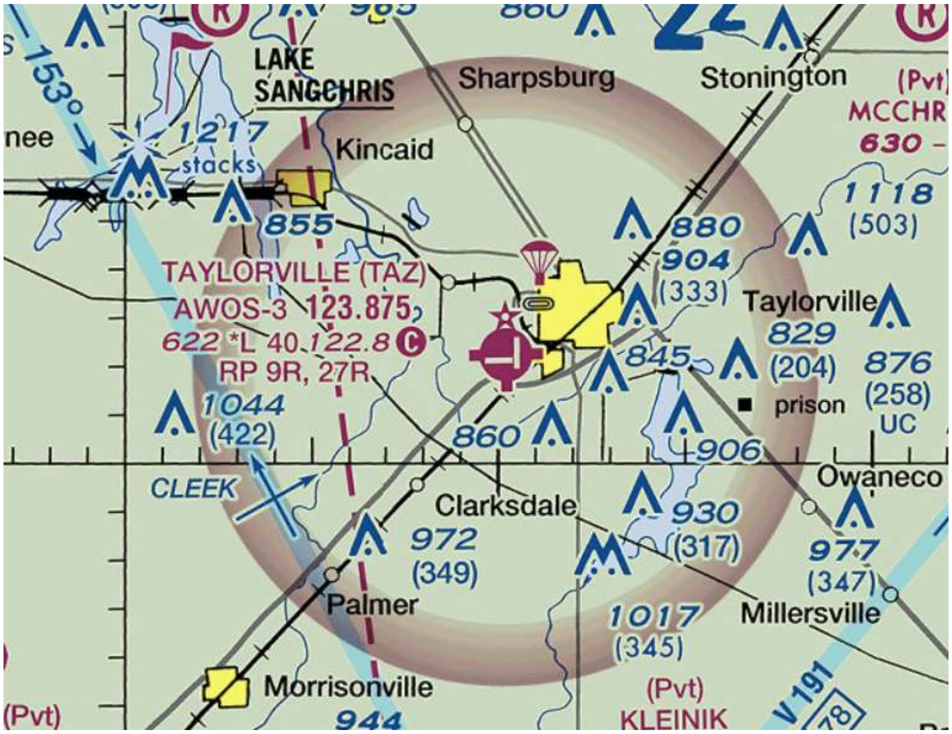
Given Answer: Communicating with the control tower

Correct Answer: Communicating your intentions to other aircraft in the area

QUESTION 37: MULTIPLE CHOICE

0 out of 1 points

Refer to the chart excerpt below. Which of the following best describes the airspace above TAZ airport?



Given Answer: Class E at the surface extending up to 700 AGL

Correct Answer: Class G at the surface extending up to 700 AGL

QUESTION 38: MULTIPLE CHOICE

1 out of 1 points

Where is Class E airspace most commonly located?

Given Answer: From 700 or 1200 AGL up to the bottom of the overlying airspace

Correct Answer: From 700 or 1200 AGL up to the bottom of the overlying airspace

QUESTION 39: MULTIPLE CHOICE

1 out of 1 points

What is magnetic variation?

Given Answer: The angular difference between true and magnetic north

Correct Answer: The angular difference between true and magnetic north

QUESTION 40: MULTIPLE CHOICE

0 out of 0 points

Exit Save and Exit

Correct Answer: A pilot may enter as soon as two way radio communications have been established

QUESTION 41: MULTIPLE CHOICE

1 out of 1 points

What are the basic VFR weather minimums when operating an aircraft in Class B airspace?

Given Answer: 3 miles visibility and clear of clouds

Correct Answer: 3 miles visibility and clear of clouds

QUESTION 42: MULTIPLE CHOICE

1 out of 1 points

How is Class A airspace identified on a Sectional or Terminal Area Chart?

Given Answer: Not depicted

Correct Answer: Not depicted

QUESTION 43: TRUE/FALSE

0 out of 1 points

When approaching a Class D airport for landing, you contact the tower and they respond with, “Aircraft calling tower, say again.” This is considered to be establishing two-way communication, and the Class D airspace may be entered.

Given Answer: True

Correct Answer: False

QUESTION 44: MULTIPLE CHOICE

1 out of 1 points

During operations in Class G airspace below 1,200 AGL during the day, what is the required visibility?

Given Answer: 1 SM

Correct Answer: 1 SM

QUESTION 45: MULTIPLE CHOICE

1 out of 1 points

When operating below 10,000 MSL in Class E airspace, what are the basic VFR weather minimums?

Given Answer: 3 miles visibility and 500 feet below, 1000 feet above, 2000 feet horizontally from clouds

Correct Answer: 3 miles visibility and 500 feet below, 1000 feet above, 2000 feet horizontally from clouds

QUESTION 46: MULTIPLE CHOICE

1 out of 1 points

Exit Save and Exit

Correct Answer: All of the above

QUESTION 47: MULTIPLE CHOICE — 0 out of 1 points

Which statement is true regarding operating under a special VFR clearance during the day?

Given Answer: The pilot must be instrument rated in an aircraft equipped for instrument flight

Correct Answer: One mile flight visibility is required and the flight must be operated clear of clouds

QUESTION 48: MULTIPLE CHOICE — 1 out of 1 points

What is the maximum airspeed allowed by regulations when operating below 2,500 AGL within 4 NM of a Class C or Class D airport?

Given Answer: 200 knots

Correct Answer: 200 knots

QUESTION 49: MULTIPLE CHOICE — 1 out of 1 points

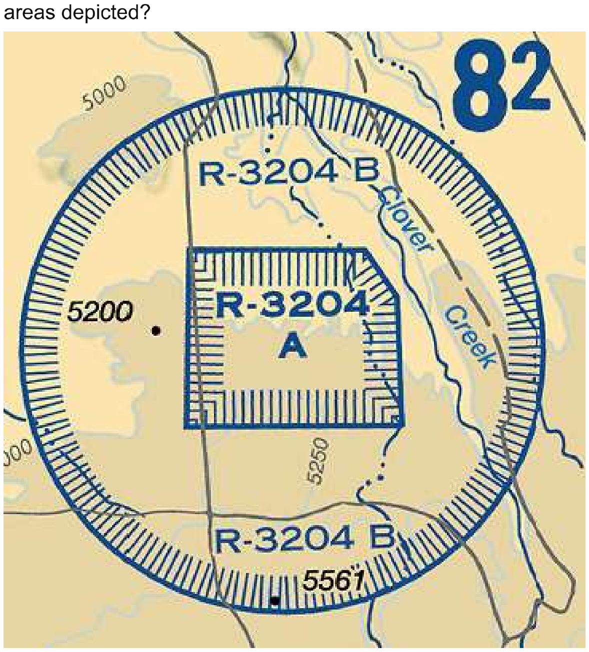
Which statement is true regarding flight in an alert area?

Given Answer: No authorization is required, but pilots should be extra cautious

Correct Answer: No authorization is required, but pilots should be extra cautious

QUESTION 50: MULTIPLE CHOICE — 0 out of 1 points

Refer to the chart excerpt below. Which statement is true regarding flight in the special use airspace areas depicted?



Given Answer: No authorization is required, but pilots should be extra cautious

Correct Answer: Permission is required from the controlling agency prior to entering

Exit Save and Exit

QUESTION 51: MULTIPLE CHOICE

0 out of 1 points

Where would a warning area typically be located?

Given Answer: Around military bases to warn pilots of potentially hazardous military activity

Correct Answer: Extending from 3 miles outward along the coast

QUESTION 52: TRUE/FALSE

0 out of 1 points

Generally, pilots are able to operate VFR in airspace affected by a Temporary Flight Restriction without any specific clearance or communication requirements. However, extra vigilance is recommended.

Given Answer: True

Correct Answer: False

QUESTION 53: MULTIPLE CHOICE

0 out of 1 points

Which statement is true regarding flight in the vicinity of stadiums with more than 30,000 seats during major league sporting events?

Given Answer: Depending on the event, flight restrictions may or may not be in place; check the FAA website

Correct Answer: Flights are automatically restricted within a 3-mile radius below 3,000 AGL

QUESTION 54: MULTIPLE CHOICE

1 out of 1 points

According to Federal Aviation Regulations, who is responsible for ensuring the aircraft is in a condition for safe flight?

Given Answer: The pilot

Correct Answer: The pilot

QUESTION 55: MULTIPLE CHOICE

1 out of 1 points

Which aircraft document is required to be visible to passengers or crew?

Given Answer: Airworthiness Certificate

Correct Answer: Airworthiness Certificate

QUESTION 56: TRUE/FALSE

1 out of 1 points

An airworthiness certificate never expires so long as the aircraft is maintained in accordance with the applicable regulations.

Given Answer: True

Correct Answer: True

Exit Save and Exit

QUESTION 57: TRUE/FALSE

0 out of 1 points

The operating limitations found in Section 2 of the AFM function as recommendations from the aircraft manufacturer. Pilots may exceed a limitation if they determine it will be in the interest of operational efficiency.

Given Answer: True

Correct Answer: False

QUESTION 58: MULTIPLE CHOICE

1 out of 1 points

For which operation is an annual inspection required?

Given Answer: Any operation

Correct Answer: Any operation

QUESTION 59: MULTIPLE CHOICE

0 out of 1 points

An annual inspection was conducted on January 3 of this year. When will the next annual inspection be due?

Given Answer: January 3 of next year

Correct Answer: January 31 of next year

QUESTION 60: MULTIPLE CHOICE

0 out of 1 points

Which of the following operations would require a 100-hour inspection to be conducted on the aircraft?

Given Answer: All of the above

Correct Answer: Flights carrying passengers for hire

QUESTION 61: TRUE/FALSE

1 out of 1 points

The annual inspection will satisfy the 100-hour inspection requirement if the annual was conducted within the previous 100 hours of time in service.

Given Answer: True

Correct Answer: True

QUESTION 62: MULTIPLE CHOICE

0 out of 1 points

How often must the batteries in an ELT be replaced?

Given Answer: Every 12 calendar months

Correct Answer: After half of their useful life or one hour of cumulative use

QUESTION 63: MULTIPLE CHOICE

1 out of 1 points

Exit Save and Exit

How often must an ELT inspection be performed?

Given Answer: Every 12 calendar months

Correct Answer: Every 12 calendar months

QUESTION 64: MULTIPLE CHOICE 1 out of 1 points

How often must a transponder inspection be performed?

Given Answer: Every 24 calendar months

Correct Answer: Every 24 calendar months

QUESTION 65: TRUE/FALSE 0 out of 1 points

You are planning a 2.5 hour flight in an airplane with a recurring airworthiness directive (AD) due in only 1.5 hours. You may proceed without a special flight permit assuming the flight is to a destination where the AD can be complied with.

Given Answer: True

Correct Answer: False

QUESTION 66: MULTIPLE CHOICE 1 out of 1 points

After determining that an inoperative component is not required, which of the following actions must legally be completed prior to flight?

Given Answer: All of the above

Correct Answer: All of the above

QUESTION 67: MULTIPLE CHOICE 1 out of 1 points

A list of instruments and equipment required to be operational for flight can be found in which of the following sources?

Given Answer: FAR 91.205

Correct Answer: FAR 91.205

QUESTION 68: MULTIPLE CHOICE 0 out of 1 points

An aircraft that does not currently meet applicable airworthiness requirements, but is capable of safe flight, may be flown to a point where repairs can be made by obtaining a __________.

Given Answer: Operating Certificate

Correct Answer: Special Flight Permit

QUESTION 69: MULTIPLE CHOICE 0 out of 1 points

Exit Save and Exit

Correct Answer: Engine combustion

QUESTION 70: TRUE/FALSE

1 out of 1 points

Electrical power for starting the engine is provided by the aircraft battery.

Given Answer: True

Correct Answer: True

QUESTION 71: MULTIPLE CHOICE

0 out of 1 points

During cruise flight, you notice that the oil pressure appears to be decreasing, and the oil temperature is gradually increasing. What is the best course of action?

Given Answer: Suspect a gauge malfunction, monitor the engine gauges, and return to the airport

Correct Answer: Serious engine problems may be present; reduce throttle to minimum required RPM and prepare for potential off-airport landing

QUESTION 72: MULTIPLE CHOICE

1 out of 1 points

What is a function of the anti-servo tab?

Given Answer: To reduce the tendency to overcontrol the airplane's pitch

Correct Answer: To reduce the tendency to overcontrol the airplane's pitch

QUESTION 73: MULTIPLE CHOICE

0 out of 1 points

V_Y is the best __________ of climb speed. This airspeed will produce the greatest altitude gain in a given __________.

Given Answer: rate, horizontal distance

Correct Answer: rate, time

QUESTION 74: MULTIPLE CHOICE

0 out of 1 points

The left turning tendency of an airplane known as torque is caused by what?

Given Answer: The propeller blade descending on the right, producing more thrust than the ascending blade on the left

Correct Answer: The clockwise rotation of the engine and the propeller turning the airplane counterclockwise

QUESTION 75: MULTIPLE CHOICE

0 out of 1 points

Exit Save and Exit

Given Answer: Lift during cruise flight is greater than lift during slow flight due to the higher airspeed

Correct Answer: Lift is approximately the same in slow flight as it is during flight at cruise airspeeds

QUESTION 76: MULTIPLE CHOICE

0 out of 1 points

What type of drag would be created at the intersection of the wing and the fuselage due to mixing of airflow?

Given Answer: Induced

Correct Answer: Interference

QUESTION 77: MULTIPLE CHOICE

0 out of 1 points

Why is adverse yaw created during a turn?

Given Answer: The rudder is deflected creating more drag on one side of the airplane

Correct Answer: The ailerons are deflected during turn entry, resulting in more lift and more induced drag on one wing

QUESTION 78: MULTIPLE CHOICE

1 out of 1 points

What is the primary cause of overbanking tendency in steep turns?

Given Answer: One wing is moving faster than the other, creating more lift than the other wing

Correct Answer: One wing is moving faster than the other, creating more lift than the other wing

QUESTION 79: MULTIPLE CHOICE

1 out of 1 points

Load factor is defined as the ratio of the total load the airplane is supporting to the ___________.

Given Answer: weight of the airplane

Correct Answer: weight of the airplane

QUESTION 80: TRUE/FALSE

1 out of 1 points

Load factor and stall speed will always increase in a coordinated, constant-altitude turn.

Given Answer: True

Correct Answer: True

FEEDBACK AND NOTES FOR ATTEMPT

Feedback to Learner

Exit Save and Exit

Grade Test: Final Exam

*Assign a grade and feedback for the current test attempt. Expand the **Test Information** section to clear the student's attempt or edit the test. More Help*

Jump to... Hide User Names

Test Information

Current Grade	68.00000 out of 68 points Grade based on Last Evaluated Attempt
Status	Completed
Attempt Score	68 out of 68 points
Time Elapsed	34 minutes out of 1 hour and 50 minutes
Started Date	12/1/20 8:00 AM Access Log
Submitted Date	12/1/20 8:35 AM
Clear Attempt	Clear Attempt *Click **Clear Attempt** to clear this user's attempt.*
Edit Test	Edit Test *Click **Edit Test** to make changes.*
Instructions	

QUESTION 1: MULTIPLE CHOICE 1 out of 1 points

Which transponder code should be used in the event of a loss of communication?

Given Answer: 7600

Correct Answer: 7600

QUESTION 2: MULTIPLE CHOICE

1 out of 1 points

Runway Touchdown Zone markings are separated by how many feet?

Given Answer: 500 feet

Correct Answer: 500 feet

QUESTION 3: MULTIPLE CHOICE

1 out of 1 points

The portion of a runway designated as a displaced threshold may be used for which of the following operations?

Given Answer: Taxi and takeoff in the direction of the arrows

Correct Answer: Taxi and takeoff in the direction of the arrows

QUESTION 4: MULTIPLE CHOICE

1 out of 1 points

Induced drag increases as the _____ increases.

Given Answer: Angle of attack of the wing

Correct Answer: Angle of attack of the wing

QUESTION 5: MULTIPLE CHOICE

1 out of 1 points

Vy is the best _____ of climb speed. This airspeed will produce the greatest altitude gain in a given _____.

Given Answer: rate; time

Correct Answer: rate; time

QUESTION 6: MULTIPLE CHOICE

1 out of 1 points

The turning tendency of an airplane known as precession is caused by what?

Given Answer: The gyroscopic forces applied to the rotating propeller blades acting 90 degrees after the point the forces were applied

Correct Answer:

QUESTION 7: MULTIPLE CHOICE 1 **out of 1 points**

If an airplane is maintaining altitude during a turn at 30 degrees of bank, the airplane will stall at _____ airspeed than during straight and level flight.

Given Answer: a higher

Correct Answer: a higher

QUESTION 8: MULTIPLE CHOICE 1 **out of 1 points**

How is adverse yaw created during a turn?

Given Answer: The ailerons are deflected during turn entry, resulting in more induced drag on one wing

Correct Answer: The ailerons are deflected during turn entry, resulting in more induced drag on one wing

QUESTION 9: MULTIPLE CHOICE 1 **out of 1 points**

Which of the following best describes ground effect?

Given Answer: An increase in lift and a decrease in induced drag when within one wingspan of the ground

Correct Answer: An increase in lift and a decrease in induced drag when within one wingspan of the ground

QUESTION 10: MULTIPLE CHOICE 1 **out of 1 points**

Assuming the CG is within the allowable limits, what effect would an aft CG have on the airplane?

Given Answer: Increase in performance compared to an airplane with a forward CG

Correct Answer: Increase in performance compared to an airplane with a forward

QUESTION 11: MULTIPLE CHOICE

1 out of 1 points

In an aircraft equipped with a vacuum system, if the suction/vacuum gauge is indicating below the green arc during the engine run-up, what system or equipment will be affected?

Given Answer: The gyroscopic flight instruments

Correct Answer: The gyroscopic flight instruments

QUESTION 12: MULTIPLE CHOICE

1 out of 1 points

In the event of a failure of the aircraft's alternator/generator, which of the following indications would you expect to see on the electrical gauges?

Given Answer: A decrease in voltage and a negative indication on the ammeter

Correct Answer: A decrease in voltage and a negative indication on the ammeter

QUESTION 13: MULTIPLE CHOICE

1 out of 1 points

Which of the following instrument indications would you expect if the static port became blocked?

Given Answer: The altimeter, VSI, and airspeed indicator would read incorrectly

Correct Answer: The altimeter, VSI, and airspeed indicator would read incorrectly

QUESTION 14: MULTIPLE CHOICE

1 out of 1 points

In a fuel injected airplane, when would the alternate air need to be opened?

Given Answer: When the primary engine air intake becomes blocked

Correct Answer: When the primary engine air intake becomes blocked

QUESTION 15: MULTIPLE CHOICE

1 out of 1 points

Given Answer: An in-flight report on current weather conditions made by a pilot

Correct Answer: An in-flight report on current weather conditions made by a pilot

QUESTION 16: MULTIPLE CHOICE

1 out of 1 points

A SIGMET would be issued for which of the following conditions?

Given Answer: Extreme turbulence

Correct Answer: Extreme turbulence

QUESTION 17: MULTIPLE CHOICE

1 out of 1 points

An AIRMET will be issued for which of the following conditions?

Given Answer: All of the above

Correct Answer: All of the above

QUESTION 18: MULTIPLE CHOICE

1 out of 1 points

Which of the following wind shear conditions would likely be most hazardous to an aircraft during takeoff or landing?

Given Answer: A headwind abruptly shifting to a tailwind

Correct Answer: A headwind abruptly shifting to a tailwind

QUESTION 19: MULTIPLE CHOICE

1 out of 1 points

It is typically recommended to remain at least how many miles away from a thunderstorm?

Given Answer: 20 miles

Correct Answer: 20 miles

QUESTION 20: MULTIPLE CHOICE

1 out of 1 points

Given Answer: Poor visibility and light-to-moderate precipitation

Correct Answer: Poor visibility and light-to-moderate precipitation

QUESTION 21: MULTIPLE CHOICE

1 out of 1 points

During the passage of a cold front, which of the following weather conditions would be most likely?

Given Answer: Cumulous clouds, rain showers, and possible thunderstorms

Correct Answer: Cumulous clouds, rain showers, and possible thunderstorms

QUESTION 22: MULTIPLE CHOICE

1 out of 1 points

A front is best defined as:

Given Answer: A boundary between two airmasses with different temperatures

Correct Answer: A boundary between two airmasses with different temperatures

QUESTION 23: MULTIPLE CHOICE

1 out of 1 points

Hazards associated with structural icing include which of the following?

Given Answer: All of the above

Correct Answer: All of the above

QUESTION 24: MULTIPLE CHOICE

1 out of 1 points

Which of the following conditions must be in place for the aircraft to accumulate ice on its exterior surfaces?

Given Answer: Visible moisture and an aircraft surface temperature at or below freezing

Correct Answer: Visible moisture and an aircraft surface temperature at or below

QUESTION 25: MULTIPLE CHOICE

1 out of 1 points

What type of fog forms due to surface cooling and is common on clear, calm nights?

Given Answer: Radiation

Correct Answer: Radiation

QUESTION 26: MULTIPLE CHOICE

1 out of 1 points

Describe the weather conditions most commonly associated with a temperature inversion.

Given Answer: Stable air and restricted visibility

Correct Answer: Stable air and restricted visibility

QUESTION 27: MULTIPLE CHOICE

1 out of 1 points

Airflow around a low pressure system is _____ and _____.

Given Answer: Upward and counterclockwise

Correct Answer: Upward and counterclockwise

QUESTION 28: MULTIPLE CHOICE

1 out of 1 points

In the northern hemisphere, Coriolis Force causes objects to be deflected to the _____.

Given Answer: Right

Correct Answer: Right

QUESTION 29: MULTIPLE CHOICE

1 out of 1 points

According to Part 1 of the Federal Aviation Regulations, "night" begins at what time?

Given Answer: The end of evening civil twilight

QUESTION 30: MULTIPLE CHOICE

1 out of 1 points

As a private pilot, you may perform certain maintenance activities on an aircraft you own or operate. What is this known as?

Given Answer: Preventive maintenance

Correct Answer: Preventive maintenance

QUESTION 31: MULTIPLE CHOICE

1 out of 1 points

Private pilots are required to have which of the following documents available in the aircraft when acting as Pilot in Command?

Given Answer: All of the above

Correct Answer: All of the above

QUESTION 32: MULTIPLE CHOICE

1 out of 1 points

A pilot conducting operations requiring a private pilot certificate must hold at least what class of medical certificate?

Given Answer: Third Class

Correct Answer: Third Class

QUESTION 33: MULTIPLE CHOICE

1 out of 1 points

A 19-year old private pilot is issued a second class medical certificate. For operations requiring a private pilot certificate, how long will this medical certificate remain valid?

Given Answer: 60 calendar months

Correct Answer: 60 calendar months

QUESTION 34: TRUE/FALSE

1 out of 1 points

Assume a pilot conducted training and completed a Private Pilot checkride in a Diamond DA20. That pilot will be restricted to flying only Diamond DA20 aircraft until passing a type rating in a different make/model.

QUESTION 35: MULTIPLE CHOICE | 1 out of 1 points

A complex airplane is an airplane with flaps, retractable landing gear, and:

Given Answer: An adjustable pitch propeller

Correct Answer: An adjustable pitch propeller

QUESTION 36: TRUE/FALSE | 1 out of 1 points

Private pilots may log time as "Pilot In Command" whenever they are the sole manipulator of the controls of an aircraft for which they are rated, even if there is another more experienced pilot in the cockpit.

Given Answer: True

Correct Answer: True

QUESTION 37: MULTIPLE CHOICE | 1 out of 1 points

A private pilot received a flight review on May 10 of this year. When is the next flight review required?

Given Answer: May 31, year after next

Correct Answer: May 31, year after next

QUESTION 38: MULTIPLE CHOICE | 1 out of 1 points

To act as pilot in command of an aircraft carrying passengers, the pilot must have made at least three takeoffs and three landings in an aircraft of the same category and class within the preceding:

Given Answer: 90 days

Correct Answer: 90 days

QUESTION 39: MULTIPLE CHOICE | 1 out of 1 points

Which of the following limitations apply to student pilots with a current solo endorsement

Given Answer: All of the above

QUESTION 40: TRUE/FALSE

1 out of 1 points

Private pilots may be compensated for any flight they conduct as long as that flight does not carry passengers.

Given Answer: False

Correct Answer: False

QUESTION 41: MULTIPLE CHOICE

1 out of 1 points

A private pilot conducts a flight carrying three additional passengers. The operating expenses for the flight total $400.00, and the pilot wishes to share these expenses with the passengers as much as possible. At a minimum, how much is the pilot required to contribute?

Given Answer: $100.00

Correct Answer: $100.00

QUESTION 42: MULTIPLE CHOICE

1 out of 1 points

No person may attempt to act as a crewmember of an aircraft within _____ after consuming any alcoholic beverage or with a blood alcohol content of _____ or greater.

Given Answer: 8 hours; 0.04

Correct Answer: 8 hours; 0.04

QUESTION 43: TRUE/FALSE

1 out of 1 points

During cruise flight, passengers may remove their safety belt as long as it is refastened prior to landing.

Given Answer: True

Correct Answer: True

QUESTION 44: MULTIPLE CHOICE

1 out of 1 points

According to regulations, what is the fuel requirement for VFR flight during the day in an airplane?

for 30 minutes at normal cruising speed

Correct Answer: Enough to fly to the first point of intended landing and to fly after that for 30 minutes at normal cruising speed

QUESTION 45: MULTIPLE CHOICE 1 out of 1 points

Except when necessary for takeoff or landing, when operating over any congested area of a city, town, or settlement, or over an open-air assembly of persons, no person may operate an aircraft below:

Given Answer: 1000 feet above the highest obstacle within 2000 feet of the aircraft

Correct Answer: 1000 feet above the highest obstacle within 2000 feet of the aircraft

QUESTION 46: MULTIPLE CHOICE 1 out of 1 points

For which operation is a 100-hour inspection required?

Given Answer: Only operations carrying persons for hire

Correct Answer: Only operations carrying persons for hire

QUESTION 47: TRUE/FALSE 1 out of 1 points

The 100-hour inspection can take the place of the annual inspection if the 100-hour inspection was conducted within the previous 12 calendar months.

Given Answer: False

Correct Answer: False

QUESTION 48: MULTIPLE CHOICE 1 out of 1 points

How often must a transponder inspection be performed?

Given Answer: Every 24 calendar months

Correct Answer: Every 24 calendar months

QUESTION 49: MULTIPLE CHOICE

1 out of 1 points

How often does an aircraft Airworthiness Certificate expire?

Given Answer: It does not expire assuming the aircraft is maintained in accordance with the applicable FAR's

Correct Answer: It does not expire assuming the aircraft is maintained in accordance with the applicable FAR's

QUESTION 50: MULTIPLE CHOICE

1 out of 1 points

How often must an ELT inspection be performed?

Given Answer: Every 12 calendar months

Correct Answer: Every 12 calendar months

QUESTION 51: MULTIPLE CHOICE

1 out of 1 points

How often must the batteries in an ELT be replaced?

Given Answer: After half of their useful life or one hour of cumulative use

Correct Answer: After half of their useful life or one hour of cumulative use

QUESTION 52: MULTIPLE CHOICE

1 out of 1 points

Where would a warning area typically be located?

Given Answer: Extending from 3 miles outward along the coast

Correct Answer: Extending from 3 miles outward along the coast

QUESTION 53: MULTIPLE CHOICE

1 out of 1 points

Which statement is true regarding flight in a restricted area?

Given Answer: Permission is required from the controlling agency prior to entry

QUESTION 54: MULTIPLE CHOICE

1 out of 1 points

In which of the following areas is a transponder required?

Given Answer: In and above Class C airspace

Correct Answer: In and above Class C airspace

QUESTION 55: MULTIPLE CHOICE

1 out of 1 points

When operating below 10,000 MSL in Class E airspace, what are the basic VFR weather minimums?

Given Answer: 3 miles visibility and 500 feet below, 1000 feet above, 2000 feet horizontally from clouds

Correct Answer: 3 miles visibility and 500 feet below, 1000 feet above, 2000 feet horizontally from clouds

QUESTION 56: MULTIPLE CHOICE

1 out of 1 points

What are the basic VFR weather minimums when operating an aircraft in Class B airspace?

Given Answer: 3 miles visibility and clear of clouds

Correct Answer: 3 miles visibility and clear of clouds

QUESTION 57: MULTIPLE CHOICE

1 out of 1 points

Which statement is true regarding operations in Class C airspace?

Given Answer: A pilot may enter as soon as two way radio communications have been established

Correct Answer: A pilot may enter as soon as two way radio communications have been established

QUESTION 58: MULTIPLE CHOICE

1 out of 1 points

Where is Class G airspace typically located in our area?

Given Answer: From the surface to either 700 or 1200 AGL

Correct Answer: From the surface to either 700 or 1200 AGL

QUESTION 59: MULTIPLE CHOICE

1 out of 1 points

Winds are reported to be from 330° at 20 knots. You plan on departing from runway 30R. Which of the following would be the most reasonable estimation of headwind and crosswind components?

Given Answer: Headwind: 17 knots, Crosswind: 10 knots

Correct Answer: Headwind: 17 knots, Crosswind: 10 knots

QUESTION 60: MULTIPLE CHOICE

1 out of 1 points

Which of the following conditions will result in improved cruise performance?

Given Answer: All of the above

Correct Answer: All of the above

QUESTION 61: MULTIPLE CHOICE

1 out of 1 points

If the outside air temperature at the airport is warmer than standard, the density altitude will be:

Given Answer: Higher than pressure altitude

Correct Answer: Higher than pressure altitude

QUESTION 62: MULTIPLE CHOICE

1 out of 1 points

At 3,000 feet, the outside air temperature is 9°C. How does this compare to the standard temperature at this altitude?

Given Answer: Equal to standard

Correct Answer: Equal to standard

1 out of 1 points

Refer to the weather products below. What local (central standard) time was the KCPS METAR issued?

```
KCPS 061553Z 21003KT 10SM BKN055 03/M03 A3027 RMK AO2 SLP253 T00331033

BLV UA /OV TOY180030/TM 1613/FL150/TP MD80/TA M11/IC MOD CLR 080/RM ZKC FDC

KCPS 061140Z 0612/0712 23007KT 5SM SN OVC030
  FM061700 29008KT 2SM SN OVC020
  FM062000 33008KT 6SM OVC028
  FM070000 35007KT P6SM BKN035
  FM070200 35006KT P6SM SKC

FT  3000    6000    9000   12000   18000   24000  30000  34000  39000
COU 3513 3218-06 2641-06 2747-11 2773-22 2896-32 781047 770955 782357
SGF 3210 3019-03 2537-04 2836-07 2773-19 2889-30 289746 770054 772958
STL 3115 2917-06 2640-08 2755-12 2777-23 7801-32 781747 771655 782357
DIK      2915-14 2822-13 2929-20 3234-28 3043-39 305851 296757 296158
GFK 3015 3119-16 3027-18 3036-24 3249-33 3254-41 315953 306456 306456
```

Given Answer: 9:53

Correct Answer: 9:53

QUESTION 64: MULTIPLE CHOICE

1 out of 1 points

Refer to the weather products below. What surface temperature was observed at KCPS?

```
KCPS 061553Z 21003KT 10SM BKN055 03/M03 A3027 RMK AO2 SLP253 T00331033

BLV UA /OV TOY180030/TM 1613/FL150/TP MD80/TA M11/IC MOD CLR 080/RM ZKC FDC

KCPS 061140Z 0612/0712 23007KT 5SM SN OVC030
  FM061700 29008KT 2SM SN OVC020
  FM062000 33008KT 6SM OVC028
  FM070000 35007KT P6SM BKN035
  FM070200 35006KT P6SM SKC

FT  3000    6000    9000   12000   18000   24000  30000  34000  39000
COU 3513 3218-06 2641-06 2747-11 2773-22 2896-32 781047 770955 782357
SGF 3210 3019-03 2537-04 2836-07 2773-19 2889-30 289746 770054 772958
STL 3115 2917-06 2640-08 2755-12 2777-23 7801-32 781747 771655 782357
DIK      2915-14 2822-13 2929-20 3234-28 3043-39 305851 296757 296158
GFK 3015 3119-16 3027-18 3036-24 3249-33 3254-41 315953 306456 306456
```

Given Answer: 3 degrees C

Correct Answer: 3 degrees C

QUESTION 65: MULTIPLE CHOICE

1 out of 1 points

Refer to the weather products below. Which of the following is forecast at KCPS for the morning of the 6th?

```
KCPS 061553Z 21003KT 10SM BKN055 03/M03 A3027 RMK AO2 SLP253 T00331033

BLV UA /OV TOY180030/TM 1613/FL150/TP MD80/TA M11/IC MOD CLR 080/RM ZKC FDC

KCPS 061140Z 0612/0712 23007KT 5SM SN OVC030
  FM061700 29008KT 2SM SN OVC020
  FM062000 33008KT 6SM OVC028
  FM070000 35007KT P6SM BKN035
  FM070200 35006KT P6SM SKC

FT  3000    6000    9000   12000   18000   24000  30000  34000  39000
COU 3513 3218-06 2641-06 2747-11 2773-22 2896-32 781047 770955 782357
SGF 3210 3019-03 2537-04 2836-07 2773-19 2889-30 289746 770054 772958
STL 3115 2917-06 2640-08 2755-12 2777-23 7801-32 781747 771655 782357
DIK      2915-14 2822-13 2929-20 3234-28 3043-39 305851 296757 296158
GFK 3015 3119-16 3027-18 3036-24 3249-33 3254-41 315953 306456 306456
```

Given Answer: Moderate snow

Correct Answer: Moderate snow

QUESTION 66: MULTIPLE CHOICE

1 **out of 1 points**

Refer to the weather products below.A pilot in the vicinity of KBLV is reporting what type of flight hazard?

```
KCPS 061553Z 21003KT 10SM BKN055 03/M03 A3027 RMK AO2 SLP253 T00331033

BLV UA /OV TOY180030/TM 1613/FL150/TP MD80/TA M11/IC MOD CLR 080/RM ZKC FDC

KCPS 061140Z 0612/0712 23007KT 5SM SN OVC030
  FM061700 29008KT 2SM SN OVC020
  FM062000 33008KT 6SM OVC028
  FM070000 35007KT P6SM BKN035
  FM070200 35006KT P6SM SKC

FT  3000    6000    9000   12000   18000   24000  30000  34000  39000
COU 3513 3218-06 2641-06 2747-11 2773-22 2896-32 781047 770955 782357
SGF 3210 3019-03 2537-04 2836-07 2773-19 2889-30 289746 770054 772958
STL 3115 2917-06 2640-08 2755-12 2777-23 7801-32 781747 771655 782357
DIK      2915-14 2822-13 2929-20 3234-28 3043-39 305851 296757 296158
GFK 3015 3119-16 3027-18 3036-24 3249-33 3254-41 315953 306456 306456
```

Given Answer: Moderate icing

Correct Answer: Moderate icing

QUESTION 67: MULTIPLE CHOICE

1 **out of 1 points**

Refer to the weather products below. You have a flight planned for the 6th departing from KCPS at approximately noon local (central standard) time. According to the TAF, what cloud coverage and cloud height should be expected for the time of your departure?

```
KCPS 061553Z 21003KT 10SM BKN055 03/M03 A3027 RMK AO2 SLP253 T00331033

BLV UA /OV TOY180030/TM 1613/FL150/TP MD80/TA M11/IC MOD CLR 080/RM ZKC FDC

KCPS 061140Z 0612/0712 23007KT 5SM SN OVC030
  FM061700 29008KT 2SM SN OVC020
  FM062000 33008KT 6SM OVC028
  FM070000 35007KT P6SM BKN035
  FM070200 35006KT P6SM SKC

FT  3000    6000    9000   12000   18000   24000  30000  34000  39000
COU 3513 3218-06 2641-06 2747-11 2773-22 2896-32 781047 770955 782357
SGF 3210 3019-03 2537-04 2836-07 2773-19 2889-30 289746 770054 772958
STL 3115 2917-06 2640-08 2755-12 2777-23 7801-32 781747 771655 782357
DIK      2915-14 2822-13 2929-20 3234-28 3043-39 305851 296757 296158
GFK 3015 3119-16 3027-18 3036-24 3249-33 3254-41 315953 306456 306456
```

Given Answer: Overcast 2000

Correct Answer: Overcast 2000

QUESTION 68: MULTIPLE CHOICE

1 out of 1 points

Refer to the weather products below. What wind speed and direction would be expected for a flight in the vicinity of STL at 6,000 feet?

```
KCPS 061553Z 21003KT 10SM BKN055 03/M03 A3027 RMK AO2 SLP253 T00331033

BLV UA /OV TOY180030/TM 1613/FL150/TP MD80/TA M11/IC MOD CLR 080/RM ZKC FDC

KCPS 061140Z 0612/0712 23007KT 5SM SN OVC030
  FM061700 29008KT 2SM SN OVC020
  FM062000 33008KT 6SM OVC028
  FM070000 35007KT P6SM BKN035
  FM070200 35006KT P6SM SKC

FT  3000    6000    9000   12000   18000   24000  30000  34000  39000
COU 3513 3218-06 2641-06 2747-11 2773-22 2896-32 781047 770955 782357
SGF 3210 3019-03 2537-04 2836-07 2773-19 2889-30 289746 770054 772958
STL 3115 2917-06 2640-08 2755-12 2777-23 7801-32 781747 771655 782357
DIK      2915-14 2822-13 2929-20 3234-28 3043-39 305851 296757 296158
GFK 3015 3119-16 3027-18 3036-24 3249-33 3254-41 315953 306456 306456
```

Given Answer: 290 degrees at 17 knots

Correct Answer: 290 degrees at 17 knots

FEEDBACK AND NOTES FOR ATTEMPT

Feedback to Learner

Paragraph Arial 3 (12pt)

Mashups

Undergraduate Course Assessment Form

Course: FSCI 1150 - Flight 1
Semester Taught: Fall 2020
Number of Students in Course: 40

Student Learning Outcome Assessed	Assessment Results: (Percentage of student oral and flight stage checks graded as "Satisfactory" on first attempt)	Benchmark achieved? (Benchmark: 80% of student oral and flight stage checks will receive a grade of "Satisfactory" on first attempt)
H. Use the techniques, skills, and modern technology necessary for professional practice.	Module 1 and 2 Stage Check Pass Rate: 89%	Yes
J. Apply pertinent knowledge in identifying and solving problems.	Module 1 and 2 Stage Check Pass Rate: 89%	Yes

Recommendations: Develop more structured instructor professional development plans throughout each semester. Continue to evaluate and improve upon the new-hire and check instructor standardization process. Continually revise syllabus and training course outlines to ensure accurate and up-to-date lesson content, training standards, and student expectations.

Description of Assignment: The student assessment consists of two stage check practical exams. Each stage check consists of an oral portion and a flight portion. Satisfactory (S) or Unsatisfactory (U) performance is determined in accordance with the Module Completion Standards (attached) and/or the appropriate Airmen Certification Standards (ACS)/Practical Test Standards (PTS).

Notes: Attached are the module completion standards included in the approved Training Course Outline. These documents describe the expectations and assessment standards for stage check oral and flight checks. Also attached are example stage check grade sheets.

Module 1

Basic Flight Training

Prerequisites: Prior to beginning this module the student must be enrolled in the Private Pilot Course and must possess a First or Second Class Medical Certificate issued within the previous 12 calendar months.

Objective: To provide students with the fundamental knowledge and skill necessary to conduct ground operations, takeoffs, and flight maneuvers with minimal instructor assistance.

Completion Standards:

- The student must meet the following minimum training time requirements during this module:

DUAL	OTHER		
Local	ATD	Pre/ Post	Ground
13.3	3.7	5.6	21.0

- Prior to completion of the module, students must pass a written exam and stage check to evaluate their understanding of:
  1) Airworthiness, including certificate and document locations and expiration, required inspections, equipment requirements, and flight with inoperative equipment.
  2) Weather information, including acceptable sources of weather data and weather products such as METARs, TAFs, PIREPs, AIRMETs, SIGMETs, winds aloft forecasts, and area forecasts.
  3) Aerodynamics associated with maneuvering flight, slow flight, stalls, and steep turns, including a description of angle of attack, load factor, maneuvering speed, stall speeds, turning tendencies, and overbanking tendency.
  4) Major aircraft components and systems by describing normal and abnormal operation of systems such as primary and secondary flight controls and trim,

powerplant and propeller, landing gear, fuel, oil, hydraulic, electrical, flight instruments, and environmental systems.

5) Airport considerations such as signs, markings, and lighting, collision avoidance, runway incursion avoidance, wake turbulence avoidance, wind shear avoidance, and NOTAMs and TFRs.

- Prior to completion of the module, students must pass a stage check to evaluate their ability to:

1) Inspect the airplane with reference to an appropriate checklist and explain which items must be inspected and how to detect possible defects. Verify the airplane is airworthy and in condition for safe flight.
2) Start the engine under various atmospheric conditions and complete the appropriate checklist.
3) Brief occupants on the use of safety belts, doors, and sterile cockpit procedures and execute positive exchange of flight controls.
4) Taxi the airplane, position the flight controls properly for the existing wind conditions, and control direction and speed without excessive use of brakes while maintaining taxiway/runway alignment.
5) Maintain situational awareness while on the ground, use an airport diagram during taxi, and ensure taxi clearances/instructions are received, recorded, and read back correctly. Comply with airport signs, markings, lighting, and ATC clearances.
6) Accomplish the before takeoff checklist, ensure the airplane is in a safe operating condition as recommended by the manufacturer, and provide a departure briefing.
7) Select appropriate radio frequencies for communication with ATC, transmit using phraseology and procedures as specified in the AIM, acknowledge radio communications, and comply with instructions.
8) Perform a takeoff without assistance, lift off and climb at the recommended airspeed +/- 15 knots, and maintain directional control and proper wind correction throughout takeoff and climb while completing appropriate checklists.

9) Perform straight and level flight, turns, climbs, descents, steep turns, slow flight, stalls, and ground reference maneuvers with minimal assistance and in accordance with published procedures, while maintaining altitude +/- 250 feet, airspeed +/- 25 knots, and heading +/- 25 degrees.

10) Perform a simulated emergency approach and landing with minimal assistance and in accordance with published procedures, maintain the best glide airspeed +/- 20 knots, select a suitable landing area, and complete the appropriate checklist.

11) Complete the before landing checklist, identify airport runways, and comply with proper traffic pattern entry procedures with minimal assistance, as directed by ATC.

12) Conduct flight in the traffic pattern, approach, and landing with instructor assistance.

13) Complete the after landing and engine shutdown checklists, conduct an appropriate post flight inspection, and secure the aircraft.

Notes:

- Lessons may be completed out of sequence as necessary to meet academic goals set by the instructor.
- Multiple instructional periods may be required to meet lesson requirements.

Module 2

Solo Flight Operations

Prerequisites: Prior to beginning this module the student must possess a valid Student Pilot Certificate.

Objective: To prepare students for safe solo flight operations in the local practice area.

Completion Standards:

- The student must meet the following minimum training time requirements during this module:

DUAL		SOLO	OTHER		
Local	Inst. Ref.	Local	ATD	Pre/ Post	Ground
15.3	1.5	0.4	1.3	4.4	11.0

- Prior to completion of the module, students must pass a pre-solo written exam and stage check to evaluate their understanding of:
  1) All knowledge areas included in Module 1.
  2) Basic flight instrument function, operation, limitations, and potential errors.
  3) Factors affecting performance of the aircraft, including aircraft loading, atmospheric conditions, and density altitude.
  4) Use of all performance charts, tables, and data to determine takeoff and landing, climb, and cruise performance.
  5) Computing weight and balance for a given scenario and the effects of exceeding weight and balance limits.
  6) Airspace rules and procedures, including types of airspace, VFR weather minimums, chart symbology, operating rules, pilot certification requirements, and airplane equipment requirements.
  7) Applicable sections of parts 61 and 91 of this chapter, including student pilot privileges and limitations, airmen document requirements, medical certificate class and duration, and applicable general operating rules.
- Prior to completion of the module, students must pass a stage check to evaluate their ability to:

1) Perform all tasks included in Module 1.
2) Liftoff at the recommended airspeed -0/+10 knots, climb at the recommended airspeed +/- 10 knots, and maintain directional control and proper wind correction throughout takeoff and climb while completing appropriate checklists.
3) Perform straight and level flight, turns, climbs, descents, steep turns, slow flight, stalls, and ground reference maneuvers in accordance with published procedures while maintaining altitude +/- 200 feet, airspeed +/- 20 knots, and heading +/- 20 degrees.
4) Navigate by reference to landmarks to any point within the practice area using aeronautical charts.
5) Communicate with other traffic in the practice area, make appropriate position reports, and ensure proper aircraft separation is maintained.
6) Control the aircraft solely by reference to instruments in straight and level flight, constant airspeed climbs and descents, and turns to headings while maintaining altitude +/- 250 feet, heading +/-25 degrees, and airspeed +/- 15 knots. Recognize unusual attitudes solely by reference to instruments and perform the correct flight control application to resolve unusual pitch and bank attitudes.
7) Analyze and take appropriate action during simulated equipment malfunctions and emergencies by completing the appropriate checklist or procedure. Perform a simulated emergency approach and landing, maintain the best glide airspeed +/- 15 knots, select a suitable landing area, plan a flight pattern to the landing area that would allow for a safe landing, and complete the appropriate checklist.
8) Comply with proper traffic pattern procedures, maintain proper spacing from other aircraft, correct for wind drift, and maintain orientation with the runway while maintaining traffic pattern altitude +/- 150 feet and appropriate airspeed +/- 15 knots.
9) Perform normal and crosswind landings and forward slips to a landing without assistance. Establish the recommended approach and landing configuration

while maintaining airspeed +/-10 knots, maintain a stabilized approach, touchdown smoothly at a speed that provides little or no aerodynamic lift, and maintain crosswind correction and directional control throughout the approach and landing.

10) Perform short and soft field takeoffs and landings with instructor assistance.
11) Conduct a go-around as necessary. Make a timely decision to discontinue the approach to landing, retract the flaps, and transition to climb pitch attitude for the appropriate airspeed +/- 10 knots.

Notes:

- Lessons may be completed out of sequence as necessary to meet academic goals set by the instructor.
- Multiple instructional periods may be required to meet lesson requirements.

ACTIVITY GRADESHEET

Instructor: XXXXXXXXX **Student 1:** XXXXXXXXXX **Unit Grade:** S

Course: Flight I R6 **Comments:** **Unit:** F11 DL-FLT CHK **Activity Type:** Flight **Activity Subtype:** Check Ride

Completion Standard

The student will demonstrate all required tasks with minimal assistance and will meet the applicable module completion standards.

Objective Block

To evaluate the student in the maneuvers and procedures included in Module 1.

Line Item Group	Line Item Description	Prev	Line Item Grade						U/M Reason	Attp	Line Item Comment
ACS Procedures	Engine Starting(Ev)		S	U	I				NA	0	
ACS Procedures	Taxiing(Ev)		S	U	I				NA	0	
ACS TO+Land	Normal Takeoff and Climb(Ev)		S	U	I				NA	0	
01 F15 Maneuver	Straight and level flight, and turns in both directions.(Ev)		S	U	I				NA	0	
leg SLU-Manvrs	Straight Climbs and Climbing Turns(Ev)		S	U	I				NA	0	
01 F15 Maneuver	Straight Descents and Descending Turns(Ev)		S	U	I				NA	0	
ACS Perform	Steep Turns(Ev)		S	U	I				NA	0	
ACS Slow Flt	Maneuvering During Slow Flight(Ev)		S	U	I				NA	0	
ACS Slow Flt	Power-Off Stalls(Ev)		S	U	I				NA	0	
ACS Slow Flt	Power-On Stalls(Ev)		S	U	I				NA	0	
01 Used ETA LI	Emergency Procedures(Ev)		S	U	I				NA	0	
ACS Emerg ops	Emergency Approach and Landing (Simulated) (ASEL)(Ev)		S	U	I				NA	0	
ACS Perform	Ground Reference Maneuvers(Ev)		S	U	I				NA	0	
01 F15 Spc Emph	Collision Avoidance(Ev)		S	U	I				NA	0	
01 F15 General	Daily Lesson Performance Grade (5pts)(Ev)		5	4	3	2	1	I	NA	0	

ACTIVITY GRADESHEET

Instructor: XXXXXXXX **Student 1:** XXXXXXXXX **Unit Grade:** U

Course: Flight I R6 **Unit:** F11 DL-FLT CHK **Activity Type:** Flight **Activity Subtype:** Check Ride

Comments:

Completion Standard

The student will demonstrate all required tasks with minimal assistance and will meet the applicable module completion standards.

Objective Block

To evaluate the student in the maneuvers and procedures included in Module 1.

Line Item Group	Line Item Description	Prev	Line Item Grade						U/M Reason	Attp	Line Item Comment
ACS Procedures	Engine Starting(Ev)		$\boxed{S}$	U	I				NA	0	
ACS Procedures	Taxiing(Ev)		$\boxed{S}$	U	I				NA	0	
ACS TO+Land	Normal Takeoff and Climb(Ev)		$\boxed{S}$	U	I				NA	0	
01 F15 Maneuver	Straight and level flight, and turns in both directions.(Ev)		S	$\boxed{U}$	I				NA	0	1000 foot altitude deviations multiple times
leg SLU-Manvrs	Straight Climbs and Climbing Turns(Ev)		$\boxed{S}$	U	I				NA	0	
01 F15 Maneuver	Straight Descents and Descending Turns(Ev)		$\boxed{S}$	U	I				NA	0	
ACS Perform	Steep Turns(Ev)		$\boxed{S}$	U	I				NA	0	
ACS Slow Flt	Maneuvering During Slow Flight(Ev)		$\boxed{S}$	U	I				NA	0	
ACS Slow Flt	Power-Off Stalls(Ev)		S	$\boxed{U}$	I				NA	0	90 degrees off starting heading, needed to read procedure in airplane
ACS Slow Flt	Power-On Stalls(Ev)		S	$\boxed{U}$	I				NA	0	unable to perform correct procedure
01 Used ETA LI	Emergency Procedures(Ev)		$\boxed{S}$	U	I				NA	0	
ACS Emerg ops	Emergency Approach and Landing (Simulated) (ASEL)(Ev)		$\boxed{S}$	U	I				NA	0	
ACS Perform	Ground Reference Maneuvers(Ev)		$\boxed{S}$	U	I				NA	0	
01 F15 Spc Emph	Collision Avoidance(Ev)		$\boxed{S}$	U	I				NA	0	
01 F15 General	Daily Lesson Performance Grade (5pts)(Ev)		5	4	$\boxed{3}$	2	1	I	NA	0	

Undergraduate Course Assessment Form

Course: FSCI 1250 - Basic Flight Foundations
Semester Taught: Fall 2020
Number of Students in Course: 41

Student Learning Outcome Assessed	Assessment Results: (Indicate what % of class achieved a minimum 70%)	Benchmark achieved? (Benchmark: 80% of students will score a minimum of 70% = "C")
H. Use the techniques, skills, and modern technology necessary for professional practice.	Midterm Exam Question 18: 100% Midterm Exam Question 19: 93% Midterm Exam Question 73: 78% Final Exam Question 7: 90% Final Exam Question 12: 92% Final Exam Question 14: 97%	Overall: 91% Benchmark Achieved

Recommendations: Greater emphasis should be placed on areas determined to be weak in other Private Pilot flight courses to maximize value of content.

Note: Attached are the midterm and final exam given in this course in addition to the highest and lowest-scoring student attempts for these exams.

This Test has 41 attempts. For information on editing questions, click **More Help** below.

Test Canvas: Midterm Exam

The Test Canvas lets you add, edit, and reorder questions, as well as review a test. More Help

Question Settings

You can edit, delete, or change the point values of test questions on this page. If necessary, test attempts will be regraded after you submit your changes.

Description	
Instructions	
Total Questions	80
Total Points	79
Number of Attempts	41

Select: All None Select by Type: - Question Type -

Delete and Regrade Points Update and Regrade Hide Question Details

Multiple Choice: Which statement is true regarding rig...

Points: 1

Question Which statement is true regarding right of way rules?

Answer

- When two airplanes are converging, but not head-on, the faster airplane always has the right of way.
- When overtaking another aircraft traveling in the same direction, you must pass well clear on the left side of the other aircraft.
- ✔ When two airplanes are approaching head-on, you and the pilot of the other aircraft must alter course to the right.

Multiple Choice: Except when necessary for takeoff or ...

Points: 1

Question Except when necessary for takeoff or landing, when operating over open water or sparsely populated areas, an aircraft may not be operated closer than __________ from any person, vessel, vehicle, or structure?

Answer

- ✔ 500 feet
- 1,000 feet
- 2,000 feet
- ½ NM

Multiple Choice: Except when necessary for takeoff or ...

Points: 1

Question	Except when necessary for takeoff or landing, when operating over any congested area of a city, town, or settlement, or over any open-air assembly of persons, no person may operate an aircraft below:
Answer	500 feet above the surface 500 feet above any obstacle within 2000 feet of the aircraft 1000 feet above the surface ✔ 1000 feet above the highest obstacle within 2000 feet of the aircraft

Multiple Choice: You have just started the airplane's ...

Points: 1

Question	You have just started the airplane's engine and are preparing to taxi to the runway for departure. You must contact ground control and receive instructions prior to:
Answer	Leaving the parking spot ✔ Entering the airport movement area Taxiing onto the active runway for departure Entering the airport ramp area

Multiple Choice: Runway Aiming Point markings are loca...

Points: 1

Question	Runway Aiming Point markings are located how far from the threshold?
Answer	100 feet 500 feet ✔ 1000 feet 2000 feet

Multiple Choice: Runway Touchdown Zone markings are se...

Points: 1

Question	Runway Touchdown Zone markings are separated by how many feet?
Answer	100 feet ✔ 500 feet

1000 feet

2000 feet

True/False: Taxiway markings are white, while run...

Points: 1

Question	Taxiway markings are white, while runway markings are yellow.
Answer	True ✔ False

True/False: Runway holding position markings cons...

Points: 1

Question

Runway holding position markings consist of two solid yellow lines and two dashed yellow lines. A pilot needs a clearance prior to crossing when approaching from the side of the solid lines.

Answer

✔ True

False

Multiple Choice: What color are taxiway edge lights?

Points: 1

Question

What color are taxiway edge lights?

Answer

Green

✔ Blue

White

Yellow

Multiple Choice: How is a lighted land airport identif...

Points: 1

Question

How is a lighted land airport identified at night?

Answer

✔ White and green flashing beacon

Yellow and white flashing beacon

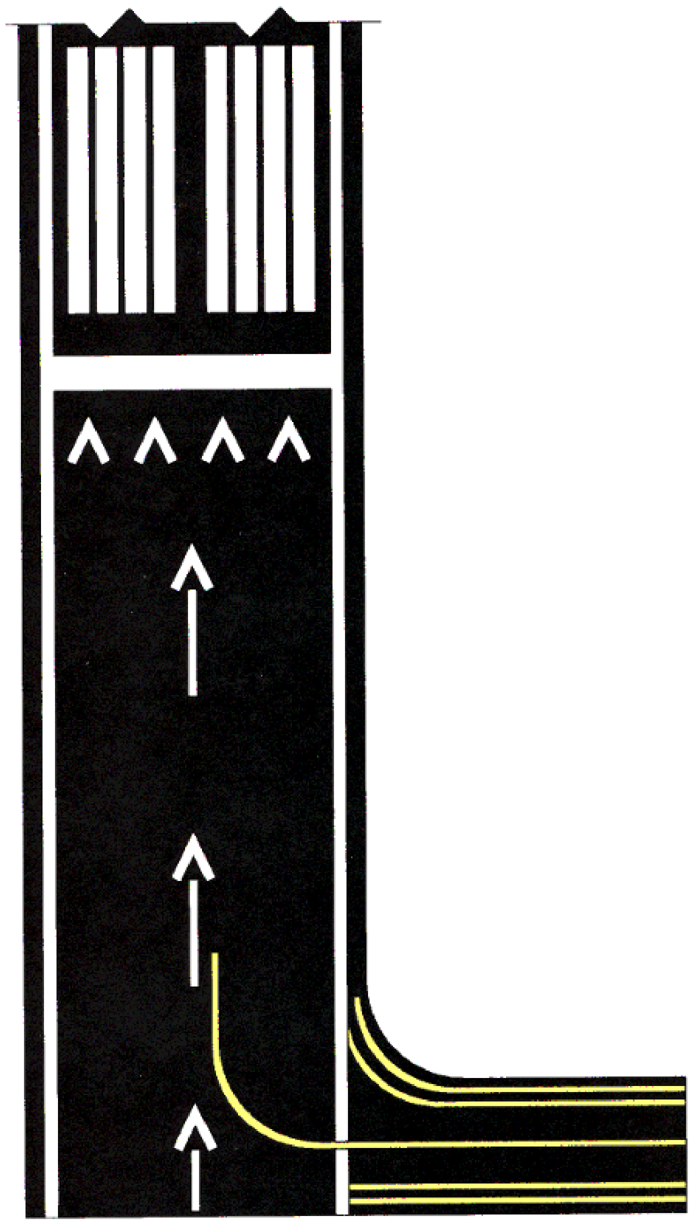
Yellow, white, and green flashing beacon

☐ Multiple Choice: In the figure below, what does the ar...

Points: 1

Question

In the figure below, what does the area of pavement marked by white arrows represent?



Answer

✔ A displaced threshold

A blastpad/stopway

A runway under construction

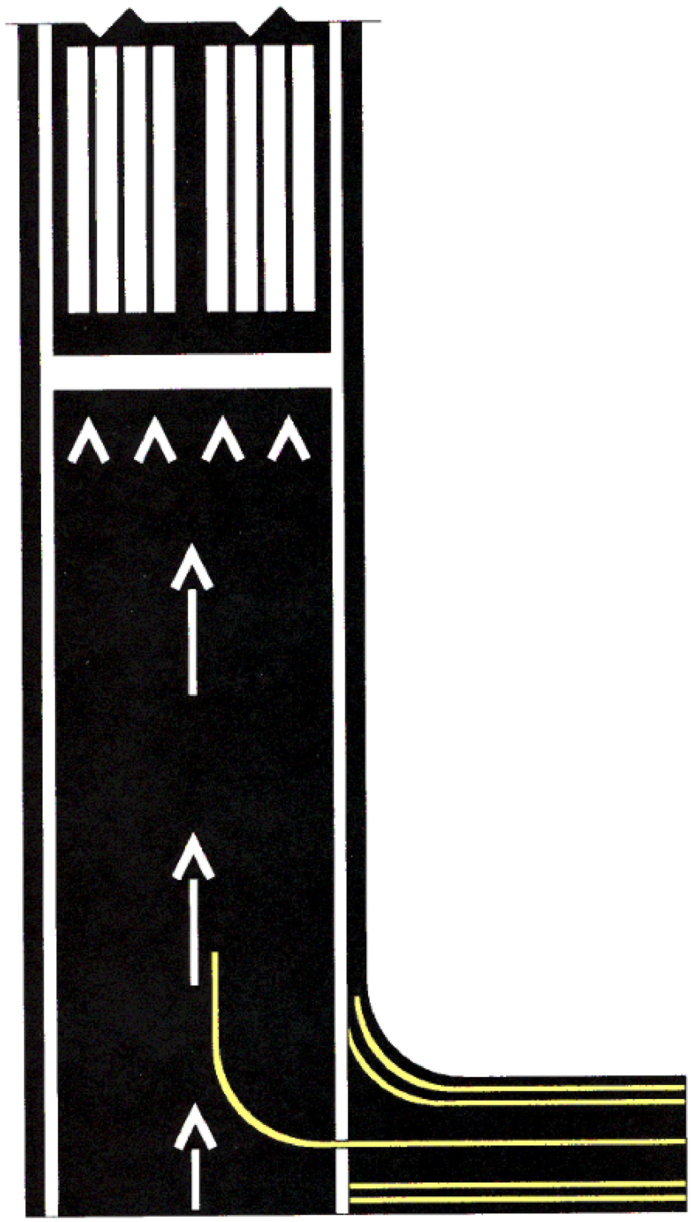
The runway touchdown zone

Multiple Choice: In the figure below, what may the are...

Points: 1

Question

In the figure below, what may the area marked by white arrows be used for?



Answer

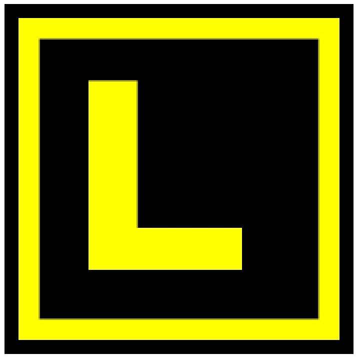
Taxi only

✔ Takeoff in the direction of the arrows

Landing in the direction of the arrows

Points: 1

Multiple Choice: What is the meaning of the sign below?

Question	What is the meaning of the sign below? 
Answer	✓ The aircraft is currently located on taxiway Lima
	The aircraft is approaching the intersection of taxiway Lima
	The aircraft is approaching the left of two parallel runways

Multiple Choice: What is an on-glideslope indication f...

Points: 1

Question	What is an on-glideslope indication from a VASI?
Answer	A red light over a red light
	✓ A red light over a white light
	A white light over a white light
	A single horizontal line of lights made up of two red lights and two white lights

Multiple Choice: You receive the following taxi instru...

Points: 1

Question	You receive the following taxi instructions from Ground Control: “Billiken 20, taxi to runway 12R via A and B1.” This taxi route takes you across runway 5/23. You may legally taxi:
Answer	All the way to runway 12R, but must hold short of runway 12R.
	✓ To the intersection of runway 5/23, where a further clearance must be received in order to cross.
	Onto runway 12R, but may not takeoff until a takeoff clearance is received from the control tower.

Multiple Choice: If ATC instructs you to “Ident,” what...

Points: 1

Question	If ATC instructs you to “Ident,” what do they want you to do?
Answer	✓ Press the “Ident” button on the transponder

Reply with your aircraft callsign

Confirm your location and altitude

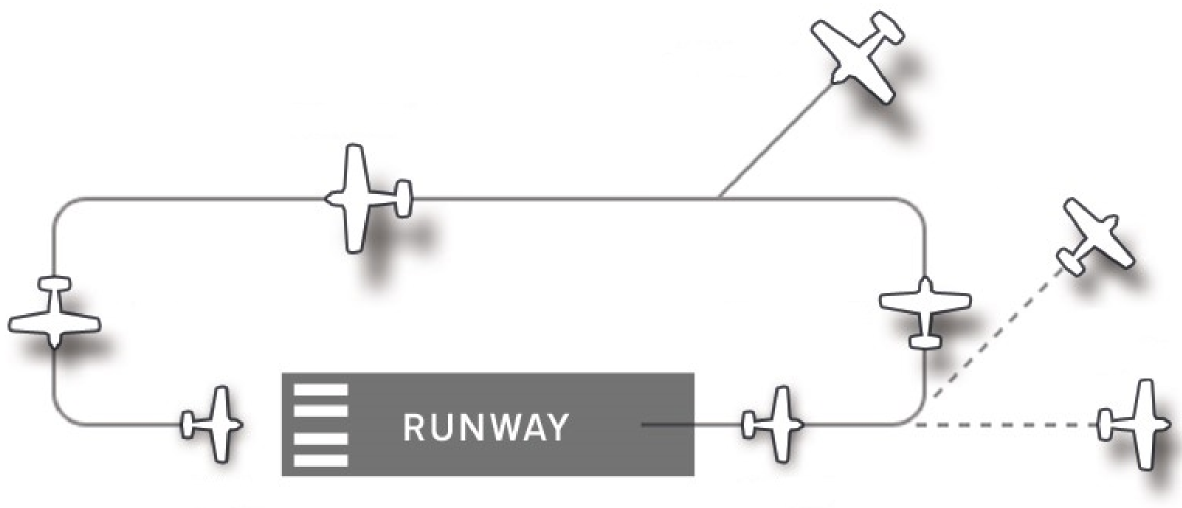
Set your transponder code to 1200

☐ **Hot Spot: Click on the airplane symbol located ...**

Points: 1

Question Click on the airplane symbol located on a left crosswind.

Answer



☐ **Multiple Choice: A transponder code of 7700 should be ...**

Points: 1

Question	A transponder code of 7700 should be used in what situation?
Answer	✔ Emergency Hijacking Loss of communications VFR operations

☐ **Multiple Choice: Using a network of ground stations an...**

Points: 1

Question	Using a network of ground stations and specialized aircraft equipment, this system provides ATC highly accurate position and speed information for all aircraft, and it provides pilots real-time traffic position data and weather information.
Answer	VOR WAAS RAIM

✓ ADS-B

Multiple Choice: Assume the current time is 2:00 PM (C... Points: 1

Question	Assume the current time is 2:00 PM (Central Daylight Time). What is the current Zulu time?
Answer	7:00 8:00 14:00 ✓ 19:00

Multiple Choice: What is the meaning of the word "Stan... Points: 1

Question	What is the meaning of the word "Standby" when used over the radio?
Answer	✓ Wait and I will call you Unable to comply with your request Proceed with your message Hold your present position

Multiple Choice: Which of the following is an appropri... Points: 1

Question	Which of the following is an appropriate response when asked a yes/no question by ATC over the radio?
Answer	Yes Roger ✓ Affirmative Wilco

Multiple Choice: In the event of suspected communicati... Points: 1

Question	In the event of suspected communications failure during a VFR training flight when returning to a Class D airport, what is the best course of action?
Answer	Squawk 7700, enter the airspace, and land immediately on the first available runway

✅ Observe the flow of traffic, enter the airspace, and wait for light gun signals

Choose a different airport; you may not enter the Class D airspace

Multiple Choice: In the event of radio communication f...

Points: 1

Question	In the event of radio communication failure, the control tower can provide instructions using a light gun. If while taxiing you saw a flashing red light coming from the tower, what is the appropriate action?
Answer	Stop immediately Takeoff immediately Return to your starting point on the airport ✅ Taxi clear of the runway

Multiple Choice: Additional airport data, such as runw...

Points: 1

Question	Additional airport data, such as runway information, fuel availability, hours of operation, and lighting availability, can be found in what publication?
Answer	✅ Chart Supplement Federal Aviation Regulations Notices to Airmen Publication Aeronautical Information Manual

Multiple Choice: FAR Part 61 deals with which of the f...

Points: 1

Question	FAR Part 61 deals with which of the following subjects?
Answer	✅ Certification of Pilots Pilot Schools Maintenance General Operating Rules

Multiple Choice: FAR Part 91 deals with which of the f...

Points: 1

Question	FAR Part 91 deals with which of the following subjects?

Answer	Certification of Pilots Pilot Schools Maintenance ✔ General Operating Rules

☐ Multiple Choice: On Sectional and Terminal Area Charts...

Points: 1

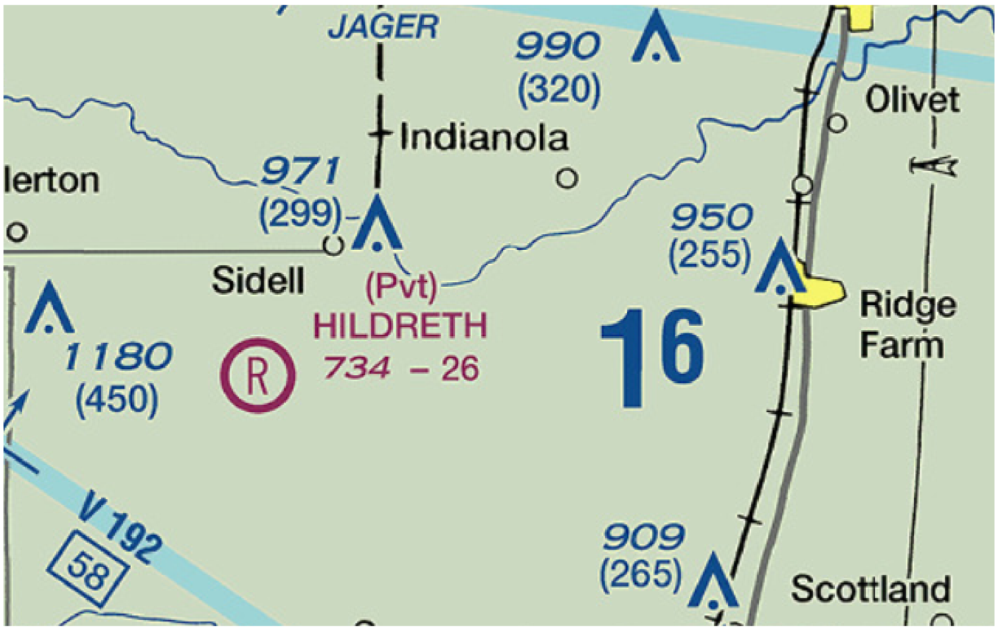
Question	On Sectional and Terminal Area Charts, towered airports are shown in what color?
Answer	✔ Blue Black Magenta Grey

☐ Multiple Choice: Refer to the chart excerpt below. Wha...

Points: 1

Question

Refer to the chart excerpt below. What is the height above the ground (AGL) of the top of the obstacle located in the town of Ridge Farm?



Answer

✔ 255 feet

695 feet

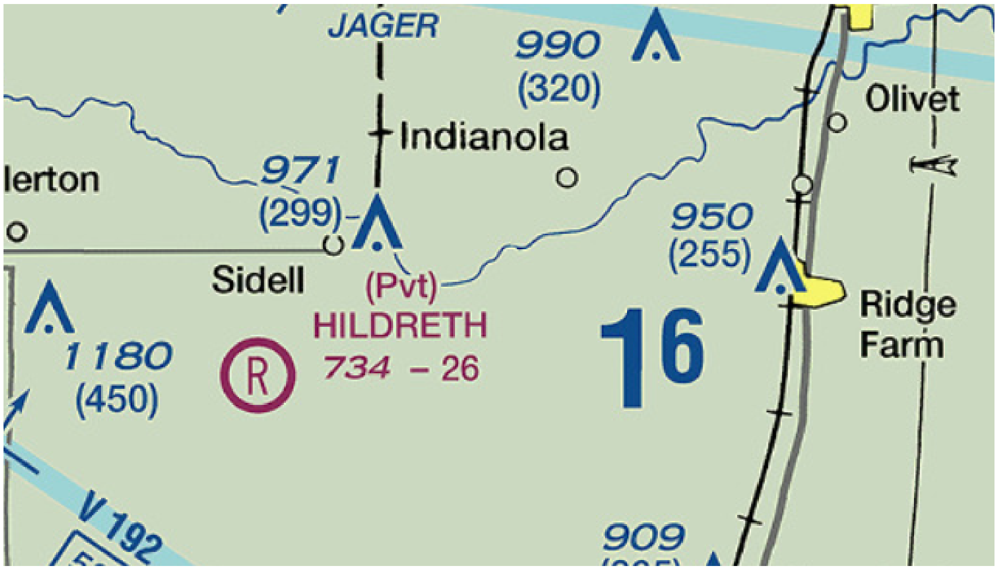
950 feet

Multiple Choice: Refer to the chart excerpt below. Wha...

Points: 1

Question

Refer to the chart excerpt below. What does the circled magenta R indicate?



Answer

A restricted area requiring ATC permission to enter

A private airport requiring the owner's permission to land

A public-use airport with an unpaved runway

Multiple Choice: Refer to the chart excerpt below. Wha...

Points: 1

Question

Refer to the chart excerpt below. What do the numbers 1^6 to the southwest of Ridge Farm indicate?

Answer

- Length in hundreds of feet of the longest runway in that sector
- Average elevation of the airports in the area
- Required visibility in miles for operating in that quadrant
- ✔ The highest elevation in hundreds of feet of terrain or obstacles in that quadrant

☐ Multiple Choice: Refer to the chart excerpt below. Wha...

Points: 1

Question

Refer to the chart excerpt below. What do the tick marks around the TAZ airport symbol indicate?

Answer

A rotating beacon is in operation from sunset to sunrise

Part time operation of the control tower

The runways are hard surface

✅ Services are available at the airport

☐ **Multiple Choice: Refer to the chart excerpt below. Wha...**

Points: 1

Question

Refer to the chart excerpt below. What is the elevation of TAZ airport?

Answer

- 400 feet
- ✅ 622 feet
- 860 feet
- 4000 feet

☐ Multiple Choice: Refer to the chart excerpt below. Whi...

Points: 1

Question

Refer to the chart excerpt below. Which of the following statement(s) is/are true regarding TAZ airport?

\

Answer

- Airport lighting is available, but limitations exist
- The length of the longest runway is approximately 4000 feet
- Parachute operations take place in the vicinity of the airport
- ✅ All of the above

☐ Multiple Choice: Refer to the chart excerpt below. Whe...

Points: 1

Question

Refer to the chart excerpt below. When operating near TAZ airport, the frequency 122.8 should be used for what purpose?

Answer	✔ Communicating your intentions to other aircraft in the area
	Communicating with the control tower
	Listening to the automated weather
	Reporting your position to approach control

☐ **Multiple Choice: Refer to the chart excerpt below. Whi...**

Points: 1

Question	Refer to the chart excerpt below. Which of the following best describes the airspace above TAZ airport?
Answer	✔ Class G at the surface extending up to 700 AGL
	Class G at the surface extending up to 1,200 AGL
	Class E at the surface extending up to 700 AGL
	Class E at the surface extending up to 18,000 MSL

☐ **Multiple Choice: Where is Class E airspace most common...**

Points: 1

Question	Where is Class E airspace most commonly located?
Answer	Surrounding the busiest airports in the nation
	From the surface to either 700 or 1200 AGL
	✔ From 700 or 1200 AGL up to the bottom of the overlying airspace
	At and above FL180 (18,000 MSL)

☐ **Multiple Choice: What is magnetic variation?**

Points: 1

Question	What is magnetic variation?
Answer	The change in heading required to compensate for the effects of wind
	✔ The angular difference between true and magnetic north
	The compass error caused by interference from electrical equipment in the aircraft

The slow drifting of the heading indicator requiring it to be periodically set to match the compass

Multiple Choice: Which statement is true regarding ope...

Points: 0

Question	Which statement is true regarding operations in Class C airspace?
Answer	A specific clearance must be received prior to entry
	✓ A pilot may enter as soon as two way radio communications have been established
	A pilot may enter as soon as two way radio communications have been established

Multiple Choice: What are the basic VFR weather minimu...

Points: 1

Question	What are the basic VFR weather minimums when operating an aircraft in Class B airspace?
Answer	1 mile visibility and clear of clouds
	✓ 3 miles visibility and clear of clouds
	3 miles visibility and 500 feet below, 1000 feet above, 2000 feet horizontally from clouds
	5 miles visibility and 1000 feet below, 1000 feet above, 1 SM horizontally from clouds

Multiple Choice: How is Class A airspace identified on...

Points: 1

Question	How is Class A airspace identified on a Sectional or Terminal Area Chart?
Answer	A dashed blue line
	A shaded blue line
	A dashed magenta line
	✓ Not depicted

True/False: When approaching a Class D airport fo...

Points: 1

Question	When approaching a Class D airport for landing, you contact the tower and they respond with, “Aircraft calling tower, say again.” This is considered to be establishing two-way communication, and the Class D airspace may be entered.
Answer	True
	✓ False

Multiple Choice: During operations in Class G airspace...

Points: 1

Question	During operations in Class G airspace below 1,200 AGL during the day, what is the required visibility?
Answer	✔ 1 SM 2 SM 3 SM 5 SM

☐ Multiple Choice: When operating below 10,000 MSL in Cl...

Points: 1

Question	When operating below 10,000 MSL in Class E airspace, what are the basic VFR weather minimums?
Answer	1 mile visibility and clear of clouds 1 mile visibility and 500 feet below, 1000 feet above, 2000 feet horizontally from clouds ✔ 3 miles visibility and 500 feet below, 1000 feet above, 2000 feet horizontally from clouds 5 miles visibility and 1000 feet below, 1000 feet above, 1 SM horizontally from clouds

☐ Multiple Choice: In which of the following areas is a ...

Points: 1

Question	In which of the following areas is a transponder required?
Answer	Above 10,000 feet, excluding that airspace at and below 2,500 AGL In Class C and Class B airspace and within 30 NM of the Class B primary airport Above Class C airspace ✔ All of the above

☐ Multiple Choice: Which statement is true regarding ope...

Points: 1

Question	Which statement is true regarding operating under a special VFR clearance during the day?
Answer	The pilot must be instrument rated in an aircraft equipped for instrument flight ✔ One mile flight visibility is required and the flight must be operated clear of clouds Air traffic control will automatically issue a special VFR clearance if conditions warrant

☐ Multiple Choice: What is the maximum airspeed allowed ...

Points: 1

Question	What is the maximum airspeed allowed by regulations when operating below 2,500 AGL within 4 NM of a Class C or Class D airport?
Answer	150 knots ✔ 200 knots 250 knots Mach 1.0

☐ Multiple Choice: Which statement is true regarding fli...

Points: 1

Question	Which statement is true regarding flight in an alert area?
Answer	Permission is required from the controlling agency prior to entering Flight within is not allowed under any circumstances ✔ No authorization is required, but pilots should be extra cautious These areas are not charted, and therefore no specific requirements apply

☐ Multiple Choice: Refer to the chart excerpt below. Whi...

Points: 1

Question	Refer to the chart excerpt below. Which statement is true regarding flight in the special use airspace areas depicted?
Answer	✔ Permission is required from the controlling agency prior to entering Flight within is not allowed under any circumstances No authorization is required, but pilots should be extra cautious

☐ Multiple Choice: Where would a warning area typically ...

Points: 1

Question	Where would a warning area typically be located?
Answer	Around military bases to warn pilots of potentially hazardous military activity Above specific locations in Washington D.C. Above ground facilities that require increased security ✔ Extending from 3 miles outward along the coast

☐ **True/False: Generally, pilots are able to operate...** Points: 1

Question	Generally, pilots are able to operate VFR in airspace affected by a Temporary Flight Restriction without any specific clearance or communication requirements. However, extra vigilance is recommended.
Answer	True ✔ False

☐ **Multiple Choice: Which statement is true regarding fli...** Points: 1

Question	Which statement is true regarding flight in the vicinity of stadiums with more than 30,000 seats during major league sporting events?
Answer	Depending on the event, flight restrictions may or may not be in place; check the FAA website ✔ Flights are automatically restricted within a 3-mile radius below 3,000 AGL No flight restrictions exist, but pilots should be extra vigilant

☐ **Multiple Choice: According to Federal Aviation Regulat...** Points: 1

Question	According to Federal Aviation Regulations, who is responsible for ensuring the aircraft is in a condition for safe flight?
Answer	The mechanics The flight school ✔ The pilot The dispatch department

☐ **Multiple Choice: Which aircraft document is required t...** Points: 1

Question	Which aircraft document is required to be visible to passengers or crew?
Answer	Registration Certificate ✔ Airworthiness Certificate Operation Limitations Weight and Balance Data

☐ **True/False: An airworthiness certificate never ex...** Points: 1

Question	An airworthiness certificate never expires so long as the aircraft is maintained in accordance with the applicable regulations.

Answer	✔ True False

True/False: The operating limitations found in Se...

Points: 1

Question	The operating limitations found in Section 2 of the AFM function as recommendations from the aircraft manufacturer. Pilots may exceed a limitation if they determine it will be in the interest of operational efficiency.
Answer	True ✔ False

Multiple Choice: For which operation is an annual insp...

Points: 1

Question	For which operation is an annual inspection required?
Answer	✔ Any operation Only operations involving flying for hire Only when providing flight instruction Only when carrying passengers

Multiple Choice: An annual inspection was conducted on...

Points: 1

Question	An annual inspection was conducted on January 3 of this year. When will the next annual inspection be due?
Answer	December 31 of this year January 3 of next year ✔ January 31 of next year

Multiple Choice: Which of the following operations wou...

Points: 1

Question	Which of the following operations would require a 100-hour inspection to be conducted on the aircraft?
Answer	✔ Flights carrying passengers for hire Flights carrying cargo for hire Flights conducted in class B airspace All of the above

True/False: The annual inspection will satisfy th...

Points: 1

Question	The annual inspection will satisfy the 100-hour inspection requirement if the annual was conducted within the previous 100 hours of time in service.
Answer	✔ True False

Multiple Choice: How often must the batteries in an EL...

Points: 1

Question	How often must the batteries in an ELT be replaced?
Answer	Every 12 calendar months Every 24 calendar months ✔ After half of their useful life or one hour of cumulative use

Multiple Choice: How often must an ELT inspection be p...

Points: 1

Question	How often must an ELT inspection be performed?
Answer	Every 100 hours of time in service Every 30 days ✔ Every 12 calendar months Every 24 calendar months

Multiple Choice: How often must a transponder inspecti...

Points: 1

Question	How often must a transponder inspection be performed?
Answer	Every 100 hours of time in service Every 30 days Every 12 calendar months ✔ Every 24 calendar months

True/False: You are planning a 2.5 hour flight in...

Points: 1

Question	You are planning a 2.5 hour flight in an airplane with a recurring airworthiness directive (AD) due in only 1.5 hours. You may proceed without a special flight permit assuming the flight is to a destination where the AD can be complied with.
Answer	True ✔ False

Multiple Choice: After determining that an inoperative...

Points: 1

Question	After determining that an inoperative component is not required, which of the following actions must legally be completed prior to flight?
Answer	Placard the instrument or equipment “INOPERATIVE” Deactivate or remove the component Determine whether the inoperative equipment will create a safety hazard ✔ All of the above

Multiple Choice: A list of instruments and equipment r...

Points: 1

Question	A list of instruments and equipment required to be operational for flight can be found in which of the following sources?
Answer	✔ FAR 91.205 Chart Supplements Notices to Airmen Chapter 5 of the Aircraft Flight Manual

Multiple Choice: An aircraft that does not currently m...

Points: 1

Question	An aircraft that does not currently meet applicable airworthiness requirements, but is capable of safe flight, may be flown to a point where repairs can be made by obtaining a __________.
Answer	Operating Certificate Revised Registration Certificate Special VFR Clearance ✔ Special Flight Permit

Multiple Choice: The alternate air control provides a ...

Points: 1

Question	The alternate air control provides a secondary source of air for what purpose?
Answer	Power for the gyroscopes Engine cooling

Carburetor intake

✅ Engine combustion

True/False: Electrical power for starting the eng...

Points: 1

Question	Electrical power for starting the engine is provided by the aircraft battery.
Answer	✅ True False

Multiple Choice: During cruise flight, you notice that...

Points: 1

Question	During cruise flight, you notice that the oil pressure appears to be decreasing, and the oil temperature is gradually increasing. What is the best course of action?
Answer	No need for concern as long as engine is running smoothly; continue the flight Suspect a gauge malfunction, monitor the engine gauges, and return to the airport ✅ Serious engine problems may be present; reduce throttle to minimum required RPM and prepare for potential off-airport landing Immediately shut down the engine and land in any field within gliding distance

Multiple Choice: What is a function of the anti-servo ...

Points: 1

Question	What is a function of the anti-servo tab?
Answer	To act as a trim tab for the ailerons ✅ To reduce the tendency to overcontrol the airplane’s pitch To increase lift without increasing parasite drag To compensate for changes in altitude on the elevator

Multiple Choice: VY is the best __________ of climb sp...

Points: 1

Question	V_Y is the best __________ of climb speed. This airspeed will produce the greatest altitude gain in a given __________.
Answer	✅ rate, time angle, time rate, horizontal distance

angle, horizontal distance

Multiple Choice: The left turning tendency of an airpl...

Points: 1

Question	The left turning tendency of an airplane known as torque is caused by what?
Answer	✔ The clockwise rotation of the engine and the propeller turning the airplane counterclockwise The propeller blade descending on the right, producing more thrust than the ascending blade on the left The gyroscopic forces applied to the rotating propeller blades acting 90 degrees after the point the forces were applied The spiraling airflow from the propeller striking the vertical stabilizer and rudder

Multiple Choice: Assuming a constant altitude is maint...

Points: 1

Question	Assuming a constant altitude is maintained, how does lift in slow flight compare to lift at cruise speeds?
Answer	Lift in slow flight is greater than lift during cruise flight due to the higher angle of attack Lift during cruise flight is greater than lift during slow flight due to the higher airspeed ✔ Lift is approximately the same in slow flight as it is during flight at cruise airspeeds

Multiple Choice: What type of drag would be created at...

Points: 1

Question	What type of drag would be created at the intersection of the wing and the fuselage due to mixing of airflow?
Answer	Form Skin Friction ✔ Interference Induced

Multiple Choice: Why is adverse yaw created during a t...

Points: 1

Question	Why is adverse yaw created during a turn?
Answer	✔ The ailerons are deflected during turn entry, resulting in more lift and more induced drag on one wing The rudder is deflected creating more drag on one side of the airplane

Lift is redirected during a bank, resulting in induced drag acting on one wing more than the other

One wing is moving faster than the other in the turn, creating more lift and more induced drag

Multiple Choice: What is the primary cause of overbank...

Points: 1

Question	What is the primary cause of overbanking tendency in steep turns?
Answer	The ailerons are deflected during the turn resulting in more lift on one wing The rudder is deflected during turns creating an additional force that increases bank angle ✔ One wing is moving faster than the other, creating more lift than the other wing The horizontal component of lift acts on the airplane to increase bank angle

Multiple Choice: Load factor is defined as the ratio o...

Points: 1

Question	Load factor is defined as the ratio of the total load the airplane is supporting to the ___________.
Answer	stall speed in the landing configuration maximum G's the structure can withstand maneuvering speed of the airplane ✔ weight of the airplane

True/False: Load factor and stall speed will alwa...

Points: 1

Question	Load factor and stall speed will always increase in a coordinated, constant-altitude turn.
Answer	✔ True False

Select: All None Select by Type: - Question Type -

Delete and Regrade | Points | Update and Regrade | Hide Question Details

← OK

This Test has 41 attempts. For information on editing questions, click **More Help** below.

Test Canvas: Final Exam

The Test Canvas lets you add, edit, and reorder questions, as well as review a test. More Help

Question Settings

You can edit, delete, or change the point values of test questions on this page. If necessary, test attempts will be regraded after you submit your changes.

Description	
Instructions	
Total Questions	68
Total Points	68
Number of Attempts	41

Select: All None Select by Type: - Question Type -

Delete and Regrade Points Update and Regrade Hide Question Details

Points: 1

1. Multiple Choice: Which transponder code should be used...

Question	Which transponder code should be used in the event of a loss of communication?
Answer	1200
	7500
	✓ 7600
	7700

2. Multiple Choice: Runway Touchdown Zone markings are se...

Points: 1

Question	Runway Touchdown Zone markings are separated by how many feet?
Answer	100 feet ✔ 500 feet 1000 feet 2000 feet

3. Multiple Choice: The portion of a runway designated as...

Points: 1

Question	The portion of a runway designated as a displaced threshold may be used for which of the following operations?
Answer	Taxi only Landing in the direction of the arrows ✔ Taxi and takeoff in the direction of the arrows

4. Multiple Choice: Induced drag increases as the _____ i...

Points: 1

Question	Induced drag increases as the _____ increases.
Answer	Airplane's airspeed ✔ Angle of attack of the wing Total parasite drag

5. Multiple Choice: Vy is the best _____ of climb speed. ...

Points: 1

Question	Vy is the best _____ of climb speed. This airspeed will produce the greatest altitude gain in a given _____.
Answer	✓ rate; time rate; horizontal distance angle; time angle; horizontal distance

6. Multiple Choice: The turning tendency of an airplane k...

Points: 1

Question	The turning tendency of an airplane known as precession is caused by what?
Answer	The clockwise rotation of the engine and the propeller turning the airplane counterclockwise The propeller blade descending on the right, producing more thrust than the ascending blade on the left ✓ The gyroscopic forces applied to the rotating propeller blades acting 90 degrees after the point the forces were applied The airflow from the propeller striking the vertical stabilizer and rudder

7. Multiple Choice: If an airplane is maintaining altitud...

Points: 1

Question	If an airplane is maintaining altitude during a turn at 30 degrees of bank, the airplane will stall at _____ airspeed than during straight and level flight.
Answer	✓ a higher a lower

the same

8. Multiple Choice: How is adverse yaw created during a t...

Points: 1

Question	How is adverse yaw created during a turn?
Answer	The inside wing is creating more induced drag because it is moving slower The rudder is deflected creating more drag on one side of the airplane ✔ The ailerons are deflected during turn entry, resulting in more induced drag on one wing

9. Multiple Choice: Which of the following best describes...

Points: 1

Question	Which of the following best describes ground effect?
Answer	A sudden reduction in performance when within one wingspan of the ground A tendency of the airplane to settle to the surface earlier than desired ✔ An increase in lift and a decrease in induced drag when within one wingspan of the ground

10. Multiple Choice: Assuming the CG is within the allowab...

Points: 1

Question	Assuming the CG is within the allowable limits, what effect would an aft CG have on the airplane?
Answer	Increase in stability compared to an airplane with a forward CG ✔ Increase in performance compared to an airplane with a forward CG Difficulty flaring for landing

☐ 11. Multiple Choice: In an aircraft equipped with a vacuum...

Points: 1

Question	In an aircraft equipped with a vacuum system, if the suction/vacuum gauge is indicating below the green arc during the engine run-up, what system or equipment will be affected?
Answer	The fuel system The oil system ✔ The gyroscopic flight instruments The environmental system

☐ 12. Multiple Choice: In the event of a failure of the airc...

Points: 1

Question	In the event of a failure of the aircraft's alternator/generator, which of the following indications would you expect to see on the electrical gauges?
Answer	An increase in voltage and a positive indication on the ammeter A decrease in voltage and a positive indication on the ammeter An increase in voltage and a negative indication on the ammeter ✔ A decrease in voltage and a negative indication on the ammeter

☐ 13. Multiple Choice: Which of the following instrument ind...

Points: 1

Question	Which of the following instrument indications would you expect if the static port became blocked?
Answer	Only the airspeed indicator would read incorrectly The heading indicator, attitude indicator, and turn coordinator would read incorrectly

The altimeter and VSI would read incorrectly

✅ The altimeter, VSI, and airspeed indicator would read incorrectly

☐ 14. Multiple Choice: In a fuel injected airplane, when wou...

Points: 1

Question	In a fuel injected airplane, when would the alternate air need to be opened?
Answer	✅ When the primary engine air intake becomes blocked When the pitot or static lines become blocked When the engine is operating at higher than normal temperatures due to restricted cooling airflow When carburetor ice is suspected

☐ 15. Multiple Choice: Which of the following best describes...

Points: 1

Question	Which of the following best describes a PIREP?
Answer	A forecast of hazardous conditions, such as wind shear or icing ✅ An in-flight report on current weather conditions made by a pilot A forecast of visibility and cloud heights across a large region making up several states A report of the current frontal activity and pressure systems

☐ 16. Multiple Choice: A SIGMET would be issued for which of...

Points: 1

Question	A SIGMET would be issued for which of the following conditions?

Answer	Light icing ✔ Extreme turbulence Marginal VFR conditions

17. Multiple Choice: An AIRMET will be issued for which of...

Points: 1

Question	An AIRMET will be issued for which of the following conditions?
Answer	Moderate icing Moderate turbulence IFR conditions ✔ All of the above

18. Multiple Choice: Which of the following wind shear con...

Points: 1

Question	Which of the following wind shear conditions would likely be most hazardous to an aircraft during takeoff or landing?
Answer	A crosswind abruptly shifting to a headwind ✔ A headwind abruptly shifting to a tailwind A tailwind abruptly shifting to a headwind

19. Multiple Choice: It is typically recommended to remain...

Points: 1

Question	It is typically recommended to remain at least how many miles away from a thunderstorm?

Answer	5 miles 10 miles 15 miles ✔ 20 miles

20. Multiple Choice: Prior to the passage of a warm front,...

Points: 1

Question	Prior to the passage of a warm front, which of the following weather conditions would be most likely?
Answer	Cumulous clouds and possible thunderstorms ✔ Poor visibility and light-to-moderate precipitation Good visibility and unstable air

21. Multiple Choice: During the passage of a cold front, w...

Points: 1

Question	During the passage of a cold front, which of the following weather conditions would be most likely?
Answer	✔ Cumulous clouds, rain showers, and possible thunderstorms Stratus clouds and widespread light precipitation Cirrus clouds and possible structural icing

22. Multiple Choice: A front is best defined as:

Points: 1

Question	A front is best defined as:
Answer	✔ A boundary between two airmasses with different temperatures

A large area of relatively uniform humidity

An extended area of high pressure

23. Multiple Choice: Hazards associated with structural ic...

Points: 1

Question Hazards associated with structural icing include which of the following?

Answer

- Decrease in lift
- Increase in drag
- Increase in weight
- ✅ All of the above

24. Multiple Choice: Which of the following conditions mus...

Points: 1

Question Which of the following conditions must be in place for the aircraft to accumulate ice on its exterior surfaces?

Answer

- Frozen precipitation, such as snow or ice pellets
- Temperatures below 70 degrees Fahrenheit and high relative humidity
- ✅ Visible moisture and an aircraft surface temperature at or below freezing

25. Multiple Choice: What type of fog forms due to surface...

Points: 1

Question What type of fog forms due to surface cooling and is common on clear, calm nights?

Answer

- Advection

Radiation

Upslope

Steam

26. Multiple Choice: Describe the weather conditions most ...

Points: 1

Question	Describe the weather conditions most commonly associated with a temperature inversion.
Answer	Stable air and good visibility
	Stable air and restricted visibility
	Unstable air and good visibility
	Unstable air and restricted visibility

27. Multiple Choice: Airflow around a low pressure system ...

Points: 1

Question	Airflow around a low pressure system is _____ and _____.
Answer	Upward and clockwise
	Downward and clockwise
	Upward and counterclockwise
	Downward and counterclockwise

28. Multiple Choice: In the northern hemisphere, Coriolis ...

Points: 1

Question

In the northern hemisphere, Coriolis Force causes objects to be deflected to the _____.

Answer	✓ Right
	Left
	East
	West

☐ **29. Multiple Choice: According to Part 1 of the Federal Av...** Points: 1

Question	According to Part 1 of the Federal Aviation Regulations, "night" begins at what time?
Answer	Sunset
	✓ The end of evening civil twilight
	45 minutes after sunset

☐ **30. Multiple Choice: As a private pilot, you may perform c...** Points: 1

Question	As a private pilot, you may perform certain maintenance activities on an aircraft you own or operate. What is this known as?
Answer	Minor maintenance
	Minor alteration
	✓ Preventive maintenance
	Preventive alteration

☐ **31. Multiple Choice: Private pilots are required to have w...** Points: 1

Question	Private pilots are required to have which of the following documents available in the aircraft when acting as Pilot in Command?
Answer	Medical Certificate Pilot Certificate Photo Identification ✔ All of the above

☐ **32. Multiple Choice: A pilot conducting operations requiri...**

Points: 1

Question	A pilot conducting operations requiring a private pilot certificate must hold at least what class of medical certificate?
Answer	First Class Second Class ✔ Third Class

☐ **33. Multiple Choice: A 19-year old private pilot is issued...**

Points: 1

Question	A 19-year old private pilot is issued a second class medical certificate. For operations requiring a private pilot certificate, how long will this medical certificate remain valid?
Answer	6 calendar months 12 calendar months 24 calendar months ✔ 60 calendar months

☐ 34. True/False: Assume a pilot conducted training and...

Points: 1

Question	Assume a pilot conducted training and completed a Private Pilot checkride in a Diamond DA20. That pilot will be restricted to flying only Diamond DA20 aircraft until passing a type rating in a different make/model.
Answer	True ✔ False

☐ 35. Multiple Choice: A complex airplane is an airplane wit...

Points: 1

Question	A complex airplane is an airplane with flaps, retractable landing gear, and:
Answer	✔ An adjustable pitch propeller A fuel injection system An engine with more than 200 horsepower A maximum operating altitude above 25,000 feet

☐ 36. True/False: Private pilots may log time as "Pilot...

Points: 1

Question	Private pilots may log time as "Pilot In Command" whenever they are the sole manipulator of the controls of an aircraft for which they are rated, even if there is another more experienced pilot in the cockpit.
Answer	✔ True False

☐ 37. Multiple Choice: A private pilot received a flight rev...

Points: 1

Question	A private pilot received a flight review on May 10 of this year. When is the next flight review required?
Answer	May 10, next year May 31, next year ✔ May 31, year after next

☐ 38. Multiple Choice: To act as pilot in command of an airc...

Points: 1

Question	To act as pilot in command of an aircraft carrying passengers, the pilot must have made at least three takeoffs and three landings in an aircraft of the same category and class within the preceding:
Answer	30 days ✔ 90 days 12 calendar months 24 calendar months

☐ 39. Multiple Choice: Which of the following limitations ap...

Points: 1

Question	Which of the following limitations apply to student pilots with a current solo endorsement
Answer	Minimum visibility during the day is always limited to 3 SM The student pilot may not land at any other airport without an additional logbook endorsement The pilot may not operate more 25 NM from the departure airport without an additional logbook endorsement ✔ All of the above

☐ 40. True/False: Private pilots may be compensated for...

Points: 1

Question	Private pilots may be compensated for any flight they conduct as long as that flight does not carry passengers.
Answer	True ✔ False

41. Multiple Choice: A private pilot conducts a flight car...

Points: 1

Question	A private pilot conducts a flight carrying three additional passengers. The operating expenses for the flight total $400.00, and the pilot wishes to share these expenses with the passengers as much as possible. At a minimum, how much is the pilot required to contribute?
Answer	No contribution from the pilot is necessary ✔ $100.00 $200.00 $400.00

42. Multiple Choice: No person may attempt to act as a cre...

Points: 1

Question	No person may attempt to act as a crewmember of an aircraft within ______ after consuming any alcoholic beverage or with a blood alcohol content of ______ or greater.
Answer	✔ 8 hours; 0.04 8 hours; 0.08 12 hours; 0.04 12 hours; 0.08

43. True/False: During cruise flight, passengers may ...

Points: 1

Question	During cruise flight, passengers may remove their safety belt as long as it is refastened prior to landing.
Answer	✔ True False

44. Multiple Choice: According to regulations, what is the...

Points: 1

Question	According to regulations, what is the fuel requirement for VFR flight during the day in an airplane?
Answer	Enough to complete the flight to the planned destination at normal cruising speed ✔ Enough to fly to the first point of intended landing and to fly after that for 30 minutes at normal cruising speed Enough to fly to the first point of intended landing and to fly after that for 45 minutes at normal cruising speed Enough to fly to the first point of intended landing and to fly after that for 60 minutes at normal cruising speed

☐ 45. Multiple Choice: Except when necessary for takeoff or ...

Points: 1

Question	Except when necessary for takeoff or landing, when operating over any congested area of a city, town, or settlement, or over an open-air assembly of persons, no person may operate an aircraft below:
Answer	500 feet above the surface 500 feet above any obstacle within 2000 feet of the aircraft 1000 feet above the surface ✔ 1000 feet above the highest obstacle within 2000 feet of the aircraft

☐ 46. Multiple Choice: For which operation is a 100-hour ins...

Points: 1

Question	For which operation is a 100-hour inspection required?
Answer	Any operation Any operation for hire ✔ Only operations carrying persons for hire

Only operations carrying cargo for hire

☐ **47. True/False: The 100-hour inspection can take the ...** Points: 1

Question	The 100-hour inspection can take the place of the annual inspection if the 100-hour inspection was conducted within the previous 12 calendar months.
Answer	True ✔ False

☐ **48. Multiple Choice: How often must a transponder inspecti...** Points: 1

Question	How often must a transponder inspection be performed?
Answer	Every 30 days Every 100 hours of time in service Every 12 calendar months ✔ Every 24 calendar months

☐ **49. Multiple Choice: How often does an aircraft Airworthin...** Points: 1

Question	How often does an aircraft Airworthiness Certificate expire?
Answer	Every 12 calendar months Every 24 calendar months Every 3 years ✔ It does not expire assuming the aircraft is maintained in accordance with the applicable FAR's

☐ 50. Multiple Choice: How often must an ELT inspection be p...

Points: 1

Question	How often must an ELT inspection be performed?
Answer	Every 30 days
	Every 100 hours of time in service
	✅ Every 12 calendar months
	Every 24 calendar months

☐ 51. Multiple Choice: How often must the batteries in an EL...

Points: 1

Question	How often must the batteries in an ELT be replaced?
Answer	Every 12 calendar months
	Every 24 calendar months
	✅ After half of their useful life or one hour of cumulative use

☐ 52. Multiple Choice: Where would a warning area typically ...

Points: 1

Question	Where would a warning area typically be located?
Answer	Around military bases to warn pilots of potentially hazardous military activity
	Above specific locations in Washington D.C.
	Above ground facilities that require increased security
	✅ Extending from 3 miles outward along the coast

53. Multiple Choice: Which statement is true regarding fli...

Points: 1

Question	Which statement is true regarding flight in a restricted area?
Answer	These areas are not charted, and therefore no specific requirements apply No authorization is required, but pilots should be extra cautious ✓ Permission is required from the controlling agency prior to entry Flight within is not allowed under any circumstances

54. Multiple Choice: In which of the following areas is a ...

Points: 1

Question	In which of the following areas is a transponder required?
Answer	✓ In and above Class C airspace Airspace within 30 NM of a Class C primary airport In Class D airspace All of the above

55. Multiple Choice: When operating below 10,000 MSL in Cl...

Points: 1

Question	When operating below 10,000 MSL in Class E airspace, what are the basic VFR weather minimums?
Answer	1 mile visibility and clear of clouds 1 mile visibility and 500 feet below, 1000 feet above, 2000 feet horizontally from clouds

3 miles visibility and 500 feet below, 1000 feet above, 2000 feet horizontally from clouds

5 miles visibility and 1000 feet below, 1000 feet above, 1 SM horizontally from clouds

Points: 1

56. Multiple Choice: What are the basic VFR weather minimu...

Question	What are the basic VFR weather minimums when operating an aircraft in Class B airspace?
Answer	1 mile visibility and clear of clouds 3 miles visibility and clear of clouds 3 miles visibility and 500 feet below, 1000 feet above, 2000 feet horizontally from clouds 5 miles visibility and 1000 feet below, 1000 feet above, 1 SM horizontally from clouds

Points: 1

57. Multiple Choice: Which statement is true regarding ope...

Question	Which statement is true regarding operations in Class C airspace?
Answer	A specific clearance must be received prior to entry A pilot may enter as soon as two way radio communications have been established A private pilot certificate is required to enter; student pilot operations are not authorized

Points: 1

58. Multiple Choice: Where is Class G airspace typically l...

Question

	Where is Class G airspace typically located in our area?
Answer	✔ From the surface to either 700 or 1200 AGL
	From 700 or 1200 AGL to the bottom of the overlying airspace
	Surrounding the busiest airports in the nation
	At and above FL180 (18,000 MSL)

☐ 59. Multiple Choice: Winds are reported to be from 330° at...

Points: 1

Question	Winds are reported to be from 330° at 20 knots. You plan on departing from runway 30R. Which of the following would be the most reasonable estimation of headwind and crosswind components?
Answer	Headwind: 15 knots, Crosswind: 15 knots
	Headwind: 10 knots, Crosswind: 17 knots
	✔ Headwind: 17 knots, Crosswind: 10 knots

☐ 60. Multiple Choice: Which of the following conditions wil...

Points: 1

Question	Which of the following conditions will result in improved cruise performance?
Answer	High pressure
	Light airplane
	Cold temperature
	✔ All of the above

61. Multiple Choice: If the outside air temperature at the...

Points: 1

Question

If the outside air temperature at the airport is warmer than standard, the density altitude will be:

Answer

- Equal to pressure altitude
- ✔ Higher than pressure altitude
- Lower than pressure altitude
- Unable to determine without more information

62. Multiple Choice: At 3,000 feet, the outside air temper...

Points: 1

Question

At 3,000 feet, the outside air temperature is 9°C. How does this compare to the standard temperature at this altitude?

Answer

- ✔ Equal to standard
- Above standard
- Below standard

63. Multiple Choice: Refer to the weather products below.&...

Points: 1

Question

Refer to the weather products below. What local (central standard) time was the KCPS METAR issued?

```
KCPS 061553Z 21003KT 10SM BKN055 03/M03 A3027 RMK AO2 SLP253 T00331033

BLV UA /OV TOY180030/TM 1613/FL150/TP MD80/TA M11/IC MOD CLR 080/RM ZKC FDC

KCPS 061140Z 0612/0712 23007KT 5SM SN OVC030
  FM061700 29008KT 2SM SN OVC020
  FM062000 33008KT 6SM OVC028
  FM070000 35007KT P6SM BKN035
  FM070200 35006KT P6SM SKC

FT  3000    6000    9000    12000   18000   24000   30000  34000  39000
COU 3513 3218-06 2641-06 2747-11 2773-22 2896-32 781047 770955 782357
SGF 3210 3019-03 2537-04 2836-07 2773-19 2889-30 289746 770054 772958
STL 3115 2917-06 2640-08 2755-12 2777-23 7801-32 781747 771655 782357
DIK      2915-14 2822-13 2929-20 3234-28 3043-39 305851 296757 296158
GFK 3015 3119-16 3027-18 3036-24 3249-33 3254-41 315953 306456 306456
```

Answer

6:15

9:53

11:40

15:53

64. Multiple Choice: Refer to the weather products below.&...

Points: 1

Question

Refer to the weather products below. What surface temperature was observed at KCPS?

```
KCPS 061553Z 21003KT 10SM BKN055 03/M03 A3027 RMK AO2 SLP253 T00331033

BLV UA /OV TOY180030/TM 1613/FL150/TP MD80/TA M11/IC MOD CLR 080/RM ZKC FDC

KCPS 061140Z 0612/0712 23007KT 5SM SN OVC030
  FM061700 29008KT 2SM SN OVC020
  FM062000 33008KT 6SM OVC028
  FM070000 35007KT P6SM BKN035
  FM070200 35006KT P6SM SKC

FT  3000    6000    9000    12000   18000   24000   30000  34000  39000
COU 3513 3218-06 2641-06 2747-11 2773-22 2896-32 781047 770955 782357
SGF 3210 3019-03 2537-04 2836-07 2773-19 2889-30 289746 770054 772958
STL 3115 2917-06 2640-08 2755-12 2777-23 7801-32 781747 771655 782357
DIK      2915-14 2822-13 2929-20 3234-28 3043-39 305851 296757 296158
GFK 3015 3119-16 3027-18 3036-24 3249-33 3254-41 315953 306456 306456
```

Answer

-3 degrees C

2 degrees C

3 degrees C

10 degrees C

65. Multiple Choice: Refer to the weather products below. ...

Points: 1

Question

Refer to the weather products below. Which of the following is forecast at KCPS for the morning of the 6th?

```
KCPS 061553Z 21003KT 10SM BKN055 03/M03 A3027 RMK AO2 SLP253 T00331033

BLV UA /OV TOY180030/TM 1613/FL150/TP MD80/TA M11/IC MOD CLR 080/RM ZKC FDC

KCPS 061140Z 0612/0712 23007KT 5SM SN OVC030
  FM061700 29008KT 2SM SN OVC020
  FM062000 33008KT 6SM OVC028
  FM070000 35007KT P6SM BKN035
  FM070200 35006KT P6SM SKC

FT  3000    6000    9000    12000   18000   24000   30000  34000  39000
COU 3513 3218-06 2641-06 2747-11 2773-22 2896-32 781047 770955 782357
SGF 3210 3019-03 2537-04 2836-07 2773-19 2889-30 289746 770054 772958
STL 3115 2917-06 2640-08 2755-12 2777-23 7801-32 781747 771655 782357
DIK      2915-14 2822-13 2929-20 3234-28 3043-39 305851 296757 296158
GFK 3015 3119-16 3027-18 3036-24 3249-33 3254-41 315953 306456 306456
```

Answer

- Rain
- ✔ Moderate snow
- Gusty winds
- Broken cloud coverage

☐ 66. Multiple Choice: Refer to the weather products below.A...

Points: 1

Question

Refer to the weather products below.A pilot in the vicinity of KBLV is reporting what type of flight hazard?


```
KCPS 061553Z 21003KT 10SM BKN055 03/M03 A3027 RMK AO2 SLP253 T00331033

BLV UA /OV TOY180030/TM 1613/FL150/TP MD80/TA M11/IC MOD CLR 080/RM ZKC FDC

KCPS 061140Z 0612/0712 23007KT 5SM SN OVC030
  FM061700 29008KT 2SM SN OVC020
  FM062000 33008KT 6SM OVC028
  FM070000 35007KT P6SM BKN035
  FM070200 35006KT P6SM SKC

FT  3000    6000    9000    12000   18000   24000   30000  34000  39000
COU 3513 3218-06 2641-06 2747-11 2773-22 2896-32 781047 770955 782357
SGF 3210 3019-03 2537-04 2836-07 2773-19 2889-30 289746 770054 772958
STL 3115 2917-06 2640-08 2755-12 2777-23 7801-32 781747 771655 782357
DIK      2915-14 2822-13 2929-20 3234-28 3043-39 305851 296757 296158
GFK 3015 3119-16 3027-18 3036-24 3249-33 3254-41 315953 306456 306456
```


Answer

- ✔ Moderate icing
- Moderate turbulence

Thunderstorms in the vicinity

Wind shear

☐ 67. **Multiple Choice: Refer to the weather products below.&...**

Points: 1

Question

Refer to the weather products below. You have a flight planned for the 6th departing from KCPS at approximately noon local (central standard) time. According to the TAF, what cloud coverage and cloud height should be expected for the time of your departure?

```
KCPS 061553Z 21003KT 10SM BKN055 03/M03 A3027 RMK AO2 SLP253 T00331033

BLV UA /OV TOY180030/TM 1613/FL150/TP MD80/TA M11/IC MOD CLR 080/RM ZKC FDC

KCPS 061140Z 0612/0712 23007KT 5SM SN OVC030
  FM061700 29008KT 2SM SN OVC020
  FM062000 33008KT 6SM OVC028
  FM070000 35007KT P6SM BKN035
  FM070200 35006KT P6SM SKC

FT  3000    6000     9000    12000    18000    24000   30000   34000   39000
COU 3513 3218-06 2641-06 2747-11 2773-22 2896-32 781047 770955 782357
SGF 3210 3019-03 2537-04 2836-07 2773-19 2889-30 289746 770054 772958
STL 3115 2917-06 2640-08 2755-12 2777-23 7801-32 781747 771655 782357
DIK      2915-14 2822-13 2929-20 3234-28 3043-39 305851 296757 296158
GFK 3015 3119-16 3027-18 3036-24 3249-33 3254-41 315953 306456 306456
```

Answer

Overcast 300

✔ Overcast 2000

Overcast 2800

Overcast 3000

☐ 68. **Multiple Choice: Refer to the weather products below.&...**

Points: 1

Question

Refer to the weather products below. What wind speed and direction would be expected for a flight in the vicinity of STL at 6,000 feet?

```
KCPS 061553Z 21003KT 10SM BKN055 03/M03 A3027 RMK AO2 SLP253 T00331033

BLV UA /OV TOY180030/TM 1613/FL150/TP MD80/TA M11/IC MOD CLR 080/RM ZKC FDC

KCPS 061140Z 0612/0712 23007KT 5SM SN OVC030
  FM061700 29008KT 2SM SN OVC020
  FM062000 33008KT 6SM OVC028
  FM070000 35007KT P6SM BKN035
  FM070200 35006KT P6SM SKC

FT  3000    6000    9000   12000   18000   24000  30000  34000  39000
COU 3513 3218-06 2641-06 2747-11 2773-22 2896-32 781047 770955 782357
SGF 3210 3019-03 2537-04 2836-07 2773-19 2889-30 289746 770054 772958
STL 3115 2917-06 2640-08 2755-12 2777-23 7801-32 781747 771655 782357
DIK      2915-14 2822-13 2929-20 3234-28 3043-39 305851 296757 296158
GFK 3015 3119-16 3027-18 3036-24 3249-33 3254-41 315953 306456 306456
```

Answer

- ✔ 290 degrees at 17 knots
- 170 degrees at 29 knots
- 170 degrees at 6 knots
- 320 degrees at 18 knots

Select: All None Select by Type: - Question Type -

Delete and Regrade Points Update and Regrade Hide Question Details

← **OK**

Blackboard learn

Home Blue Course Evaluations Ac Ryan Boyer 39

Grade Center **Grade Test: Midterm Exam** Edit Mode is: ON ?

Grade Test: Midterm Exam

Assign a grade and feedback for the current test attempt. Expand the ***Test Information*** *section to clear the student's attempt or edit the test. More Help*

Jump to... Hide User Names

Viewing 18 of 41 gradable items

(Attempt 1 of 1)

Test Information

Current Grade	47.00000 out of 79 points Grade based on Last Evaluated Attempt
Status	Completed
Attempt Score	47 out of 79 points
Time Elapsed	1 hour, 15 minutes out of 1 hour and 15 minutes
Started Date	10/13/20 8:03 AM Access Log
Submitted Date	10/13/20 9:18 AM LATE
Due Date	10/13/20 9:15 AM
Clear Attempt	Clear Attempt *Click* ***Clear Attempt*** *to clear this user's attempt.*
Edit Test	Edit Test *Click* ***Edit Test*** *to make changes.*
Instructions	

QUESTION 1: MULTIPLE CHOICE

0 **out of 1 points**

Which statement is true regarding right of way rules?

Given Answer: When overtaking another aircraft traveling in the same direction, you must pass well clear on the left side of the other aircraft.

Correct Answer: When two airplanes are approaching head-on, you and the pilot of the other aircraft must alter course to the right.

QUESTION 2: MULTIPLE CHOICE

1 **out of 1 points**

Except when necessary for takeoff or landing, when operating over open water or sparsely populated areas, an aircraft may not be operated closer than __________ from any person, vessel, vehicle, or structure?

Given Answer: 500 feet

Exit Save and Exit

QUESTION 3: MULTIPLE CHOICE | 1 out of 1 points

Except when necessary for takeoff or landing, when operating over any congested area of a city, town, or settlement, or over any open-air assembly of persons, no person may operate an aircraft below:

Given Answer: 1000 feet above the highest obstacle within 2000 feet of the aircraft

Correct Answer: 1000 feet above the highest obstacle within 2000 feet of the aircraft

QUESTION 4: MULTIPLE CHOICE | 0 out of 1 points

You have just started the airplane's engine and are preparing to taxi to the runway for departure. You must contact ground control and receive instructions prior to:

Given Answer: Taxiing onto the active runway for departure

Correct Answer: Entering the airport movement area

QUESTION 5: MULTIPLE CHOICE | 1 out of 1 points

Runway Aiming Point markings are located how far from the threshold?

Given Answer: 1000 feet

Correct Answer: 1000 feet

QUESTION 6: MULTIPLE CHOICE | 1 out of 1 points

Runway Touchdown Zone markings are separated by how many feet?

Given Answer: 500 feet

Correct Answer: 500 feet

QUESTION 7: TRUE/FALSE | 1 out of 1 points

Taxiway markings are white, while runway markings are yellow.

Given Answer: False

Correct Answer: False

QUESTION 8: TRUE/FALSE | 1 out of 1 points

Runway holding position markings consist of two solid yellow lines and two dashed yellow lines. A pilot needs a clearance prior to crossing when approaching from the side of the solid lines.

Exit Save and Exit

Given Answer: True
Correct Answer: True

QUESTION 9: MULTIPLE CHOICE

1 out of 1 points

What color are taxiway edge lights?
Given Answer: Blue
Correct Answer: Blue

QUESTION 10: MULTIPLE CHOICE

1 out of 1 points

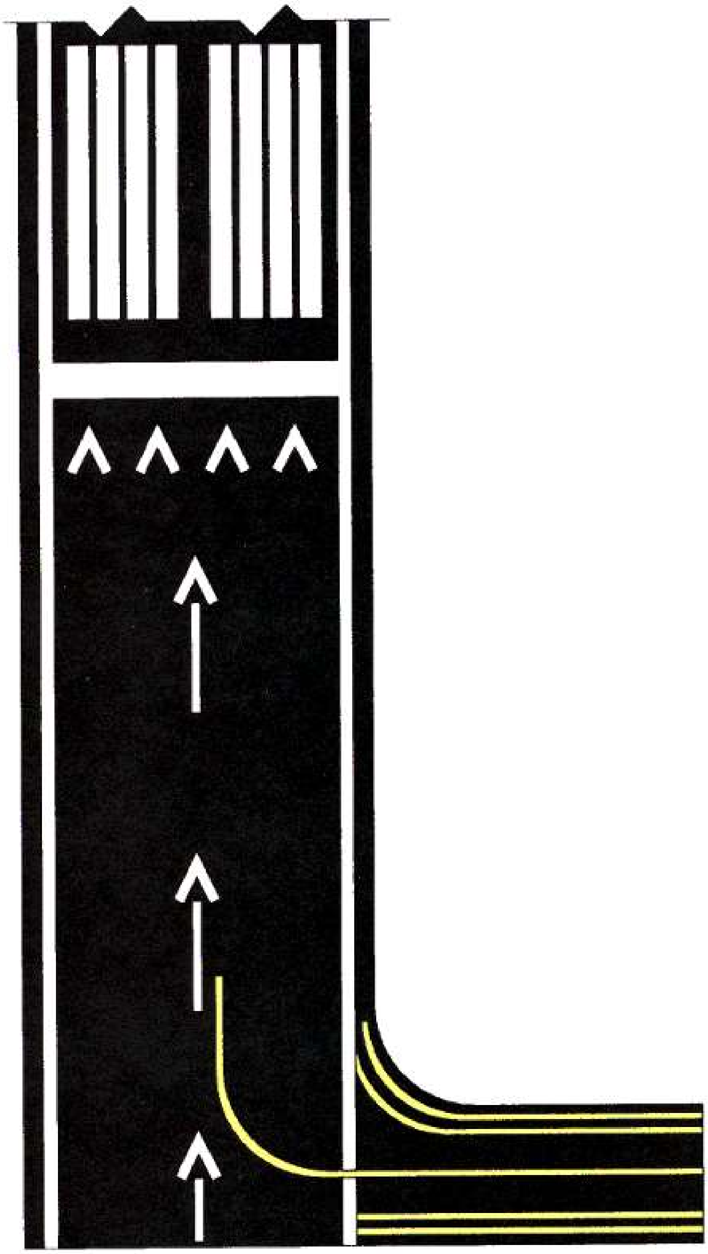
How is a lighted land airport identified at night?
Given Answer: White and green flashing beacon
Correct Answer: White and green flashing beacon

QUESTION 11: MULTIPLE CHOICE

1 out of 1 points

In the figure below, what does the area of pavement marked by white arrows represent?

Exit Save and Exit



Given Answer: A displaced threshold

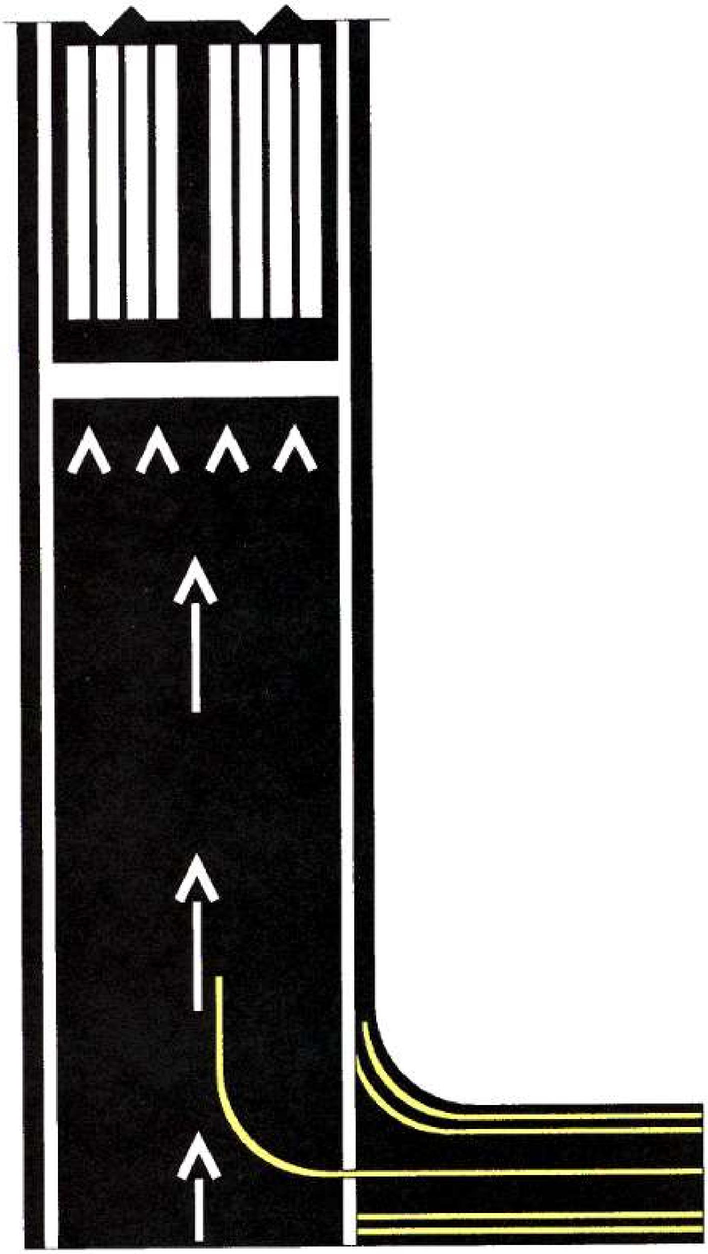
Correct Answer: A displaced threshold

QUESTION 12: MULTIPLE CHOICE

1 out of 1 points

In the figure below, what may the area marked by white arrows be used for?

Exit Save and Exit

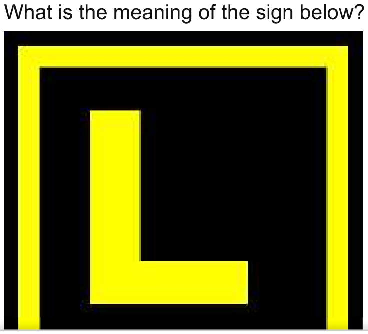


Given Answer: Takeoff in the direction of the arrows

Correct Answer: Takeoff in the direction of the arrows

QUESTION 13: MULTIPLE CHOICE 0 out of 1 points

What is the meaning of the sign below?



Exit Save and Exit

Given Answer: The aircraft is approaching the intersection of taxiway Lima

Correct Answer: The aircraft is currently located on taxiway Lima

QUESTION 14: MULTIPLE CHOICE

0 **out of 1 points**

What is an on-glideslope indication from a VASI?

Given Answer: A single horizontal line of lights made up of two red lights and two white lights

Correct Answer: A red light over a white light

QUESTION 15: MULTIPLE CHOICE

0 **out of 1 points**

You receive the following taxi instructions from Ground Control: “Billiken 20, taxi to runway 12R via A and B1.” This taxi route takes you across runway 5/23. You may legally taxi:

Given Answer: All the way to runway 12R, but must hold short of runway 12R.

Correct Answer: To the intersection of runway 5/23, where a further clearance must be received in order to cross.

QUESTION 16: MULTIPLE CHOICE

0 **out of 1 points**

If ATC instructs you to “Ident,” what do they want you to do?

Given Answer: Set your transponder code to 1200

Correct Answer: Press the “Ident” button on the transponder

QUESTION 17: HOT SPOT

0 **out of 1 points**

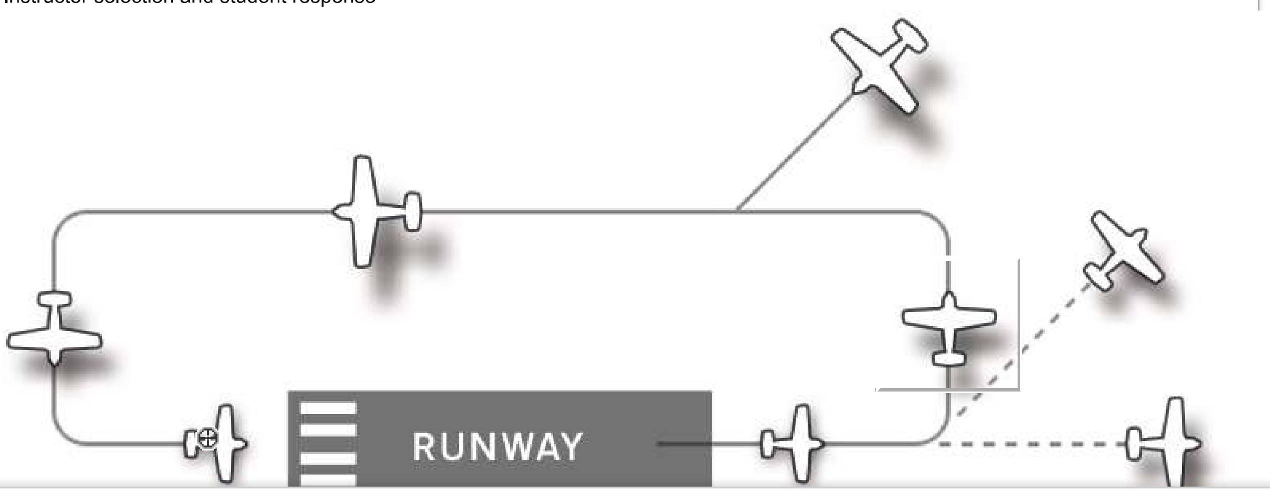
Click on the airplane symbol located on a left crosswind.

Selected Answer: 129, 268

Correct Answer:

Top Left Coordinates (548, 154) Bottom Right Coordinates (640, 240)

Instructor selection and student response



Exit Save and Exit

QUESTION 18: MULTIPLE CHOICE

1 out of 1 points

A transponder code of 7700 should be used in what situation?

Given Answer: Emergency

Correct Answer: Emergency

QUESTION 19: MULTIPLE CHOICE

1 out of 1 points

Using a network of ground stations and specialized aircraft equipment, this system provides ATC highly accurate position and speed information for all aircraft, and it provides pilots real-time traffic position data and weather information.

Given Answer: ADS-B

Correct Answer: ADS-B

QUESTION 20: MULTIPLE CHOICE

1 out of 1 points

Assume the current time is 2:00 PM (Central Daylight Time). What is the current Zulu time?

Given Answer: 19:00

Correct Answer: 19:00

QUESTION 21: MULTIPLE CHOICE

1 out of 1 points

What is the meaning of the word “Standby” when used over the radio?

Given Answer: Wait and I will call you

Correct Answer: Wait and I will call you

QUESTION 22: MULTIPLE CHOICE

1 out of 1 points

Which of the following is an appropriate response when asked a yes/no question by ATC over the radio?

Given Answer: Affirmative

Correct Answer: Affirmative

QUESTION 23: MULTIPLE CHOICE

1 out of 1 points

In the event of suspected communications failure during a VFR training flight when returning to a Class D airport, what is the best course of action?

Given Answer: Observe the flow of traffic, enter the airspace, and wait for light gun signals

Correct Answer: Observe the flow of traffic, enter the airspace, and wait for light gun signals

Exit Save and Exit

QUESTION 24: MULTIPLE CHOICE

1 out of 1 points

In the event of radio communication failure, the control tower can provide instructions using a light gun. If while taxiing you saw a flashing red light coming from the tower, what is the appropriate action?

Given Answer: Taxi clear of the runway

Correct Answer: Taxi clear of the runway

QUESTION 25: MULTIPLE CHOICE

0 out of 1 points

Additional airport data, such as runway information, fuel availability, hours of operation, and lighting availability, can be found in what publication?

Given Answer: Federal Aviation Regulations

Correct Answer: Chart Supplement

QUESTION 26: MULTIPLE CHOICE

1 out of 1 points

FAR Part 61 deals with which of the following subjects?

Given Answer: Certification of Pilots

Correct Answer: Certification of Pilots

QUESTION 27: MULTIPLE CHOICE

1 out of 1 points

FAR Part 91 deals with which of the following subjects?

Given Answer: General Operating Rules

Correct Answer: General Operating Rules

QUESTION 28: MULTIPLE CHOICE

1 out of 1 points

On Sectional and Terminal Area Charts, towered airports are shown in what color?

Given Answer: Blue

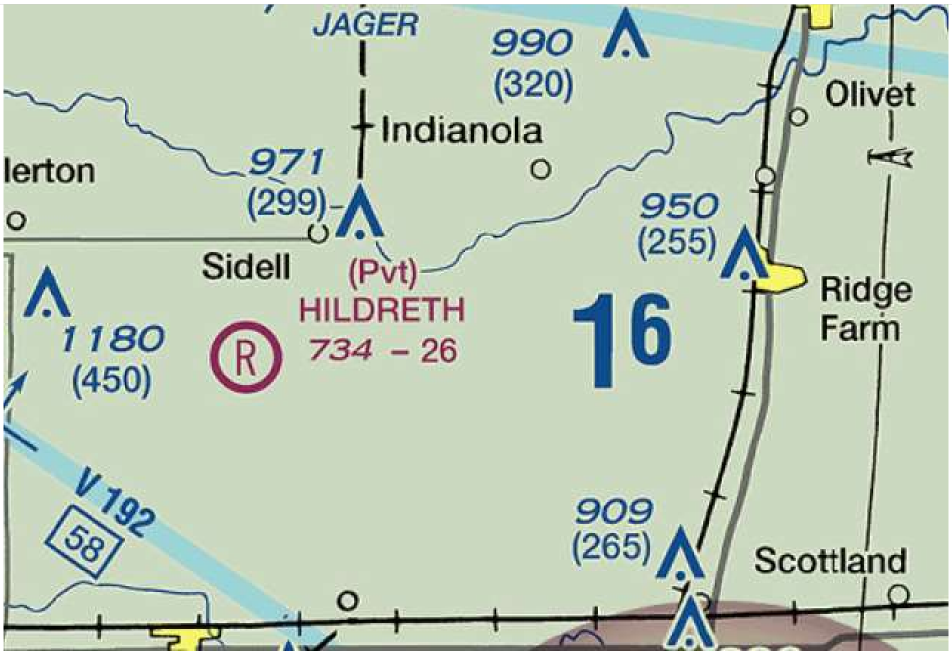
Correct Answer: Blue

QUESTION 29: MULTIPLE CHOICE

0 out of 1 points

Refer to the chart excerpt below. What is the height above the ground (AGL) of the top of the obstacle located in the town of Ridge Farm?

Exit Save and Exit

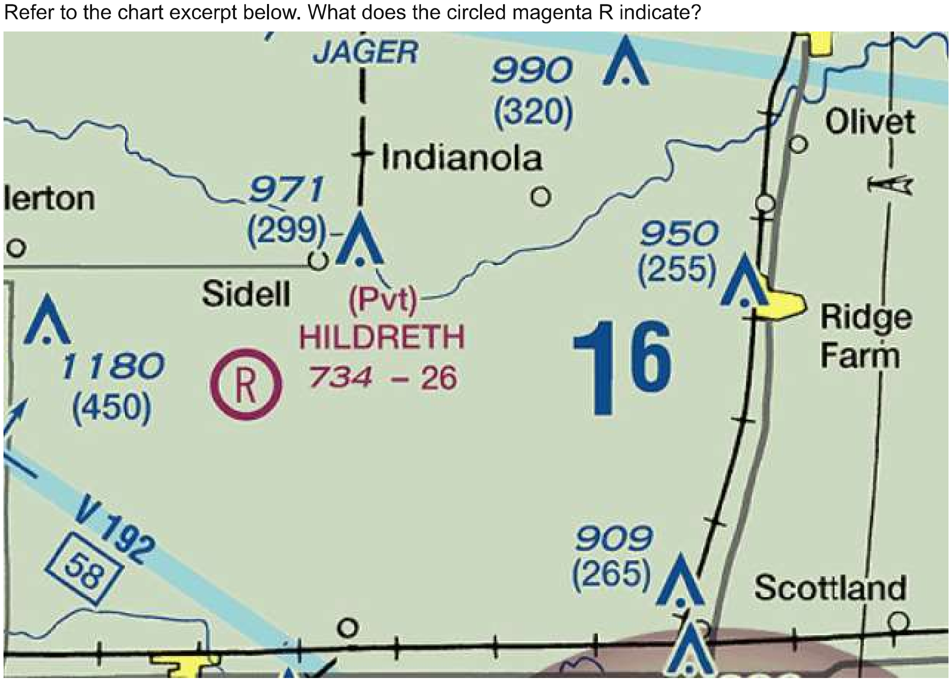


Given Answer: 950 feet

Correct Answer: 255 feet

QUESTION 30: MULTIPLE CHOICE | 1 out of 1 points

Refer to the chart excerpt below. What does the circled magenta R indicate?

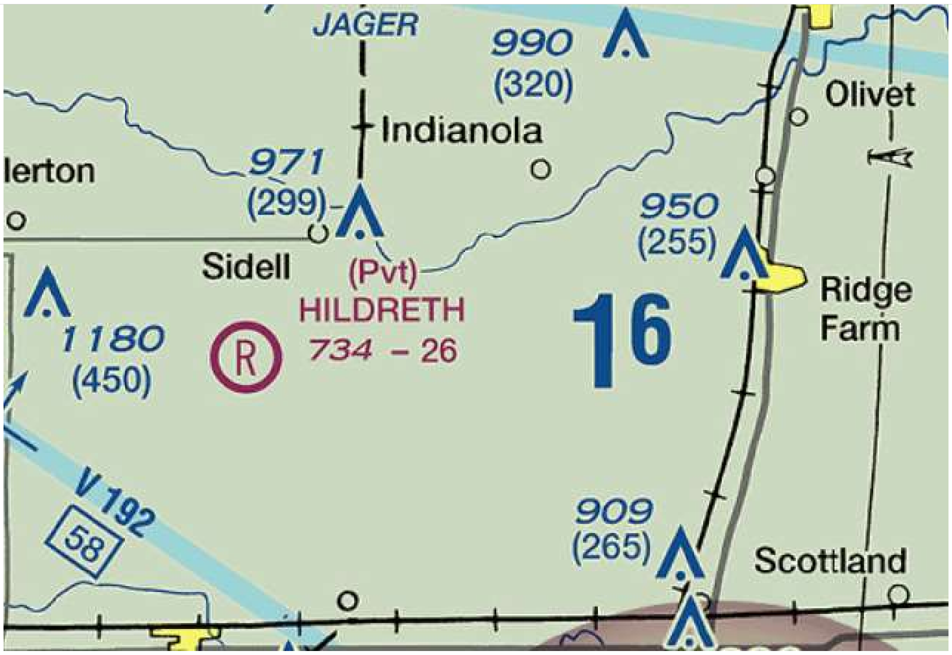


Given Answer: A private airport requiring the owner's permission to land

Correct Answer: A private airport requiring the owner's permission to land

QUESTION 31: MULTIPLE CHOICE | 1 out of 1 points

Exit | Save and Exit



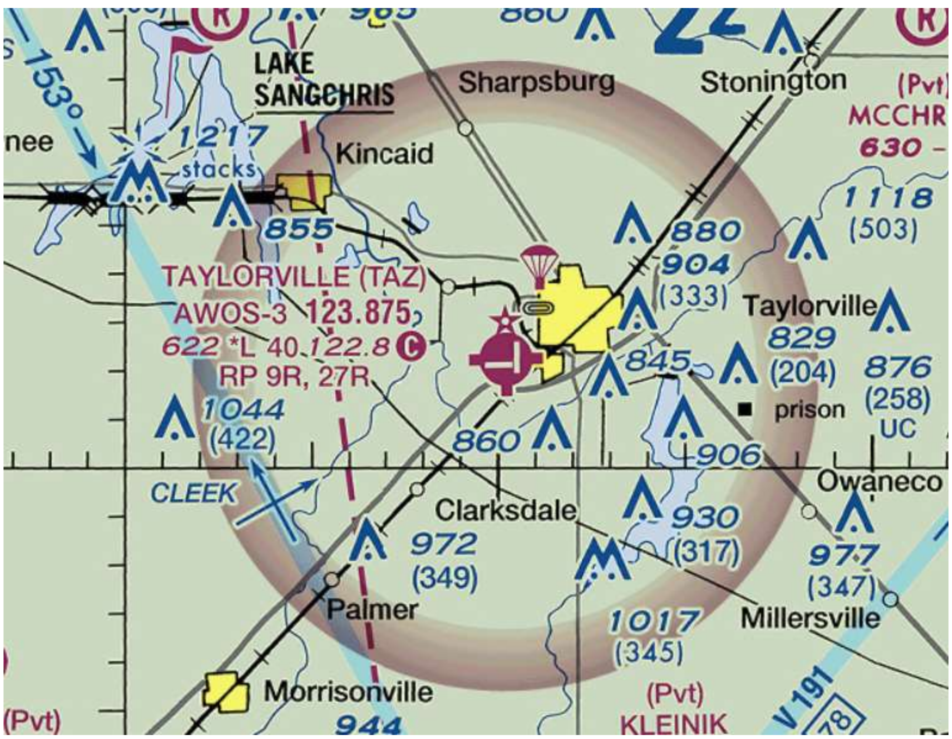
Given Answer: The highest elevation in hundreds of feet of terrain or obstacles in that quadrant

Correct Answer: The highest elevation in hundreds of feet of terrain or obstacles in that quadrant

QUESTION 32: MULTIPLE CHOICE

0 out of 1 points

Refer to the chart excerpt below. What do the tick marks around the TAZ airport symbol indicate?



Given Answer: A rotating beacon is in operation from sunset to sunrise

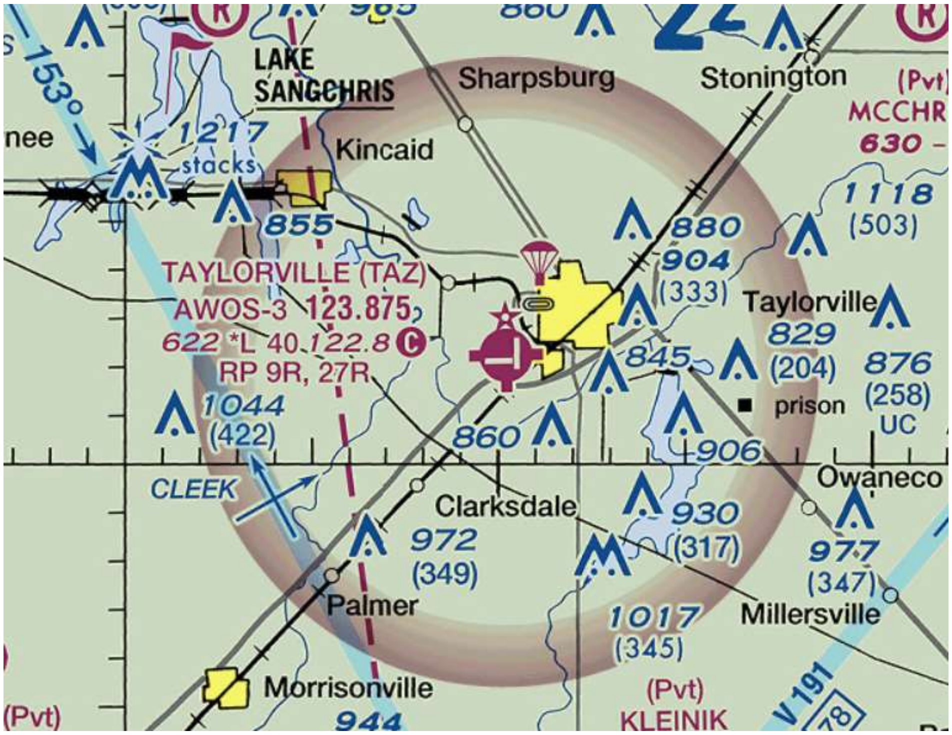
Correct Answer: Services are available at the airport

QUESTION 33: MULTIPLE CHOICE

0 out of 1 points

Exit Save and Exit

Refer to the chart excerpt below. What does the star above the TAZ airport symbol indicate?



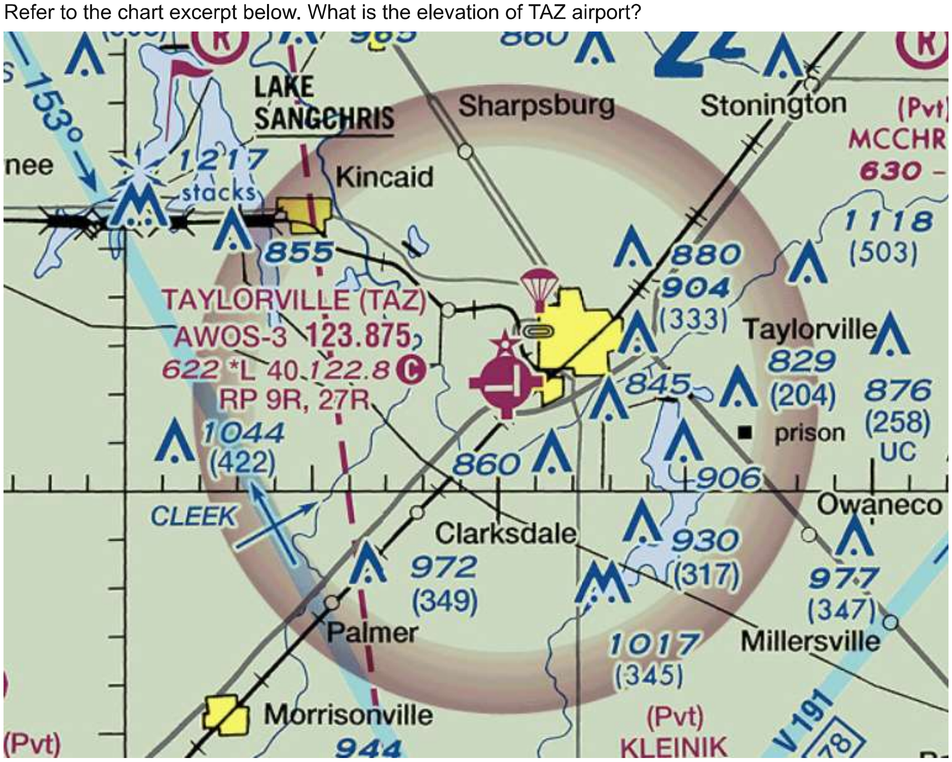
Given Answer: Part time operation of the control tower

Correct Answer: A rotating beacon is in operation from sunset to sunrise

QUESTION 34: MULTIPLE CHOICE

1 out of 1 points

Refer to the chart excerpt below. What is the elevation of TAZ airport?



Given Answer: 622 feet

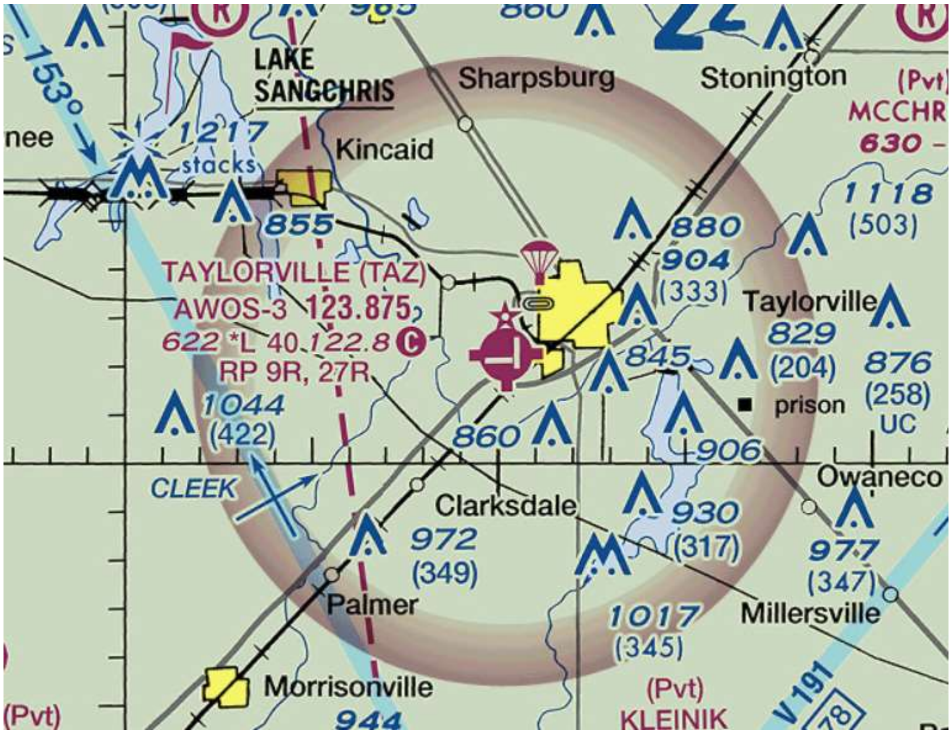
Correct Answer: 622 feet

Exit Save and Exit

QUESTION 35: MULTIPLE CHOICE

1 out of 1 points

Refer to the chart excerpt below. Which of the following statement(s) is/are true regarding TAZ airport?
\



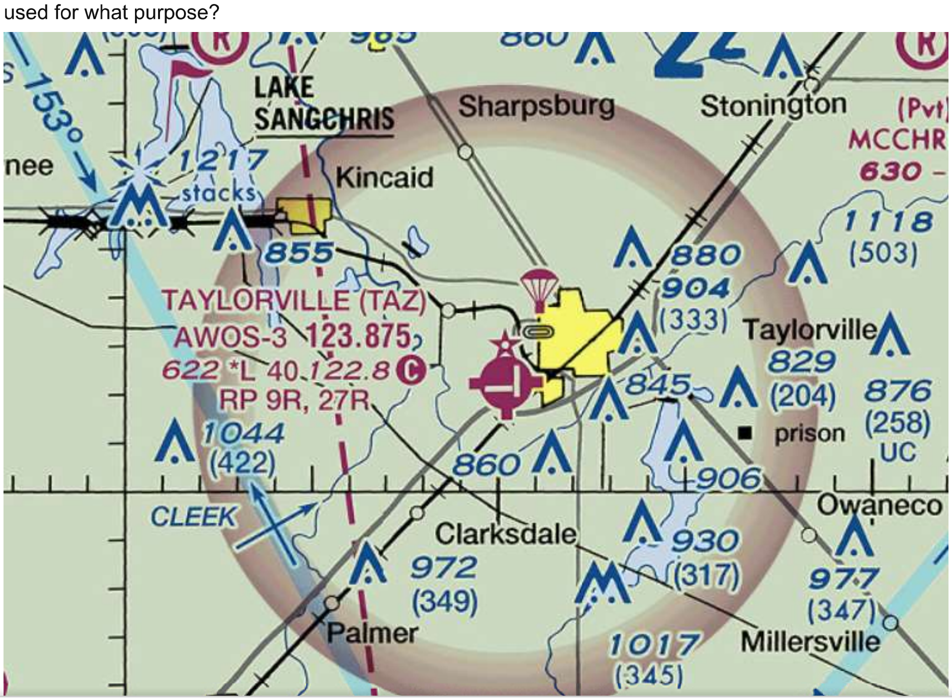
Given Answer: All of the above

Correct Answer: All of the above

QUESTION 36: MULTIPLE CHOICE

0 out of 1 points

Refer to the chart excerpt below. When operating near TAZ airport, the frequency 122.8 should be used for what purpose?



Exit Save and Exit

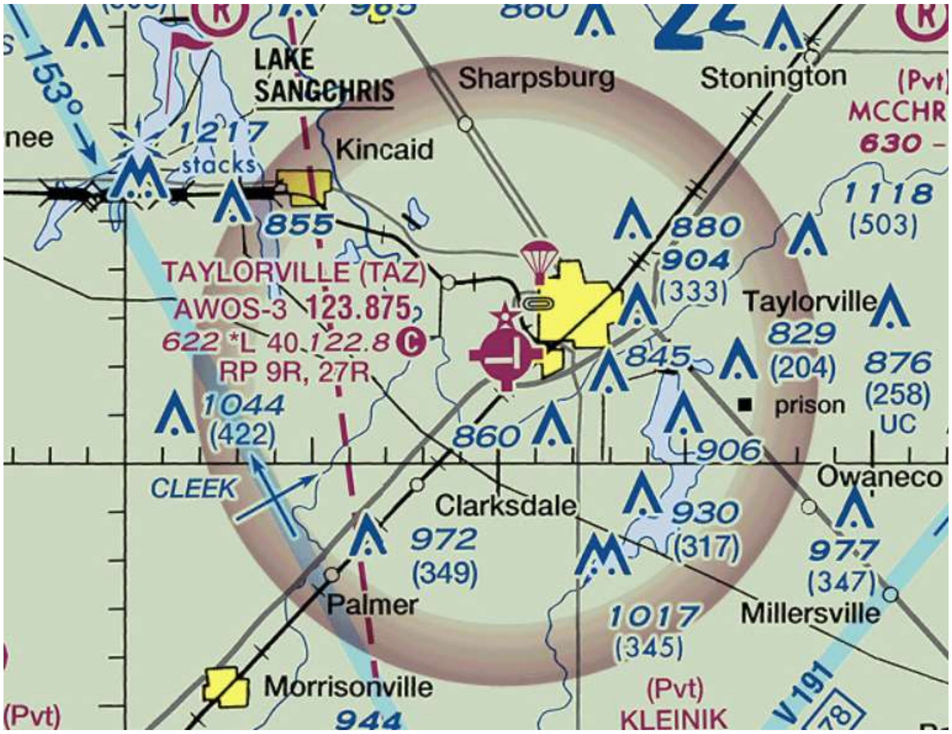
Given Answer: Communicating with the control tower

Correct Answer: Communicating your intentions to other aircraft in the area

QUESTION 37: MULTIPLE CHOICE

0 out of 1 points

Refer to the chart excerpt below. Which of the following best describes the airspace above TAZ airport?



Given Answer: Class E at the surface extending up to 700 AGL

Correct Answer: Class G at the surface extending up to 700 AGL

QUESTION 38: MULTIPLE CHOICE

1 out of 1 points

Where is Class E airspace most commonly located?

Given Answer: From 700 or 1200 AGL up to the bottom of the overlying airspace

Correct Answer: From 700 or 1200 AGL up to the bottom of the overlying airspace

QUESTION 39: MULTIPLE CHOICE

1 out of 1 points

What is magnetic variation?

Given Answer: The angular difference between true and magnetic north

Correct Answer: The angular difference between true and magnetic north

QUESTION 40: MULTIPLE CHOICE

0 out of 0 points

Exit Save and Exit

Correct Answer: A pilot may enter as soon as two way radio communications have been established

QUESTION 41: MULTIPLE CHOICE

1 out of 1 points

What are the basic VFR weather minimums when operating an aircraft in Class B airspace?

Given Answer: 3 miles visibility and clear of clouds

Correct Answer: 3 miles visibility and clear of clouds

QUESTION 42: MULTIPLE CHOICE

1 out of 1 points

How is Class A airspace identified on a Sectional or Terminal Area Chart?

Given Answer: Not depicted

Correct Answer: Not depicted

QUESTION 43: TRUE/FALSE

0 out of 1 points

When approaching a Class D airport for landing, you contact the tower and they respond with, "Aircraft calling tower, say again." This is considered to be establishing two-way communication, and the Class D airspace may be entered.

Given Answer: True

Correct Answer: False

QUESTION 44: MULTIPLE CHOICE

1 out of 1 points

During operations in Class G airspace below 1,200 AGL during the day, what is the required visibility?

Given Answer: 1 SM

Correct Answer: 1 SM

QUESTION 45: MULTIPLE CHOICE

1 out of 1 points

When operating below 10,000 MSL in Class E airspace, what are the basic VFR weather minimums?

Given Answer: 3 miles visibility and 500 feet below, 1000 feet above, 2000 feet horizontally from clouds

Correct Answer: 3 miles visibility and 500 feet below, 1000 feet above, 2000 feet horizontally from clouds

QUESTION 46: MULTIPLE CHOICE

1 out of 1 points

Exit Save and Exit

Correct Answer: All of the above

QUESTION 47: MULTIPLE CHOICE | 0 out of 1 points

Which statement is true regarding operating under a special VFR clearance during the day?

Given Answer: The pilot must be instrument rated in an aircraft equipped for instrument flight

Correct Answer: One mile flight visibility is required and the flight must be operated clear of clouds

QUESTION 48: MULTIPLE CHOICE | 1 out of 1 points

What is the maximum airspeed allowed by regulations when operating below 2,500 AGL within 4 NM of a Class C or Class D airport?

Given Answer: 200 knots

Correct Answer: 200 knots

QUESTION 49: MULTIPLE CHOICE | 1 out of 1 points

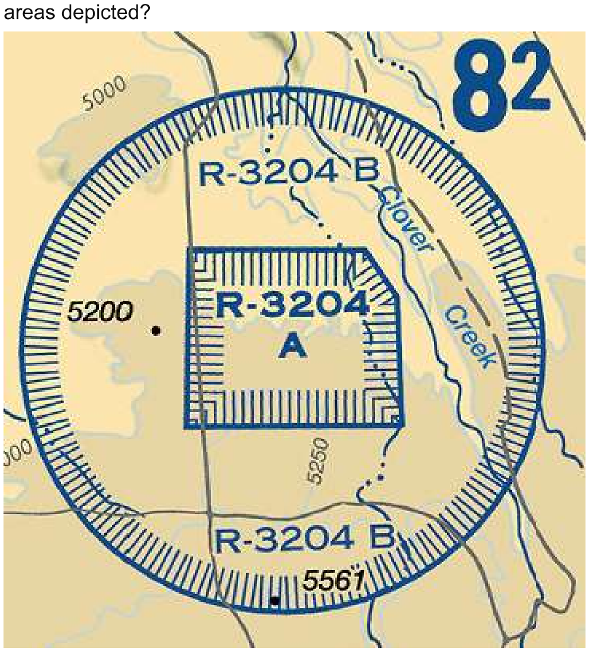
Which statement is true regarding flight in an alert area?

Given Answer: No authorization is required, but pilots should be extra cautious

Correct Answer: No authorization is required, but pilots should be extra cautious

QUESTION 50: MULTIPLE CHOICE | 0 out of 1 points

Refer to the chart excerpt below. Which statement is true regarding flight in the special use airspace areas depicted?



Given Answer: No authorization is required, but pilots should be extra cautious

Correct Answer: Permission is required from the controlling agency prior to entering

Exit Save and Exit

QUESTION 51: MULTIPLE CHOICE | 0 out of 1 points

Where would a warning area typically be located?

Given Answer: Around military bases to warn pilots of potentially hazardous military activity

Correct Answer: Extending from 3 miles outward along the coast

QUESTION 52: TRUE/FALSE | 0 out of 1 points

Generally, pilots are able to operate VFR in airspace affected by a Temporary Flight Restriction without any specific clearance or communication requirements. However, extra vigilance is recommended.

Given Answer: True

Correct Answer: False

QUESTION 53: MULTIPLE CHOICE | 0 out of 1 points

Which statement is true regarding flight in the vicinity of stadiums with more than 30,000 seats during major league sporting events?

Given Answer: Depending on the event, flight restrictions may or may not be in place; check the FAA website

Correct Answer: Flights are automatically restricted within a 3-mile radius below 3,000 AGL

QUESTION 54: MULTIPLE CHOICE | 1 out of 1 points

According to Federal Aviation Regulations, who is responsible for ensuring the aircraft is in a condition for safe flight?

Given Answer: The pilot

Correct Answer: The pilot

QUESTION 55: MULTIPLE CHOICE | 1 out of 1 points

Which aircraft document is required to be visible to passengers or crew?

Given Answer: Airworthiness Certificate

Correct Answer: Airworthiness Certificate

QUESTION 56: TRUE/FALSE | 1 out of 1 points

An airworthiness certificate never expires so long as the aircraft is maintained in accordance with the applicable regulations.

Given Answer: True

Correct Answer: True

Exit Save and Exit

QUESTION 57: TRUE/FALSE 0 out of 1 points

The operating limitations found in Section 2 of the AFM function as recommendations from the aircraft manufacturer. Pilots may exceed a limitation if they determine it will be in the interest of operational efficiency.

Given Answer: True
Correct Answer: False

QUESTION 58: MULTIPLE CHOICE 1 out of 1 points

For which operation is an annual inspection required?

Given Answer: Any operation
Correct Answer: Any operation

QUESTION 59: MULTIPLE CHOICE 0 out of 1 points

An annual inspection was conducted on January 3 of this year. When will the next annual inspection be due?

Given Answer: January 3 of next year
Correct Answer: January 31 of next year

QUESTION 60: MULTIPLE CHOICE 0 out of 1 points

Which of the following operations would require a 100-hour inspection to be conducted on the aircraft?

Given Answer: All of the above
Correct Answer: Flights carrying passengers for hire

QUESTION 61: TRUE/FALSE 1 out of 1 points

The annual inspection will satisfy the 100-hour inspection requirement if the annual was conducted within the previous 100 hours of time in service.

Given Answer: True
Correct Answer: True

QUESTION 62: MULTIPLE CHOICE 0 out of 1 points

How often must the batteries in an ELT be replaced?

Given Answer: Every 12 calendar months
Correct Answer: After half of their useful life or one hour of cumulative use

QUESTION 63: MULTIPLE CHOICE 1 out of 1 points

Exit Save and Exit

How often must an ELT inspection be performed?

Given Answer: Every 12 calendar months

Correct Answer: Every 12 calendar months

QUESTION 64: MULTIPLE CHOICE — 1 out of 1 points

How often must a transponder inspection be performed?

Given Answer: Every 24 calendar months

Correct Answer: Every 24 calendar months

QUESTION 65: TRUE/FALSE — 0 out of 1 points

You are planning a 2.5 hour flight in an airplane with a recurring airworthiness directive (AD) due in only 1.5 hours. You may proceed without a special flight permit assuming the flight is to a destination where the AD can be complied with.

Given Answer: True

Correct Answer: False

QUESTION 66: MULTIPLE CHOICE — 1 out of 1 points

After determining that an inoperative component is not required, which of the following actions must legally be completed prior to flight?

Given Answer: All of the above

Correct Answer: All of the above

QUESTION 67: MULTIPLE CHOICE — 1 out of 1 points

A list of instruments and equipment required to be operational for flight can be found in which of the following sources?

Given Answer: FAR 91.205

Correct Answer: FAR 91.205

QUESTION 68: MULTIPLE CHOICE — 0 out of 1 points

An aircraft that does not currently meet applicable airworthiness requirements, but is capable of safe flight, may be flown to a point where repairs can be made by obtaining a __________.

Given Answer: Operating Certificate

Correct Answer: Special Flight Permit

QUESTION 69: MULTIPLE CHOICE — 0 out of 1 points

Exit Save and Exit

Correct Answer: Engine combustion

QUESTION 70: TRUE/FALSE

1 out of 1 points

Electrical power for starting the engine is provided by the aircraft battery.

Given Answer: True

Correct Answer: True

QUESTION 71: MULTIPLE CHOICE

0 out of 1 points

During cruise flight, you notice that the oil pressure appears to be decreasing, and the oil temperature is gradually increasing. What is the best course of action?

Given Answer: Suspect a gauge malfunction, monitor the engine gauges, and return to the airport

Correct Answer: Serious engine problems may be present; reduce throttle to minimum required RPM and prepare for potential off-airport landing

QUESTION 72: MULTIPLE CHOICE

1 out of 1 points

What is a function of the anti-servo tab?

Given Answer: To reduce the tendency to overcontrol the airplane's pitch

Correct Answer: To reduce the tendency to overcontrol the airplane's pitch

QUESTION 73: MULTIPLE CHOICE

0 out of 1 points

V_Y is the best __________ of climb speed. This airspeed will produce the greatest altitude gain in a given __________.

Given Answer: rate, horizontal distance

Correct Answer: rate, time

QUESTION 74: MULTIPLE CHOICE

0 out of 1 points

The left turning tendency of an airplane known as torque is caused by what?

Given Answer: The propeller blade descending on the right, producing more thrust than the ascending blade on the left

Correct Answer: The clockwise rotation of the engine and the propeller turning the airplane counterclockwise

QUESTION 75: MULTIPLE CHOICE

0 out of 1 points

Exit Save and Exit

Given Answer: Lift during cruise flight is greater than lift during slow flight due to the higher airspeed

Correct Answer: Lift is approximately the same in slow flight as it is during flight at cruise airspeeds

QUESTION 76: MULTIPLE CHOICE

0 out of 1 points

What type of drag would be created at the intersection of the wing and the fuselage due to mixing of airflow?

Given Answer: Induced

Correct Answer: Interference

QUESTION 77: MULTIPLE CHOICE

0 out of 1 points

Why is adverse yaw created during a turn?

Given Answer: The rudder is deflected creating more drag on one side of the airplane

Correct Answer: The ailerons are deflected during turn entry, resulting in more lift and more induced drag on one wing

QUESTION 78: MULTIPLE CHOICE

1 out of 1 points

What is the primary cause of overbanking tendency in steep turns?

Given Answer: One wing is moving faster than the other, creating more lift than the other wing

Correct Answer: One wing is moving faster than the other, creating more lift than the other wing

QUESTION 79: MULTIPLE CHOICE

1 out of 1 points

Load factor is defined as the ratio of the total load the airplane is supporting to the ___________.

Given Answer: weight of the airplane

Correct Answer: weight of the airplane

QUESTION 80: TRUE/FALSE

1 out of 1 points

Load factor and stall speed will always increase in a coordinated, constant-altitude turn.

Given Answer: True

Correct Answer: True

FEEDBACK AND NOTES FOR ATTEMPT

Feedback to Learner

Exit Save and Exit

Blackboard learn+ Home Blue Course Evaluations Ac Ryan Boyer 39

Grade Test: Final Exam

*Assign a grade and feedback for the current test attempt. Expand the **Test Information** section to clear the student's attempt or edit the test. More Help*

Jump to... Hide User Names

Test Information

Current Grade	68.00000 out of 68 points Grade based on Last Evaluated Attempt
Status	Completed
Attempt Score	68 out of 68 points
Time Elapsed	34 minutes out of 1 hour and 50 minutes
Started Date	12/1/20 8:00 AM Access Log
Submitted Date	12/1/20 8:35 AM
Clear Attempt	Clear Attempt *Click **Clear Attempt** to clear this user's attempt.*
Edit Test	Edit Test *Click **Edit Test** to make changes.*
Instructions	

QUESTION 1: MULTIPLE CHOICE 1 out of 1 points

Which transponder code should be used in the event of a loss of communication?

Given Answer: 7600

Correct Answer: 7600

QUESTION 2: MULTIPLE CHOICE

1 out of 1 points

Runway Touchdown Zone markings are separated by how many feet?

Given Answer: 500 feet

Correct Answer: 500 feet

QUESTION 3: MULTIPLE CHOICE

1 out of 1 points

The portion of a runway designated as a displaced threshold may be used for which of the following operations?

Given Answer: Taxi and takeoff in the direction of the arrows

Correct Answer: Taxi and takeoff in the direction of the arrows

QUESTION 4: MULTIPLE CHOICE

1 out of 1 points

Induced drag increases as the _____ increases.

Given Answer: Angle of attack of the wing

Correct Answer: Angle of attack of the wing

QUESTION 5: MULTIPLE CHOICE

1 out of 1 points

Vy is the best _____ of climb speed. This airspeed will produce the greatest altitude gain in a given _____.

Given Answer: rate; time

Correct Answer: rate; time

QUESTION 6: MULTIPLE CHOICE

1 out of 1 points

The turning tendency of an airplane known as precession is caused by what?

Given Answer: The gyroscopic forces applied to the rotating propeller blades acting 90 degrees after the point the forces were applied

Correct Answer:

QUESTION 7: MULTIPLE CHOICE 1 **out of 1 points**

If an airplane is maintaining altitude during a turn at 30 degrees of bank, the airplane will stall at _____ airspeed than during straight and level flight.

Given Answer: a higher

Correct Answer: a higher

QUESTION 8: MULTIPLE CHOICE 1 **out of 1 points**

How is adverse yaw created during a turn?

Given Answer: The ailerons are deflected during turn entry, resulting in more induced drag on one wing

Correct Answer: The ailerons are deflected during turn entry, resulting in more induced drag on one wing

QUESTION 9: MULTIPLE CHOICE 1 **out of 1 points**

Which of the following best describes ground effect?

Given Answer: An increase in lift and a decrease in induced drag when within one wingspan of the ground

Correct Answer: An increase in lift and a decrease in induced drag when within one wingspan of the ground

QUESTION 10: MULTIPLE CHOICE 1 **out of 1 points**

Assuming the CG is within the allowable limits, what effect would an aft CG have on the airplane?

Given Answer: Increase in performance compared to an airplane with a forward CG

Correct Answer: Increase in performance compared to an airplane with a forward

QUESTION 11: MULTIPLE CHOICE

1 out of 1 points

In an aircraft equipped with a vacuum system, if the suction/vacuum gauge is indicating below the green arc during the engine run-up, what system or equipment will be affected?

Given Answer: The gyroscopic flight instruments

Correct Answer: The gyroscopic flight instruments

QUESTION 12: MULTIPLE CHOICE

1 out of 1 points

In the event of a failure of the aircraft's alternator/generator, which of the following indications would you expect to see on the electrical gauges?

Given Answer: A decrease in voltage and a negative indication on the ammeter

Correct Answer: A decrease in voltage and a negative indication on the ammeter

QUESTION 13: MULTIPLE CHOICE

1 out of 1 points

Which of the following instrument indications would you expect if the static port became blocked?

Given Answer: The altimeter, VSI, and airspeed indicator would read incorrectly

Correct Answer: The altimeter, VSI, and airspeed indicator would read incorrectly

QUESTION 14: MULTIPLE CHOICE

1 out of 1 points

In a fuel injected airplane, when would the alternate air need to be opened?

Given Answer: When the primary engine air intake becomes blocked

Correct Answer: When the primary engine air intake becomes blocked

QUESTION 15: MULTIPLE CHOICE

1 out of 1 points

Given Answer: An in-flight report on current weather conditions made by a pilot

Correct Answer: An in-flight report on current weather conditions made by a pilot

QUESTION 16: MULTIPLE CHOICE

1 **out of 1 points**

A SIGMET would be issued for which of the following conditions?

Given Answer: Extreme turbulence

Correct Answer: Extreme turbulence

QUESTION 17: MULTIPLE CHOICE

1 **out of 1 points**

An AIRMET will be issued for which of the following conditions?

Given Answer: All of the above

Correct Answer: All of the above

QUESTION 18: MULTIPLE CHOICE

1 **out of 1 points**

Which of the following wind shear conditions would likely be most hazardous to an aircraft during takeoff or landing?

Given Answer: A headwind abruptly shifting to a tailwind

Correct Answer: A headwind abruptly shifting to a tailwind

QUESTION 19: MULTIPLE CHOICE

1 **out of 1 points**

It is typically recommended to remain at least how many miles away from a thunderstorm?

Given Answer: 20 miles

Correct Answer: 20 miles

QUESTION 20: MULTIPLE CHOICE

1 **out of 1 points**

Given Answer: Poor visibility and light-to-moderate precipitation

Correct Answer: Poor visibility and light-to-moderate precipitation

QUESTION 21: MULTIPLE CHOICE

1 **out of 1 points**

During the passage of a cold front, which of the following weather conditions would be most likely?

Given Answer: Cumulous clouds, rain showers, and possible thunderstorms

Correct Answer: Cumulous clouds, rain showers, and possible thunderstorms

QUESTION 22: MULTIPLE CHOICE

1 **out of 1 points**

A front is best defined as:

Given Answer: A boundary between two airmasses with different temperatures

Correct Answer: A boundary between two airmasses with different temperatures

QUESTION 23: MULTIPLE CHOICE

1 **out of 1 points**

Hazards associated with structural icing include which of the following?

Given Answer: All of the above

Correct Answer: All of the above

QUESTION 24: MULTIPLE CHOICE

1 **out of 1 points**

Which of the following conditions must be in place for the aircraft to accumulate ice on its exterior surfaces?

Given Answer: Visible moisture and an aircraft surface temperature at or below freezing

Correct Answer: Visible moisture and an aircraft surface temperature at or below

QUESTION 25: MULTIPLE CHOICE

1 out of 1 points

What type of fog forms due to surface cooling and is common on clear, calm nights?

Given Answer: Radiation

Correct Answer: Radiation

QUESTION 26: MULTIPLE CHOICE

1 out of 1 points

Describe the weather conditions most commonly associated with a temperature inversion.

Given Answer: Stable air and restricted visibility

Correct Answer: Stable air and restricted visibility

QUESTION 27: MULTIPLE CHOICE

1 out of 1 points

Airflow around a low pressure system is _____ and _____.

Given Answer: Upward and counterclockwise

Correct Answer: Upward and counterclockwise

QUESTION 28: MULTIPLE CHOICE

1 out of 1 points

In the northern hemisphere, Coriolis Force causes objects to be deflected to the _____.

Given Answer: Right

Correct Answer: Right

QUESTION 29: MULTIPLE CHOICE

1 out of 1 points

According to Part 1 of the Federal Aviation Regulations, "night" begins at what time?

Given Answer: The end of evening civil twilight

QUESTION 30: MULTIPLE CHOICE

1 out of 1 points

As a private pilot, you may perform certain maintenance activities on an aircraft you own or operate. What is this known as?

Given Answer: Preventive maintenance

Correct Answer: Preventive maintenance

QUESTION 31: MULTIPLE CHOICE

1 out of 1 points

Private pilots are required to have which of the following documents available in the aircraft when acting as Pilot in Command?

Given Answer: All of the above

Correct Answer: All of the above

QUESTION 32: MULTIPLE CHOICE

1 out of 1 points

A pilot conducting operations requiring a private pilot certificate must hold at least what class of medical certificate?

Given Answer: Third Class

Correct Answer: Third Class

QUESTION 33: MULTIPLE CHOICE

1 out of 1 points

A 19-year old private pilot is issued a second class medical certificate. For operations requiring a private pilot certificate, how long will this medical certificate remain valid?

Given Answer: 60 calendar months

Correct Answer: 60 calendar months

QUESTION 34: TRUE/FALSE

1 out of 1 points

Assume a pilot conducted training and completed a Private Pilot checkride in a Diamond DA20. That pilot will be restricted to flying only Diamond DA20 aircraft until passing a type rating in a different make/model.

QUESTION 35: MULTIPLE CHOICE

1 out of 1 points

A complex airplane is an airplane with flaps, retractable landing gear, and:

Given Answer: An adjustable pitch propeller

Correct Answer: An adjustable pitch propeller

QUESTION 36: TRUE/FALSE

1 out of 1 points

Private pilots may log time as "Pilot In Command" whenever they are the sole manipulator of the controls of an aircraft for which they are rated, even if there is another more experienced pilot in the cockpit.

Given Answer: True

Correct Answer: True

QUESTION 37: MULTIPLE CHOICE

1 out of 1 points

A private pilot received a flight review on May 10 of this year. When is the next flight review required?

Given Answer: May 31, year after next

Correct Answer: May 31, year after next

QUESTION 38: MULTIPLE CHOICE

1 out of 1 points

To act as pilot in command of an aircraft carrying passengers, the pilot must have made at least three takeoffs and three landings in an aircraft of the same category and class within the preceding:

Given Answer: 90 days

Correct Answer: 90 days

QUESTION 39: MULTIPLE CHOICE

1 out of 1 points

Which of the following limitations apply to student pilots with a current solo endorsement

Given Answer: All of the above

QUESTION 40: TRUE/FALSE

1 out of 1 points

Private pilots may be compensated for any flight they conduct as long as that flight does not carry passengers.

Given Answer: False

Correct Answer: False

QUESTION 41: MULTIPLE CHOICE

1 out of 1 points

A private pilot conducts a flight carrying three additional passengers. The operating expenses for the flight total $400.00, and the pilot wishes to share these expenses with the passengers as much as possible. At a minimum, how much is the pilot required to contribute?

Given Answer: $100.00

Correct Answer: $100.00

QUESTION 42: MULTIPLE CHOICE

1 out of 1 points

No person may attempt to act as a crewmember of an aircraft within _____ after consuming any alcoholic beverage or with a blood alcohol content of _____ or greater.

Given Answer: 8 hours; 0.04

Correct Answer: 8 hours; 0.04

QUESTION 43: TRUE/FALSE

1 out of 1 points

During cruise flight, passengers may remove their safety belt as long as it is refastened prior to landing.

Given Answer: True

Correct Answer: True

QUESTION 44: MULTIPLE CHOICE

1 out of 1 points

According to regulations, what is the fuel requirement for VFR flight during the day in an airplane?

for 30 minutes at normal cruising speed

Correct Answer: Enough to fly to the first point of intended landing and to fly after that for 30 minutes at normal cruising speed

QUESTION 45: MULTIPLE CHOICE

1 out of 1 points

Except when necessary for takeoff or landing, when operating over any congested area of a city, town, or settlement, or over an open-air assembly of persons, no person may operate an aircraft below:

Given Answer: 1000 feet above the highest obstacle within 2000 feet of the aircraft

Correct Answer: 1000 feet above the highest obstacle within 2000 feet of the aircraft

QUESTION 46: MULTIPLE CHOICE

1 out of 1 points

For which operation is a 100-hour inspection required?

Given Answer: Only operations carrying persons for hire

Correct Answer: Only operations carrying persons for hire

QUESTION 47: TRUE/FALSE

1 out of 1 points

The 100-hour inspection can take the place of the annual inspection if the 100-hour inspection was conducted within the previous 12 calendar months.

Given Answer: False

Correct Answer: False

QUESTION 48: MULTIPLE CHOICE

1 out of 1 points

How often must a transponder inspection be performed?

Given Answer: Every 24 calendar months

Correct Answer: Every 24 calendar months

QUESTION 49: MULTIPLE CHOICE

1 out of 1 points

How often does an aircraft Airworthiness Certificate expire?

Given Answer: It does not expire assuming the aircraft is maintained in accordance with the applicable FAR's

Correct Answer: It does not expire assuming the aircraft is maintained in accordance with the applicable FAR's

QUESTION 50: MULTIPLE CHOICE

1 out of 1 points

How often must an ELT inspection be performed?

Given Answer: Every 12 calendar months

Correct Answer: Every 12 calendar months

QUESTION 51: MULTIPLE CHOICE

1 out of 1 points

How often must the batteries in an ELT be replaced?

Given Answer: After half of their useful life or one hour of cumulative use

Correct Answer: After half of their useful life or one hour of cumulative use

QUESTION 52: MULTIPLE CHOICE

1 out of 1 points

Where would a warning area typically be located?

Given Answer: Extending from 3 miles outward along the coast

Correct Answer: Extending from 3 miles outward along the coast

QUESTION 53: MULTIPLE CHOICE

1 out of 1 points

Which statement is true regarding flight in a restricted area?

Given Answer: Permission is required from the controlling agency prior to entry

QUESTION 54: MULTIPLE CHOICE

1 out of 1 points

In which of the following areas is a transponder required?

Given Answer: In and above Class C airspace

Correct Answer: In and above Class C airspace

QUESTION 55: MULTIPLE CHOICE

1 out of 1 points

When operating below 10,000 MSL in Class E airspace, what are the basic VFR weather minimums?

Given Answer: 3 miles visibility and 500 feet below, 1000 feet above, 2000 feet horizontally from clouds

Correct Answer: 3 miles visibility and 500 feet below, 1000 feet above, 2000 feet horizontally from clouds

QUESTION 56: MULTIPLE CHOICE

1 out of 1 points

What are the basic VFR weather minimums when operating an aircraft in Class B airspace?

Given Answer: 3 miles visibility and clear of clouds

Correct Answer: 3 miles visibility and clear of clouds

QUESTION 57: MULTIPLE CHOICE

1 out of 1 points

Which statement is true regarding operations in Class C airspace?

Given Answer: A pilot may enter as soon as two way radio communications have been established

Correct Answer: A pilot may enter as soon as two way radio communications have been established

QUESTION 58: MULTIPLE CHOICE

1 out of 1 points

Where is Class G airspace typically located in our area?

Given Answer: From the surface to either 700 or 1200 AGL

Correct Answer: From the surface to either 700 or 1200 AGL

QUESTION 59: MULTIPLE CHOICE

1 out of 1 points

Winds are reported to be from 330° at 20 knots. You plan on departing from runway 30R. Which of the following would be the most reasonable estimation of headwind and crosswind components?

Given Answer: Headwind: 17 knots, Crosswind: 10 knots

Correct Answer: Headwind: 17 knots, Crosswind: 10 knots

QUESTION 60: MULTIPLE CHOICE

1 out of 1 points

Which of the following conditions will result in improved cruise performance?

Given Answer: All of the above

Correct Answer: All of the above

QUESTION 61: MULTIPLE CHOICE

1 out of 1 points

If the outside air temperature at the airport is warmer than standard, the density altitude will be:

Given Answer: Higher than pressure altitude

Correct Answer: Higher than pressure altitude

QUESTION 62: MULTIPLE CHOICE

1 out of 1 points

At 3,000 feet, the outside air temperature is 9°C. How does this compare to the standard temperature at this altitude?

Given Answer: Equal to standard

Correct Answer: Equal to standard

1 out of 1 points

Refer to the weather products below. What local (central standard) time was the KCPS METAR issued?

```
KCPS 061553Z 21003KT 10SM BKN055 03/M03 A3027 RMK AO2 SLP253 T00331033

BLV UA /OV TOY180030/TM 1613/FL150/TP MD80/TA M11/IC MOD CLR 080/RM ZKC FDC

KCPS 061140Z 0612/0712 23007KT 5SM SN OVC030
  FM061700 29008KT 2SM SN OVC020
  FM062000 33008KT 6SM OVC028
  FM070000 35007KT P6SM BKN035
  FM070200 35006KT P6SM SKC

FT  3000    6000    9000   12000   18000   24000  30000  34000  39000
COU 3513 3218-06 2641-06 2747-11 2773-22 2896-32 781047 770955 782357
SGF 3210 3019-03 2537-04 2836-07 2773-19 2889-30 289746 770054 772958
STL 3115 2917-06 2640-08 2755-12 2777-23 7801-32 781747 771655 782357
DIK      2915-14 2822-13 2929-20 3234-28 3043-39 305851 296757 296158
GFK 3015 3119-16 3027-18 3036-24 3249-33 3254-41 315953 306456 306456
```

Given Answer: 9:53

Correct Answer: 9:53

QUESTION 64: MULTIPLE CHOICE

1 out of 1 points

Refer to the weather products below. What surface temperature was observed at KCPS?

```
KCPS 061553Z 21003KT 10SM BKN055 03/M03 A3027 RMK AO2 SLP253 T00331033

BLV UA /OV TOY180030/TM 1613/FL150/TP MD80/TA M11/IC MOD CLR 080/RM ZKC FDC

KCPS 061140Z 0612/0712 23007KT 5SM SN OVC030
  FM061700 29008KT 2SM SN OVC020
  FM062000 33008KT 6SM OVC028
  FM070000 35007KT P6SM BKN035
  FM070200 35006KT P6SM SKC

FT  3000    6000    9000   12000   18000   24000  30000  34000  39000
COU 3513 3218-06 2641-06 2747-11 2773-22 2896-32 781047 770955 782357
SGF 3210 3019-03 2537-04 2836-07 2773-19 2889-30 289746 770054 772958
STL 3115 2917-06 2640-08 2755-12 2777-23 7801-32 781747 771655 782357
DIK      2915-14 2822-13 2929-20 3234-28 3043-39 305851 296757 296158
GFK 3015 3119-16 3027-18 3036-24 3249-33 3254-41 315953 306456 306456
```

Given Answer: 3 degrees C

Correct Answer: 3 degrees C

QUESTION 65: MULTIPLE CHOICE

1 out of 1 points

Refer to the weather products below. Which of the following is forecast at KCPS for the morning of the 6th?

```
KCPS 061553Z 21003KT 10SM BKN055 03/M03 A3027 RMK AO2 SLP253 T00331033

BLV UA /OV TOY180030/TM 1613/FL150/TP MD80/TA M11/IC MOD CLR 080/RM ZKC FDC

KCPS 061140Z 0612/0712 23007KT 5SM SN OVC030
  FM061700 29008KT 2SM SN OVC020
  FM062000 33008KT 6SM OVC028
  FM070000 35007KT P6SM BKN035
  FM070200 35006KT P6SM SKC

FT  3000    6000    9000   12000   18000   24000  30000  34000  39000
COU 3513 3218-06 2641-06 2747-11 2773-22 2896-32 781047 770955 782357
SGF 3210 3019-03 2537-04 2836-07 2773-19 2889-30 289746 770054 772958
STL 3115 2917-06 2640-08 2755-12 2777-23 7801-32 781747 771655 782357
DIK      2915-14 2822-13 2929-20 3234-28 3043-39 305851 296757 296158
GFK 3015 3119-16 3027-18 3036-24 3249-33 3254-41 315953 306456 306456
```

Given Answer: Moderate snow

Correct Answer: Moderate snow

QUESTION 66: MULTIPLE CHOICE

1 out of 1 points

Refer to the weather products below.A pilot in the vicinity of KBLV is reporting what type of flight hazard?

```
KCPS 061553Z 21003KT 10SM BKN055 03/M03 A3027 RMK AO2 SLP253 T00331033

BLV UA /OV TOY180030/TM 1613/FL150/TP MD80/TA M11/IC MOD CLR 080/RM ZKC FDC

KCPS 061140Z 0612/0712 23007KT 5SM SN OVC030
  FM061700 29008KT 2SM SN OVC020
  FM062000 33008KT 6SM OVC028
  FM070000 35007KT P6SM BKN035
  FM070200 35006KT P6SM SKC

FT  3000    6000    9000   12000   18000   24000  30000  34000  39000
COU 3513 3218-06 2641-06 2747-11 2773-22 2896-32 781047 770955 782357
SGF 3210 3019-03 2537-04 2836-07 2773-19 2889-30 289746 770054 772958
STL 3115 2917-06 2640-08 2755-12 2777-23 7801-32 781747 771655 782357
DIK      2915-14 2822-13 2929-20 3234-28 3043-39 305851 296757 296158
GFK 3015 3119-16 3027-18 3036-24 3249-33 3254-41 315953 306456 306456
```

Given Answer: Moderate icing

Correct Answer: Moderate icing

QUESTION 67: MULTIPLE CHOICE

1 out of 1 points

Refer to the weather products below. You have a flight planned for the 6th departing from KCPS at approximately noon local (central standard) time. According to the TAF, what cloud coverage and cloud height should be expected for the time of your departure?

```
KCPS 061553Z 21003KT 10SM BKN055 03/M03 A3027 RMK AO2 SLP253 T00331033

BLV UA /OV TOY180030/TM 1613/FL150/TP MD80/TA M11/IC MOD CLR 080/RM ZKC FDC

KCPS 061140Z 0612/0712 23007KT 5SM SN OVC030
  FM061700 29008KT 2SM SN OVC020
  FM062000 33008KT 6SM OVC028
  FM070000 35007KT P6SM BKN035
  FM070200 35006KT P6SM SKC

FT  3000    6000    9000   12000   18000   24000  30000  34000  39000
COU 3513 3218-06 2641-06 2747-11 2773-22 2896-32 781047 770955 782357
SGF 3210 3019-03 2537-04 2836-07 2773-19 2889-30 289746 770054 772958
STL 3115 2917-06 2640-08 2755-12 2777-23 7801-32 781747 771655 782357
DIK      2915-14 2822-13 2929-20 3234-28 3043-39 305851 296757 296158
GFK 3015 3119-16 3027-18 3036-24 3249-33 3254-41 315953 306456 306456
```

Given Answer: Overcast 2000

Correct Answer: Overcast 2000

QUESTION 68: MULTIPLE CHOICE

1 out of 1 points

Refer to the weather products below. What wind speed and direction would be expected for a flight in the vicinity of STL at 6,000 feet?

```
KCPS 061553Z 21003KT 10SM BKN055 03/M03 A3027 RMK AO2 SLP253 T00331033

BLV UA /OV TOY180030/TM 1613/FL150/TP MD80/TA M11/IC MOD CLR 080/RM ZKC FDC

KCPS 061140Z 0612/0712 23007KT 5SM SN OVC030
  FM061700 29008KT 2SM SN OVC020
  FM062000 33008KT 6SM OVC028
  FM070000 35007KT P6SM BKN035
  FM070200 35006KT P6SM SKC

FT  3000    6000    9000   12000   18000   24000  30000  34000  39000
COU 3513 3218-06 2641-06 2747-11 2773-22 2896-32 781047 770955 782357
SGF 3210 3019-03 2537-04 2836-07 2773-19 2889-30 289746 770054 772958
STL 3115 2917-06 2640-08 2755-12 2777-23 7801-32 781747 771655 782357
DIK      2915-14 2822-13 2929-20 3234-28 3043-39 305851 296757 296158
GFK 3015 3119-16 3027-18 3036-24 3249-33 3254-41 315953 306456 306456
```

Given Answer: 290 degrees at 17 knots

Correct Answer: 290 degrees at 17 knots

FEEDBACK AND NOTES FOR ATTEMPT

Feedback to Learner

Paragraph Arial 3 (12pt)

Mashups

Undergraduate Course Assessment Form

Course: FSCI 1560 - Flight 2 Transition
Semester Taught: Fall 2020
Number of Students in Course: 8

Student Learning Outcome Assessed	Assessment Results: (Percentage of student oral and flight stage checks graded as “Satisfactory” on first attempt)	Benchmark achieved? (Benchmark: 80% of student oral and flight stage checks will receive a grade of “Satisfactory” on first attempt)
H. Use the techniques, skills, and modern technology necessary for professional practice.	Module 4 Stage Check Pass Rate: 48%	No
J. Apply pertinent knowledge in identifying and solving problems.	Module 4 Stage Check Pass Rate: 48%	No

Recommendations: Develop more structured instructor professional development plans throughout each semester. Continue to evaluate and improve upon the new-hire and check instructor standardization process to emphasize common deficient areas on stage checks (primarily cross-country planning/operations and approach and landing procedures).

Description of Assignment: The student assessment consists of two stage check practical exams. Each stage check consists of an oral portion and a flight portion. Satisfactory (S) or Unsatisfactory (U) performance is determined in accordance with the Module Completion Standards (attached) and/or the appropriate Airmen Certification Standards (ACS)/Practical Test Standards (PTS).

Notes: Attached are the module completion standards included in the approved Training Course Outline. These documents describe the expectations and assessment standards for stage check oral and flight checks. Also attached are example stage check grade sheets.

Module 4

Post Private Pilot Operations

Prerequisites: Prior to beginning this module the student must possess a Private Pilot Certificate with an Airplane Single-Engine Land rating, a First or Second Class Medical Certificate issued within the previous 12 calendar months and must either already hold an Instrument Airplane rating, *or* they must be concurrently enrolled in the Instrument Rating Course and the Commercial Pilot Course.

Objective: To introduce the student to the Commercial Pilot maneuvers and to gain proficiency in VFR cross-country flying, night operations, and takeoffs and landings.

Completion Standards:

- The student must meet the following minimum training time requirements during this module:

DUAL			SOLO			TOTAL	OTHER		
Local	XC Total	XC Night	Local Total	Local Night	XC	Airplane	ATD	Pre/ Post	Ground
9.0 – 12.9	4.0 – 8.6	2.0	2.5 – 6.4	2.5	0 - 4.6	24.0	4.5	6.4	11.0

- Prior to completion of the module, students must pass a written exam and stage check to evaluate their understanding of:
  1) All knowledge areas included in Modules 1 – 3.
  2) Weather products required for preflight planning, current and forecast weather for departure, enroute, and arrival phases of flight.
  3) Meteorology applicable for flights conducted in Visual Meteorological Conditions to include atmospheric composition and stability, wind, temperature, moisture, precipitation, weather system formation, air masses, fronts, clouds, turbulence, thunderstorms, microbursts, icing, and fog.
  4) GPS navigation, including equipment, regulations, authorized use of databases, and receiver autonomous integrity monitoring.

5) Aerodynamics associated with flight maneuvers, including maneuvering speed and impact of weight changes, overbanking tendencies, factors effecting stall speed, and accelerated stalls. Objectives, procedures, and standards of all commercial flight maneuvers, including lazy eights, chandelles, steep spirals, and eights on pylons.

- Prior to completion of the module, students must pass a stage check to evaluate their ability to:
  1) Demonstrate any selected tasks included in the Private Pilot Airplane Airmen Certification Standards within the established standards.
  2) Perform steep turns in accordance with the Commercial Pilot testing standards.
  3) Demonstrate a basic understanding of chandelles by performing the maneuver in accordance with published procedures, complete the rollout at the 180° point +/- 20 degrees, no more than 10 knots above stall speed.
  4) Demonstrate a basic understanding of lazy eights by performing the maneuver in accordance with published procedures, arrive at each 180° point +/- 20 degrees, at an altitude +/- 200 feet from entry altitude, at an airspeed +/- 20 knots from entry airspeed.
  5) Demonstrate a basic understanding of steep spirals by performing the maneuver in accordance with published procedures, maintain a constant radius with only minor deviations while maintaining specified airspeed +/- 20 knots, and roll out toward specified heading +/- 20 degrees.
  6) Demonstrate a basic understanding of eights on pylons by performing the maneuver in accordance with published procedures, select suitable pylons, determine the approximate pivotal altitude, enter the maneuver at the appropriate altitude and airspeed, and maintain the reference line on each pylon with only minor deviations.

7) Perform an accelerated stall in accordance with published procedures, acknowledge the cues and recover promptly at the first indication of an impending stall.

8) Perform a power-off 180° accuracy approach and touch down -200/+400 feet from the specified touchdown point.

Notes:

- Lessons may be completed out of sequence as necessary to meet academic goals set by the instructor.
- Multiple instructional periods may be required to meet lesson requirements.

ACTIVITY GRADESHEET

Instructor: XXXXXXXXXXX **Student 1:** XXXXXXXXXXXXXX **Unit Grade:** S

Course: Flight II T R6 **Unit:** F28 DL-FLT CHK **Activity Type:** Flight **Activity Subtype:** Check Ride

Comments:

Completion Standard

The student will demonstrate all required tasks and any selected optional tasks and will meet the applicable module completion standards.

Objective Block

To evaluate the student in all required flight tasks and any selected optional flight tasks included in Module 4.

Line Item Group	Line Item Description	Prev	Line Item Grade	U/M Reason	Attp	Line Item Comment
ACS Procedures	Preflight Assessment(Ev)		$\boxed{S}$ U I NA		0	
01 F15 Maneuver	Chandelles(Ev)		$\boxed{S}$ U I NA		0	
01 F15 Maneuver	Eights-on-Pylons(Ev)		$\boxed{S}$ U I NA		0	
01 F15 Maneuver	Lazy Eights(Ev)		$\boxed{S}$ U I NA		0	
01 Used ETA LI	Steep Spirals(Ev)		$\boxed{S}$ U I NA		0	
01 F15 Maneuver	Steep Turns(Ev)		$\boxed{S}$ U I NA		0	
01 F15 Maneuver	Accelerated Stalls(Ev)		$\boxed{S}$ U I NA		0	
01 F15 Emergenc	Emergency Procedures(Ev)		$\boxed{S}$ U I NA		0	
01 F15 Maneuver	180-Degree Power Off Accuracy Approach and Landing(Ev)		$\boxed{S}$ U I NA		0	
01 F15 Planning	Pilotage and Dead Reckoning(Ev)	Optional	$\boxed{S}$ U I NA		0	
01 F15 Instrumt	Navigation Systems and Radar Services(Ev)	Optional	$\boxed{S}$ U I NA		0	
01 F15 Planning	Diversion(Ev)	Optional	$\boxed{S}$ U I NA		0	
01 F15 Planning	Lost Procedures(Ev)	Optional	$\boxed{S}$ U I NA		0	
01 Used ETA LI	Maneuvering During Slow Flight(Ev)	Optional	$\boxed{S}$ U I NA		0	
01 F15 Maneuver	Power-Off Stalls (Turning)(Ev)	Optional	$\boxed{S}$ U I NA		0	
01 F15 Maneuver	Power-On Stalls (Turning)(Ev)	Optional	$\boxed{S}$ U I NA		0	
01 F15 Maneuver	Normal and/or Crosswind Takeoff and Climb(Ev)	Optional	$\boxed{S}$ U I NA		0	
01 F15 Maneuver	Normal and/or Crosswind Approach and Landing(Ev)	Optional	$\boxed{S}$ U I NA		0	
01 Used ETA LI	Short-Field Takeoff and Climb(Ev)	Optional	$\boxed{S}$ U I NA		0	
01 Used ETA LI	Short-Field Approach and Landing(Ev)	Optional	$\boxed{S}$ U I NA		0	
01 Used ETA LI	Soft-Field Takeoff and Climb(Ev)	Optional	$\boxed{S}$ U I NA		0	
01 Used ETA LI	Soft-Field Approach and Landing(Ev)	Optional	$\boxed{S}$ U I NA		0	
01 F15 General	Daily Lesson Performance Grade (5pts)(Ev)		5 $\boxed{4}$ 3 2 1 I NA		0	

ACTIVITY GRADESHEET

Instructor: XXXXXXXXXXX **Student 1:** XXXXXXXXXXXX **Unit Grade: U**

Course: Flight II T R6 **Unit:** G17 - ORAL CHEC **Activity Type:** Oral **Activity Subtype:** Check

Comments
:

Completion Standard	Objective Block
The student will demonstrate an understanding of the knowledge areas included in Modules 1 - 4 and will meet the applicable module completion standards.	To evaluate the student on the knowledge areas included in Modules 1 - 4.

Line Item Group	Line Item Description	Prev	Line Item Grade	U/M Reason	Attp	Line Item Comment
leg SLU Grnd Itm	Aerodynamics(Ev)		$\boxed{S}$ U I NA		0	
01 F15 Weather	Weather Theory(Ev)		$\boxed{S}$ U I NA		0	
01 Used ETA LI	Weather Information(Ev)		$\boxed{S}$ U I NA		0	
01 Used ETA LI	GPS - Principles of operations, navigation, limitations(Ev)		S U $\boxed{I}$ NA		0	
01 F15 Maneuver	Commercial Maneuvers(Ev)		S U $\boxed{I}$ NA		0	
leg SLU Grnd Itm	Performance and Limitations(Ev)	Optional	S $\boxed{U}$ I NA		0	Came in with a weight and balance outside of weight limits
01 F15 Regs	Certificates and Documents(Ev)	Optional	$\boxed{S}$ U I NA		0	
01 F15 Regs	Airworthiness Requirements(Ev)	Optional	S $\boxed{U}$ I NA		0	Did not know all inspections, did not have ATOMATOFFLAMES memorized, special flight permit and MEL confusion, maintaining airworthiness certificate and all the places to check when there is a broken item.
ACS Preflight	Operation of Systems(Ev)	Optional	S U $\boxed{I}$ NA		0	
01 F15 Planning	Cross Country Planning(Ev)	Optional	S $\boxed{U}$ I NA		0	Improper planning due to weight and balance mistake
01 F15 Regs	National Airspace System(Ev)	Optional	$\boxed{S}$ U I NA		0	
01 F15 Planning	Performance and Limitations(Ev)	Optional	S $\boxed{U}$ I NA		0	Came in with a weight and balance outside of weight limits
leg SLU Grnd Itm	Aeromedical Factors(Ev)	Optional	S U $\boxed{I}$ NA		0	
01 F15 General	Daily Lesson Performance Grade (5pts)(Ev)		5 4 3 $\boxed{2}$ 1 I NA		0	

Undergraduate Course Assessment Form

Course: FSCI 2150 Flight 3
Semester Taught: Fall 2020
Number of Students in Course: 24

Student Learning Outcome Assessed	Assessment Results: (Percentage of student oral and flight stage checks graded as "Satisfactory" on first attempt)	Benchmark achieved? (Benchmark: 80% of student oral and flight stage checks will receive a grade of "Satisfactory" on first attempt)
H. Use the techniques, skills, and modern technology necessary for professional practice.	Module 5 and 6 Stage Check Pass Rate: 86%	Yes
J. Apply pertinent knowledge in identifying and solving problems.	Module 5 and 6 Stage Check Pass Rate: 86%	Yes

Recommendations: Develop more structured instructor professional development plans throughout each semester. Continue to evaluate and improve upon the new-hire and check instructor standardization process. Continually revise syllabus and training course outlines to ensure accurate and up-to-date lesson content, training standards, and student expectations.

Description of Assignment: The student assessment consists of two stage check practical exams. Each stage check consists of an oral portion and a flight portion. Satisfactory (S) or Unsatisfactory (U) performance is determined in accordance with the Module Completion Standards (attached) and/or the appropriate Airmen Certification Standards (ACS)/Practical Test Standards (PTS).

Notes: Attached are the module completion standards included in the approved Training Course Outline. These documents describe the expectations and assessment standards for stage check oral and flight checks. Also attached are example stage check grade sheets.

Module 5

Commercial BAI and Navigation

Prerequisites: Prior to beginning this module the student must have satisfactorily completed Module 4.

Objective: To introduce the student to navigation by reference to instruments and to gain proficiency in VFR cross-country flying, night operations, and Commercial Pilot maneuvers.

Completion Standards:

- The student must meet the following minimum training time requirements during this module:

DUAL				SOLO			TOTAL	OTHER		
Local Total	XC	Local Night	Inst. Ref.	Local Total	Local Night	XC	Airplane	ATD	Pre/ Post	Ground
9.5	2.0	1.5	4.5	5.1	2.5	10.4	27.0	7.5	5.2	9.5

- Prior to completion of the module, students must pass a written exam and stage check to evaluate their understanding of:
  1) Pilotage and dead reckoning, including selection of route and altitude, course plotting, estimating heading, true airspeed, wind correction angle, groundspeed, time, and distance.
  2) Operation and common failure modes of flight instruments, including the pitot-static system, gyroscopic/electric instruments, magnetic compass, and vacuum systems.
  3) Concepts of flight instrument references related to attitude instrument flying, including pitch instruments, bank instruments, and power instruments.
  4) Characteristics of VOR, DME, and NDB equipment, including orientation, course determination, equipment, required checks, regulations, and common failure modes.
  5) Satellite-based navigation, including equipment, regulations, authorized use of databases, and receiver autonomous integrity monitoring.

- Prior to completion of the module, students must pass a stage check to evaluate their ability to:
    1) Prepare and use a flight log, navigate by pilotage and pre-computed headings, verify position within three miles, and arrive at checkpoints within 3 minutes of the estimated time of arrival while maintaining altitude +/- 150 feet and heading +/- 15 degrees.
    2) Control the aircraft solely by reference to instruments in straight and level flight, constant rate/airspeed climbs and descents, and turns to headings while maintaining altitude +/- 150 feet, heading +/- 15 degrees, and airspeed +/- 15 knots.
    3) Control the aircraft during partial panel operations in straight and level flight, constant rate/airspeed climbs and descents, and turns to headings while maintaining altitude +/- 200 feet, heading +/- 20 degrees, and airspeed +/- 20 knots.
    4) Use onboard navigation equipment both full panel and partial panel, determine the airplane's position using the navigation systems, intercept and track a course or radial, and recognize the indication of station or waypoint passage, while maintaining altitude +/- 200 feet, heading +/- 20 degrees, and without allowing full-scale deflection of the CDI.
    5) Recognize unusual attitudes during both full panel and partial panel flight and apply the correct flight control application, in the correct sequence, to return the aircraft to a stabilized level flight attitude.

Notes:

- Lessons may be completed out of sequence as necessary to meet academic goals set by the instructor.
- Multiple instructional periods may be required to meet lesson requirements.

Module 6

Holding and Approach Procedures

Prerequisites: Prior to beginning this module the student must possess a Private Pilot Certificate with an Airplane Single-Engine Land rating, a First or Second Class Medical Certificate and may be concurrently enrolled in the Instrument Rating Course and the Commercial Pilot Course.

Objective: To introduce the student to instrument flight operations, including holding procedures and instrument approach procedures.

Completion Standards:

- The student must meet the following minimum training time requirements during this module:

DUAL		OTHER		
Local	Inst. Ref.	ATD	Pre/ Post	Ground
12.0	8.8	7.0	5.6	17.5

- Prior to completion of the module, students must pass a written exam and stage check to evaluate their understanding of:
  1) Operation and common failure modes of flight instruments, including the pitot-static system, gyroscopic/electric instruments, magnetic compass, and vacuum systems.
  2) Characteristics of VOR, DME, and NDB equipment, including orientation, course determination, equipment, required checks, regulations, and common failure modes.
  3) Holding procedures, including purpose, reporting criteria, recommended entry procedures, holding speeds, and wind correction.
  4) Symbology found on IFR enroute and approach charts and diagrams.
  5) Procedures and limitations associated with non-precision approaches, precision approaches, missed approach procedures, circling approaches, and landing from an instrument approach.

- Prior to completion of the module, students must pass a stage check to evaluate their ability to:
    1) Perform an adequate preflight inspection of installed flight instruments, avionics, and navigation equipment by following the appropriate checklist and determine the aircraft is in a condition for safe instrument flight.
    2) Control the aircraft solely by reference to instruments in straight and level flight, constant rate/airspeed climbs and descents, and turns to headings while maintaining altitude +/- 150 feet, heading +/- 15 degrees, and airspeed +/- 15 knots.
    3) Comply with instrument approach procedures, establish the appropriate configuration, and maintain altitude +/- 200 feet, heading +/- 20 degrees, airspeed +/- 20 knots, and never allow full-scale deflection of the CDI, glideslope, or localizer indications.
    4) During non-precision approaches, establish a stabilized approach profile with a rate of descent that will ensure arrival at the MDA prior to reaching the missed approach point. Maintain the MDA, when reached, +200/-0 feet to the missed approach point.
    5) Transition at the decision altitude or MDA to a visual flight condition, allowing for safe visual maneuvering and a normal landing. Maintain positive aircraft control throughout the landing maneuver.
    6) During circling approaches, maneuver the aircraft after reaching the MDA on a flight path that will permit a normal landing on a runway. Maintain altitude +200/-0 feet until a descent to a normal landing can be made.
    7) Initiate a missed approach upon reaching the missed approach point or decision altitude when the required visual references are not available. Comply with published missed approach procedures and maintain recommended airspeed +/- 20 knots, heading or course +/- 20 degrees, and altitude +/- 200 feet during the missed approach procedure.
    8) Intercept a DME arc and maintain that arc within +/- 1 nautical mile while maintaining altitude +/- 200 feet and airspeed +/- 20 knots.

9) Conduct holding procedures, use an entry procedure that ensure the aircraft remains within the holding pattern airspace, use proper wind correction, and maintain airspeed +/- 20 knots, altitude +/- 200 feet, headings +/- 20 degrees, and never allow full-scale deflection of the CDI.

Notes:

- Lessons may be completed out of sequence as necessary to meet academic goals set by the instructor.
- Multiple instructional periods may be required to meet lesson requirements.

ACTIVITY GRADESHEET

Instructor: XXXXXXXXX **Student 1:** XXXXXXXXXX **Unit Grade: S**

Course: Flight III R6 **Unit:** G14 - ORAL CHEC **Activity Type:** Oral **Activity Subtype:** Check

Comments:

Completion Standard

The student will demonstrate an understanding of the knowledge areas included in Module 6 and will meet the applicable module completion standards.

Objective Block

To evaluate the student on the knowledge areas included in Module 6.

Line Item Group	Line Item Description	Prev	Line Item Grade						U/M Reason	Attp	Line Item Comment
01 Used ETA LI	Flight Instruments(Ev)		$\boxed{S}$	U	I				NA	0	
leg SLU Grnd Itm	Aircraft Navigation Equipment(Ev)		$\boxed{S}$	U	I				NA	0	
01 F15 Instrumt	IFR Low Altitude Enroute Chart(Ev)		$\boxed{S}$	U	I				NA	0	
01 F15 Instrumt	Holding Procedures(Ev)		$\boxed{S}$	U	I				NA	0	
01 F15 Instrumt	Approach Procedures - Non Precision Approach(Ev)		$\boxed{S}$	U	I				NA	0	
01 F15 Instrumt	Approach Procedures - Precision Approach(Ev)		$\boxed{S}$	U	I				NA	0	
01 F15 General	Daily Lesson Performance Grade (5pts)(Ev)		5	$\boxed{4}$	3	2	1	I	NA	0	

ACTIVITY GRADESHEET

Instructor: XXXXXXXXXX **Student 1:** XXXXXXXXXX **Unit Grade:** U

Course: Flight III R6 **Unit:** F22 DL-FLT CHEC **Activity Type:** Flight **Activity Subtype:** Check Ride

Comments: Overall, struggled with altitude control and multi tasking. Fixating was an issue at times. Procedural knowledge was inconsistent.

Completion Standard

The student will demonstrate all required tasks and will meet the applicable module completion standards.

Objective Block

To evaluate the student in all required flight tasks included in Module 6.

Line Item Group	Line Item Description	Prev	Line Item Grade	U/M Reason	Attp	Line Item Comment
01 Used ETA LI	Instrument Cockpit Check(Ev)		$\boxed{S}$ U I NA		0	
01 F15 Instrumt	Flight by Reference to Instruments(Ev)		$\boxed{S}$ U I NA		0	
01 F15 Instrumt	Approach Procedures - ILS(Ev)		S $\boxed{U}$ I NA		0	Full Scale Glideslope Deflection
01 F15 Instrumt	Approach Procedures - VOR(Ev)		S $\boxed{U}$ I NA		0	Turned off the approach course by 30 degrees, was not configured properly inside the FAF. Weak procedures to set up for the approach.
01 F15 Instrumt	Approach Procedures - GPS(Ev)		$\boxed{S}$ U I NA		0	
01 F15 Instrumt	Approach Procedures - Circling Approaches(Ev)	Optional	$\boxed{S}$ U I NA		0	
leg SLU-Inst	Approach Procedures - Missed Approach Procedure(Ev)	Optional	S U I $\boxed{NA}$		0	
01 F15 Instrumt	Landing from a Straight-In or Circling Approach(Ev)		$\boxed{S}$ U I NA		0	
01 F15 Instrumt	Holding Procedures(Ev)		$\boxed{S}$ U I NA		0	
01 F15 Instrumt	DME Arcs(Ev)		$\boxed{S}$ U I NA		0	
01 F15 General	Daily Lesson Performance Grade (5pts)(Ev)		5 $\boxed{4}$ 3 2 1 I NA		0	

Undergraduate Course Assessment Form

Course: FSCI 2550 - Flight 4
Semester Taught: Fall 2020
Number of Students in Course: 21

Student Learning Outcome Assessed	Assessment Results: (Percentage of student oral and flight stage checks graded as "Satisfactory" on first attempt)	Benchmark achieved? (Benchmark: 80% of student oral and flight stage checks will receive a grade of "Satisfactory" on first attempt)
H. Use the techniques, skills, and modern technology necessary for professional practice.	Module 7 and 8 Stage Check Pass Rate: 84%	Yes
J. Apply pertinent knowledge in identifying and solving problems.	Module 7 and 8 Stage Check Pass Rate: 84%	Yes

Recommendations: Develop more structured instructor professional development plans throughout each semester. Continue to evaluate and improve upon the new-hire and check instructor standardization process. Continually revise syllabus and training course outlines to ensure accurate and up-to-date lesson content, training standards, and student expectations.

Description of Assignment: The student assessment consists of two stage check practical exams. Each stage check consists of an oral portion and a flight portion. Satisfactory (S) or Unsatisfactory (U) performance is determined in accordance with the Module Completion Standards (attached) and/or the appropriate Airmen Certification Standards (ACS)/Practical Test Standards (PTS).

Notes: Attached are the module completion standards included in the approved Training Course Outline. These documents describe the expectations and assessment standards for stage check oral and flight checks. Also attached are example stage check grade sheets.

Module 7

Instrument Cross-Country and Partial Panel Operations

Prerequisites: Prior to beginning this module the student must have successfully completed Module 6.

Objective: To introduce IFR cross-country and partial panel operations and to complete the aeronautical knowledge and flight training required to prepare students to pass the Instrument Rating Airplane Knowledge and Practical Exams.

Completion Standards:

- The student must meet the following minimum training time requirements during this module:

DUAL			OTHER		
Local	XC	Inst. Ref.	ATD	Pre/ Post	Ground
11.5	6.0	13.0	5.5	5.6	18.0

- Prior to completion of the module, students must pass the FAA Instrument Rating Knowledge Exam.
- Prior to completion of the module, students must pass a stage check to evaluate their ability to:
  1) Demonstrate all applicable Tasks as specified in the Instrument Rating Airplane Airmen Certification Standards within the established standards.
  2) Demonstrate mastery of the aircraft by performing each Task successfully.
  3) Demonstrate proficiency and competency in accordance with the standards.
  4) Demonstrate sound judgment and exercise aeronautical decision making and risk management.

Notes:

- Lessons may be completed out of sequence as necessary to meet academic goals set by the instructor.
- Multiple instructional periods may be required to meet lesson requirements.

Module 8

Technically Advanced Airplane Operations

Prerequisites: Prior to beginning this module the student must possess a Private Pilot Airplane Single-engine Land certificate and an Instrument Airplane Rating.

Objective: To introduce the student to Technologically Advanced Airplane (TAA) operations and to gain proficiency in IFR cross-country operations, commercial pilot maneuvers, and commercial aeronautical knowledge.

Completion Standards:

- The student must meet the following minimum training time requirements during this module:

DUAL				TOTAL	OTHER		
Local	XC	Inst. Ref.	TAA	Airplane	ATD	Pre/ Post	Ground
15.0	8.5	7.5	10.0	23.5	4.5	5.6	13.5

- Prior to completion of the module, students must pass a written exam to evaluate their understanding of:
  1) Major aircraft components and systems by describing normal operation of systems such as primary and secondary flight controls and trim, powerplant and propeller, landing gear, fuel, oil, hydraulic, electrical, flight instruments, avionics, and environmental systems.
  2) Use of all performance charts, tables, and data to determine takeoff and landing, climb, and cruise performance.
  3) Weather products required for preflight planning, current and forecast weather for departure, enroute, and arrival phases of flight.
  4) Meteorology applicable for flights conducted in both instrument and Visual Meteorological Conditions to include atmospheric composition and stability, wind, temperature, moisture, precipitation, weather system formation, airmasses, fronts, clouds, turbulence, thunderstorms, microbursts, icing, and fog.

5) Airworthiness, including certificate and document locations and expiration, required inspections, airworthiness directives, equipment requirements, and flight with inoperative equipment.
6) Currency requirements, privileges, limitations, medical certification, and documents related to commercial pilot operations.

- Prior to completion of the module, students must pass a stage check to evaluate their ability to:
  1) Perform steep turns and slow flight in accordance with published procedures while maintaining altitude +/- 100 feet, airspeed +/- 10 knots, and heading +/- 10 degrees.
  2) Perform power-on, power-off, and accelerated stalls in accordance with the Commercial Pilot testing standards.
  3) Perform chandelles in accordance with published procedures, complete the rollout at the 180° point +/- 15 degrees, no more than 10 knots above stall speed.
  4) Perform lazy eights in accordance with published procedures, arrive at each 180° point +/- 15 degrees, at an altitude +/- 150 feet from entry altitude, at an airspeed +/- 15 knots from entry airspeed.
  5) Perform steep spirals in accordance with published procedures, maintain a constant radius with only minor deviations while maintaining specified airspeed +/- 15 knots, and roll out toward specified heading +/- 15 degrees.
  6) Perform eights on pylons in accordance with published procedures, select suitable pylons, determine the approximate pivotal altitude, enter the maneuver at the appropriate altitude and airspeed, and maintain the reference line on each pylon with only minor deviations.
  7) Comply with instrument approach procedures, both with and without the use of autopilot, and maintain altitude +/- 100 feet, heading +/- 10 degrees, airspeed +/- 10 knots, and allow less than ¾-scale deflection of the CDI, glideslope, or localizer indications. Maintain the MDA, when reached, +100/-0 feet to the missed approach point.

8) Perform a power-off 180° accuracy approach and touch down -200/+400 feet from the specified touchdown point.
9) Perform normal takeoffs and landings, short-field takeoffs, soft-field takeoffs, and soft-field landings in accordance with the Commercial Pilot testing standards.
10) Perform short-field landings, establish the recommended approach and landing configuration while maintaining airspeed +/- 5 knots, touchdown within 400 feet beyond a specified point with no side drift and minimum float.

Notes:

- Lessons may be completed out of sequence as necessary to meet academic goals set by the instructor.
- Multiple instructional periods may be required to meet lesson requirements.

ACTIVITY GRADESHEET

Instructor: XXXXXXXXX **Student 1:** XXXXXXXXXX **Unit Grade: S**

Course: Flight IV R6.4 **Unit:** G9 - ORAL CHECK **Activity Type:** Oral **Activity Subtype:** Check

Comments:

Completion Standard

The student will demonstrate an understanding of the knowledge areas included in Modules 6 and 7 and will meet the applicable module completion standards and Airmen Certification Standards.

Objective Block

To evaluate the student on the knowledge areas included in Modules 6 and 7 according to the Airmen Certification Standards.

Line Item Group	Line Item Description	Prev	Line Item Grade						U/M Reason	Attp	Line Item Comment
01 F15 Instrumt	Pilot Qualifications(Ev)		S	U	I				NA	0	
01 F15 Instrumt	Weather Information(Ev)		S	U	I				NA	0	
01 F15 Instrumt	Cross-Country Flight Planning(Ev)		S	U	I				NA	0	
01 F15 Instrumt	Aircraft Systems Related to IFR Operations(Ev)		S	U	I				NA	0	
01 F15 Instrumt	Aircraft Flight Instruments and Navigation Equipment(Ev)		S	U	I				NA	0	
01 Used ETA LI	Instrument Cockpit Check(Ev)		S	U	I				NA	0	
01 F15 Instrumt	Air Traffic Control Clearances(Ev)		S	U	I				NA	0	
01 F15 Instrumt	Holding Procedures(Ev)		S	U	I				NA	0	
01 F15 Instrumt	Flight by Reference to Instruments(Ev)		S	U	I				NA	0	
01 F15 Instrumt	Compliance with Departure, En Route, and Arrival Clearances(Ev)		S	U	I				NA	0	
01 F15 Instrumt	Instrument Approach Procedures(Ev)		S	U	I				NA	0	
01 Used ETA LI	Emergency Operations(Ev)		S	U	I				NA	0	
01 F15 General	Daily Lesson Performance Grade (5pts)(Ev)		5	4	3	2	1	I	NA	0	

ACTIVITY GRADESHEET

Instructor: XXXXXXXXXX **Student 1:** XXXXXXXXXX **Unit Grade:** U

Course: Flight IV R6.4 **Unit:** F10 DL-FLT CHEC **Activity Type:** Flight **Activity Subtype:** Check Ride

Comment:

Completion Standard	Objective Block
The student will meet all standards of knowledge, judgment, and skill as specified in the Instrument Rating Airplane Airman Certification Standards for the issuance of an Instrument Rating.	To evaluate the student according to the Instrument Rating Airplane Airmen Certification Standards and to determine whether the student is prepared to pass the Instrument Rating Practical Test.

Line Item Group	Line Item Description	Prev	Line Item Grade	U/M Reason	Attp	Line Item Comment
ACS Procedures	Instrument Flight Deck Check(Ev)		$\boxed{S}$ U I NA		0	
ACS ATC	Compliance with Air Traffic Control Clearances and Procedures(Ev)		S $\boxed{U}$ I NA		0	Forgot atis and how to identify nav sources
ACS ATC	Holding Procedures(Ev)		S $\boxed{U}$ I NA		0	Used no xwind correction first lap and too little correction the second lap, intercepted course too late
01 F15 Instrumt	Basic Instrument Flight Maneuvers(Ev)		$\boxed{S}$ U I NA		0	
ACS Inst Ref	Recovery from Unusual Flight Attitudes(Ev)		$\boxed{S}$ U I NA		0	
01 F15 Instrumt	Intercepting and Tracking Navigational Systems(Ev)		$\boxed{S}$ U I NA		0	
01 F15 Instrumt	DME Arcs(Ev)		S $\boxed{U}$ I NA		0	Turned wrong direction for arc entry
01 F15 Instrumt	Compliance with Departure, En Route, and Arrival Procedures(Ev)		$\boxed{S}$ U I NA		0	
01 F15 Instrumt	Approach Procedures - Non Precision Approach(Ev)		$\boxed{S}$ U I NA		0	
01 F15 Instrumt	Approach Procedures - VOR(Ev)	Optional	S U I $\boxed{NA}$		0	
01 F15 Instrumt	Approach Procedures - GPS(Ev)	Optional	$\boxed{S}$ U I NA		0	
01 F15 Instrumt	Approach Procedures - Precision Approach(Ev)		$\boxed{S}$ U I NA		0	
01 F15 Instrumt	Approach Procedures - ILS(Ev)	Optional	$\boxed{S}$ U I NA		0	
01 F15 Instrumt	Approach Procedures - LPV(Ev)	Optional	S U I $\boxed{NA}$		0	
leg SLU-Inst	Approach Procedures - Missed Approach Procedure(Ev)		$\boxed{S}$ U I NA		0	
01 F15 Instrumt	Approach Procedures - Circling Approaches(Ev)		S U $\boxed{I}$ NA		0	out of time
01 F15 Instrumt	Landing from Straight-In or Circling Approach Procedure(Ev)		$\boxed{S}$ U I NA		0	
01 F15 Emergenc	Loss of Communications(Ev)		$\boxed{S}$ U I NA		0	
01 F15 Instrumt	Partial Panel - Non Precision Approach(Ev)		$\boxed{S}$ U I NA		0	
01 F15 General	Postflight Procedures(Ev)		$\boxed{S}$ U I NA		0	
01 F15 General	Daily Lesson Performance Grade (5pts)(Ev)		5 4 $\boxed{3}$ 2 1 I NA		0	

Undergraduate Course Assessment Form

Course: FSCI 3550 - Flight 5
Semester Taught: Fall 2020
Number of Students in Course: 13

Student Learning Outcome Assessed	Assessment Results: (Percentage of student oral and flight stage checks graded as "Satisfactory" on first attempt)	Benchmark achieved? (Benchmark: 80% of student oral and flight stage checks will receive a grade of "Satisfactory" on first attempt)
H. Use the techniques, skills, and modern technology necessary for professional practice.	Module 9 and 10 Stage Check Pass Rate: 85%	Yes
J. Apply pertinent knowledge in identifying and solving problems.	Module 9 and 10 Stage Check Pass Rate: 85%	Yes

Recommendations: Develop more structured instructor professional development plans throughout each semester. Continue to evaluate and improve upon the new-hire and check instructor standardization process. Continually revise syllabus and training course outlines to ensure accurate and up-to-date lesson content, training standards, and student expectations.

Description of Assignment: The student assessment consists of two stage check practical exams. Each stage check consists of an oral portion and a flight portion. Satisfactory (S) or Unsatisfactory (U) performance is determined in accordance with the Module Completion Standards (attached) and/or the appropriate Airmen Certification Standards (ACS)/Practical Test Standards (PTS).

Notes: Attached are the module completion standards included in the approved Training Course Outline. These documents describe the expectations and assessment standards for stage check oral and flight checks. Also attached are example stage check grade sheets.

Module 9

Commercial Pilot ASEL Course Completion

Prerequisites: Prior to beginning this module the student must have successfully completed Module 8.

Objective: To complete the aeronautical knowledge and flight training required to prepare students to pass the Commercial Pilot Knowledge and Practical Exams.

Completion Standards:

- The student must meet the following minimum training time requirements during this module:

DUAL		SOLO	TOTAL	OTHER		
Local	XC	Airplane	Airplane	ATD	Pre/ Post	Ground
10.8	2.0	11.7	24.5	4.5	4.4	12.0

- Prior to completion of the module, students must pass the FAA Commercial Pilot Knowledge Exam.
- Prior to completion of the module, students must pass a stage check to evaluate their ability to:
  1) Demonstrate all applicable Tasks as specified in the Commercial Pilot Airplane Airmen Certification Standards within the established standards.
  2) Demonstrate mastery of the aircraft by performing each Task successfully.
  3) Demonstrate proficiency and competency in accordance with the standards.
  4) Demonstrate sound judgment and exercise aeronautical decision making and risk management.

Notes:

- Lessons may be completed out of sequence as necessary to meet academic goals set by the instructor.
- Multiple instructional periods may be required to meet lesson requirements.

Module 10

Multiengine Aircraft Operations

Prerequisites: Prior to beginning this module the student must be enrolled in the Commercial Pilot Added Rating Course, must hold a Commercial Pilot Airplane Single-engine Land certificate and must possess a valid Medical Certificate.

Objective: To complete the aeronautical knowledge and flight training required to prepare students to pass the Commercial Pilot Airplane Multiengine Land Added Class Rating Practical Exam.

Completion Standards:

- The student must meet the following minimum training time requirements during this module:

DUAL				**TOTAL**	OTHER		
Local Total	XC Total	XC Night	Inst. Ref.	**AMEL**	ATD	Pre/ Post	Ground
9.5	4.0	2.0	5.0	**13.5**	6.0	5.6	15.5

- Prior to completion of the module, students must pass a written exam to evaluate their understanding of the required knowledge areas included in the Commercial Pilot Airmen Certification Standards for an added Airplane Multiengine Land class rating.
- Prior to completion of the module, students must pass a stage check to evaluate their ability to:
    1) Demonstrate all applicable Tasks as specified in the Commercial Pilot Airplane Airmen Certification Standards within the established standards.
    2) Demonstrate mastery of the aircraft by performing each Task successfully.
    3) Demonstrate proficiency and competency in accordance with the standards.
    4) Demonstrate sound judgment and exercise aeronautical decision making and risk management.

Notes:

- Lessons may be completed out of sequence as necessary to meet academic goals set by the instructor.
- Multiple instructional periods may be required to meet lesson requirements.

ACTIVITY GRADESHEET

Instructor: XXXXXXXXX **Student 1:** XXXXXXXXXX **Unit Grade:** S

Course: Flight V R6.4 **Unit:** F9 DL-FLT CHECK **Activity Type:** Flight **Activity Subtype:** Check Ride

Comment:

Completion Standard

The student will meet all standards of knowledge, judgment, and skill as specified in the Commercial Pilot Airman Certification Standards for the issuance of a Commercial Pilot ASEL Certificate.

Objective Block

To evaluate the student according to the Commercial Pilot Airmen Certification Standards and to determine whether the student is prepared to pass the Commercial Pilot Practical Test.

Line Item Group	Line Item Description	Prev	Line Item Grade						U/M Reason	Attp	Line Item Comment
01 F15 General	Preflight Procedures(Ev)		$\boxed{S}$	U	I				NA	0	
leg SLU-Flt Bsc	Airport Operations(Ev)		$\boxed{S}$	U	I				NA	0	
leg SLU-Manvrs	Takeoffs, Landings, and Go-arounds(Ev)		$\boxed{S}$	U	I				NA	0	
leg SLU-Manvrs	Performance Maneuvers(Ev)		$\boxed{S}$	U	I				NA	0	
ACS Perform	Steep Turns(Ev)	Optional	$\boxed{S}$	U	I				NA	0	
01 Used ETA LI	Steep Spirals(Ev)	Optional	S	U	I				$\boxed{NA}$	0	
01 F15 Maneuver	Chandelles(Ev)	Optional	$\boxed{S}$	U	I				NA	0	
01 F15 Maneuver	Lazy Eights(Ev)	Optional	$\boxed{S}$	U	I				NA	0	
ACS Perform	Eights on Pylons(Ev)		$\boxed{S}$	U	I				NA	0	
leg SLU-Nav	Navigation(Ev)		$\boxed{S}$	U	I				NA	0	
ACS Slow Flt	Maneuvering During Slow Flight(Ev)		$\boxed{S}$	U	I				NA	0	
leg SLU-Manvrs	Stalls(Ev)		$\boxed{S}$	U	I				NA	0	
leg SLU-Stand	Emergency Operations(Ev)		$\boxed{S}$	U	I				NA	0	
ACS Post Flt	After Landing, Parking and Securing (ASEL, AMEL)(Ev)		$\boxed{S}$	U	I				NA	0	
01 F15 General	Daily Lesson Performance Grade (5pts)(Ev)		$\boxed{5}$	4	3	2	1	I	NA	0	

ACTIVITY GRADESHEET

Instructor: XXXXXXXXX **Student 1:** XXXXXXXXXXXX **Unit Grade:** U

Course: Flight V R6.4 **Unit:** F9 DL-FLT CHECK **Activity Type:** Flight **Activity Subtype:** Check Ride

Comments
:

Completion Standard

The student will meet all standards of knowledge, judgment, and skill as specified in the Commercial Pilot Airman Certification Standards for the issuance of a Commercial Pilot ASEL Certificate.

Objective Block

To evaluate the student according to the Commercial Pilot Airmen Certification Standards and to determine whether the student is prepared to pass the Commercial Pilot Practical Test.

Line Item Group	Line Item Description	Prev	Line Item Grade	U/M Reason	Attp	Line Item Comment
01 F15 General	Preflight Procedures(Ev)		$\boxed{S}$ U I NA		0	
leg SLU-Flt Bsc	Airport Operations(Ev)		$\boxed{S}$ U I NA		0	
leg SLU-Manvrs	Takeoffs, Landings, and Go-arounds(Ev)		S $\boxed{U}$ I NA		0	Retest: Short field landing (+200'). Power off 180 (+500').
leg SLU-Manvrs	Performance Maneuvers(Ev)		$\boxed{S}$ U I NA		0	
ACS Perform	Steep Turns(Ev)	Optional	$\boxed{S}$ U I NA		0	
01 Used ETA LI	Steep Spirals(Ev)	Optional	$\boxed{S}$ U I NA		0	
01 F15 Maneuver	Chandelles(Ev)	Optional	$\boxed{S}$ U I NA		0	
01 F15 Maneuver	Lazy Eights(Ev)	Optional	$\boxed{S}$ U I NA		0	
ACS Perform	Eights on Pylons(Ev)		$\boxed{S}$ U I NA		0	
leg SLU-Nav	Navigation(Ev)		$\boxed{S}$ U I NA		0	
ACS Slow Flt	Maneuvering During Slow Flight(Ev)		$\boxed{S}$ U I NA		0	
leg SLU-Manvrs	Stalls(Ev)		$\boxed{S}$ U I NA		0	
leg SLU-Stand	Emergency Operations(Ev)		S $\boxed{U}$ I NA		0	Retest: Engine Failure. Overshot landing field. Field selected was inappropriate.
ACS Post Flt	After Landing, Parking and Securing (ASEL, AMEL)(Ev)		$\boxed{S}$ U I NA		0	
01 F15 General	Daily Lesson Performance Grade (5pts)(Ev)		5 4 $\boxed{3}$ 2 1 I NA		0	

Undergraduate Course Assessment Form

Course: FSCI 3750 - Flight 6
Semester Taught: Fall 2020
Number of Students in Course: 5

Student Learning Outcome Assessed	Assessment Results: (Percentage of student oral and flight stage checks graded as "Satisfactory" on first attempt)	Benchmark achieved? (Benchmark: 80% of student oral and flight stage checks will receive a grade of "Satisfactory" on first attempt)
H. Use the techniques, skills, and modern technology necessary for professional practice.	Module 11 and 12 Stage Check Pass Rate: 91%	Yes
J. Apply pertinent knowledge in identifying and solving problems.	Module 11 and 12 Stage Check Pass Rate: 91%	Yes

Recommendations: Develop more structured instructor professional development plans throughout each semester. Continue to evaluate and improve upon the new-hire and check instructor standardization process. Continually revise syllabus and training course outlines to ensure accurate and up-to-date lesson content, training standards, and student expectations.

Description of Assignment: The student assessment consists of two stage check practical exams. Each stage check consists of an oral portion and a flight portion. Satisfactory (S) or Unsatisfactory (U) performance is determined in accordance with the Module Completion Standards (attached) and/or the appropriate Airmen Certification Standards (ACS)/Practical Test Standards (PTS).

Notes: Attached are the module completion standards included in the approved Training Course Outline. These documents describe the expectations and assessment standards for stage check oral and flight checks. Also attached are example stage check grade sheets.

Module 11

Fundamentals of Instruction

Prerequisites: Prior to beginning this module the student must possess an ATP Certificate with an Airplane Single-Engine Land Rating or Commercial Pilot Certificate with Airplane Single-Engine Land and Instrument Ratings and must possess either a valid FAA medical certificate or meet the Alternative Pilot Physical Examination and Education Requirements under FAR 68 (BasicMed).

Objective: To introduce the student to the Fundamentals of Instruction, to gain proficiency in teaching technical subject areas, and to increase competence in demonstrating and describing Private Pilot procedures and maneuvers.

Completion Standards:

- The student must meet the following minimum training time requirements during this module:

DUAL		OTHER
Airplane	Pre/ Post	Ground
12.7	3.6	21.0

- Prior to completion of the module, students must pass the FAA Fundamentals of Instruction Knowledge Exam and a stage check to evaluate their instructional knowledge of:
  1) The fundamentals of instructing, including human behavior, effective communication, the teaching process, the learning process, assessment and critique, instructor responsibilities and professionalism, techniques of flight instruction, and risk management, as described in the Flight Instructor Practical Test Standards or Airmen Certification Standards.
  2) Technical subject areas, including principles of flight, flight controls, aircraft systems, performance, and weight and balance, as described in the Flight Instructor Practical Test Standards or Airmen Certification Standards.

- Prior to completion of the module, students must pass a stage check to evaluate their ability to:
  1) Demonstrate all procedures and maneuvers in this module from the right seat to the Private Pilot skill level.
  2) Demonstrate a preflight inspection while describing reasons for the inspection, items to check, and recognition of defects.
  3) Demonstrate and simultaneously explain all ground operations, including engine starting procedures, cockpit management, taxiing, airport signs and markings, ATC communication procedures, and before takeoff checks.
  4) Demonstrate and simultaneously explain fundamentals of flight and basic instrument maneuvers.
  5) Demonstrate and simultaneously explain traffic pattern procedures, including normal/crosswind takeoff and landing, short-field takeoff and landing, soft-field takeoff and landing, slip to a landing, and go-arounds.
  6) Demonstrate and simultaneously explain steep turns, slow flight, and stalls.
  7) Demonstrate and simultaneously explain Private Pilot ground reference maneuvers, including turns around a point, s-turns, and rectangular course.
  8) Demonstrate and simultaneously explain emergency operations, including a simulated emergency approach and landing.

Notes:

- Lessons may be completed out of sequence as necessary to meet academic goals set by the instructor.
- Multiple instructional periods may be required to meet lesson requirements.

Module 12

Flight Instructor Practical Test Preparation

Prerequisites: Prior to beginning this module the student must possess an ATP Certificate with an Airplane Single-Engine Land Rating or Commercial Pilot Certificate with Airplane Single-Engine Land and Instrument Ratings.

Objective: To gain proficiency in teaching technical subject areas and demonstrating and describing all required procedures and maneuvers. To complete the aeronautical knowledge and flight training required for the Certified Flight Instructor Practical Exam.

Completion Standards:

- The student must meet the following minimum training time requirements during this module:

DUAL	OTHER	
Airplane	Pre/ Post	Ground
12.3	4.2	20.0

- Prior to completion of the module, students must pass the FAA Flight Instructor Airplane and Advanced Ground Instructor Knowledge Exams.
- Prior to completion of the module, students must pass a stage check to evaluate their:
  1) Ability to demonstrate all applicable tasks as specified in the Flight Instructor Practical Test Standards or Airmen Certification Standards within the established standards.
  2) Knowledge of the fundamentals of instruction, technical subject areas, and instructor responsibilities.
  3) Ability to demonstrate the procedures and maneuvers to at least the Commercial Pilot skill level while giving effective instruction.
  4) Competence in teaching the selected procedures and maneuvers.
  5) Competence in describing, recognizing, analyzing, and correcting common errors.

6) Knowledge of the development and effective use of a course of training, syllabus, and lesson plan.

Notes:

- Lessons may be completed out of sequence as necessary to meet academic goals set by the instructor.
- Multiple instructional periods may be required to meet lesson requirements.

ACTIVITY GRADESHEET

Instructor: xxxxxxxxxxx **Student 1:** xxxxxxxxxxxxxx **Unit Grade: S**

Course: Flight VI R6.6 **Unit:** G27 - ORAL CHEC **Activity Type:** Oral **Activity Subtype:** Check

Comment:

Completion Standard	Objective Block
The student will demonstrate aeronautical knowledge and instructional proficiency on the areas included in Modules 11 and 12 and will meet the applicable module completion standards and Practical Test Standards.	To evaluate the student on the knowledge areas included in Modules 11 and 12 according to the Practical Test Standards.

Line Item Group	Line Item Description	Prev	Line Item Grade	U/M Reason	Attp	Line Item Comment
leg SLU-CFI	Human Behavior and Effective Communication(Ev)	Optional	S U I $\boxed{\text{NA}}$		0	
leg SLU Grnd Itm	The Learning Process(Ev)	Optional	S U I $\boxed{\text{NA}}$		0	
leg SLU Grnd Itm	The Teaching Process(Ev)	Optional	S U I $\boxed{\text{NA}}$		0	
leg SLU-CFI	Assessment and Critique(Ev)	Optional	S U I $\boxed{\text{NA}}$		0	
leg SLU-CFI	Instructor Responsibilities and Professionalism(Ev)		$\boxed{\text{S}}$ U I NA		0	
leg SLU-CFI	Techniques of Flight Instruction(Ev)	Optional	$\boxed{\text{S}}$ U I NA		0	
01 Used ETA LI	Risk Management(Ev)	Optional	S U I $\boxed{\text{NA}}$		0	
leg SLU Grnd Itm	Aeromedical Factors(Ev)	Optional	S U I $\boxed{\text{NA}}$		0	
01 F15 Spc Emph	Runway Incursion Avoidance(Ev)		$\boxed{\text{S}}$ U I NA		0	
leg SLU-CFI	Visual Scanning and Collision Avoidance(Ev)	Optional	S U I $\boxed{\text{NA}}$		0	
01 F15 Aerodyna	Principles of Flight(Ev)	Optional	S U I $\boxed{\text{NA}}$		0	
leg SLU-CFI	Airplane Flight Controls(Ev)	Optional	S U I $\boxed{\text{NA}}$		0	
leg SLU-CFI	Airplane Weight and Balance(Ev)	Optional	$\boxed{\text{S}}$ U I NA		0	
leg SLU Grnd Itm	Navigation and Flight Planning(Ev)	Optional	S U I $\boxed{\text{NA}}$		0	
01 F15 Instrumt	Night Operations(Ev)	Optional	$\boxed{\text{S}}$ U I NA		0	
leg SLU-CFI	High Altitude Operations(Ev)	Optional	S U I $\boxed{\text{NA}}$		0	
leg SLU-CFI	14 CFR and Publications(Ev)	Optional	S U I $\boxed{\text{NA}}$		0	
ACS Preflight	National Airspace System(Ev)	Optional	S U I $\boxed{\text{NA}}$		0	
leg SLU-CFI	Navigation Aids and Radar Services(Ev)	Optional	S U I $\boxed{\text{NA}}$		0	
01 F15 Regs	Logbook Entries and Certificate Endorsements(Ev)		$\boxed{\text{S}}$ U I NA		0	
01 F15 Regs	Certificates and Documents(Ev)	Optional	$\boxed{\text{S}}$ U I NA		0	
ACS Preflight	Weather Information(Ev)	Optional	S U I $\boxed{\text{NA}}$		0	
ACS Preflight	Operation of Systems(Ev)	Optional	S U I $\boxed{\text{NA}}$		0	
01 F15 Planning	Performance and Limitations(Ev)	Optional	S U I $\boxed{\text{NA}}$		0	
ACS Preflight	Airworthiness Requirements(Ev)	Optional	S U I $\boxed{\text{NA}}$		0	
leg SLU-CFI	Preflight Lesson on a Maneuver to be Performed in Flight(Ev)		$\boxed{\text{S}}$ U I NA		0	
01 F15 General	Daily Lesson Performance Grade (5pts)(Ev)		5 $\boxed{4}$ 3 2 1 I NA		0	

ACTIVITY GRADESHEET

Instructor: xxxxxxxxxxxxxxxxxxxx **Student 1:** xxxxxxxxxxxxxxxxxxxx **Unit Grade:** U

Course: Flight VI R6.6 **Unit:** F18-DL FLT CHEC **Activity Type:** Flight **Activity Subtype:** Check Ride

Comment: Too fast, occasionally exceeded 78 KIAS with full flaps, inconsistent position abeam planned touchdown point, rushing through, not explaining while doing.

Completion Standard

The student will meet all standards as specified in the Flight Instructor PTS for the issuance of a Flight Instructor Certificate.

Objective Block

To evaluate the student according to the Flight Instructor Practical Test Standards and to determine whether the student is prepared to pass the Flight Instructor Practical Test.

Line Item Group	Line Item Description	Prev	Line Item Grade	U/M Reason	Attp	Line Item Comment
01 F15 General	Preflight Inspection(Ev)	Optional	$\boxed{S}$ U I	NA	0	
leg SLU-Flt Bsc	Cockpit Management(Ev)	Optional	$\boxed{S}$ U I	NA	0	
ACS Procedures	Engine Starting(Ev)	Optional	$\boxed{S}$ U I	NA	0	
ACS Procedures	Taxiing(Ev)	Optional	$\boxed{S}$ U I	NA	0	
ACS Procedures	Before Takeoff Check(Ev)	Optional	$\boxed{S}$ U I	NA	0	
01 Used ETA LI	Radio Communications and ATC Light Signals(Ev)	Optional	$\boxed{S}$ U I	NA	0	
ACS Airport	Traffic Patterns(Ev)	Optional	$\boxed{S}$ U I	NA	0	
01 Used ETA LI	Airport, Taxiway, and Runway Signs and Markings(Ev)	Optional	$\boxed{S}$ U I	NA	0	
ACS TO+Land	Normal Takeoff and Climb(Ev)	Optional	$\boxed{S}$ U I	NA	0	
ACS TO+Land	Short-Field Takeoff and Maximum Performance Climb (ASEL, AMEL)(Ev)	Optional	$\boxed{S}$ U I	NA	0	
ACS TO+Land	Soft-Field Takeoff and Climb (ASEL)(Ev)	Optional	$\boxed{S}$ U I	NA	0	
01 Used ETA LI	Straight and Level Flight(Ev)	Optional	$\boxed{S}$ U I	NA	0	
01 F15 Maneuver	Level Turns(Ev)	Optional	S U I	$\boxed{NA}$	0	
leg SLU-Manvrs	Straight Climbs and Climbing Turns(Ev)	Optional	S U I	$\boxed{NA}$	0	
01 F15 Maneuver	Straight Descents and Descending Turns(Ev)	Optional	S U I	$\boxed{NA}$	0	
01 F15 Instrumt	BAI - Straight and Level Flight(Ev)	Optional	$\boxed{S}$ U I	NA	0	
01 F15 Instrumt	BAI - Constant Airspeed Climbs(Ev)	Optional	S U I	$\boxed{NA}$	0	
01 F15 Instrumt	BAI - Constant Airspeed Descents(Ev)	Optional	S U I	$\boxed{NA}$	0	
01 F15 Instrumt	BAI - Turns to a Heading(Ev)	Optional	S U I	$\boxed{NA}$	0	
ACS Inst Ref	Recovery from Unusual Flight Attitudes(Ev)	Optional	S U I	$\boxed{NA}$	0	
ACS Perform	Steep Turns(Ev)	Optional	S U I	$\boxed{NA}$	0	
01 Used ETA LI	Steep Spirals(Ev)	Optional	$\boxed{S}$ U I	NA	0	
01 F15 Maneuver	Chandelles(Ev)	Optional	$\boxed{S}$ U I	NA	0	
01 F15 Maneuver	Lazy Eights(Ev)	Optional	S U I	$\boxed{NA}$	0	
ACS Perform	Rectangular Course(Ev)	Optional	S U I	$\boxed{NA}$	0	
ACS Perform	S-Turns across a road(Ev)	Optional	$\boxed{S}$ U I	NA	0	
ACS Perform	Turns around a point(Ev)	Optional	S U I	$\boxed{NA}$	0	
leg SLU-Stand	Eights On Pylons(Ev)		$\boxed{S}$ U I	NA	0	

ACS Slow Flt	Maneuvering During Slow Flight(Ev)	Optional	S	U	I				NA	0	
ACS Slow Flt	Power-On Stalls(Ev)	Optional	S	U	I				NA	0	
ACS Slow Flt	Power-Off Stalls(Ev)	Optional	S	U	I				NA	0	
01 F15 Maneuver	Cross Control Stalls(Ev)	Optional	S	U	I				NA	0	
01 F15 Maneuver	Elevator Trim Stalls(Ev)	Optional	S	U	I				NA	0	
leg SLU-CFI	Secondary stalls(Ev)	Optional	S	U	I				NA	0	
ACS Slow Flt	Spin Awareness(Ev)		S	U	I				NA	0	
01 F15 Maneuver	Accelerated Maneuver Stall(Ev)	Optional	S	U	I				NA	0	
01 F15 Emergenc	Emergency Approach and Landing(Ev)		S	U	I				NA	0	
ACS Emerg ops	Systems and Equipment Malfunctions(Ev)		S	U	I				NA	0	
ACS Emerg ops	Emergency Equipment and Survival Gear(Ev)	Optional	S	U	I				NA	0	
ACS Emerg ops	Emergency Descent(Ev)	Optional	S	U	I				NA	0	
ACS TO+Land	Normal Approach and Landing(Ev)	Optional	S	U	I				NA	0	
ACS TO+Land	Go-Around/Rejected Landing(Ev)	Optional	S	U	I				NA	0	
ACS TO+Land	Short-Field Approach and Landing (ASEL, AMEL)(Ev)	Optional	S	U	I				NA	0	
ACS TO+Land	Soft-Field Approach and Landing (ASEL)(Ev)	Optional	S	U	I				NA	0	
01 F15 Maneuver	180-Degree Power Off Accuracy Approach and Landing(Ev)	Optional	S	U	I				NA	0	See comments above
01 F15 General	Postflight Procedures(Ev)		S	U	I				NA	0	
01 F15 General	Daily Lesson Performance Grade (5pts)(Ev)		5	4	3	2	1	I	NA	0	

Course Assessment Form

Course: ASCI 1510 The Air Transportation System
Semester Taught: Spring 2021
Number of Students in Course: 19

Student Learning Outcome Assessed	Assessment Results: (Indicate what % of class achieved a minimum 70%)	Benchmark achieved? (Benchmark: 80% of students will score a minimum of 70% = "C")
G. Assess contemporary issues.	Homework #4-78.94% Homework #5-94.73%	Yes.
I. Assess the national and international aviation environment.	Homework #6-84.21% Homework #7-89.47% Discussion #14-84.21% Final Exam-94.73%	Yes.

Course Assessment (Intended Use of Results)
The following will be used for recommendations to improve the quality of course delivery based on assessment results. These recommendations may include prerequisite change; changing course outline and adding more topics; adding a third assessment; changing the course sequence, etc.

Recommendation is to continue the current methods of presenting the course materials to the class.

**Attach description of assignment used for assessment and samples of student work.*

Homework #4: Discuss airport privatization: should St. Louis Lambert International Airport be privatized? If you cannot answer this question, what information do you need to make an informed decision? If privatization should not occur, what would need to happen so that it would work?

According to the Federal Aviation Administration, St. Louis Lambert International Airport applied for the Airport Investment Partnership Program in 2020 but withdrew their application on May 28th, 2020. The pandemic is mostly to blame for this action and is also the reason this proposal was not on the November ballot this past year. Privatization does not leave the owner with the full responsibility to govern over an airport, but instead the government assumes a role in "shouldering responsibility on thorny issues" (Hirst 62). However, privatization should not be instituted at St. Louis Lambert Airport because the airport would not be able to sustain itself as a business when traffic levels are low, the airport can be managed efficiently by the government, and development is still on the rise while the airport is in governmental hands.

Privatizing the airport is seen by many as a means to improve Lambert, which is currently city owned, but also put money into the adjacent neighborhoods to the airport. However, the ongoing pandemic has resulted in a significant decrease in air travel, which has narrowed profit margins for the airport. If it were to fall into an investor's hands, they might not have significant funds and resources to withstand an economic downturn and its impacts on air transportation. Although privatization would bring a great deal of wealth to the city to improve surrounding neighborhoods and provide more resources for the airport, the airport still faces immense amounts of debt that would be difficult for a private investor to undertake and maintain. There is still much uncertainty surrounding airport privatization as few airports have adopted this proposal. In order to improve the north city of St. Louis, the city must figure out ways to do so and invest their time and money in planning for this. Privatizing a critical asset to the city is not the best way to do this in order for the city to gain heaps on money in a short period of time. It is essential that the city continues to run the airport with much care and regard for the citizens as well as commit to growth and development.

Ultimately, the profits of the city would come before public interest if privatization were approved and the city's most critical asset would slip away from them. The idea of privatization is still being explored by many and until an airport is successful in this initiative, Lambert Airport under city govern should continue to invest its efforts into infrastructure improvement and community outreach to better its neighbors. Once another city is able to successfully privatize their airport, St. Louis should relook the idea. However, in today's industry state, it would be ill-advised for Lambert Airport to be the guinea pig of such an immense change.

Homework #5 : Chapter 3 discusses the regulatory environment-last week you all choose different regulatory organizations or a regulatory policy. This week, I'd like to focus our discussion on Human Factors. The questions I'd like to pose are: How do YOU define Human Factors? How does Human Factors impact safety? Is it right for Human Factors to play a part in the regulatory environment? Let's take sleep for example. All of us require different amounts of hours to be fully rested. Is it OK for an employer to tell you how much rest you should have in between shifts?

Effectively managing and mitigating Human Factors in the workplace is crucial to the safety of oneself and others and plays an extra importance in the aviation environment. In the 21st century with the ever so evolution of technology, I define human factors as the understanding of how humans manage the tasks at hand while efficiently using technology and placing an emphasis on safety. Furthermore, I believe that human factors represent how a crew interacts with one another, their controls and technology, and the environment.

Human Factors is essential to ensuring safety within a system. Safety is heavily impacted by Human Factors as a vast majority of aviation accidents have the root cause of a human error. In order for these accidents to be avoided in the future, it is important to educate and train students and employees on how to efficiently manage Human Factors. There is extensive research that backs up the science of why we make errors and educating oneself on the study of Human Factors can help mitigate violations. The impact of human error can have various results, but it impacts safety because it can lead to unsafe aircraft states which are sometimes fatal.

Every time an accident occurs, the investigation encompasses the traditional shell model to find the root and contributing causes which includes software, hardware, environment, and liveware. The liveware (the human) lies in the center of the model so that investigators can analyze their interactions with each piece of equipment as well as their crew. The human lies in the middle of this model and with such complex technology, aircraft, and transportation systems, humans often have many tasks at hand. Stress, complacency, and fatigue are a few Human Factors that impact the safety of an individual, especially in flight.

It is not only just for Human Factors to play into the regulatory environment, but it is essential. Before flying, pilots often run through the IMSAFE (illness, medications, stress, alcohol, fatigue, emotions/eating) checklist, to ensure they are fit for flight. At times, many airline pilots call in sick to their flights as well as flight students at Parks because they can't pass their own "IMSAFE" checklist. The emphasis that the FAA places on Human Factors and its role in the cockpit and control tower is a crucial part of our regulatory environment. Without a regard for human factors and individuals educating on it, our air transportation system would be dangerous.

An employer should have the ability to tell an employee how much rest they should be receiving between shifts because they are the operators of hundreds and thousands of liabilities in their hands each day. If someone were to show up to work tired or distracted by outside factors, they might not be able to safely conduct the flight thus leading to a hazardous flight attitude. By suggesting rest and promoting an environment and culture surrounded by the wellness of pilots and employees, employers are helping to ensure the safest operations and that employees are not being forced to work in unsafe conditions. Ultimately, Human Factors is an important topic to address in any work environment.

Homework #6: Video Link (43 minutes): https://www.youtube.com/watch?v=DVYaLwlgYgk&feature=youtu.be. Based on the video, when creating a new aircraft what factors need to be considered when outsourcing the parts?

Creating and building a new aircraft is a long, expensive process that requires many workers to assemble both correctly and efficiently. To try to overcome these inconveniences while building the 787 Dreamliner, Boeing decided to outsource nearly all its parts. This paper will discuss the problems that Boeing encountered with outsourcing during the design and construction of the Dreamliner and how said problems can be avoided and considered during the design and construction of other new aircrafts.

Affordability is one of the first factors most organizations consider before designing or building a new aircraft, regarding the Dreamliner, Boeing overly outsourced their parts in order to save money which caused them to spend between seventeen and twenty-three billion dollars. Some of this cost was hidden fees that were not considered at first. In 2001 John Hart Smith wrote a paper to not overly outsource, if Boeing would have considered his work, they might not have spent the additional money they did. One example of a hidden cost that was not considered prior to productions, was that Boeing had to spend nearly one billion dollars to a plant because they were taking too long. By outsourcing, Boeing ended up spending a large amount of money on correcting mistakes from inconsistency and product control.

The completion of the Dreamliner encountered many challenges causing the completion to be set back a few years. Most of these setbacks were caused from outsourcing. By having these parts made in foreign countries instead of in house, they had to wait for each part to be delivered. Additionally, some parts came in non-sequentially, meaning Boeing had to wait for some parts to arrive before they could complete assembly.

On top of shipping delays and expenses, by outsourcing you are unable to control the quality and compatibility of parts. Boeing found this to be the problem when they were assembling the aircraft and realized that some parts did not fit together because they were made by different manufactures. Not every supplier had proper preparations or the ability to make their parts up to Boeing's standards and therefore, they ended up eventually just rebuild the entire airplane.

The three most important factors when considering outsourcing is affordability, compatibility, and completing the aircraft within a timely manner. All of these were problems that Boeing did not consider when trying to create an aircraft seventy percent outsourced, which led them to spend more money and delay their release date. The oversights that Boeing took when assembling the Dreamliner expose the problems with outsourcing and the possible negative effects.

Homework #7: Identify and research an airport of your choice. Some possible questions to answer in your assignment could include:
Where is the airport located?
What is the history behind the name of the airport and is there anything interesting in regards to the airport code?
How many runways does the airport have?
What are the major/regional carriers that operate out of that airport?
How many passengers pass through the airport in recent years?
Is there anything unique about the airport?

The airport I choose Shenzhen Baoan International Airport. This airport is located in Shenzhen, Guangdong Province, China. Its IATA code is SZX, and its ICAO code is ZGSZ. I chose this because Shenzhen is where I was born and raised, and another reason is that Shenzhen Airport plays a vital role. Because although Shenzhen is a 41-year-old city, its development is rapid. Shenzhen's GPD ranks first in China and has a population of 14 million. So Shenzhen Airport has a lot of responsibilities, which is why I am proud of it. And in 2018, Shenzhen Baoan International Airport also won the title of "Top Ten Beautiful Airports in the World."

The original name of Shenzhen Baoan Airport was Huangtian Airport. However, because Huangtian and Huangquan have similar pronunciations in Hokkien (Huangquan means the place after death, or it means death, which is very unlucky), so Huangtian Airport later changed its name to Shenzhen Baoan International Airport. Shenzhen Baoan International Airport was opened to air traffic in 1991, but it has become one of the largest airports in mainland China after only more than ten years of operation. Shenzhen Baoan International Airport opened a new passenger terminal on November 28, 2013 and transferred all passenger flights to the new terminal. The design of the terminal currently in use comes from the design master Massimiliano Fuksas.

The airport has two runways, one is 3,600 meters long, and the other is 3400 meters long. The runway can be used to take-off and land the world's largest passenger and cargo aircraft. The existing apron has a total area of 845,000 square meters, 84 parking bays, and a total terminal area of 146,000 square meters. In addition, Shenzhen Airport will also build a third runway. The project will be designed to meet the goal of 80 million passengers and 2.6 million tons of cargo in 2030.

Shenzhen Airport is the base of Shenzhen Airlines, but the airline with the most flights at Shenzhen Airport is actually China Southern Airlines. The annual passenger throughput of Shenzhen Baoan International Airport exceeded 50 million for the first time, reaching 52.93 million passengers, an increase of 7.3% year-on-year. The global ranking rose from 32nd to 26th.

I think the uniqueness of Shenzhen Airport lies in its convenience. Shenzhen Baoan Airport is a transportation hub, and the means of transportation in and out of the airport are not only buses, taxis, and subways. Shenzhen Baoan Airport also has a wharf and a helicopter airport. People can also take a boat to other cities or Shenzhen docks. The wealthy can also take a helicopter directly to the city center. Compared to other airports, Shenzhen Baoan Airport makes people feel very comfortable and convenient, allowing passengers to have an excellent travel experience. I think an airport can give passengers from other cities the first impression of this city. I am proud of the convenient service and excellent appearance of Shenzhen Baoan Airport.

Discussion #14: How are drones handled in airspace (for those outside of the US, please share with us how it's handled in your country)? And how do you think they should be handled? How do you think airspace will be handled in 80 years when there are flying cars?

Right now I am living in Spain, so I am going to talk about how they are handled here. In Spain, you cannot fly any type of drone outside of your property if you do not have a drone license. Drones are strictly forbidden near airports. The fine of flying a drone near an airport can reach up to 225,000 euros. There are trained hawks that the airport staff uses to hunt drones out of the sky that are flying too close to the airport. I personally love cars and I think that flying cars would ruin the point of cars, so I hope there are no flying cars in the future. However, if there are flying cars I think it will be the same as drones. They would not be allowed near the airport and they would probably have a ceiling of like 500 feet max, so that that they do not interrupt air traffic.

In Indonesia, we have 2 categories of flying drones. Category 1 is considered as the recreational uses, which you don't need a specific permit or license and you need to be at least 18-year-old. Category 2 is considered as the professionals, for commercial purposes then you need a specific permit and license. There are responsibilities to follow the rules and regulations sets by the Directorate General for Civil Aviation (Indonesia). Such as, drones may not fly above 500 feet (must remain in class G airspace), drones may not weigh more than 7 kg (15.4 pounds). Drones may not be flown within 9.32 miles of any airport, over crowds or highly populated areas, at night, and from any moving vehicle. Drone pilots must maintain a direct line (horizontal distance) of visual sight while flying. In 80 years, if flying cars exist, I'm not sure how airspace going to handle this but I believe the cars must follow existing roads and have altitude restrictions. In order to keep the traffic flow safe and not putting too much work on ATC.

In Saudi Arabia, it is legal to fly a drone but there are specific laws for that and you have to follow them. you have to submit an application for a Certificate of Aircraft Registration within Saudi's airspace. This registration should be each 3 years and has specific numbers. All these processes come from the General Authority of Civil Aviation of Saudi Arabia (GACA). Also, No person may operate an unmanned aircraft unless the areas of operations are within the authorized that come from GACA. For safety, there are some laws for that which are drones must be within their visible line of sight, a remote pilot can only fly one drone at a time, dangerous materials cannot be transported by drones, and drones cannot fly directly over people. In 80 years when there are flying cars, I think that there will be greater organization, heights, and specific tracks for flying cars and aircraft, but it will be difficult in the event that a car crashes, but I think that there will be safety methods, perhaps not driving the flying car inside residential areas. https://gaca.gov.sa/web/en-gb/news/gacanews-130119-hf01

In China, the management of drones is still very strict. According to the Civil Aviation Administration of China (CAAC), the Chinese authorities allow the masses to use drones. However, the Civil Aviation Administration has also issued a series of regulations on drone flight operations. Some of the highlights of these regulations are as follows: 1. Before flying, please check the website of the local aviation authority and review all relevant rules and regulations. 2. Do not use airplanes to drop or transport objects. 3. The pilot must keep the aircraft in sight when flying. 4. Don't fly at night. 5. Always fly below the height limit (120 m) of the Civil Aviation Administration of China. 6. Before flying, please register your drone with the relevant local authorities. 7. The operator must purchase third-party liability insurance for its aircraft. 8. Before flying, please check the local no-fly zone. 9. When flying an aircraft for commercial purposes, the operator must obtain a business license. 10. Stay away from airports, international borders, military zones, government agencies, power plants, substations, docks, ports, railways, roads, and public places. 11. Do not fly drones, etc., *under the influence of drugs or alcohol. I think strict management of drones is a good thing because some drones invade privacy, and strict management can prevent such bad things from happening. I'm afraid I have to disagree with flying cars because I don't think it means much. Even if there is, it should only fly at low altitudes, just like drones. But I think if flying cars show up, the traffic will definitely become a mess because there will be no more roads to restrict the car's direction.*

Final Paper: You found the password to your old Bitcoin wallet and you decided to invest in the aviation industry. A portion of the money will be used to build an airport. Discuss how you would determine the site selection of your airport (don't forget to take into account the natural environment!). What regulatory considerations must be taken into account? Describe how the operational environment impacts your airport. What terminal style would your airport have and what type of passengers would access your airport? Describe and defend your rationale for choosing what services you would want your airport to offer. In addition to the airport, you also decide to start an airline carrier. As you build your airline, articulate what steps you would need to take to make sure your business is financially viable. What service quality indicators would be important to have? Describe and defend (think about route selections here!) the type of aircraft(s?) you would have in your fleet. What type of airport(s) would you want to be based out of? What organizations would you need to work with to ensure your airport is safe (think security and airspace for this question!)? For fun: what would you name your airline carrier?

The United States airline industry generated a total operating revenue of almost $247.64 billion U.S. dollars in 2019, making the United States one of the largest markets for the airline industry worldwide (Mazareanu, 2020). Using my Bitcoin wallet investment, investing in the aviation industry in the United States would be a profitable decision due to it being an immense revenue generator in the country. However, there are a range of factors that would impact the success of this investment.

The first aspect my investment would be used towards would be building an airport. The United States is home to one-third of all airports on the globe with over 15,000 airports and 5,000 of those airports have paved runway. With regards to the natural environment of the air transportation system, there is a multitude of factors which need to be taken into account. The natural environment "considers everything related to the Earth: its size and shape, the shape of landmasses, how populations are distributed and the properties of the atmosphere" (Hirst, 2008). There is a handful of natural disasters that have had harsh impacts on aviation. Not only have some airports been forced to rebuild part of their infrastructure, but as a result of these disasters airports have been unable to permit arrivals and departures. If I were to build a new airport, the natural environment would be considered in such a way that the airport would be away from any swamplands, mountains, and hurricane and tornado alleys. I would determine the site selection based on how many miles of property are available to buy and whether the land is stable for numerous runways, terminal buildings, a control tower, and highways to and from the landside of the airport to be built. Although empty land of this nature is difficult to come by in today's day and age with the rapid development of infrastructure, I would choose to tear down and rebuild the Coleman A. Young Airport in Detroit with innovation that is consistent with airport terminals of today. This airport would have runways and terminal capacity capable of both regional, domestic coast-to-coast, and international flights. The land of Coleman A. Young Airport is six miles northeast of downtown Detroit and it is void of the previously mentioned natural environment hazards that could deter or damage an airfield and its facilities.

In considering the regulatory environment for the development of my airport, both the economic and technical aspects would play huge roles. The regulatory environment of this airport would need to be consistent with both the International Civil Aviation Organization (ICAO) who looks after the safety-oriented regulation and the International Air Transport Association (IATA) who looks after commercially sensitive regulation. It is essential that this airport operates and is consistent with ICAO's high standards. In addition, if the airport were to have private investors and a private owner it would be under law of "privatization." Privatization is a means for a "country's government to increase access to sources of private capital for airport development and to make airports more efficient competitive, and financially viable" (Congressional Research Service, 2021). With privatization comes significant risk in terms of finances, but the government would be there to assist with any difficulties. Safety is the forefront of all operations in aviation and an airport must put in place safety systems. On the regulatory side, some of these may deal with instrument approaches, runway conditions, NOTAMs, snow removal, gate parking, etc. Additionally, security measures would need to be set and for commercial operations, the Department of Homeland Security would need to be present to lead security issues. On the environmental regulatory side, the airport must adapt conditions consistent with the ICAO Annexes for noise certification requirements for aircraft. This adaptation would be aimed at the best interest for the general public, so that those surrounding the airport can benefit from the revenue the airport will bring while being free of noise pollution. When submitting plans for the development of an airport, it is important to understand that it is a long process as the rules and processes affect everyone and major developments to a landscape are subject to public inquiry. Air transportation is a process that impacts everyone – whether a traveler or community member – the regulations surrounding it are crucial to abide by for the best interest of the general public.

Although both the natural and regulatory environments are essential for deliberation when building a new airport, the operational environment is an assembly of components created to get aircraft in the air using technology to communicate, navigate, and provide surveillance. An airport accommodating both domestic and international commercial operations would need to have a control tower on the field to safely sequence a vast number of aircraft. As aircraft are evolving with the latest technology, it would be essential for the control tower and airfield to be equipped with comparable technology so that there are no limitations with aircraft attempting to land at the airport. The airport must not only be equipped with equipment that aligns with the aircraft, but it also needs to be financially equipped to accept changes in regulations as technological systems and processes are emerging and change is inevitable.

Lastly, to attract passengers, a newly built airport would have to offer an unmatched passenger experience and numerous benefits for travelers. To begin, if this airport were to be built in Detroit as a competitor for Detroit Metro Airport, it would need to include aspects that DTW does not have. Detroit is a city that beams with pride, so I think creating a local feel centered around the city would be effective towards drawing in both tourists and locals. An airport is an outlet for a city to showcase their character and identity for those passing through on layovers and others to feel welcomed. Not only should the infrastructure represent the city of Detroit, but there should be retail shops selling Detroit merchandise as well as locally owned eateries in the terminal. As for the actual terminal design, constructing it in manner that flows and is easily accessible in terms of location and parking is important for passengers and revenue. With a range of retail, food, and activities to do in an airport, passengers are more compelled to arrive early and spend time utilizing what the airport has to offer. This in turn avoids peak times at the airport and thus enhances the passenger experience without the lines. When the passengers arrive, they should not have to wait in any absurd lines to check baggage, so I think having kiosks to tag and drop their bags is an efficient and effective way to avoid congestion at the starting point. The airport would have two terminals – one for domestic flights and one for international flights with customs. The most effective style for these terminals would be linear built with infrastructure that offers high ceilings and plenty of space for seating, walking, and lounging. To draw people to fly from this airport instead of DTW, it would be essential to provide offerings that the other does not have. An idea of this could be a botanical garden in the airport similar to Singapore. Another example could be a car museum with vintage and antique cars as Detroit is known as the Motor City.

The passengers would be an immense part of the success and revenue of the airport. The competitor airport to this airport, DTW, is not conveniently located for many who inhabit metro-Detroit. By crafting this airport, I believe we could extend our reach to more of northeast Detroit as well as downtown Detroit. Detroit is a city that is currently undergoing gentrification and it is one of the top emerging cities in the United States with a shopping district similar to Chicago and amazing eateries on every block. More and more conferences every year are held in Detroit and people go on vacations just to visit the city, which was never the case ten years ago. This airport would reach passengers that are local to the area trying to reach popular destinations such as Chicago, Boston, New York, Naples, Fort Lauderdale, Los Angeles as well as smaller international destinations such as Toronto, Montreal, Cabo San Lucas, and the Bahamas. The destinations and airlines offered would need to be catered to the wants and needs of the people for this airport to be profitable. Ultimately, creating a sense of community at this airport in a beautifully built, high ceiling terminal with plenty of comfortable lounge space would be sure to draw people from all over into this airport.

In order to establish a successful air carrier, there are a myriad of factors that are necessary for consideration. What is the market for travel like? How will this operation be sustainable? Will I be able to hire pilots in a pilot shortage? What does this airline offer to passengers that other airlines don't offer? The major three airlines as well as Southwest Airlines have already been well established within the United States with distinguished routes and a spectacular safety record. There are many difficulties when constructing an airline such as trying to obtain gate spots at major airports where these airlines are already established. With this in mind, the airline would begin service at an underserved airport in a city with high demand such as the Detroit City Airport I previously identified and described. If I were to craft this airline with already existing airports, I would make it a ski country airport with service to Aspen, Telluride, Jackson Hole, Eagle, Salt Lake City, Big Sky, and Steamboat Springs from cities where the demand for skiing and visiting these luxurious destinations is high. The bases for the aircraft will be Chicago-Midway, Grand Rapids-Michigan, and John Wayne Airport with expansion likely once the airline reaches a financial position that allows for this. The routes currently offered to the ski country airports listed above usually have stops in Denver, Houston, or Chicago and are often times insanely expensive. The need for this airline is apparent and it would offer an excellent competitive edge due to the point-to-point service and low fares. This airline named Peak Airways would be a low-cost carrier (LCC) and it would offer innovative passenger services similar to the Southwest business model. This model would be based around identifying what passengers are willing to pay for and offering tickets and an experience that meets their demand (ICAO). The airline would need to be competitive with Southwest, American, United, and Delta that already fly into many of these cities. Not only would it need to be competitive, but an emerging airline would have to offer unmatched luxuries. For many of the individuals that frequent ski country, some have the ability to afford to charter an aircraft, but in the end, it doesn't make sense because of steep ramp, fuel, and parking fees at ski country airports. Therefore, Peak Airways would offer a low-cost option direct from popular cities while providing a passenger experience that is unmatched on any other low-cost carrier.

The airline industry in the last 25 years has experienced a cyclical industry from the attacks of 9/11 to the 2008 economic recessions to the current COVID-19 pandemic. During these times of company tribulation, a low-cost carrier must maintain their competitive advantage by driving to cut costs, expand revenues and maximize efficiency. A low-cost carrier needs to be in a financial position to withstand economic downturns in an event that tourism comes to a halt and only essential travel is taking place. As for the finances to kickstart the company, I would present why the company would be successful to venture capitalists to obtain financing in return for stake in the company. The company's business department will ensure long term budgeting is thoroughly analyzed and we are financially positioned to withstand a downturn of travel. Typically, when downturns occur, small regional carriers are the first ones to experience financial distress. Being a new airline, it is difficult to establish a strong reputation in the industry, but by providing an excellent passenger experience and hiring competent and highly experienced pilots, the passengers are sure to walk away from a flight satisfied. If the company develops a strong safety record, they will be free of any reputation tarnishes, which will position them for full-flights and maximized profitability.

Peak Airways would appeal to individuals because of its point-to-point service from popular cities to ski country as well as its luxurious offerings. The airline's plan will be to offer one free baggage to all passengers as well as a free alcoholic beverage and snacks. As we are a low-cost carrier, the airline won't offer seatback entertainment, but there will be availability for passengers to stream shows and movies on their own devices and Wi-Fi will be free for all passengers. To increase Peak Airway's competitive edge, the airline will be formulated on the principle of technology to enhance the passenger experience. Check-in processes will be very technology friendly and easy to follow with kiosks for checking in bags. All boarding passes will be electronic, and the airline plans to have a contactless boarding system in which passenger photos are used to permit boarding. These processes adapted by the airline shows a concern for passenger satisfaction and the airline's initiative to lead in customer service and efficiency.

Not only are customer service and efficiency important, but the number one priority of Peak Airways will be safety and developing a strong safety culture and reputation, which begins with the aircraft being flown. The airline has plans to take order of three brand-new Embraer 195s, which ensures a high level of safety as the aircraft technology is consistent with technology used for navigating to airports. The Embraer 195 allows for airlines to sustain profitability and demonstrate a competitive edge as it fills a gap between regional and mainline carrier. According to Embraer's Website, the 195 is built with the lowest possible aircraft operating rate so that it can carry the highest revenue-generating payload. Consistent with the company's goals for technology the aircraft has fly-by-wire technology that reduces pilot workload, improves aircraft performance, simplifies systems architecture and minimizes weight and maintenance. The acquisition of brand-new aircraft will not be an inexpensive transaction, but by purchasing these aircraft early on, the airline is preparing for a future of light maintenance and generally low operating costs as compared to another new or used aircraft. Not only will this aircraft allow the airline to maximize profitability, but customers will feel safe and comfortable on this aircraft. The aircraft utilizes a double-bubble fuselage concept which maximizes personal space and allows for wider seats and a wider aisle. As previously mentioned, all passengers would get to check one bag for free, as the cargo capacity on this aircraft is immense and weight limitations will allow for it. Have you ever had to deal with a window not being aligned with the seat or not being eye level? With the Embraer 195, that issue won't be a problem as the windows are almost 30% larger than those on other aircraft so that passengers can see the beauty of the snowcapped mountains as they approach into Aspen or other ski cities.

The sustainability of our Earth is an extremely pressing issue in today's day and by selecting an aircraft that complies with ICAO Annex 16 on noise reduction as well as reducing CO2 emissions, the company is helping to ensure the Earth is sustainable. The aircraft has a General Electric CF34 engine that is more efficient with CO, UHC, NOx and smoke emission margins being down from 9% to 77% below the ICAO Annex 16 limits. A single class aircraft would have 124 seats with 31" between each, which would allow for a significant number of passengers to be carried and would maximize the number of legs required out of a city on a specific day while still being comfortable for passengers.

The service quality indicators that are essential towards Peak Airway's success include flight frequency, load factors, transit times, and aircraft type. With a consistent and reliable service, customers will become loyal to the company. Displaying the highest level of customer service from the airport agents to the flight attendants is crucial in the drive for customer loyalty. The company culture will be built on family and happiness with the thought in mind that each flight is enabling passengers to safely reach their destination for a fun and memorable time with the people they love. Peak Airway's needs to conduct surveys of the service with a team who reviews these and works to ensure the customers standards are being met and every individual leaves the aircraft feeling satisfied.

To ensure the airport is safe in terms of security and airspace, the airline needs to have strong working relationships with the Department of Transportation, Transportation Security Administration, and the Federal Aviation Administration. The FAA is where we will gain our certification to become a Part 121 operator with certain limitations in the early stages of development. A relationship with TSA is also necessary to ensure that the safety and security of passengers is being upheld. On an airspace standpoint, the company's dispatch and pilots must be willing to work with Air Traffic Control to safely and efficiently operate.

All in all, both the development of an airport and an airline accompanies a list of factors to be considered. In the already developed and innovative industry the United States has today, these initiatives are not an easy task. However, new start-up airline, Breeze Airways, will be taking to the skies soon with a strong business model and all eyes will be on the company to see if they will become prominent in the industry or succumb to shut down like TransStates Airlines and Compass Airlines. The process for developing an airline and an airport cannot be done in a day and the approval and certification typically takes months and sometimes close to a year. As innovation is reaching all-time highs, it will be interesting to see how the aviation industry adapts to this change and works towards continuous improvement with regards to regulations, operations, and the environment. Ultimately, despite the cyclical environment of the industry, aviation is essential in the United States and it will continue to generate large sums of money.

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Course Assessment Form

Course: ASCI 1850 Safety Management Systems
Semester Taught: Spring 2021
Number of Students in Course: 50

Student Learning Outcome Assessed	Assessment Results: (Indicate what % of class achieved a minimum 70%)	Benchmark achieved? (Benchmark: 80% of students will score a minimum of 70% = "C")
B. Analyze and interpret data.	Average – 87.86% 46/50 students completed assignment.	Yes
D. Make professional and ethical decisions.	Average – 86.28% 44/50 students completed the assignment.	Yes
H. Use the technology, skills and modern technology necessary for professional practice.	Average – 85.63% 24/50 students completed assignment. (Less than ½ of students completed assignment. Average represents completed assignments)	Yes and No. Since less than ½ students completed the assignment, the true performance of the class is skewed.
J. Apply pertinent knowledge in identifying and solving problems.	Average 93.30% 50/50 students completed the assignment.	Yes

Course Assessment (Intended Use of Results)
The following will be used for recommendations to improve the quality of course delivery based on assessment results. These recommendations may include prerequisite change; changing course outline and adding more topics; adding a third assessment; changing the course sequence, etc.

SLO B. Analyze and Interpret Data.

Overall, I was pleased with the performance of students in their efforts to analyze and interpret data. The assignment included the use of a risk matrix in assessing a hazard. In terms of continuous improvement, I may consider adding additional risk assessments throughout the semester.

SLO D. Make Professional and Ethical Decisions.

Again, I'm satisfied with the overall performance of students on this assignment. The choice of whether to self-submit a hazard report demonstrates both professionalism and ethical decision-making. This is an indirect measure of SLO D and I may consider a more-direct measure in an effort aimed at continuous improvement.

SLO H. Use the Technology, Skills and Modern Technology Necessary for Professional Practice.

While I am pleased with the average score of those students who submitted this assignment, I am greatly disappointed with the fact that less than half the class turned the assignment in. This was the last assignment of the semester and I suspect students were becoming burned out. In terms of continuous improvement, I may weight the last assignment a bit higher in an effort to motivate individuals to submit.

SLO J. Apply Pertinent Knowledge in Identifying and Solving Problems

This assignment was the first (assignment) of the semester. Students did an excellent job of providing detailed responses to the questions provided. I was also pleased that 50 out of 50 students completed the assignment. I do not anticipate making changes to this assignment as overall, I am satisfied with student performance.

Student Learning Outcome B. Analyze and Interpret Data.

The risk assessment homework assignment served to measure the student's ability to analyze and interpret data. The assignment involved evaluating a scenario and assigning a severity and likelihood matrix to determine an overall risk assessment.

Assignment #2

Assignment #2
Apply Pertinent Knowledge in Identifying and Solving Problems (J)
Application of the Safety Risk Management Process
Assessing Risk Using a Risk Matrix

This assignment requires you to use the Risk Matrix provided below in the assessment of a risk. Please respond to the four questions below on the second page of this assignment. When completed, please upload this assignment to Blackboard.

Using the risk matrix provided below, assess the risk (constrained analysis) associated with a student-pilot's first solo.

1. Identify what you believe to be the potential severity of the potential outcome.
    a. Justify your response.
2. Identify what you believe to be the potential likelihood of a negative event.
    a. Justify your response.
3. Given the risk, would you allow the solo to occur?
    a. Justify your response.
4. If the risk is currently beyond the level of acceptance, suggest five mitigation efforts you might employ to reduce the risk.

Impact →

Likelihood ↑	Negligible	Minor	Moderate	Significant	Severe
Very Likely	Low Med	Medium	Med Hi	High	High
Likely	Low	Low Med	Medium	Med Hi	High
Possible	Low	Low Med	Medium	Med Hi	Med Hi
Unlikely	Low	Low Med	Low Med	Medium	Med Hi
Very Unlikely	Low	Low	Low Med	Medium	Medium

Identify what you believe to be the severity of the potential outcome using the matrix above.

Severity ________ Support why you believe this value is appropriate.
Identify what you believe to be the likelihood of a negative event. Likelihood ________ Support why you believe this value is appropriate.
Given this risk assessment, would you allow the solo to occur? Yes or No (indicate your answer) Justify/Support your response.
If the risk were/is currently beyond the level of acceptance, suggest five mitigation efforts you might employ to reduce the risk.

1.   2.   3.   4.   5.

Assignment 2 Risk Matrix Student Examples

Example #1

Identify what you believe to be the severity of the potential outcome using the matrix above.

Severity ____Med/High ____

Support why you believe this value is appropriate.

I believe the medium-high value is appropriate for this scenario for two reasons. First, from experience a first solo is nerve-racking and it can make people prone to silly mistakes and errors. Secondly, aviation in its nature is dangerous, small errors can turn into massive problems or accidents. Also, small errors that may be easily solvable for an experienced pilot could end tragically for a solo student who does not have the same experience.

Identify what you believe to be the likelihood of a negative event.

Likelihood ___Low_____

Support why you believe this value is appropriate.

I feel that the likelihood for a negative event to occur is low. By the time a student is ready to solo, they have already had a significant amount of training with an instructor in the same type of plane that the solo will take place in. Also, prior to soloing, every student must receive an endorsement from their instructor. If an instructor feels that the student is not ready for their solo, they won't endorse the student, which ensures the student will be as ready as possible.

Given this risk assessment, would you allow the solo to occur? Yes or No (indicate your answer)

Justify/Support your response.

Yes, while there is some risk associated with a student's first solo, in my opinion it is not enough to stop the solo from happening. Student pilots, while inexperienced, have made it through the training necessary to take their first solo, and should be allowed to complete the flight.

If the risk were/is currently beyond the level of acceptance, suggest five mitigation efforts you might employ to reduce the risk.

1. If the risk was beyond the level of acceptance, the student could be sent on another training flight with their instructor.
2. If the risk was beyond the level of acceptance and it was because of weather factors, the

student could cancel their flight and try again another day.

3. If the risk was beyond the level of acceptance and it is the fault of the student, the school could terminate their flight training.

4. If the risk was beyond the level of acceptance, a different instructor could sign off on the student, in order to ensure they are ready.

5. If the risk was beyond the level of acceptance, the student could complete simulator flights of the same flight that their solo would be to practice in the exact same conditions as the real flight

Example #2

Identify what you believe to be the severity of the potential outcome using the matrix above.

Severity __medium__

Support why you believe this value is appropriate.

There would be a medium severity for a student pilot's first solo as it is likely for something to go wrong without a CFI but unlikely that something could go wrong as they have had the necessary training needed to do 3 laps in the traffic pattern. The impact would be moderate as most student pilots have hardly any experience and a student solo pilot would have their first encounter with hazards own their own.

Identify what you believe to be the likelihood of a negative event.

Likelihood _____possible

Support why you believe this value is appropriate.

It is possible for a negative event to occur however it is not that likely to occur as the student is trained on how to do their planned 3 touch and goes in a controlled airspace as well as major recovery procedures. A negative event could occur since they have most likely never had any experience with engine failures or fires for example. Another issue could be stalling the aircraft while turning or landing and not being able to perform a stall recovery correctly or even in time before they hit the ground. The ability to multitask such as using checklists, flying, talking to ATC, and even avoiding other traffic could be very overwhelming for new pilots which could result in a accident.

Given this risk assessment, would you allow the solo to occur? Yes or No (indicate your answer)

Justify/Support your response.

Yes, I would allow the solo to occur as there is no other way for a trained student pilot to be able to learn how to fly solo and work towards their private's license in a safer environment then what there already is. A possible likelihood with a moderate impact should be the most that any flight should be conducted as anything past that becomes dangerous with higher risks. The chances that something could go wrong are low and if it did occur, it would most likely be something the student pilot could solve relatively well. Three touch and goes in a traffic pattern that the student is very familiar with doing is going to be a pretty safe bet that nothing goes wrong or if it does it would be most likely minimal.

If the risk were/is currently beyond the level of acceptance, suggest five mitigation efforts you might employ to reduce the risk.

1. Being able to talk on the radios well and knowing all the possible options that ATC can throw at a student pilot. If a student pilot is not familiar with certain commands from ATC it could cause some issues especially since no flight instructor is going to be there to help.

2. Practicing the airport that you are going to a solo in so much to the point where the flight instructor can sit in silence with the student and not interfere with the practice solo. If the student can do this than they have a particularly good chance of nothing going wrong during the real solo flight.

3. Memorizing or becoming quite familiar with all the checklists to decrease the amount of time spent not focusing on the environment around you. Even having a general idea of the order of the emergency procedures could make a huge difference if something were to go wrong.

4.Understanding the right of way with other aircraft as well as being able to scan for other planes and keep good separation if ATC were to make a mistake. A big risk is the collision with other aircraft and if the student can understand how to maintain a visual and good separation with other aircraft then their chances of a negative outcome become reduced.

5. In the unlikely event of losing radio communication, it is important that the student knows the correct procedure for communicating with the tower to avoid a runway incursion or even a collision with other planes. Being able to improvise and adapt to a new situation is key to a safe flight.

Example #3

Identify what you believe to be the severity of the potential outcome using the matrix above.

Severity __Low Med______

Support why you believe this value is appropriate.

I believe that at Parks, by the time a student does their first solo they have received the proper training, so they should be able to handle most things that come up. The reason I chose low med is due to the fact of how nervous the student may be. This might cause them to make a mistake and potentially a fatal one, but it is on the lower side due to the good training the student receives.

Identify what you believe to be the likelihood of a negative event.

Likelihood __Unlikely______

Support why you believe this value is appropriate.

I see this as appropriate because the student has received very good training. They know what they are doing and they must be good at it if their instructor sent them up. The chances of the student causing something is lower than it would if they were not deemed ready.

Given this risk assessment, would you allow the solo to occur? Yes or No (indicate your answer)

Justify/Support your response.

Yes I would allow this solo to occur because the student pilot again has been deemed worthy of being able to attempt their first solo.

If the risk were/is currently beyond the level of acceptance, suggest five mitigation efforts you might employ to reduce the risk.

1. Keep the student close to the delta airspace, so they are not far.

2. Avoid any hazardous weather

3. CFI double checks the aircraft before takeoff

4. CFI stays in communication in case of an emergency 5. Make sure during flight that everything is working

Student Learning Outcome D. Make Professional and Ethical Decisions.

The Aviation Safety Action Program (ASAP) is a voluntary reporting strategy that relies on the reporter to voluntary submit reports regarding the presence of hazards within a safety system. Reporting hazards is both a professional and ethical responsibility as it is incumbent on the individual's willingness to demonstrate professional characteristics (the reporting itself). Additionally, ASAP reporting provide an opportunity for the reporter to demonstrate a willingness to self-report when they make mistakes and errors. The choice to self-report demonstrates a positive ethical outcome as it opens the reporter to discipline if the report is subsequently rejected from the ASAP program.

ASAP Assignment

ASCI 1850 Safety Management Systems Spring 2021 Name:

1. Provide a description of the differences between an Aviation Safety Action Program (ASAP) and the Aviation Safety Reporting System (ASRS).

2. Describe how an ASAP program is interdependent with Safety Policy.

3. Describe how an ASAP program is interdependent with Safety Risk Management.

4. Describe how an ASAP program is interdependent with Safety Assurance.

5. Describe how an ASAP program is interdependent with Safety Promotion.

ASAP Assignment Student Examples

Example #1

ASAP Assignment

ASCI 1850 Safety Management Systems Spring 2021 Name: Rommel Romero

1. Provide a description of the differences between an Aviation Safety Action Program (ASAP) and the Aviation Safety Reporting System (ASRS).

The difference between an ASAP and the ASRS lies within their objectives. The ASRS is aimed at identifying safety issues within aviation by offering a voluntary reporting platform of anonymity monitored by NASA's databases and may waive FAA punitive action. An ASAP is also aimed at identifying safety issues within aviation with a confidential reporting system, but instead de-identifies reports and is meant to protect from punitive action.

2. Describe how an ASAP program is interdependent with Safety Policy.

An ASAP is interdependent with Safety Policy because of the non-punitive nature of an ASAP. Safety Policy lies the groundwork for any SMS. If the policies do not align with how ASAPs work, then it may encourage a suboptimal safety culture which would undermine the purposes of both safety policy and the ASAP.

3. Describe how an ASAP program is interdependent with Safety Risk Management.

An ASAP is interdependent with Safety Risk Management because it aids in nearly every aspect of the formal process of Safety Risk Management. ASAP reports may help individuals understand systems, and certainly help in identifying hazards and assessing and analyzing risks. Without SRM, however, an ASAP's utility is diminished because of the lack of risk control of the SRM to mitigate risks.

4. Describe how an ASAP program is interdependent with Safety Assurance.

An ASAP provides valuable information in the data acquisition stage of safety assurance. Similarly to SRMs, without Safety assurance ASAP's utility is diminished due to the lack of corrective action to prevent the hazards reported through the ASAP.

5. Describe how an ASAP program is interdependent with Safety Promotion.

An ASAP is interdependent with Safety Promotion because of both its role in and reliance on Safety

Promotion. If the safety is not permitted or promoted by the culture of an organization in the individuals' behavior, then an ASAP will fail to remain useful. ASAPs are a necessary tool of information collection when formulating safety strategies in Safety Promotion. One could argue that an ASAP in itself is Safety Promotion.

Example #2

ASAP Assignment

ASCI 1850 Safety Management Systems Spring 2021 Name: Ellie Volansky

1. Provide a description of the differences between an Aviation Safety Action Program (ASAP) and the Aviation Safety Reporting System (ASRS).

• ASRS is funded by the FAA but is run by NASA as an independent party. ASRS is concerned more with general aviation and gives protection to pilots from the FAA. Both are good systems with different applications. ASRS offers regulator protection for general aviation, while ASAP offers company and regulator protection. ASAP reports also go through NASA for analysis. Both systems are nonpunitive within reason.

2. Describe how an ASAP program is interdependent with Safety Policy.

• The ASAP program is interdependent with Safety Policy as it helps to protect employees by giving certain immunities if employees report safety incidents. The program gives all employees the ability to learn from other employees' mistakes because it gives protection to the employee that reported the incident.

3. Describe how an ASAP program is interdependent with Safety Risk Management.

• The ASAP program is interdependent with Safety Risk Management as it helps to identify potentially hazardous risk regarding aircraft safety. When new threats are identified, Safety Risk Management can take over to assess risk involved with the identified threat and decide how to best deal with it.

4. Describe how an ASAP program is interdependent with Safety Assurance.

• The ASAP Program is interdependent with Safety Assurance because the reports that come in through employees help to identify new safety threats/hazards that may have previously gone unnoticed. This allows safety assurance to be more useful/accurate as there is a constant flow of reports that pinpoint potential issues within aircraft safety.

5. Describe how an ASAP program is interdependent with Safety Promotion.

• The ASAP Program is interdependent with Safety Promotion because the program encourages employees to voluntarily self-report safety information to spread awareness to potential safety issues. If employees participate in the program, there will be a more positive safety culture as everyone is made aware of potential threats and there is an increase in honesty from employees.

Example #3

ASAP Assignment

ASCI 1850 Safety Management Systems Spring 2021 Name: Rommel Romero

1. Provide a description of the differences between an Aviation Safety Action Program (ASAP) and the Aviation Safety Reporting System (ASRS).

The difference between an ASAP and the ASRS lies within their objectives. The ASRS is aimed at identifying safety issues within aviation by offering a voluntary reporting platform of anonymity monitored by NASA's databases and may waive FAA punitive action. An ASAP is also aimed at identifying safety issues within aviation with a confidential reporting system, but instead de-identifies reports and is meant to protect from punitive action.

2. Describe how an ASAP program is interdependent with Safety Policy.

An ASAP is interdependent with Safety Policy because of the non-punitive nature of an ASAP. Safety Policy lies the groundwork for any SMS. If the policies do not align with how ASAPs work, then it may encourage a suboptimal safety culture which would undermine the purposes of both safety policy and the ASAP.

3. Describe how an ASAP program is interdependent with Safety Risk Management.

An ASAP is interdependent with Safety Risk Management because it aids in nearly every aspect of the formal process of Safety Risk Management. ASAP reports may help individuals understand systems, and certainly help in identifying hazards and assessing and analyzing risks. Without SRM, however, an ASAP's utility is diminished because of the lack of risk control of the SRM to mitigate risks.

4. Describe how an ASAP program is interdependent with Safety Assurance.

An ASAP provides valuable information in the data acquisition stage of safety assurance. Similarly to SRMs, without Safety assurance ASAP's utility is diminished due to the lack of corrective action to prevent the hazards reported through the ASAP.

5. Describe how an ASAP program is interdependent with Safety Promotion.

An ASAP is interdependent with Safety Promotion because of both its role in and reliance on Safety Promotion. If the safety is not permitted or promoted by the culture of an organization in the individuals' behavior, then an ASAP will fail to remain useful. ASAPs are a necessary tool of information collection when formulating safety strategies in Safety Promotion. One could argue that an ASAP in itself is Safety Promotion.

Student Learning Outcome H. Use the Technology, Skills and Modern Technology Necessary for Professional Practice.

A Line Operations Safety Audit (LOSA) is a technique used by larger air carriers to leverage the collection of operations data to identify deficiencies in the operation and subsequently identify intervention strategies that may be incorporated into recurrent training.

LOSA/FDM Assignment ASCI 1850 Name:

1. Briefly describe the LOSA process.

2. Briefly describe the meaning of the term "threat" in the context of LOSA.

3. Briefly describe the term "error" in the context of LOSA.

4. Briefly describe the meaning of an "unintended aircraft state" in the context of LOSA.

5. Briefly describe the FDM process.

6. Differentiate between FDM and FOQA.

7. Describe how both LOSA and FDM fit within a Safety Management System.

LOSA Assignment Student Examples

Example #1

LOSA/FDM Assignment

ASCI 1850

Name: Redacted

1. Briefly describe the LOSA process.

LOSA is a formal process used to collect safety information and data. An expert observer will ride in the jump seat of a flight and note environmental conditions, operational complexity, and flight crew performance. Data collection is confidential and non-jeopardy is assured for pilots. These observations work to identify threats and minimize risks associated with them.

2. Briefly describe the meaning of the term “threat” in the context of LOSA.

Threats are defined as events or errors that occur beyond the influence of pilots. Threats can be anticipated, unexpected, or latent. Anticipates are expected threats, such as incoming adverse weather. Unexpected threats occur unexpectedly, like an aircraft malfunction. Latent threats are not directly obvious and may need to be uncovered by safety analysis, like an equipment design issue. All threats increase operational complexity and must be managed to maintain the margins of safety.

3. Briefly describe the term “error” in the context of LOSA.

Errors are the actions or in actions by pilots or other personnel that lead to deviations from organizational or operational intentions or expectations. Errors reduce safety margins and may lead to an undesired event or aircraft state. There can be aircraft handling errors, procedural errors, communication errors, and more.

4. Briefly describe the meaning of an “unintended aircraft state” in the context of LOSA.

An una]ended aircraft state is when a situation results in a reduction in safety margins. This is considered the last stage before an accident and it represents the last opportunity to avoid an unsafe outcome and maintain safety margins in flight. This can be caused due to ineffective threat and error management.

5. Briefly describe the FDM process.

Flight data monitoring program is the process of capturing and analyzing information from the aircraft flight data crew. It is a proactive and non-punitive program that gathers routine flight data to improve crew performance, operating procedures, flight training, and more. The program assists an operator to identify, qualify, assess and address operational risks. It is a closed loop process that identifies and quantifies risks, then asks if the risks are acceptable, then takes remedial action if no and then asks if the action was effective.

6. Difference between FDM and FOQA.

FOQA is a FAA term for a more formalizes process surrounding the capture and analysis of information from aircraft flight data recording systems that is provided to the FAA. FDM on the other hand is a globally used term to describe the capture and analysis of data from aircraft flight data recording systems. FOQA is a voluntary safety program to make commercial aviation safer. The information is shared with the FAA so they can monitor trends in risk issues. FOQA allows all three parties to identify and reduce risks. FDM provides operators with understanding of how assets are being operated.

7. Describe how both LOSA and FDM fit within a Safety Management System.

Both LOSA and FDM fit within a Safety Management system by identifying risks, errors, and hazards to safe flight operations in order to minimize and be]er understand them. The process of identifying risks and merging them is a fundamental process with Safety Management. Data observed in LOSA or captured in FDM is analyzed and thus, identified and mitigated.

Example #2

LOSA/FDM Assignment

ASCI 1850

Name: Redacted

1. Briefly describe the LOSA process.

The Rosa process is a program for collecting safety-related data during normal operations. It is a means for companies to self-evaluate safety margins. This process enables the identification and management of at-risk behaviors in advance through ideal operational monitoring. This process can also reinforce positive behavior.

2. Briefly describe the meaning of the term “threat” in the context of LOSA.

Threats are responsible for increasing operational complexity and, if poorly managed, reduce safety margins

3. Briefly describe the term “error” in the context of LOSA.

Errors are mistakes that occur when threats are mismanaged. Errors increase the likelihood of adverse operations during maintenance or ground operations.

4. Briefly describe the meaning of an “unintended aircraft state” in the context of LOSA.

It refers to a situation in which safety margins are reduced due to unintended situations. This may be due to inefficient risk management and error management. It's the last step before the incident and the accident. This is the last chance to maintain a safety margin.

5. Briefly describe the FDM process.

It is the process of analyzing recorded flight data to enhance the safety of flight operations. This provides data to help prevent accidents and accidents. A reduction in flight accidents can reduce material loss and insurance costs. This can help modify the pilot's education program.

6. Differentiate between FDM and FOQA.

FDM is a term used worldwide. It is a term used to capture and analyze information in aircraft data recording systems. FOQA is a term that describes the process by which information collection and analysis of aircraft flight data recording systems is formulated, provided in total form by the FAA.

7. Describe how both LOSA and FDM fit within a Safety Management System.

FDM is suitable for safety management systems by monitoring and analyzing incidents based on aircraft data to prevent accidents and respond to accidents.

LOSA is suitable for safety management systems by identifying threats to operational safety, finding and minimizing the causes of such threats, and managing human errors of residual risks.

Example #3

LOSA/FDM Assignment

ASCI 1850

Name: Name Redacted

1. Briefly describe the LOSA process.

- The process requires expert observers must accompany regularly scheduled flights to collect information and data on safety-related conditions such as environmental conditions, operational complexity, and flight crew performance.

2. Briefly describe the meaning of the term “threat” in the context of LOSA.

Events or mistakes that happen outside of the reach of pilots or other personnel which increases the complexity of an operational.

3. Briefly describe the term “error” in the context of LOSA.

It is pilots or other personnel’s actions that causes deviations from organizational or operational expectations that could lead to undesired aircraft states.

4. Briefly describe the meaning of an “unintended aircraft state” in the context of LOSA.

- An aircraft's position, situation, or attitude that explicitly decreases safety margins as a result of the flight crew's actions.

5. Briefly describe the FDM process.

- The first step in the FDM process is to analyze data from aircraft flight data recorders. The process is non-punitive and aims to improve the safety system by analyzing data from regular flights.

6. Differentiate between FDM and FOQA.

- Flight Data Monitoring (FDM): it serves as to describe the data and review it from an aircraft's flight data recording system.

- Flight Operations Quality Assurance (FOQA): A more formalized approach used by the FAA for collecting and processing data from aircraft flight data recording systems and delivering it to the FAA in aggregate form.

7. Describe how both LOSA and FDM fit within a Safety Management System.

- They maintain flight safety while also providing additional data that assists in risk mitigation. They both have a more in-depth look at errors and risks, leading to a better view of the central problem.

Student Learning Outcome J. Apply Pertinent Knowledge in Identifying and Solving Problems.

Homework Assignment #1 involved students responding to questions that deal with the knowledge necessary to both identify and solve problems experienced within the context of a Safety Management System.

Homework Assignment #1

Answer the following questions:

1. In your own words define the term hazard.

2. Provide an example of a hazard you encounter regularly in your everyday life (and why it is a hazard).

3. In your own words, define the term risk.

4. Provide an example of how you assess risk you encounter regularly (provide an example).

5. In your own words, define the term safety.

6. Describe a situation in which you felt unsafe and explain why.

7. Differentiate between the terms hazard, risk, and safety.

Homework #1 Student Examples

Example #1.

Homework Assignment #1

Answer the following questions:

1. In your own words define the term hazard

A hazard is something that could potentially lead to a dangerous situation if not addressed and properly mitigated.

2. Provide an example of a hazard you encounter regularly in your everyday life (and why it is a hazard)

One hazard I encounter is when I cross the street. It is hazardous because if either me or a driver is not paying attention/ following safe driving or crossing rules, I could be struck and hurt or killed.

3. In your own words, define the term risk

Risk is the quality that a particular course of action has that could lead to some sort of unintended negative outcome .

4. Provide an example of how you assess risk you encounter regularly (provide an example)

Every time I go flying at parks, I face the risk of potentially being put in a dangerous situation by adverse weather. I assess this risk by doing a thorough preflight weather briefing before my flight. I check aviation weather to view the current and forecasted winds, temperatures, atmospheric conditions, clouds, precipitation and more to discern whether or not I could encounter any dangerous weather conditions. If I am not confident that I can safely manage any risks that the weather brings, I reschedule the flight.

5. In your own words, define the term safety

Safety is the state of being protected from hazards.

6. Describe a situation in which you felt unsafe and explain why.

One time I felt unsafe was when I was driving to school the day after a blizzard when the roads had not been sufficiently cleared yet. I have a rear wheel drive pickup truck which has very bad traction, and the conditions very easily could have caused me to lose control of the vehicle. I was sure to use extra caution when driving and take precautions such as driving slower, applying my brakes well in advance, and leaving extra space between me and the car in front of me. Luckily this allowed me to complete the drive safely.

7. Differentiate between the terms hazard, risk and safety.

Safety is the state of being protected from harmful situations. A hazard is an objection or situation that has the potential to cause harm. A risk is an action that a person could take that would expose them to hazards.

Example #2

Homework Assignment #1

Answer the following questions:

1. In your own words define the term hazard

A hazard is something that is potentially dangerous to life, property, reputation, or the environment.

2. Provide an example of a hazard you encounter regularly in your everyday life (and why it is a hazard)

Driving is a hazard I regularly encounter because there is always a chance that I could get into an accident and seriously hurt myself or even die.

3. In your own words, define the term risk

Risk is the chance that a hazard will actually happen.

4. Provide an example of how you assess risk you encounter regularly (provide an example)

When I am driving and turning right on a red light, I assess risk by looking at the oncoming traffic and judging roughly how long it will take for the cars to reach me. Then I make a decision on whether or not it is safe to go.

5. In your own words, define the term safety

Safety is mitigating risks or refusing to do something because it is too risky.

6. Describe a situation in which you felt unsafe and explain why.

I love to snowboard and a few years ago when I went on a run through some trees I felt unsafe because I didn't have much control or room to slow down. Plus the trees present a much greater danger than open snow.

7. Differentiate between the terms hazard, risk and safety.

A hazard is something that presents danger. Risk is the probability that this danger will actually harm you, someone else, or something. Safety is avoiding hazards as much as possible, thus lowering risk.

Example #3

Homework Assignment #1

Name Redacted 2-18-21

Answer the following questions:

In your own words define the term hazard

Anything that can cause harm.

Provide an example of a hazard you encounter regularly in your everyday life (and why it is a hazard)

Everyday I walk from my dorm to the parking garage where my car is and there is an inherent risk involved with crossing the street as I could potentially be run over by another driver.

In your own words, define the term risk

A chance of danger.

Provide an example of how you assess risk you encounter regularly (provide an example)

In the above example I said there is a risk that I could be hit by a car while crossing the street. To assess the risk, I look both ways before walking out into the road and do not proceed if it looks dangerous.

In your own words, define the term safety

Taking precautions to avoid danger or risk.

Describe a situation in which you felt unsafe and explain why.

Yesterday afternoon I went for a run around the city, but halfway through when I was about 4 miles from campus the sun went down. I had to run back to SLU in the dark and definitely felt unsafe in some of the areas I had to pass through. There were people loitering around on some of the sidewalks and were giving me some

Differentiate between the terms hazard, risk and safety.

A hazard is anything that can cause harm and the risk is how great the chance is that somebody will be harmed by something. Safety is the attempt at mitigating the risk of harm

Course Assessment Form

Course: ASCI 2750 01 Accident Investigation
Semester Taught: 18
Number of Students in Course: Spring 2021

Student Learning Outcome Assessed	Assessment Results: (Indicate what % of class achieved a minimum 70%)	Benchmark achieved? (Benchmark: 80% of students will score a minimum of 70% = "C")
B. Analyze and interpret data.	93.56% 100% of students submitted the assignment	Yes
J. Apply pertinent knowledge in identifying and solving problems.	96.50% 100% of students submitted the assignment	Yes

Course Assessment (Intended Use of Results)
The following will be used for recommendations to improve the quality of course delivery based on assessment results. These recommendations may include prerequisite change; changing course outline and adding more topics; adding a third assessment; changing the course sequence, etc.

SLO B. Analyze and Interpret Data.

I was quite pleased with the score students achieved in this assignment. 100% of students submitted the assignment with an overall average of 93.56%. I do not anticipate changes to the assignment although in the spirit of continuous improvement I may expand the breadth and depth of the effort.

SLO J. Apply Pertinent Knowledge in Identifying and Solving Problems.

Again, I was pleased with the performance of students on this assignment. 100% of students submitted the assignment with an overall average of 96.50%. I was especially pleased with student efforts on this assignment in their discussion of James Reasons Latent Failures Model of accident causation. I would anticipate, for the sake of continuous improvement heavy next year's assignment focus more specifically on an accident that has been discussed in class.

SLO B. Analyze and Interpret Data.

Students were required to complete an assignment in which they were instructed to analyze and interpret data using a causal effects model.

Assignment instructions:

Using a casual effects model (linear or domino model) consisting of:

(Fault of persons) + (Unsafe Acts or Mechanical/Physical Hazard) + (Accident) + (Injury)

Evaluate the Colgan Air Flight 3407 accident (all of the associated causal factors to the accident should be assigned to one of the categories listed above.

This assignment should take the form of a 1-page summary.

This assignment should be submitted to Blackboard no later than the end of the day on Sunday, March 21st. (Please do not email me the assignment, rather upload the assignment to Blackboard (Here).

SLO B. Analyze and Interpret Data Student Submission Examples.

Example 1.

Aviation is without a doubt a very complex and high consequence operation with a lot of moving parts. According to the Normal Accident theory, accidents in complex systems are unavoidable. As pilots, we train for as many situations as we can to be prepared on the flight line when something goes wrong; however, as previously stated, accidents are inevitable in complex systems. This is partly due to the fact that a failure in one part, whether it be the system, the human, or the organization, may coincide with the failure of an entirely different part. Therefore, some of these unforeseeable failures lead to a combination of failures since the complex systems are tightly coupled. It is said that accidents are rarely a single point failure but rather a result of a sequence of interrelated occurrences.

Furthermore, we use accident causation models to try and understand why and how things go wrong. As previously stated, accidents are typically a culmination of a series of events which interact sequentially with each other in a linear fashion. Also known as linear accident modeling, we use this model to analyze a serious of events that took place and ultimately ended in an accident. Herbert Heinrich's Domino Theory suggests that an accident is one of five factors in a sequence that results in an injury. This first factor he thought had to do with your social environment or your ancestry. Later this was disproven so we won't focus on these factors. We will however focus on the other four factors in analyzing the Colgan Air Flight 3407 accident.

The first factor in Henrich's Domino Theory/Effect is fault of the person. In many situations it is hard to come right out and say this was the fault of the pilot, or pilot error. Nonetheless when looking into the details of Colgan Air Flight 3407, there seemed to be a couple different factors that could have been handled differently. Without going into too much detail about the facts we have already discussed, such as the illness or fatigue that perhaps both of the pilots were experiencing, I would point more towards the issue of the continuous conversation and lack of situational awareness. it is discussed and observed from the CVR that there was more than enough conversation throughout the flight and even below 10,000 feet, going against sterile cockpit procedures. We know that this flight may have been picking up ice and knowing how to deal with this situation is crucial. I think I add this detail into the fault of the person factor because it seems as if the pilots were not aware of their airspeed and other instruments which would have helped in understanding how to correct for the ice buildup.

The second factor in the accident causation model is the unsafe act mechanical or physical hazard. I would say due to the previous factor and their lack of situational awareness of air speed and the accumulation of ice, the unsafe act in this flight was the captain applying too much backpressure on the yolk. It is important to know how to deal with these situations however, the continuous backpressure on the yolk is unsafe, considering you would be getting closer to the critical angle of attack.

This ultimately plays into the third factor of the accident causation model which is the accident. I would say that because the captain continued to pull back on the yolk for so long, this caused the aircraft to get so close to the critical angle of attack and the airplane slowed and rolled too far that they lost control and ultimately crashed.

Due to the accident, there were injuries, also the fourth factor in the accident causation model. 50 people died as a result of this accident including all crew and passengers and one person on the ground.

Although I kept this analysis is short and sweet while there are a lot of details in this accident, I think it is still easy to see how a failure in one part played into a failure of many parts. We can look at Heinrich’s Domino Theory model and the Colgan Air Flight 3407 accident is no exception to this model. I have found it useful to even look at the model backwards. For example, we know that in the end there were injuries and fatalities. We may ask ourselves, why were there injuries and fatalities? The answer would be due to the accident. Next, we may look at what caused the accident. Ultimately it was a loss of control and I'd even say it was a wrong or unsafe control input by the pilot. Well, why did this occur? It's hard to say exactly why this occurred, but I think it's safe to say that the continuous conversation and lack of situational awareness throughout the flight hindered the pilot’s ability to control the aircraft with correct control inputs.

If you would have prevented any of the four factor categories before they happened, in the end there wouldn’t have been injury.

Example 2.

Colgan Air Flight 3407 Causal Effects (Linear or Domino) Model

Colgan Air Flight 3407 was assigned to fly from Newark to Buffalo on February 12th, 2009. Marvin Renslow, a 47-year-old pilot with 3379 total flight hours, was hired at Colgan with 600 hours. Rebecca Shaw, a 24-year-old first officer with 2244 total flight hours and 774 turbine time. During the cruise, both the pilot and FO engaged in a casual conversation and not focused on the aircraft. Likewise, the FO hoping to be landed soon because she was feeling under the weather.

February 11th, 2009, on the day before the accident, the captain completed two-day tri and arrived at Newark at 3:44pm. The first officer commuted Seattle to Newark at 7:51pm and arrived at Newark via Memphis at 6:23am on February 12th, 2009. on the day of the accident (February 12th, 2009), the first two flights were canceled due to Newark's high winds. The dispatch release for flight 3407 was issued at 6:00pm for 7:10pm departure, but the departure was delayed, and the pushback schedule for 7:45pm. The aircraft from Newark to Buffalo scheduled a 53 minutes flight. During the flight, at 16,000 feet altitude, the FO was feeling ill and experience fatigue. She was sleepy, not energized, and her ears were stuffy; the pilot suggested taking herbal supplements, orange juice, or taking vitamin C and rest. During the approach around 10,00 feet, the pilot did not inform the crew to adhere to sterile cockpit rules. At 10:07pm, CVR detected a sound interpreted as a yawn in the cockpit. Also, both the pilot and FO violated federal laws about maintaining what's called a "sterile" cockpit at critical moments of the flight. For instance, they engaged in a casual conversation at moments when federal regulations required them to refrain from such activity.

The potential harm was both pilot and FO did not have much experience flying in icing conditions.

The pilot was panic and repeatedly reacted contrary to how he should have when the plane began to stall, pulling back on the control column rather than pushing it. FO did not correct the captain's mistake, perhaps because of fatigue. Colgan Air's inadequate airspeed and management procedures during approaches in icing conditions because Colgan 3407 did not have any significant ice accretion. Pilot performance issues and was a candidate for remedial training.

Colgan Air flight 3407 was not a survivable accident. The aircraft hit the house in a residential neighborhood in a nearly flat position. Most of those who perished suffered severe blunt force trauma. Most of those who witnessed the accident suffered from acute trauma. A large portion of the aircraft body was consumed by the fire. 50 people died: both Pilots, two flight attendants, 45 passengers, and 1 person on the ground.

Social Environment Ancestry (state of mind):

- Captain Marvin Renslow.
  - Age 47
  - With 3379 total flight hours and hired at Colgan with 600 hours.
- FO Rebecca Shaw
  - Age 24
  - With 2244 total flight hours, and 774 turbine time.
- Cruise.
  - Hoping to be landed soon.
  - Decent to 12,000 feet.
  - A non-stop casual conversation between the captain the FO.
  - Not focused.

Fault of Person (human factor):

- The day before the accident (February 11th, 2009).
  - Captain completes two-day trip.
  - Arrives at Newark at 3:44pm
  - First Officer commute Seattle to Newark at 7:51pm.
  - Arrive at Newark via Memphis at 6:23am on February 12th, 2009.
- The day of the accident (February 12th, 2009).
  - The first two flight were cancelled due to high winds at EWR.
  - The dispatch release for flight 3407 was issued at 6:00pm for 7:10pm departure.
  - Schedule 53 minutes flight to Buffalo.
  - Departure was delayed and pushback schedule for 7:45pm.
- First Officer Illness.
  - Fatigue.
  - Feeling sleepy and not energized.
  - Captain suggested to take herbal supplement, orange juice, or take vitamin C.

 Climbed altitude of 16,000 feet.

- Approach.

 The crew did not adhere to sterile cockpit rules at 10,000 feet.

 At 10:07pm CVR detected a sound interpreted as a yawn.

 FO ears were stuffy and popping.

 Also, as has been reported previously, the pilots violated federal rules about maintaining what's called a "sterile" cockpit at critical moments of the flight. For instance, they engaged in chit chat at moments when federal regulations required them to refrain from such activity.

Unsafe Act Mechanical or Physical Hazard (the potential of harm, high potential):

- Both pilot and FO did not have a much of experience flying in icing conditions.
- Pilot was panic and repeatedly reacted contrary to how he should have when the plane began to stall, pulling back on the control column rather than pushing it.
- FO did not correct the captain’s mistake perhaps because of fatigue.
- Colgan Air’s inadequate procedures for airspeed and management during approaches in icing conditions.
- Colgan 3407 did not have any significant ice accretion.
- Pilot performance issues and was a candidate for remedial training.

Accident:

- Colgan Air flight 3407 was not a survivable accident.
- The aircraft hit the house in a residential neighborhood in a nearly flat position.
- Most of those who perished suffered severe blunt force trauma.
- Most of those who witnessed the accident suffered from acute trauma.
- A large portion of the aircraft body was consumed by the fire.

Injury:

- 50 people died.

 Both Pilots.

 Both flight attendants.

 45 passengers.

- 1 person on the ground

Example 3.

Throughout the duration of Colgan Air Flight 3407, multiple causal factors occurred which led to the eventual accident. Following the chronological chain of events leading up to the crash, the first mistake would have to be the crew's decision to fly in the first place. FO Shaw was obviously sick and exhausted, and Captain Renslow had just completed a two-day trip. Choosing to fly with the FO so sick and exhausted, on top of the captain not being at the top of his game, was ce1tainly a fault of persons, as well as an unsafe act to choose to commit to. Even so, this decision was caused due to an unseen physical hazard which was caused by the system they were working in: the distance the FO had to travel to get to her destination, as well as her inability to afford a place to stay before the flight that was closer to the airport. While this physical hazard was not something as obvious as, for instance, the lack of siderails on a staircase, it still contributed to the accident. I consider this a physical hazard mainly because it played a part in the physical condition of the FO in a very substantial way. Due to the system that she had to fly in, which included her distance to the airp01t and her lack of adequate pay to have a place to stay beforehand, she was unable to get the adequate rest needed to complete the flight. Of course, she made the wrong decision to fly, yet that decision was caused by the pressures put upon her by the system itself.

The next causal factor that contributed to the accident was, in part, due to the decision of the crewmembers to continue the night regardless of their physical condition. The FO was obviously feeling sick, so the captain chose to keep conversation with her to try to make her feel better. Their decision to continue talking throughout the duration of the flight was a fault in the judgement of both pilots, as well as an unsafe act. In this case, the unsafe act was technically a violation of sterile cockpit procedures. Their decision to fly while in continuous conversation led to the distraction of both pilots.

As the pilots began their approach to the airport, another physical hazard began to present itself. Ice began to accumulate on the wings. the ice accumulation was indeed a physical hazard, yet it did not directly affect the perfo1mance of the aircraft. Even so, what the ice did do is create a mechanical hazard (or more of a software hazard) due to the decision of the captain to switch on the INCR position switch, raising the indicated stall speeds, even though ice accretion was not at a level to make its use necessarily the most efficient choice. 111is decision was not inherently hazardous, and it could be argued that the decision to tum on the INCR function had not created a hazard at all, yet I believe it is necessary to note it is as a hazard due to its contribution to the eventual accident. Both pilots lacked experience in icing conditions and a possible fault of persons could be attributed to how they mismanaged their speed selection during approach. This mismanagement of speeds led to the accident itself.

On top of the lack the situational awareness because of continuous conversation, as well as the fatigue both pilots were expe1iencing, Captain Renslow can be attributed to a fault of person en-or. As the plane came up on its INCR stall speed, the stick shaker began to notify the pilot of an incipient stall, even though that was not the case. The captain reacted fairly violently and appeared to be sta1tled, pulling the yoke aft and holding in that position until the aircraft crashed, leading to the deaths of everyone on board, as well as one person on the ground. These "injuries", aka the deaths involved due to the "accident", were caused, in the end, by Captain Renslow 's choice to hold the yoke aft. Every causal factor played into creating a sequence of events that led to the eventual fault of Renslow, which can be seen as the main accident that led to the Injury portion of the linear model.

SLO J. Apply pertinent knowledge in identifying and solving problems.

SLO J. Was evaluated utilizing an assignment that required students to discuss and apply James Reasons Latent Effects Model of Accident Causation (the so-called Swiss Cheese Model).

Assignment instructions consisted of five questions:

1. Describe the concept behind James Reason’s Swiss Cheese Model
2. Describe the concept of layering associated with the SCM.
3. Describe how the SCM might be used as an accident investigation tool.
4. Describe the meaning of “preconditions” in the context of the SCM.
5. Differentiate between active and latent failures.

Example 1.

1. Describe the concept behind James Reason’s Swiss Cheese Model

The accident causation model, aka the “swiss cheese model”, is a tool that can be used to help understand the roles that defenses, barriers, controls, and safeguards all have in accidents or errors. In a complex system such as aviation, safety often relies on multiple layers of defenses to minimize the probability of a single point failure occurring. Essentially, the more complex a system gets, the more comprehensive and coordinated the safety mitigations must be. This creates two dilemmas, though. Firstly, by creating a comprehensive and ultimately complex safety mitigation strategy that sufficiently reduces the possibility of failures, an operator is also increasing the amount of possible failure points of those mitigations. This means that it’s important to not only create a complex and multifaceted mitigation system but also a robust one that works to combat the second issue that arises in complex system/mitigation interactions: the opaqueness in operation. For instance, the more complex an operation is, the more challenging it is for a human operator, which in aviation is ultimately the final authority in aircraft operation, to be directly involved in said operation. In many cases, pilots are often monitoring the aircraft’s systems rather than directly controlling them. This is just an example of the opaqueness that can exist in complex operation, though, so what does that exactly mean for understanding an accident and factors involved? Basically, for humans to try to grasp a complex system’s operations, it helps to utilize models such as James Reason’s accident causation model to help pick apart and simplify the overall picture of what led to an accident. Instead of blindly looking for causation, it’s beneficial to have an outline to help categorize the pieces that may have played a role in the accident, such as the defenses involved, and how they failed to open up a trajectory that led to an accident. Without tools such as the swiss cheese model, it would be arguably much harder to get a full and clear picture of what led up to an accident in a system that is often quite opaque to its daily operation. To sufficiently combat accidents with efficient mitigation strategies, it's important to gain the clearest perspective possible to ensure all pieces of the operation are being considered.

2. Describe the concept of layering associated with the SCM.

There are four basic layers to the swiss cheese model, which all can act as possible "holes "that lead up to an accident. While each layer is looked at from a perspective of categorization, it's important to understand that each piece can be connected with one another. For instance, the first layer is "organizational factors" and the second layer is "unsafe supervision". Organizational factors can ultimately be seen as the general safety culture of an organization. A safety culture creates a precedent for the overall operation and policies of an organization, so they are tied together, yet unsafe supervision can exist in any level of management. Not all bases of operation have the same people responsible for them. This means that there is going to be discrepancies between different responsible parties in what they deem is "safe operation" which, in some cases, may not be considered "safe" by the overall safety culture policies that an organization attempts to uphold.

The third layer is "preconditions for unsafe acts", which simply involve the environment of the operation, and the final layer represents the "spearhead" of an accident, the "unsafe acts" themselves. The environment to which an operation is occurring contributes to the possibility of creating "unsafe acts", yet so does the safety culture of an organization and the supervision that is involved in upholding the policy made by the organization. Once again, the layers are separate in their categorization but not removed from each other in terms of the role they play in creating the trajectory for an accident to occur.

3. Describe how the SCM might be used as an accident investigation tool.

The swiss cheese model gives us a baseline to work off to help us start to understand all the factors that led to an accident. It works as a tool to orient our perspective of how an accident occurred. Consider “perspective” as the angle to which investigators look at an accident. There can be multiple angles that can lead to an ultimate “probable cause”, as well as different outlooks on what exactly contributed to that probable cause. Accident investigation is often not something that can simply be understood from the perspective of one model, though. Even so, investigators can gain a far more comprehensive insight of an investigation by utilizing multiple accident models to aid in their research to find probable causation. SCM is one of the most popular of these tools and is often used to pick apart the factors that led to an accident. Its benefits, in my opinion, mainly come from how easy it is to visualize. All you must do is imagine multiple pieces of swiss cheese acting as different “barriers” with holes of varying sizes for possible failure points of those defenses. This allows for a simple structure to be quickly made that also leaves plenty of room for a multitude of variables within the boundaries of that structure. This creates a simple, yet comprehensive tool to use in understanding the overall pathways that led to an accident.

4. Describe the meaning of “preconditions” in the context of the SCM.

Preconditions are the contributing environmental factors in an accident. In terms of where they fit in relation to latent and active failure points, preconditions exist more on the active side of the factors of an accident. They can be as simple as an ergonomics issue in the cockpit that led to unsafe acts, maybe due to discomfort, or as complicated as the weather conditions that contributed to the ultimate probable causation. Preconditions can be understood as always tied to unsafe acts, because they are the “preconditions” that created the environment to which those unsafe acts occurred. This does not mean that unsafe acts are only created due to the mere existence of a precondition, though. Latent failures can contribute to unsafe acts regardless of the environment. People make mistakes even when environmental conditions do not necessarily contribute. Even so, it’s important to understand the interaction that preconditions have with latent factors such as safety culture and supervision. An environment can be influenced by latent failures associated with organizational culture and managerial decisions.

5. Differentiate between active and latent failures.

Active failures are the failures that are created by unsafe acts or influenced by the environment that the accident occurred in. They are at the end of the causation model and are chronologically the closest to the accident. For instance, the engine literally falling off AA 191 is an active failure. These failures often lead to more questions rather than answers, though. Why did the engine fall off? What led to that active failure? Other safety failures, of course! Failures often lead to other failures. An active failure can be caused by another active failure, such as in the case of AA 191. The engine fell off because the rear pylon bulkhead disconnected with the left wing, leading to the failure of the front pylon bulkhead, which disconnected that entire powerplant system section from the aircraft. As we look at these active failures, we begin to see a picture that eventually leads beyond the accident occurrence itself. For instance, what events led to the bulkhead failure? That leads us to failures that are not connected directly to the physical accident occurrences, which are latent failures. These types of failures are associated with factors such as organizational safety culture and managerial supervision. They're connected with policy and how an organization upholds this policy. The latent failures associated with AA 191 are numerous but ultimately can be summarized by the inadequate maintenance procedures American Airlines had in detaching and reattaching the engine on their DC-10s. This led to a latent failure of structural cracking in the rear bulkhead, which eventually led to the creation of an active failure that was caused by the latent failure of structuring cracking: the ultimate failure of the bulkhead. Structural cracking could be seen as both an active and latent failure. The cracking existed before the sequence of events in the accident, yet the cracking was associated with the creation of the active failure, which could be seen as an active failure in the chain of events in itself. As you move throughout the chronological structure of events, latent failures and active failures begin to interact closer and closer with each other. I think this is one of the strengths of the SCM. This model helps us categorize latent and active failures without being overly constrictive in how we understand the multiple factors that can be associated with them.

Example 2.

1. Describe the concept behind James Reason's Swiss Cheese Model

The concept behind it is that it's derived from Heinrich's Multiple Cause Theory, and it has background context from his Human Error book that was published in 1988, which provided a cognitive psychological account on the nature, varieties, and mental sources of human error. His model also has this account as well, being based on human factors as the normal intention, but also non-human factors such as localized workplace conditions, and organization factors, speaking to safety culture and the programs in place to prevent accidents from occurring, being consistent with Perrow and Turner.

His motivations were from a number of big European accidents, such as the Flixborough chemical plant explosion in 1974, and its proximity to residential housing. The Space Shuttle Challenger explosion in 1986, and the o-ring issues and the knowledge that the engineers knew about the O-ring issues in temperature differences and organizational culture. The nuclear accident and partial meltdown on Three Mile Island in 1979, where the valve switch on the control panel indicated the position of the switch instead of the valve, and when the valve failed the switch was still in the open position when the valve had closed. The chemical reactions in Bhopal where people lived far too close to the reactor in a small shantytown, and the explosion at the Chernobyl reactor. It also included the Herald of Free Enterprise accident, and the King's Cross Underground Fire.

Reason was motivated by these accidents that caused massive losses of life, and he began to understand that the nature of these errors included the role of: Defenses, Barriers, Controls, and Safeguards. That we need to design systems with these barriers, these things that are intended to stop the progression of a causality chain, agreeing with Heinrich that accidents are usually the result of a sequence of events. The idea was to put a barrier in-between these causalities, something that blocks them and prevents them from progressing, that if you could stop any one of the contributing factors, that you could stop and prevent the accident itself. In the event that an accident occurred, you could look at if it was a failure of a barrier, or if it was something that wasn't considered all together.

2. Describe the concept of layering associated with the SCM.

The concept of layering is representative like that of a firewall, or checkpoint system, in that each layer represents a particular defense, barrier, or safeguard that is in place to prevent an accident. Holes exist in each layer as a metaphore that each one represents a different active and/or latent error that exists and is non-static in the way that they move around and change position at any time, that they work in certain situations and arent effective in other situations. The size can change as well depending on the local and temporal condiitons. This is akin to daily operations, different interactions and scenarios, each of which can affect the chances of an active failure taking place.

When a hazard presents itself, it is defined as a red line, and as latent or active failures begin to align, that hazard moves further through the system until holes in each layer align, in which case the accident, or loss, occurs. As long as the holes do not all align, a single layer being misaligned, will allow for the hazard to be denied the ability to promulgate through the system and the accident, or loss, is prevented.

3. Describe how the SCM might be used as an accident investigation tool.

The SCM might be used as an accident investigation tool in that it can act as a framework that can be used for investigating accidents, allowing you to analyze hazard locations and analyze the potential for interventions, in addition to helping to understand why an accident occurs, and can help make recommendations that can help prevent those future accidents.

4. Describe the meaning of “preconditions” in the context of the SCM.

A precondition in the context of the SCM is considered part of latent conditions, which is something that exists and comes into play from outside factors. Often times considered with environmental conditions, be it a system problem on an airplane, or a failure of a radar system on a sunny clear day, it may not be a problem. But on an inclement weather day, this then becomes a huge hazard and risk. A precondition can also be the experience that the flight crew has in specific conditions, such as ice and low visibility conditions such as night time, if the crew is fatigued, sick, or under the influence of alcohol, drugs, or narcotics. Preconditions can also mean events such as bombings or terrorist attacks, or improper communications and distractions.

5. Differentiate between active and latent failures.

With active failures, which encompass unsafe acts that can contribute and be linked to an accident, they generally occur at the point of contact between a human and some aspect of a larger system, such as a human-machine interface, and are generally readily apparent. This could mean that someone pressed an incorrect button or flipped the wrong switch or ignored/overlooked a warning light on their panel. They frequently involve someone on the front lines of the operation, and because of this are referred to as errors at the sharp end, at the point. Active failures are noticed first because they are committed by line operations personnel, and unlike latent failures, addressing active failures will generally prevent only a single accident.

In the case of latent failures, they are inherent in the system, eventually becoming error-dormant as time goes on. They are less apparent failures of organizations or designs that contributed to the occurrence of errors or allowed them to eventually cause harm. Compared to active failures being referred to as the sharp end, these are referred to as the blunt end of the stick, the opposite end. These may reside distant from the accident in both time and space, sometimes having gone unnoticed for decades potentially, and they characteristically arise from the decisions or actions above the operator and manifest themselves following a triggering type of event. And where active failures are usually committed by line operations personnel, latent failures are often a product of the organization itself as a result of its staff, training policy, communication patterns, hierarchal relationship, or a result of management decisions.

Example 3.

1. Describe the concept behind James Reason's Swiss Cheese Model

a. Through James Reason's Swiss Cheese Model, he examined the role of defenses, barriers, controls, and safeguards. He observed that system failures are rarely caused by single point failures; rather, failures (or accidents) tend to occur when multiple errors occur at a precise time. The defenses and barriers that he observed are supposed to minimize the possibility of multiple failures or errors occurring at a single time. With that being said, the concept behind the SCM relies solely on the idea that accidents in complex systems occur through the accumulation of multiple failures. The slides tend to act as defenses and the holes within each slice represent hazards. Typically, one hole in a single cheese slice is not enough to cause an accident in a complex system.

2. Describe the concept of layering associated with the SCM.

a. The SCM introduced the idea of layering in each slice. Each slice, or layer, represents a particular defense, barrier, or safeguard. The holes in each layer represent the errors. The idea behind layering is that each layer, or defense, minimizes the chance of the holes in the cheese to align perfectly enough to present an accident. The more layers or barriers there are in a given model, the less likely an accident will occur.

3. Describe how the SCM might be used as an accident investigation tool.

a. The SCM is a good tool to use in an accident investigation because it allows you to go back and analyze each hazard that occurred before the accident took place. You will see how each hazard, latent or active failures, contributed to the holes in each slice to align properly. You can also use this model to get a better understanding where potential new barriers could be put in place to prevent additional accidents from happening. Through the accidents that I've briefly analyzed and used the SCM, I've found that it makes you trace your steps backwards one by one. Going from each layer and hazard to the next and eventually you'll see all the areas where one little change in procedure or operations could've acted as a barrier to prevent this idea of the cheese holes aligning.

4. Describe the meaning of "preconditions" in the context of the SCM.

a. I best interpret the idea of preconditions in the context of SCM as being a failure point having to do with equipment and the workforce. Preconditions play into the idea of how reliable is your and how reliable or skilled is your workforce. If your workforce at a particular time is fatigued and unmotivated this is a precondition for a failure point. If your equipment is old and unreliable, this can be a precondition for a failure point. If your crew does not get along or they do not communicate well, this can be a precondition for a failure point.

5. Differentiate between active and latent failures.

a. Active and Latent failures both contribute to hazards in the SCM. Active failures to me, are the ones that are most obvious and noticeable. They tend to occur at the frontline at certain points of contact between humans and larger systems. When addressed they tend to prevent single accidents. In contrast, latent failures are less apparent. I think of them as gradually becoming more of a hazard over time. They tend to be a product of the organization itself and manifest overtime. They are said to be distant in time and space because they aren’t always as apparent and recognizable right away. Both active and latent failures contribute to accidents, but latent failures, when addressed tend to prevent many different hazards or accidents

Course Assessment Form

Course: ASCI 2750 10 Accident Investigation
Semester Taught: 13
Number of Students in Course: Spring 2021

Student Learning Outcome Assessed	Assessment Results: (Indicate what % of class achieved a minimum 70%)	Benchmark achieved? (Benchmark: 80% of students will score a minimum of 70% = “C”)
B. Analyze and interpret data.	94.21% 9/13 students submitted the assignment	Yes
J. Apply pertinent knowledge in identifying and solving problems.	88.07% 12/13 of students submitted the assignment	Yes

Course Assessment (Intended Use of Results)
The following will be used for recommendations to improve the quality of course delivery based on assessment results. These recommendations may include prerequisite change; changing course outline and adding more topics; adding a third assessment; changing the course sequence, etc.

SLO B. Analyze and Interpret Data.

Although I’m generally pleased with the overall score associated with this assignment, I am disappointed that nearly ¼ of the students did not submit a response. This is an online course and there is a possibility that enrolled students did not realize the mandatory nature of all assignments (although this is clearly stated in the course syllabus). As a means of continuous improvement, I plan to require a passing grade on all test, all homework assignments, and class participation (discussion boards in this case). This should be sufficient motivation to ensure a more comprehensive level of participation.

SLO J. Apply Pertinent Knowledge in Identifying and Solving Problems.

I am pleased with an average score of approximately 88% on this assignment. I’m also pleased that 12 of 13 students enrolled in the course submitted a response. As mentioned in the SLO B narrative, as a means of continuous improvement I plan to require a passing average on all test, all homework assignments and class participation (discussion boards).

SLO B. Analyze and Interpret Data.

Students were required to complete an assignment in which they were instructed to analyze and interpret data using a causal effects model.

Assignment instructions:

Using a casual effects model (linear or domino model) consisting of:

(Fault of persons) + (Unsafe Acts or Mechanical/Physical Hazard) + (Accident) + (Injury)

Evaluate the Colgan Air Flight 3407 accident (all of the associated causal factors to the accident should be assigned to one of the categories listed above.

This assignment should take the form of a 1-page summary.

This assignment should be submitted to Blackboard no later than the end of the day on Sunday, March 21st. (Please do not email me the assignment, rather upload the assignment to Blackboard (Here).

SLO B. Analyze and Interpret Data Student Submission Examples.

Example 1.

Fault of Persons:

The captain, Marvin Renslow reacted poorly to the stick shaker and pulled the stick aft.

This increased the stall profile in the Bombardier DCH-8-400. In addition, he only increased engine power to 70% capacity. He continued to hold the stick aft as he lost control of the aircraft. Captain Renslow had an extensive history of failed checkrides, some of which he failed to report to Colgan Air. It has been stated that there needs to be a better system in place against those who should not begin to fly passengers for hire.

The First Officer, Rebecca Shaw was inexperienced in icing conditions. She stated that she only started operating in icing conditions with Colgan Air. She admitted to feeling ill and was quoted as saying "This is one of those times that if I felt like this when I was at home there's no way I would have come all the way out here.

" While the aircraft was in the stall, she disrupted

chain of command and by her own doing she retracted the flaps. She did not adhere to FAR117.5 Fitness for duty. She was overly tired from her commute from Seattle; additionally she was feeling ill which only furthered her inability to perform her duties at an optimal level

The crew did not adhere to procedures and did not maintain a sterile cockpit below

10,000ft and preformed their checklists late. Neither Captain nor First Officer stayed at a crash pad and was fatigued.

Unsafe Acts/ Mechanical/Physical Hazard:

The crew did not maintain a sterile cockpit below 10,000ft and performed their checklists late. Because of the lack of a sterile cockpit, the crew was distracted and did not notice their airspeed beginning to increase. In addition, the aircraft sent out incorrect stall warning indications. The aircraft indicated a stall 20kts above stall speed. When the First Officer retracted the flaps, she deepened the stall and further increased the stall speed.

Accident/Injury

50 people lost their lives in the Colgan Air 3407 Accident. 45 Passengers, 4 crew members, and 1 person on the ground died. The aircraft impacted a house in a residential neighborhood in a

relatively flat position where a natural gas line was struck causing a fire that lasted until the next morning

Example 2.

Colgan Air 3407

In the case of the Colgan Air 3407 accident that occured on February 12th, 2009, the NTSB released one main probable and four additional contributing factors to the accident. The NTSB concluded that the probable cause of the accident was the captain's inappropriate response to the activation of the stick shaker, which led to an aerodynamic stall from which the airplane did not recover. Contributing to the accident were: 1) The flight crew's failure to monitor airspeed in relation to the rising position of the low speed cue, 2) The flight crew's failure to adhere to sterile cockpit procedures, 3) The captain's failure to effectively manage the flight, and 4) Colgan Air's inadequate procedures for airspeed selection and management during approaches in icing conditions. Using the causal effects model, these factors can be categorized based on their nature and outcome.

Fault of Persons

In examining the "fault of persons" in this accident we have to look at events and situations that occurred before the flight was conducted. Although the NTSB could not conclude whether it was a factor in the accident or not, it is likely that both pilots were suffering from fatigue. Both pilots had spent the majority of the day at the airport prior to the accident flight. Additionally, the FO had commuted all the way from Seattle the night before on a deadhead and on the CVR can be heard mentioning that she didn't feel 100% (in reference to both sleep and illness). While it is hard to say that this fatigue was the pilots' fault, it would certainly be considered a human factor that had the potential to diminish performance. Assuredly, there were external factors and extenuating circumstances that led to fatigue being an issue but at the end of the day, if a pilot is unfit for duty, they should not be flying.

Other factors that would be considered "fault of persons" would be the contributing factors listed by the NTSB. 1) The flight crew's failure to monitor airspeed in relation to the rising position of the low speed cue, 2) The flight crew's failure to adhere to sterile cockpit procedures, 3) The captain’s failure to effectively manage the flight, and 4) Colgan Air’s inadequate procedures for airspeed selection and management during approaches in icing conditions. In all of these factors, you have an entity (singular person, crew, or company) that failed on some level to deliver an adequate performance. While each of these factors cannot be attributed as the direct cause of the crash, they certainly contributed to it in the time preceding the accident. In the first three, the contributing factor presented itself just prior to the crash on the accident flight. In the fourth factor, there was a systemic issue that had existed for years and not been addressed.

In a final note for “fault of persons,” the captain had a troubled history with training and checkrides. There were questions as to his “stick and rudder” skills as well as his decision making ability. While everyone has setbacks in their training, this individual seemed to have repeat issues that may have been concealed in his hiring process. It is of the utmost importance that airlines do everything in their power to hire and train standup individuals who put a premium on integrity and flying ability. This accident was a watershed moment for many needed changes in the aviation industry and it is vital that we learn from the outcome.

Unsafe Acts or Mechanical/Physical Hazard

While some of the contributory factors like failure to adhere to sterile cockpit procedures could possibly be considered an unsafe act, the probable cause of the accident is more appropriately placed in this category. The NTSB concluded that the probable cause of the accident was the captain’s inappropriate response to the activation of the stick shaker, which led to an aerodynamic stall from which the airplane did not recover. Down to the bare bones, this is why the plane crashed. As the aircraft slowed down and eventually stalled, the captain made improper control inputs that worsened the situation. It should be noted that the aircraft was in nighttime icing conditions, though there was no evidence of severe icing (physical hazard) at the time of the crash. Despite the environmental hazards, the actions of the captain are ultimately why the flight perished,

Accident

The plane crashed while on approach to land after going into an aerodynamic stall that was not recovered. During the crash, the occupants were subjected to G-forces in excess of 2 Gs and the plane pitched and rolled out of control, crashing 5 miles short of the runway. The accident was not survivable.

Injury

All 49 people onboard the flight (4 crew and 45 passengers) were killed in the accident.

One person on the ground was also killed and four other additional people on the ground were Injured.

Example 3.

Colgan Air Flight 3407

Flight 3407 was a Bombardier DHC-8-400 which was operated as a Continental Connection flight from Rochester International Airport in Rochester, New York to Buffalo-Niagara International Airport in Buffalo, New York. The aircraft crashed in Clarence Center, New York which is about 5 miles northeast of the airport. This crash ended the lives of 50 people, 2 pilots, 2 crew, 45 passengers, and one person on the ground.

A few of the issues that could be a factor in the crash of flight 3407, could be any of the following which I will bring up. The fact that the icing which had taken place over the windshield of both the captain and the first officer. However, the icing was not only on the windshield bit it was also on the leading edges of the wings which played a factor in the stick pusher being activated due to the aerodynamic stall. This stall caused the right wing to start the roll angle, that caused a secondary stick pusher alert which then continuously kept the roll back to the left. All of these actions caused the nose pitch to not be in the correct alignment to land.

Pilots

The captain and the first officer had a normal flight which did not have any non-flight related conversation during the first part of the flight while the sterile cockpit is required. This was true until the last portion of the flight when the first officer started to have discussions that were not a part of the flight jobs that are required in the cockpit. The background to the captain had come to show that he had not had anything out of his normal routine prior to the flight. Although his history in reporting things that are subpar, such as his negligence to notify Colgan that he had failed his check rides on previous flights. His integrity is not where it should be for being a pilot that oversees a vast number of lives each and everyday. The Colgan Captains training requires a business like cockpit at all times, this was not the case in flight 3407. There were no signs of drug or alcohol abuse in either of the pilots toxicology reports.

The first officer held her routine almost everyday sleeping and waking up as normal according to her husband. However with he commute from Seattle, Washington this changed her schedule up quite a bit. She was leaving her home in Seattle and having to switch planes in Memphis, Tennessee. Her history of flights and the information that was given from previous pilots said that she was a good pilot that is advanced for a first officer.

Aircraft

The Bombardier Q400 which is equipped with a stall protection including a stick shaker and a stick pusher, this is a warning of an stall. This helps with the indication of the icing protection in order to keep the aircraft in the correct position for landing and alignment. The wings and windshield both have ice detection monitors which are monitored by the pitot system. The cockpit voice recorder is placed on most aircraft, this aircraft in particular. The CVR helped with information after the crash, this helped with knowing what was said and how it was handled throughout the malfunction time. The CVR keeping track of what the pilots say to each other and cross check each other during each maneuver or action taken during the flight from the time it takes off to the time it lands. Along with the FDR which records all the inputs and outputs the aircraft make throughout the flight. The

aircraft had all the fire damage due to the wings breaking off and causing the fuel to be spread over the damage, with the wings broken and the fuel lines sheared it just needed a spark from the engine to ignite it. The wings were sheard off by hitting the trees and at an angle Although the first officer had initiated the wheels up procedure, the tires and landing gear were still in the down position which caused all the bottom portion to be broken off.

Conclusion

With all the information provides from the starting of a sickness with the first officer to the non-sterile cockpit causing human factors to be entered into the equation. So human factors that are added on to by the unsafe acts of a non-sterile cockpit adding on the equipment issues with the deicing of the wings causing a stall. Over correcting of the stick shaker by the captain caused a right to left roll which then caused the aircraft to crash and kill 50 people plus destroy a house. All of this was made possible due to the low altitude and low airspeed that was required for landing. Adding all these together are effects as described by the domino method. One thing led to another and just kept going. This model I think describes the events in order from personnel, duty, aircraft accident, resulting in the loss of life.

SLO J. Apply pertinent knowledge in identifying and solving problems.

SLO J. Was evaluated utilizing an assignment that required students to discuss and apply James Reasons Latent Effects Model of Accident Causation (the so-called Swiss Cheese Model).

Assignment instructions consisted of five questions:

1. Describe the concept behind James Reason's Swiss Cheese Model
2. Describe the concept of layering associated with the SCM.
3. Describe how the SCM might be used as an accident investigation tool.
4. Describe the meaning of "preconditions" in the context of the SCM.
5. Differentiate between active and latent failures.

Example 1.

1. Describe the concept behind James Reason's Swiss Cheese Model

James Reason studied Human Error at the University of Manchester. Reason examined the role of Defenses, Barriers, Controls, and Safeguards. He observed that system failures most often arise from the insidious accumulation of delayed action human failures and that failures are rarely caused by an isolated operator error. Reason formulated a model that addressed the notion of Active and Latent errors in a system that lead to an accident. This model is based on the idea that accumulation of multiple factors and failures must align in order for a large-scale accident to occur. He conceptualized how there are layers that act as safeguards against these active and latent failures. These layers are all slightly different and they change based upon the updates to the model. However, what they all have in common is the probability of an accident to progress through failures within a layer. This probability comes in the form of the holes in the swiss cheese, hence the name the Swiss Cheese Model.

2. Describe the concept of layering associated with the SCM.

Within the context of the Swiss Cheese Model the layers are thought of to be the slices of cheese themselves. These slices represent a layer of defenses that protect against the manifestation of an accident. Often, the first slice of cheese is the furthest removed from the accident and the last slice is the closest to the accident. At the first slice is where you could expect to see well-hidden latent failures develop and begin to make their way through the slices of cheese. Toward the end of the model is often where active failures occur that contribute directly to the accident. One important part of the layers of Swiss Cheese is the location and size of the holes within the cheese. As I previously stated, holes represent the failure within a layer of defense. The location of the hole represents where within the that defense a probability for failure has arose, regardless of size. The size of the hole represents how probable it is that a failure will progress through that layer of defense. The more layers and the fewer/smaller the holes, the less the probable it will be that an accident occurs.

3. Describe how the SCM might be used as an accident investigation tool.

The SCM might be used as an accident investigation tool to determine where latent failures lie within a system and how a series of defenses failed. Given that latent failures are hard to detect, the SCM is a model which can help identify where those failures lay dormant. This allows organizations to develop countermeasure against such failures. As stated, many times in class, the probability of a single point failure is almost impossible. So, the SCM could identify how far back a chain of failures, both active and latent, goes. An important feature of the SCM is identifying what layers of defenses are in place within a system to prevent accidents from occurring. However, if this model is used after an accident has occurred, it is vital that it be identified how and why the layers of defenses failed in their respect.

Example 2.

1. Describe the concept behind James Reason's Swiss Cheese Model

● The concept is that a single failure does not cause an accident. Whether it be human or technical, there can be hundreds of other lings that led up to the accident. The model's goal is to indicate the hole and potential for accidents within layer of an organization and how these holes lined up to form an accident through both latent and active errors.

2. Describe the concept of layering associated with the SCM.

● Each layer is a defense, barrier, or safeguard. Each layer can have some holes in it where if each layer's holes or deficiencies line up, an accident will occur. A problem with this is that the layers are not static and consistent nor are they independent of each other.

3. Describe how the SCM might be used as an accident investigation tool.

● The way it can be used as a tool for accident investigation is because the SCM observes layers of the operation or in other words, multiple levels. By observing layers and identifying active and latent errors, once is able to understand how these problems can lead to severe accidents or disasters. It analyzes hazard locations and potential for interventions.

4. Describe the meaning of "preconditions" in the context of the SCM.

● A precondition are unsafe acts is how it is described. These preconditions can be a multitude of things such as poor training or design flaws in machinery or procedures. These preconditions are part of what leads to accidents.

5. Differentiate between active and latent failures.

Active

Latent

Actively happen - occurs at a point of contact
usually between a Human and Machine

Are problems in the system that are dormant
until the right conditions are met

Occur at the frontline by a operator

Occur long before it reaches the operator - a
design flaw

Addressing incident can prevent single
accident

Addressing problem will prevent problems
and accident by the organization over

Errors at sharp end

Errors at blunt end

Example 3.

1. Describe the concept behind James Reason's Swiss Cheese Model

The concept behind Reason's Swiss Cheese Model is that accidents in complex systems occur from multiple factors and failures, not just one singular incident. In Reason's model, these factors and failures or "holes" in the cheese must perfectly align for an accident to take place.

2. Describe the concept of layering associated with the SCM.

Each "slice" or layer of cheese in the model represents a barrier, defense, or safeguard in a system that are intended to prevent an accident from occurring. All of an organization's "slices" are layered because all are key factors in an accident. These "slices" or layers outlined by Reason include organizational factors, unsafe supervision, preconditions for unsafe acts, and the unsafe acts that may have been performed. The layers themselves are not static or constant and they are independent of one another. The mistakes made by each category of "slice" are represented by holes in the layer.

3. Describe how the SCM might be used as an accident investigation tool.

The Swiss Cheese Model acts as a framework for accident investigations and aids in analyzing hazard locations and the potential for intervention in each part of an organizations safeguards. It is also beneficial at showing there is no one point failure in an organizations infrastructure and helps allocate where these mistakes are being made.

4. Describe the meaning of "preconditions" in the context of the SCM.

In the Swiss Cheese Model, "preconditions" are defined as the substandard practices or ideas the company may have in place. For example, in the Uberlingen accident, a precondition would be the idea that the ATC facility had a bedroom on site and was commonly used during the night by controllers, even though they technically were not supposed to be sleeping on the premises. These "preconditions" may also include reliable equipment, a skilled workforce, or a motivated workforce.

5. Differentiate between active and latent failures.

Active failures in a complex system are referred to as the "sharp end." These failures are generally the point of contact between a person and a part of a larger system. They are generally readily apparent and often involve someone on the front line, and are the failures noticed first when examining an accident. Contrarily, latent failures are referred to as the "blunt end." They may occur much more distant from the accident itself in space and time (i.e. the American Airlines 191 accident). They generally occur from the decisions or actions above the operator and are found after the accident has occurred.

Course Assessment Form

Course: ASCI 3020 Jet Transport Systems II
Semester Taught: Spring 2021
Number of Students in Course: 28

Student Learning Outcome Assessed	Assessment Results: (Indicate what % of class achieved a minimum 70%)	Benchmark achieved? (Benchmark: 80% of students will score a minimum of 70% = "C")
H. Use the techniques, skills, and modern technology necessary for professional practice.	Test #1 Question 49 – 96.43% Test #1 Question 50 – 96.43% Test #2 Question 20 – 92.86% Test #2 Question 29 – 96.43% Test #3 Question 34 – 96.43% Test #3 Question 35 – 92.86% Final Exam Question 4 – 82.29% Final Exam Question 38 – 100%	Embedded test questions to analyze the students' ability to use the techniques, skills, and modern technology necessary for professional practice yielded an average of 94.22%, achieving the benchmark.
J. Apply pertinent knowledge in identifying and solving problems.	Test #1 Question 20 – 92.86% Test #1 Question 23 – 92.86% Test #2 Question 32 – 100% Test #3 Question 18 – 100% Test # 3 Question 28 – 100% Final Exam Question 33 – 82.15%	Embedded test questions to analyze the students' ability to use the techniques, skills, and modern technology necessary for professional practice yielded an average of 94.65%, achieving the benchmark.

Course Assessment (Intended Use of Results)
The following will be used for recommendations to improve the quality of course delivery based on assessment results. These recommendations may include prerequisite change; changing course outline and adding more topics; adding a third assessment; changing the course sequence, etc.

- Student Learning Outcome H: Recommendation is to continue the current methods of presenting the course materials to the class.
- Student Learning Outcome J: Recommendation is to continue the current methods of presenting the course materials to the class.

**Attach description of assignment used for assessment and samples of student work.*

ASCI 3200 Jet Transport Systems II – Spring 2021

1. Column

   ASCI 3020 Test 1 Spring 2021 (Test)
2. Points Possible

   104
3. Description

STATISTICS

Count	28
Minimum Value	60.00
Maximum Value	104.00
Range	44.00
Average	91.42857
Median	92.00
Standard Deviation	8.66614
Variance	75.10204

STATUS DISTRIBUTION

Null	0
In Progress	0
Needs Grading	0
Exempt	0

GRADE DISTRIBUTION

Greater than 100	0
90 - 100	11
80 - 89	13
70 - 79	3
60 - 69	0
50 - 59	1
40 - 49	0
30 - 39	0
20 - 29	0
10 - 19	0
0 - 9	0
Less than 0	0

ASCI 3020 Jet Transport Systems II – Test 1 **DO NOT MARK ON THIS TEST**

Multiple choice questions: Place the letter of your answer on the answer sheet. The Extra Credit problem and a blank sheet of paper to be used for any calculations are attached to the answer sheet.

1. The output of a simple, basic generator before commutation is:

   A. AC.
   B. DC.
   C. Synchronized AC and DC.

2. The name for the component containing a number of wires rotating through a magnetic field is:

   A. A capacitor.
   B. An armature.
   C. A commutator.

3. The type of electricity generated by an alternator of a typical small, general aviation aircraft is:

   A. DC inverted to AC.
   B. AC rectified to DC.
   C. Three phase AC.

4. In an aircraft having a battery with a nominal voltage of 24v, the generator output would be:

   A. 12v.
   B. 115v.
   C. 28v.

5. In a constant frequency AC supply system, the frequency is determined by:

   A. The generator's drive speed and the number of poles.
   B. The engine's drive speed.
   C. The voltage produced in the generator circuit.

6. The frequency of an AC supply is rated in units of:

   A. Cycles or Hertz.
   B. Watts.
   C. Cycles/minute.

7. The sine wave showing the voltage output of an AC generator will rise to a maximum value:

   A. In one direction, fall to zero and rise in the same direction.
   B. In one direction and remain at a constant value.
   C. In one direction, fall to zero and rise to a maximum value in the opposite direction.

8. A 400 Hz AC electrical supply has:

   A. A frequency of 400 cycles per hour.
   B. A frequency of 400 cycles per minute.
   C. A frequency of 400 cycles per second.

9. The basic unit of inductance is:

   A. The Henry.
   B. The Farad.
   C. The Ohm.

10. The basic unit of capacitance is:

   A. The Henry.
   B. The Farad.
   C. The Ohm.

11. Transferring electrical energy by means of rotating a conductor through a magnetic field is referred to as:

   A. Electromagnetic polarization.
   B. Electromagnetic induction.
   C. Electromagnetic amplification.

12. The moving part of a simple DC generator typically used on small aircraft is:

   A. The stator.
   B. The armature or rotor.
   C. The voltage regulator.

13. An alternator normally used to supply a transport category aircraft's electrical power system would be:

   A. A single phase AC generator.
   B. A three phase AC generator.
   C. A frequency wild generator

14. The type of alternator that is almost universally used in transport category aircraft electrical systems is:

    A. Rotating armature alternator.
    B. Rotating field alternator.
    C. Rotating exciter alternator.

15. A voltage regulator can change the AC generator's output voltage by:

    A. Increasing the battery voltage in the DC electrical system.
    B. Measuring the impedance of the AC circuits in the aircraft.
    C. Varying the strength of excitation circuit in the AC generator.

16. A component used in a brushless alternator to provide current for the main generator's rotating field is the:

    A. Voltage regulator.
    B. Exciter generator.
    C. 28V DC bus bar.

17. A frequency wild generator produces AC electrical power that varies when:

    A. The rotational speed of the generator varies.
    B. A transformer winding has an open circuit.
    C. The voltage regulator is malfunctioning.

18. A frequency wild generator system:

    A. Is the main type of generator used to generate the AC electrical power required by a transport category aircraft.
    B. Can be used to generate the AC electrical power required by the transport category aircraft if the electricity being generated is first converted to DC by with a transformer rectifier unit (TRU) and then converted to 115V, 400 Hz AC by an inverter.
    C. Is never used in the AC electric systems of small, general aviation aircraft.

19. The component used to maintain a constant AC generator speed, regardless of engine speed, is:

    A. The static inverter.
    B. The constant speed drive (CSD) unit.
    C. The generator control unit (GCU).

20. Malfunction of an alternator's constant speed drive (CSD) unit requires:

    A. Continued use of the unit at any time in flight despite the malfunction.
    B. Turning OFF the generator connected to the CSD.
    C. Operation of the drive disconnect switch at any time during ground or flight operations to disconnect the drive from the engine to the CSD.

21. Indication of a CSD unit oil overheat condition is given in the cockpit by:

    A. An automatic CSD switching the system to an "OFF" position.
    B. A "high oil pressure" warning light.
    C. An indication on a temperature gauge or a warning light illuminating.

22. the unit that is comprised of an AC generator and a CSD unit combined into one assembly that is attached to the engine is known as:

    A. The integrated drive generator (IDG).
    B. The variable speed constant frequency (VSCF) unit.
    C. The generator control relay (GCR) unit.

23. If the CSD unit's drive disconnect has been used, the drive can:

    A. Only be reconnected by maintenance personnel when the aircraft is on the ground.
    B. Be reconnected from the flight deck.
    C. Be reconnected when necessary by using the ram air turbine (RAT).

24. The generator control unit (GCU) maintains a constant voltage as the electrical load varies by:

    A. Controlling the DC battery voltage.
    B. Controlling the current in the stator circuit.
    C. Controlling the generator's excitation circuit.

25. In a constant speed parallel operation AC generator system:

    A. All AC generators are driven at the same speed by one CSD unit.
    B. All AC generators are driven by the same engine at the same speed.
    C. Each AC generator is driven at the same speed as the other AC generators by its own CSD unit.

26. For modern transport category aircraft powered by an AC electrical system, the AC ground power unit must supply the aircraft with:

    A. 28V AC only.
    B. 200V AC only.
    C. 115V/200V, three phase, 400 Hz AC electrical power.

27. The purpose of an inverter is:

    A. To change AC into DC.
    B. To change DC into AC.
    C. To act as a backup for the AC generator.

28. The component used to supply electrical power to vital systems in the event of a failure of both main and auxiliary electrical power systems is:

    A. The inverter.
    B. The battery transformer.
    C. The ram air turbine (RAT).

29. The primary source of AC electrical power on the CRJ700 during normal operation is/are:

    A. The integrated drive generators (IDGs).
    B. The air driven generator (ADG).
    C. A source of AC ground power.

30. A source of AC power for the CRJ700 when an engine-driven generators are inoperative or when the aircraft is on the ground with the engines off is:

    A. The inverter unit.
    B. The transformer rectifier unit (TRU).
    C. The auxiliary power unit (APU).

31. To operate and monitor the operation of the engine driven AC generators while in-flight, the CRJ700 flight crew uses:

    A. The auxiliary power unit (APU) control panel.
    B. The ELECTRICAL POWER SERVICES control panel.
    C. The copilot's circuit breaker panel.

32. The name of the main electrical buses installed in the CRJ700 is/are:

    A. AC BUS 1 and AC BUS 2.
    B. AC UTILITY BUS 1 and 2.
    C. AC SERV BUS.

33. The CRJ700 AC electrical bus or busses that can be used supply electrical power to the AC ESS BUS for flight is/are:

    A. AC BUS 1 and AC BUS 2.
    B. TRU BUS 1.
    C. AC SERV BUS.

34. AC-powered electrical services connected to which CRJ700 electrical bus might be shed in the event of an engine driven generator failure?

A. The essential bus.
B. Both main buses.
C. The service bus.

35. The unit used to provide emergency AC electrical power in the event that AC electrical power generating devices such as the Integrated Drive Generators (IDGs) and the auxiliary power unit (APU) are inoperable in the CRJ700 is:

A. The main battery.
B. The transformer rectifier unit.
C. The air driven generator (ADG).

36. The unit used to supply emergency DC power in-flight to the DC Essential Bus should all AC power be lost and the TRUs are not serviceable in a CRJ 700 is:

A. The Main Battery power distribution system.
B. The DC battery charger located in the aft equipment bay.
C. An external DC power source.

37. The CRJ700 flight crew is alerted to the connection of external AC electrical power to the aircraft while on the ground by:

A. The “FAULT” portion of IDG switchlights located on the ELECTRICAL POWER SERVICES control panel illuminating.
B. The “AVAIL” portion of the AC EXT PWR switchlight located on the ELECTRICAL POWER SERVICES control panel illuminating.
C. The “AC ESS XFR” switchlight located on the external service panel illuminating.

38. What is the primary source of DC electrical power on the CRJ700 during normal operation?

A. Inverter unit.
B. Transformer rectifier unit powered from the AC electrical busses.
C. A source of DC ground power.

39. The alpha range of a variable pitch propeller is between:

A. The feather and flight low (fine) pitch positions.
B. The feather and ground low (fine) pitch positions.
C. The flight low (fine) pitch and reverse pitch positions.

40. The beta range of a variable pitch propeller is between:

    A. The feather and flight low (fine) pitch positions.
    B. The feather and ground low (fine) pitch positions.
    C. The flight low (fine) pitch and reverse pitch positions.

41. What is used to move the blades to the feather position in a propeller installed on a turboprop engine?

    A. Propeller governor oil pressure.
    B. Spring force and a compressed nitrogen pressure.
    C. Beta valve oil pressure.

42. Which turboprop power lever cockpit setting is used to allow the flight crew to be able to slow down the aircraft during the landing roll to reduce aircraft brake wear?

    A. Flight idle range.
    B. Alpha range.
    C. Beta Reverse range.

43. With the turboprop power lever in the reverse pitch position the Beta valve:

    A. Opens further to increase use engine oil pressure to supplement the governor oil pressure being sent to the propeller dome, moving the propeller blades towards a negative blade angle.
    B. Opens further to decrease the oil pressure in the propeller dome, moving the propeller blades towards a positive blade angle.
    C. Closes fully to allow the primary governor to supply the oil pressure necessary to move the propeller blades towards a negative blade angle.

44. Which of the following power lever and propeller lever positions will allow the aircraft to be taxied with the propeller creating a minimum amount of thrust?

    A. Power levers in Beta range, propeller controls full back (feather).
    B. Power levers in Beta range, propeller controls in a mid-range position.
    C. Power levers in Beta range Ground Idle, propeller controls full forward (max RPM).

45. When the power lever of a turboprop aircraft is in the Beta Reverse range, the power lever controls:

    A. The propeller’s pitch only.
    B. The engine’s torque (power) output only.
    C. The engine’s torque (power) output and the propeller’s pitch.

46. Towards which direction will the blades of a turboprop propeller move if the propeller rpm becomes lower than the value pre-determined by the flight crew (underspeed condition)?

A. The propeller blade pitch does not change in this situation.
B. The propeller blade pitch will move to a lower blade angle to increase the propeller rpm back to the pre-determined value.
C. The propeller blade pitch will move to a higher blade angle to increase the propeller rpm back to the pre-determined value.

47. What is the frequency of a generator with 4 poles running at 12,000 rpm?

A. 400 Hz.
B. 200 Hz.
C. 800 Hz.

$$F = \frac{P}{2} \times \frac{N}{60} = \frac{PN}{120}$$

48. What is the line voltage of a three-phase star connected generator that has a phase voltage of 115V? Round your answer to the nearest 100^{th}.

A. 200V.
B. 100V.
C. 400V.

LINE VOLTAGE = 1.73 x PHASE VOLTAGE

49. Refer to Figure 1. Based on the power and propeller lever positions shown in Figure 1, the reversing propeller is in which range of operation?

A. The Alpha range
B. The Beta Ground Idle range.
C. The Beta full reverse pitch range.

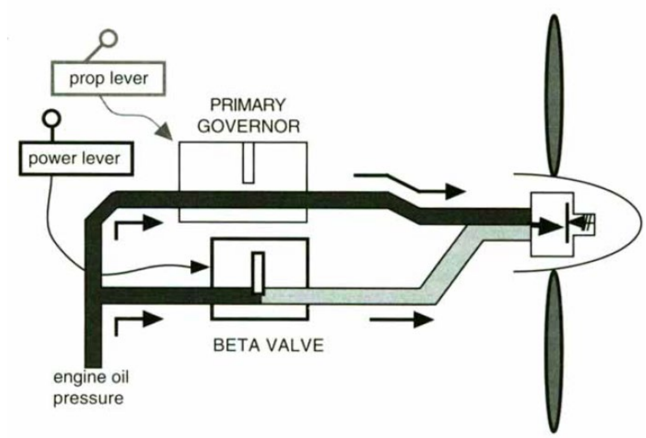


Figure 1

50. Refer to Figure 2. Based on the power and propeller lever positions shown in Figure 2, the reversing propeller is in which range of operation?

    A. The Alpha range
    B. The Beta Ground Idle range.
    C. The Beta full reverse pitch range.

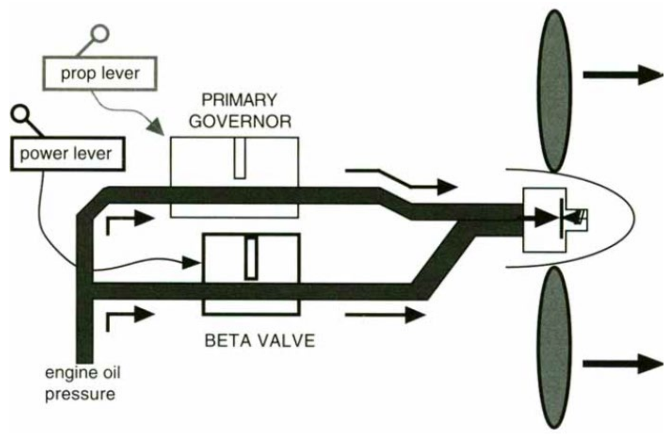
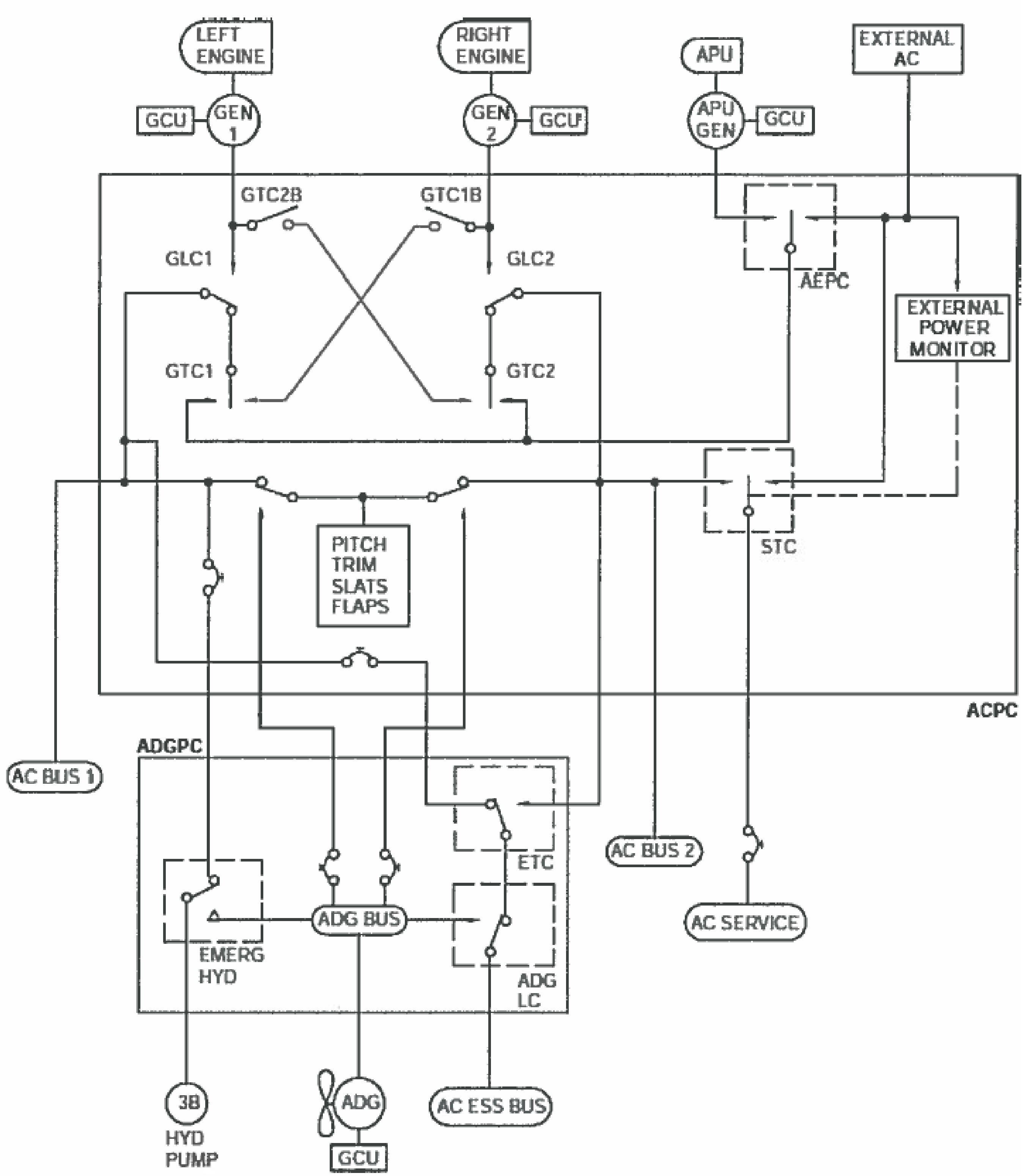


Figure 2

EXTRA CREDIT - up to 5 points

Using the CRJ700 AC electrical system schematic attached to your answer sheet, show the flow of AC electrical power to the correct bus bars if the aircraft is operating normally in flight, when it suddenly has a ***GEN 2 failure and the APU has not yet been turned on and made available for use***.


LEFT ENGINE
RIGHT ENGINE
APU
EXTERNAL AC
GCU
GEN 1
GEN 2
GCU
APU GEN
GCU
GTC2B
GTC1B
GLC1
GLC2
AEPC
EXTERNAL POWER MONITOR
GTC1
GTC2
PITCH TRIM SLATS FLAPS
STC
ACPC
ADGPC
AC BUS 1
ETC
AC BUS 2
EMERG HYD
ADG BUS
ADG LC
AC SERVICE
3B
HYD PUMP
ADG
GCU
AC ESS BUS

1. Column

   ASCI 3020 Spring 2021 Test 2 (Test)

2. Points Possible

   104

3. Description

STATISTICS

Count	28
Minimum Value	69.50
Maximum Value	104.00
Range	34.50
Average	94.83928
Median	97.00
Standard Deviation	7.58764
Variance	57.57238

STATUS DISTRIBUTION

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In Progress	0
Needs Grading	0
Exempt	0

GRADE DISTRIBUTION

Greater than 100	0
90 - 100	18
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70 - 79	1
60 - 69	1
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40 - 49	0
30 - 39	0
20 - 29	0
10 - 19	0
0 - 9	0
Less than 0	0

ASCI 3020 Jet Transport Systems II - Test 2 DO NOT MARK ON THIS TEST

Multiple choice questions: Place your answer on the answer sheet. Use the back of the answer sheet if you need to for any calculations.

1. The gas turbine engine uses the principles of:

   A. Newton's Third Law of Motion.
   B. Creating thrust equal to the weight of the aircraft.
   C. Expelling air at the same speed as that of the aircraft.

2. A pure turbojet engine provides:

   A. A small acceleration to a large mass of air.
   B. A large acceleration to a large mass of air.
   C. A large acceleration to a small mass of air.

3. In a turbojet engine, the "acceleration of a mass of air by the engine is the action, while forward movement is the reaction" is derived from which of the following?

   A. Boyles' Law.
   B. Newton's Third Law of Motion.
   C. Ohm's Law.

4. During the Brayton Cycle, combustion takes place:

   A. Once every two revolutions of the compressor rotor.
   B. Continuously.
   C. Once every two revolutions of the turbine disc.

5. The effect on air flowing through a divergent duct is:

   A. Pressure decreases and temperature and velocity increase.
   B. Pressure, temperature and velocity all increase.
   C. Pressure and temperature increase and velocity decreases.

6. The effect of air flowing through a convergent duct is:

   A. Velocity increases and pressure and temperature decrease.
   B. Velocity, pressure and temperature all decrease.
   C. Velocity and pressure increase and temperature decreases.

7. In which section of the turbine engine is fuel mixed with the compressor air and ignited?

   A. The compressor section.
   B. The turbine section.
   C. The combustion section.

8. The highest pressure in a gas turbine engine occurs:

   A. Between the compressor and the combustion chamber.
   B. At the outlet of the combustion chamber.
   C. In the jet pipe.

9. The addition of heat in the combustion chamber allows a:

   A. Large expansion of the volume of air with a large decrease in the pressure of the air.
   B. Large expansion of both the volume and pressure of the air.
   C. Large expansion of the volume of air with a relatively constant air pressure.

10. Which section of a turbine engine determines the amount of heat, and therefore the amount of thrust that can be developed by the engine?

    A. The inlet section.
    B. The combustion section.
    C. The exhaust section.

11. Which component of a turboprop reverse-flow engine is used to drive the propeller reduction gear assembly and the propeller shaft?

    A. The compressor turbine.
    B. The free or power turbine.
    C. Neither of the above.

12. Which type of gas turbine engine is typically used for the auxiliary power unit (APU) used in most of today's commercial aircraft?

    A. Turboprop engine.
    B. Turbojet engine.
    C. Turboshaft engine.

13. In a bypass engine, the bypass air:

    A. Increases the mass air flow and therefore increases propulsive efficiency.
    B. Reduces the mass air flow and therefore increases propulsive efficiency.
    C. Increases the mass air flow and therefore decreases propulsive efficiency.

14. The bypass ratio of a turbofan engine is the ratio of:

    A. Primary air to tertiary air.
    B. Cold stream air flowing around the core of the engine to the hot stream air flowing through the core of the engine.
    C. Exhaust gas pressure to intake air pressure.

15. The majority of thrust of a turbofan engine comes from:

    A. The gases flowing out of the exhaust.
    B. The mass of air flowing through the turbine section of the engine.
    C. The bypass air created by the fan assembly.

16. A bypass ratio of 5:1 means that:

    A. 5 pounds of air is bypassed for every 10 pounds entering the engine intake.
    B. 5 pounds of air is bypassed for every 1 pound of air that goes through the hot core of the engine.
    C. 1 pound of air is bypassed for every 5 pounds of air that goes through the hot core of the engine.

17. The fan in a ducted fan engine is driven by:

    A. The high pressure turbine.
    B. The intermediate pressure turbine.
    C. The low pressure turbine.

18. What is used to drive the high-pressure compressor in the General Electric CF34-8C5 used in the CRJ700 aircraft?

    A. The low-pressure turbine discs.
    B. The high-pressure turbine disc.
    C. The medium-pressure turbine disc.

19. What is the term used to describe the output of a turbine engine?

    A. Thrust.
    B. Power.
    C. Torque.

20. Refer to Figure 1. Which of the types of engines listed in Figure 1 has the most propulsive efficiency if used on an aircraft designed to fly at 350 MPH?

    A. Turboprop engine.
    B. High bypass turbine engine.
    C. Low bypass turbine engine.

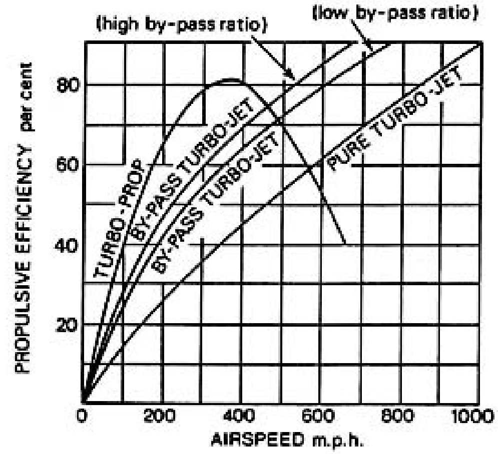


Figure 1

21. The energy used to drive the compressor assembly of a reverse-flow turboprop engine is derived from the:

    A. Power (or free) turbine.
    B. Compressor turbine.
    C. The propeller reduction gear assembly.

22. What term is used to describe when a normal light-off occurs in a turbine engine but the engine fails to reach its rated idle rpm?

    A. Hot start.
    B. Wet start.
    C. Hung start.

23. What is the term used to describe the amount of time a turbine engine needs to respond to changes in power lever settings?

A. Lag time.
B. Spool up time.
C. Power up time.

24. Using the formula below, determine the thrust produced by a turbojet engine installed on an aircraft that is flying at 600 mph (880 ft/sec), moves 65 pounds of air per second and produces an exhaust velocity of 1,400 ft/sec.

A. 1,049.6 pounds.
B. 2,826.1 pounds.
C. 4,602.5 pounds.

Formula: $$F = \frac{M(V_2 - V_1)}{g}$$

M = mass airflow through the engine
V_2 – air velocity at the exhaust
V_1 = forward velocity of the aircraft
G = acceleration of gravity (32.2 ft/sec^2)

25. The term "ram pressure recovery" refers to the time when:

A. EPR has attained the takeoff setting.
B. The high-pressure compressor has reached its maximum amount.
C. The intake pressure has been re-established to ambient pressure.

26. The purpose of the turbine engine air inlet is to provide a relatively…….. supply of air to the……..of the……..compressor.

A. Turbulent free……..face……..low pressure.
B. Turbulent free……..rear……..low pressure.
C. Turbulent free……..face……..high pressure.

27. The term used to describe how an increase in thrust is obtained due to more air being forced into the gas turbine engine as aircraft speed increases is:

A. Ram pressure recovery.
B. Ram effect.
C. Ram stabilization.

28. As the aircraft moves, the pressure in the inlet starts to rise and the point at which the pressure equals atmospheric is known as the:

A. Ram effect.
B. Velocity effect.
C. Ram pressure recovery.

29. Refer to Figure 2. What is the shape of the inlet of a sub-sonic air inlet as shown in Figure 2?

A. Convergent.
B. Divergent.
C. Divergent-convergent.

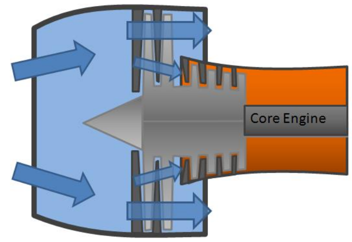


Figure 2

30. The shape of a typical air inlet on a supersonic aircraft is:

A. Convergent-divergent in shape.
B. Divergent-convergent in shape.
C. Convergent in shape.

31. True or False: The intake of a supersonic aircraft must be able to reduce the velocity of the inlet air below sonic velocity because the compressor cannot cope with supersonic airflow.

32. During which phase of operation is a turbine engine most susceptible to foreign object damage?

A. Cruise.
B. Approach.
C. Whenever on the ground.

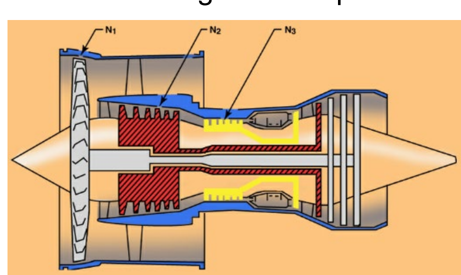
33. In-flight air turbulence can cause which of the following to occur in a turbine engine?

A. Stall.
B. Surge.
C. Flame-out.

<u>EXTRA CREDIT</u> - up to 3 points

Write your answer on the reverse side of the answer sheet.

Refer to the figure. Describe the two airflow paths created during normal operation of a high-bypass turbofan engine.



1. Column

   ASCI 3020 Test 3 Spring 2021 (Test)
2. Points Possible

   104
3. Description

STATISTICS

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Minimum Value	66.00
Maximum Value	102.00
Range	36.00
Average	93.25
Median	94.00
Standard Deviation	7.28807
Variance	53.11607

STATUS DISTRIBUTION

Null	0
In Progress	0
Needs Grading	0
Exempt	0

GRADE DISTRIBUTION

Greater than 100	0
90 - 100	15
80 - 89	12
70 - 79	0
60 - 69	1
50 - 59	0
40 - 49	0
30 - 39	0
20 - 29	0
10 - 19	0
0 - 9	0
Less than 0	0

ASCI 3020 Jet Transport Systems II – Test 3 Spring 2021

1. Blade creep in a turbine disc is:

   A. Movement of the turbine blades around the engine.
   B. Temporary expansion of the turbine blades due to temperature change.
   C. Permanent elongation of the turbine blades due to heat and centrifugal force.

2. Nozzle guide vanes are fitted before the turbine:

   A. To increase the velocity of the airflow.
   B. To decrease the velocity of the airflow, therefore increasing its pressure.
   C. To increase the velocity of the airflow, therefore decreasing its pressure.

3. Which type of turbine uses the change in the direction of airflow through the turbine blades to cause movement of the turbine blade disk?

   A. The impulse turbine blade.
   B. The reaction turbine blade.
   C. The combination impulse-reaction turbine blade.

4. Which type of turbine uses an aerodynamic lifting force caused by the airflow through the turbine blades to cause movement of the turbine blade disk?

   A. The impulse turbine blade.
   B. The reaction turbine blade.
   D. The combination impulse-reaction turbine blade.

5. The velocity of the exhaust gases in the exhaust unit of a typical turbojet engine is held to:

   A. 0.5 Mach to minimize turbulence.
   B. 0.85 Mach to maximize thrust.
   C. Mach 1 to maximize acceleration.

6. The purpose of the exhaust cone is to:

   A. Channel and direct the gases into a single jet stream.
   B. Decrease the velocity and decrease the temperature of the gases.
   C. Prevent the gases from reversing their flow back into the turbine section.

7. The propelling exhaust nozzle is designed to increase thrust by:

   A. Increasing the velocity and decreasing the pressure of the gas stream.
   B. Decreasing the velocity and the pressure of the gas stream.
   C. Increasing the velocity and the pressure of the gas stream.

8. A “choked” nozzle:

   A. Is used to decrease the engine’s thrust output.
   B. Has no effect on the engine’s thrust output.
   C. Implies that no further increase in velocity of the gas stream can be obtained without the increase of heat.

9. Due to the diverging shape of between the outer duct and the inner cone of the exhaust cone:

   A. The velocity of the air mass increases and its pressure decreases.
   B. The velocity of the air mass decreases and its pressure increases.
   C. The velocity of the air mass and its pressure both decrease.

10. The convergent shape of the exhaust nozzle is designed to:

    A. Decrease the velocity and pressure of the gas stream.
    B. Increase the velocity and the pressure of the gas stream.
    C. Increase the velocity and decrease the pressure of the gas stream.

11. The purpose of the turbine engine rear support struts is to:

    A. Add swirl to the gases before they travel down the tailpipe.
    B. Allow entry of the bypass air into the exhaust gas stream.
    C. Straighten out any residual swirl in the gas stream before they travel down the tailpipe.

12. The purpose of the divergent section of a convergent-divergent exhaust nozzle used on a supersonic aircraft is to:

    A. Increase the thrust output of the engine by increasing the velocity of the exhaust gas stream to supersonic speeds.
    B. Decrease the thrust output of the engine by decreasing the velocity of the exhaust gas stream to subsonic speeds.
    C. To maintain the thrust output of the engine by maintaining the velocity of the exhaust gas stream at Mach1 sonic speed.

13. The jet pipe is insulated from the airframe by:

    A. Heat insulation materials only.
    B. A cooling air supply only.
    C. A combination of heat insulation materials and a cooling air supply.

14. Some high-bypass turbofan engines utilize an integrated exhaust nozzle that:

    A. Separates the hot and cold air mass streams as they exit the engine.
    B. Mix the hot and cold air mass streams internally before they exit the engine.
    C. Only allow the cold air mass stream to exit the engine.

15. Oil seals used in gas turbine engines are pressurized with compressor bleed air to:

    A. Ensure oil is forced into the bearings.
    B. Ensure a minimum oil loss in the lubrication system.
    C. Minimize the amount of heat loss in the bearing housing.

16. The main bearings in an axial flow gas turbine engine are normally pressurized by:

    A. A source of air taken from the turbofan bypass air.
    B. The compressor’s bleed air.
    C. Gases flowing past the second stage turbine disk.

17. A modern turbofan engine utilizes which type of oil cooler as the main unit and which type to supplement the main unit when needed?

    A. The air-cooled oil cooler is the main unit supplemented by the fuel cooled oil cooler.
    B. The fuel cooled oil cooler is the main unit supplemented by the air-cooled oil cooler.
    C. An air-cooled oil cooler is the main unit supplemented by a second air cooled oil cooler.

18. Magnetic chip detectors are fitted in the engine:

    D. To facilitate early detection of cracks in the compressor blades.
    E. To facilitate early detection of a failing turbine blade.
    F. To collect wear debris and provide a warning of impending failure in the engine bearings.

19. What type of lubrication (oil) do gas turbine engines use in their lubrication system?

    A. Mineral oil with additives (compound).
    B. Ashless dispersant multi-grade oil 20/W/50 oil.
    C. Synthetic oil.

20. After shutting down a turbine engine it noted that the engine’s rundown time is short, which could be an indication of:

    A. Compressor blades rubbing on the compressor casing.
    B. Incorrect pressure relief valve setting.
    C. A bearing chamber labyrinth seal rubbing causing the engine to rundown quicker.

21. The main difference between the turbine engine pressure relief valve lubrication system and the full flow lubrication system is:

    A. The pressure relief valve is adjustable in the pressure relief valve lubrication system but is not adjustable in the full flow lubrication system.
    B. The full flow lubrication system does not use oil filters in the system.
    C. The full flow lubrication system does not incorporate a pressure relief valve in the system.

22. A gas turbine engine’s oil pressure is measured:

    A. In the oil return line to the oil reservoir.
    B. In the FCOC to ensure that oil pressure is always above fuel pressure.
    C. After the oil pressure pump.

23. For a pressure relief valve lubricating system, select the correct statement:

    A. The oil flow and pressure will change with engine speed.
    B. The pressure relief valve is fitted in series with the oil pressure pump.
    C. Once the proper oil pressure has been attained, the pressure will remain the same for all operating parameters.

24. In a gas turbine engine, the oil temperature is measured:

    A. After it leaves the engine’s oil cooler and before it re-enters the engine.
    B. After it leaves the engine and before it enters the engine’s oil cooler.
    C. Anywhere within the engine.

25. The purpose of an oil filter in a gas turbine engine is to:

    A. Minimize oil pressure loss.
    B. Remove solid particles that are suspended in the oil.
    C. Maximize oil pressure.

26. Gas turbine oil reservoirs are pressurized to:

    A. Prevent oil pump cavitation.
    B. Minimize oil pressure loss.
    C. Aid the engine oil pressure pump in pressurizing the oil.

27. The Engine Oil Level Replenishment System in the CRJ700 is used to:

    A. Maintain the oil quantity in the engine tanks during flight.
    B. Recover the oil that has flowed to the low spots of the engines and return it to the respective nacelle tank.
    C. Allow ground personnel to remotely fill the nacelle tanks from a replenishment tank located in the aft equipment bay.

28. If the oil pressure in an engine installed in the CRJ700 drops below 25 PSI, the messages provided to alert the flight crew of the problem are:

    A. A red “Oil Pressure” warning message appears on the EICAS primary page and the “ENGINE OIL” audio alert is sounded.
    B. A yellow “Oil Pressure” caution message appears on the EICAS primary page and the “ENGINE OIL” audio alert is sounded.
    C. A white “Oil Pressure” warning message appears on the EICAS status page.

29. An Engine Pressure Ratio (EPR) gauge measures:

    A. The turbine inlet pressure to the turbine outlet pressure.
    B. The engine inlet pressure to the engine outlet pressure.
    C. The compressor inlet to compressor outlet pressure.

30. The gas turbine engine power setting that can be used at the discretion of the pilot for unusual or emergency situations is referred to as:

    A. Takeoff power.
    B. Maximum continuous power.
    C. Maximum climb power.

31. The gas turbine engine power setting that is the lowest allowable engine speed in flight that is usually used for descent, approach and landing is referred to as:

    A. Maximum continuous power.
    B. Minimum continuous power.
    C. Flight idle power.

32. The Equivalent Shaft Horsepower (ESHP) of a turboprop engine is calculated as:

A. ESHP = Shaft horsepower (SHP) + jet thrust.
B. ESHP = Shaft horsepower (SHP) – jet thrust.
C. ESHP = Shaft horsepower x jet thrust.

33. The specific fuel consumption (SFC) of an engine is an indication of:

A. The number of gallons of fuel burned in an hour to produce one horsepower.
B. The number of pounds of fuel burned in an hour to produce 100% thrust power.
C. The number of pounds of fuel burned in an hour to produce one horsepower.

34. Refer to Figure 1. As forward airspeed of the aircraft increases, the velocity effect on a gas turbine engine causes:

A. A decrease in the airmass being produced by the engine resulting in less thrust.
B. An increase in the airmass being produced by the engine resulting in more thrust.
C. No change in the airmass being produced by the engine and no change in thrust.

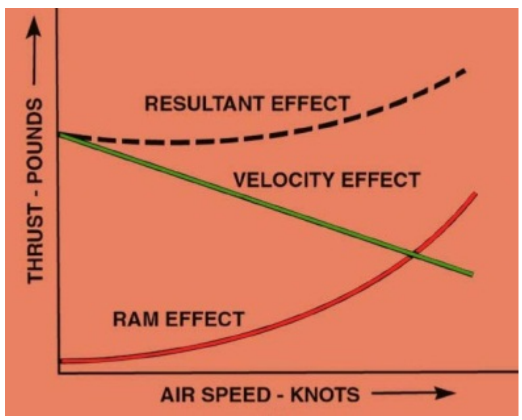

Figure 1

35. Refer to Figure 1. As forward airspeed of the aircraft increases, the ram effect on a gas turbine engine causes:

A. A decrease in the airmass being produced by the engine resulting in less thrust.
B. An increase in the airmass being produced by the engine resulting in more thrust.
C. No change in the airmass being produced by the engine and no change in thrust.

36. Refer to Figure 1. The resultant effect or the ram recovery of the gas turbine engine installed on an aircraft that is increasing its airspeed results in:

A. A slight decrease in thrust.
B. No change in thrust.
C. A slight increase in thrust.

37. A decrease in the ambient air temperature entering a gas turbine engine will cause:

A. A decrease in engine efficiency.
B. An increase in engine efficiency.
C. No change in engine efficiency.

38. When using the after-burner system, the size of the exhaust nozzle will:

A. Decrease to a smaller opening to allow for the decreased volume of air.
B. Remain the same regardless of the volume of air.
C. Increase to a larger opening to prevent the flow of exhaust gasses from becoming choked and causing a rise in turbine temperature.

39. When a water/methanol mixture is injected into an engine, the mix:

A. Causes a power decrease due to the decreased air mass.
B. Causes a power increase due to the burning of the methanol increasing the temperature of the gas stream.
C. Causes a power decrease due to the increased fuel consumption required when using water injection.

40. When methanol is mixed with water to supply a water injection system:

A. It is being used only as an anti-freeze to prevent the water in the water injection tank from freezing.
B. It is being used only as a source of fuel to aid in reducing the engine’s specific fuel consumption.
C. It is being used as both a source of fuel to prevent the cooling effect that water has on the gas stream and as an anti-freeze to prevent the water from freezing.

41. Water injection is used for to aid in increasing gas turbine engine power during takeoff:

A. When the outside air temperature is low.
B. At high altitude airports or when the prevailing ambient temperatures are high.
C. At low altitude airports near coastal areas.

42. The correct statement with regard to afterburning is that:

A. Fuel consumption decreases, thrust increases, and EGT decreases.
B. Fuel consumption increases, thrust increases, and EGT increases.
C. Fuel consumption decreases, thrust increases, and EGT increases.

43. The system used by the CRJ700 aircraft to maintain safety In the event of an engine failure during takeoff by allowing an increase in thrust from the normally operating engine is:

    A. The Automatic Performance Reserve (APR) system.
    B. The Automatic Water Injection (AWI) system.
    C. The Automatic Afterburner (AAB) system.

44. When the clamshell doors of a thrust reverser system are stowed, or in the forward thrust position, the clamshell doors:

    A. Allow the exhaust gas stream to flow to flow through the exhaust nozzle.
    B. Cause the exhaust gas stream to flow through a set of cascade vanes to allow the stream to flow through the exhaust nozzle.
    C. Direct the flow of the exhaust gas stream in a forward direction.

45. Before reverse thrust can be selected, the forward thrust lever must be:

    A. Positioned to reverse minimum power position.
    B. Positioned to the reverse deploy position.
    C. Positioned to the idle power position.

46. A reverse thrust warning light illuminates:

    A. When the thrust reverser doors are stowed in the forward thrust position.
    B. Only when the thrust reverser doors are fully deployed in the reverse thrust position.
    C. At any time a thrust reverser door moves from its stored, forward thrust position.

47. Use of reverse thrust below the recommended aircraft ground speed may cause:

    A. More fuel to be delivered to the combustion section.
    B. Ingestion of exhaust gases and foreign objects.
    C. The exhaust gas temperature to be exceeded.

48. The CRJ700 obtains the air pressure necessary to move the translating cowl doors into the reverse thrust position from:

    A. The 10th stage of the high pressure compressor.
    B. The low pressure fan.
    C. The high pressure turbine.

49. What is the name of the turbine engine component that is used to provide the power for hydraulic and electrical accessories used on the engine and aircraft?

    A. Auxiliary gearbox.
    B. Oil pump pack.
    C. The shear neck.

50. The drive for fuel, oil and hydraulic pumps is normally taken from the:

    A. Low pressure fan.
    B. Intermediate compressor.
    C. High pressure turbine.

EXTRA CREDIT – worth up to 4 points. List at least three safeguards that are built-into a typical transport category aircraft's thrust reverser system that prevents the possibility of inadvertent use or deployment of an aircraft thrust reverser system.

1. Column

   ASCI 3020 Final Exam Spring 2021 (Test)
2. Points Possible

   100
3. Description

STATISTICS

Count	28
Minimum Value	67.50
Maximum Value	97.50
Range	30.00
Average	87.23214
Median	90.00
Standard Deviation	6.38564
Variance	40.77646

STATUS DISTRIBUTION

Null	0
In Progress	0
Needs Grading	0
Exempt	0

GRADE DISTRIBUTION

Greater than 100	0
90 - 100	15
80 - 89	10
70 - 79	2
60 - 69	1
50 - 59	0
40 - 49	0
30 - 39	0
20 - 29	0
10 - 19	0
0 - 9	0
Less than 0	0

ASCI 3020 Jet Transport Systems II – Final Exam **Name ______________________**

Please **DO NOT** mark on this test; place the letter of your answer on the answer sheet provided.

1. The type of ignition system typically used on a gas turbine engine is the:

   A. Low-tension magneto ignition system.
   B. High-energy magneto ignition system.
   C. High-energy capacitance discharge system.

2. Gas turbine engines equipped with a continuous ignition setting utilize the:

   A. Low-tension magneto ignition system.
   B. High-energy magneto ignition system.
   C. High-energy capacitance discharge system.

3. A gas turbine engine re-light is:

   A. What must be prevented after a wet start.
   B. The action of re-starting a flamed out engine, usually while airborne.
   C. What occurs when the engine drain valve is stuck open.

4. A high energy ignition system used on a gas turbine engine works on the principle of:

   A. Obtaining energy from the discharge of a capacitor.
   B. Magneto static induction.
   C. Obtaining power from a step up transformer of the aircraft's AC power system.

5. In a gas turbine engine high energy igniter unit, the ignitors fire:

   A. Once every 10 seconds.
   B. Once during the start sequence.
   C. 60-100 times per minute.

6. The CRJ700 aircraft's ignition system is turned on during an engine start by:

   A. Pressing in on the IGNITION CONT switchlight in the ENGINE START/IGNITION panel.
   B. Pressing in on the associated ENGINE START switchlight in the ENGINE START/IGNITION panel.
   C. Turning on the aircraft's master switch.

7. The normal ignition mode of the CRJ700 aircraft is used:

    A. Only during the engine starting sequence.
    B. Only during takeoff on contaminated runways.
    C. At any time the possibility of a flameout exists.

8. A typical APU can provide:

    A. Air for engine starting.
    B. Air for air conditioning on the ground.
    C. Electrical power for ground or in flight use.
    D. All of the above.

9. What is a typical location for an APU in the aircraft?

    A. The forward accessory section of the aircraft.
    B. The aircraft's left engine nacelle.
    C. The tail section of the aircraft.

10. What is the term used to describe the pneumatic power used for operation of the various aircraft systems?

    A. Compressor bleed air.
    B. Power turbine takeoff air.
    C. APU high pressure air.

11. What is the purpose of an APU load control valve?

    A. To control the amount of bleed air taken from the APU.
    B. To control the amount of electrical power taken from the APU.

12. Which aircraft component is used to provide a flow of cooling air to the APU and other components such as the APU's oil cooler?

    A. The APU air intake.
    B. The aircraft's eductor draws cooling air through the APU.
    C. A fan that operates only when the APU's EGT reaches a predetermined level.

13. The primary function of a transport category's APU is to:

    A. Provide bleed air for air conditioning the cockpit and cabin.
    B. Provide hydraulic power for ground operation of the flap system.
    C. Provide electrical power for operation of the aircraft electrical systems.

14. Refer to Figure 1. What does the AVAIL light illustrate to the pilot when it is illuminated?

    A. The APU is available to be started.
    B. The APU is available to be used for electrical and pneumatic power distribution to the aircraft.

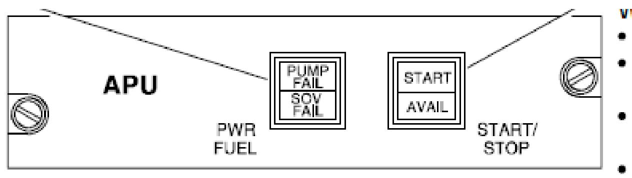

Figure 1

15. At what event during the CRJ700 aircraft's APU start sequence will be APU bleed air be available for the aircraft's pneumatic systems?

    A. When the APU reaches 99% rpm and four seconds.
    B. When the APU reaches 50% rpm.
    C. When the APU START switchlight extinguishes.

16. The switches and switchlights used by the CRJ700 aircraft's flight crew to connect APU electrical power to the aircraft are located in:

    A. The APU control panel.
    B. The circuit breaker panel located behind the copilot's seat.
    C. The ELECTRICAL POWER SERVICES control panel.

17. The purpose of a starter-generator is to:

    A. To start the engine and provide AC power only for ground operations.
    B. To start the engine and to provide DC power for the DC-electrically operated systems.
    C. To start the engine and to convert to an AC-generator used for all phases of flight.

18. After an engine start, the gas turbine engine's igniters are normally deactivated by:

    A. An electronic interlock system.
    B. A speed sensor switch.
    C. The timer switch.

19. The term “self-sustaining speed” means that:

    A. The speed from which the engine can accelerate to full power within 5 seconds.
    B. The engine will run independently of external help.
    C. The speed from which the engine can accelerate without the help of the starter motor.

20. A hung start occurs when:

    A. The engine accelerates but does not light up.
    B. The engine lights up but does not accelerate to self-sustaining speed.
    C. The engine stabilizes above the self-sustaining speed.

21. Before the gas turbine engine’s high-pressure fuel shut off valve can be opened during the engine start:

    A. The compressor must by turning at the correct RPM.
    B. The compressor must be stationary.
    C. The high-pressure turbine must be turning faster than the high-pressure compressor.

22. In a twin-spool engine, the self-sustaining speed is normally reached at:

    A. Approximately 90% N2 RPM.
    B. Approximately 45% N2 RPM.
    C. Approximately 5% N2 RPM.

23. The air supply for an air start system is:

    A. At a relatively low pressure, but high volume.
    B. Filtered to prevent damage to the starter motor.
    C. Preheated to avoid icing in the starter motor nozzle guide vanes.

24. The type of starter unit used on the engine installed in the CRJ700 aircraft is the:

    A. Electric starter motor.
    B. Pneumatic air turbine starter.
    C. Combustion starter.

25. During deceleration, if the fuel being delivered is decreased more rapidly than the airflow through the engine, an incombustible fuel/air mixture could result in a condition known as a:

    A. Lean die-out.
    B. Rich blow-out.

26. What is used in the Fuel Control Unit to measure both P1 and P3 pressure so that the pressure being created does not go above the structural limits of the compressor?

A. An RPM limiter.
B. A power limiter.
C. An acceleration unit.

27. What is used in some engines that have duplex fuel nozzles to cause any unused fuel in the engine to be drained into a drain tank so that extra fuel is not present in the engine during a subsequent start?

A. The high-pressure fuel shut off valve.
B. A low fuel pressure drain system.
C. A pressurizing and dump valve system.

28. Which fuel control unit utilizes a a speed sensitive governor that responds to the position of the power lever and the speed of the engine; also included is a servo valve that controls the rate of acceleration and deceleration, and two bellows that adjust fuel flow based on burner and inlet air pressure?

A. Hydromechanical.
B. Hydropneumatic.
C. Electronic.

29. Which type of fuel control unit is commonly used on turboprop engines?

A. Hydromechanical.
B. Hydropneumatic.
C. Electronic.

30. The function of the full authority digital engine control (FADEC) used on a gas turbine engine is:

A. To manage the fuel scheduling to the engine during starting.
B. To manage the fuel required to accelerate the engine.
C. To manage the fuel required to operate the engine during all phases of flight.

31. Which type of electronic engine control unit consists of an electronic control, a computer, and a conventional hydromechanical fuel control unit?

A. The supervisory electronic engine control.
B. The full-authority digital engine control.

32. To control the fuel scheduling during normal operation, the CRJ700 aircraft utilizes the:

A. Hydropneumatic fuel control.
B. FADEC fuel control.
C. Hydromechanical fuel control.

33. Use of the engine Synchronization system during operation of the CRJ700:

A. Will keep both the N1 and N2 engine speeds equal on both engines during the climb profile.
B. Will keep the turbine disk speeds of both engines equal to reduce noise levels in cruise flight.
C. Will keep either the N1 or N2 engine speeds equal on both engines to reduce noise levels in cruise flight.

34. Turbine blades are cooled by:

A. High pressure compressor air internally ducted through the blades.
B. High pressure air ducted from just before the inlet guide vanes.
C. Intermediate pressure air taken from the bleed valves.

35. The efficiency of a bearing chamber oil seal depends on its mechanical design and:

A. The engine compression ratio.
B. The compressor bleed air supply.
C. The turbine discharge pressure.

36. High pressure compressor bleed air that was used for cooling or sealing is typically disposed of by:

A. Mixing it with the exhaust gas stream.
B. Venting it into the burner section of the engine.
C. Returning it to the inlet of the high-pressure compressor.

37. The bleed air used when low pressure bleed air is needed for pneumatic system services as required in the CRJ700 aircraft is obtained from the:

A. The 10^{th} stage, low pressure compressor.
B. The 6^{th} stage, low pressure compressor.
C. The 10^{th} stage, high pressure compressor.

38. Refer to Figure 2. Which component of the pneumatic system is used to separate the left and right sides of the system?

A. The isolation valve.
B. The load control valve.
C. The APU one-way check valve.

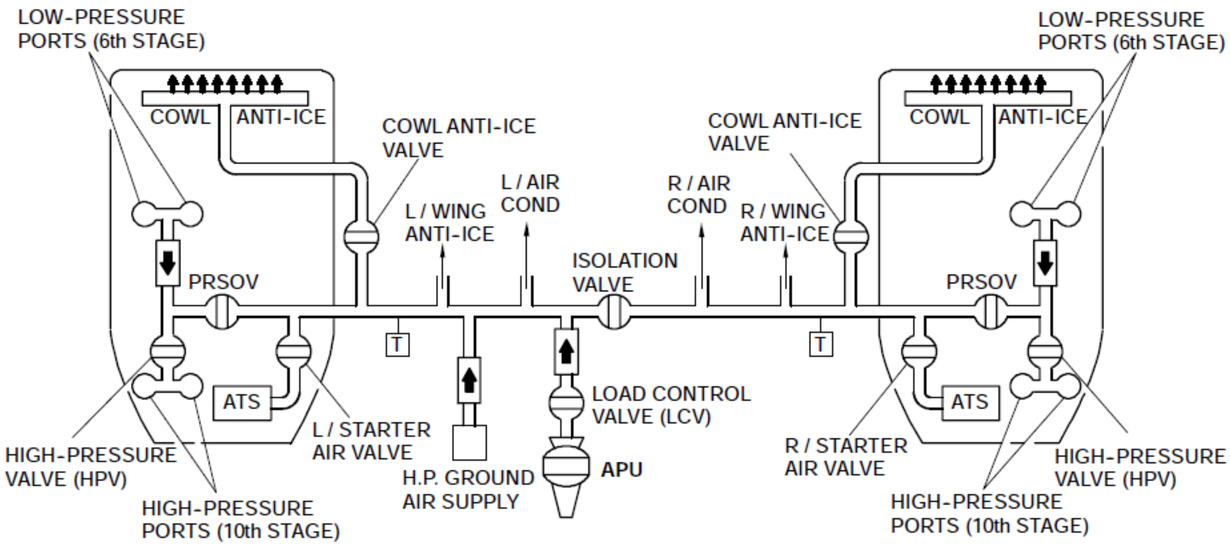

Figure 2

39. Turbine engine accessory gearboxes typically utilize a stub shaft drive or idler gear drive to compensate for:

A. Expansion and contraction of the accessory gearbox drive shafts due to temperature variations.
B. Changes in how the gear teeth mesh together as engine RPM varies.
C. To compensate for gear teeth clearance as altitude varies.

40. The section of the engine used to drive for accessory section is normally taken from:

A. The low-pressure fan section.
B. The intermediate compressor section.
C. The high-pressure turbine section.

EXTRA CREDIT – 3 points

List at least four aircraft systems that typically use the aircraft pneumatic system (bleed air) for normal operation.

Undergraduate Course Assessment Form

Course: ASCI 3100 Air Carrier Operations
Sections 01A/01B
Semester Taught: Spring 2021
Number of Students in Course: 25
COVID protocols in place impacting students, teachers and course delivery

Student Learning Outcome Assessed	Assessment Results: (Indicate what % of class achieved a minimum 70%)	Benchmark achieved? (Benchmark: 80% of students will score a minimum of 70% = "C")
K. Apply knowledge of business sustainability to aviation issues.	"Sustainability in the midst of a pandemic" homework assignment in which students were to review a set of questions prior to the Zoom session. There was no grading of the assignment. March 30, 2021. Economic sustainability and capacity purchase agreements https://slu.zoom.us/rec/share/9Mqk4XcdN1BEQiE7zkznSfebwPysg1sZ4Ljy_Q6pObQFeA2nXZ3Sw5faa4w0UuzP.B-F41rq-0uH9gDPu Passcode: *e5+N2nw Final Exam Question 40. 100% achieved a minimum of 70	In-class Zoom discussion was not scored. Final Exam Question 40: Yes. 96% Class score 3.84 / 4.00

Course Assessment (Intended Use of Results)
The following will be used for recommendations to improve the quality of course delivery based on assessment results. These recommendations may include prerequisite change; changing course outline and adding more topics; adding a third assessment; changing the course sequence, etc.

To be determined in faculty discussions

**Attach description of assignment used for assessment and samples of student work.*

K. Apply knowledge of business sustainability to aviation issues.

March 2021. The global pandemic is creating significant economic fallout affecting virtually every industry. Airlines have been especially hard hit losing billions in revenue as high fixed costs continue. Fleets are being sent to the Southwest desert and airport tarmacs as U.S. airlines reduce the number of flights -- up to 50% in many cases -- and furlough employees. All new-hire classes have been cancelled. A couple of U.S. regional airlines are going out of business in the spring of 2020. Congress has legislated a multi-billion-dollar bailout package of loans and grants to U.S. airlines; three packages in 2020 and early 2021.
March 30, 2021
Sustainability in aviation sectors may be examined from the perspective of **economic sustainability, social sustainability and environmental sustainability**. Review the material posted within this folder. There is no textbook reading assignment.
Discussion: "***Sustainability in the midst of a pandemic"***

Homework assignment; not graded; not submitted. You must complete the assignment in order to actively understand the concepts. Question 6-addressing COVID-19-is especially important in light of the current economic trauma being experienced by the airlines and their employees.

This assignment examines the issue of business sustainability and its relationship to air carrier operations. For example, regional air carriers are in a fragile state. Can you identify elements from this air carrier operations course that may be contributing to the economic sustainability (or instability) of the regional air carriers? Regionals are really just feeder airlines for the **code-sharing** major airline. What lies ahead for this feeder airline industry? With the precipitous drop in demand, airlines are "dumping" supply (capacity) by parking airplanes at remote or underutilized airports, especially in the Southwest. Airlines have very high fixed costs with debt to pay. They are running through cash reserves very quickly. Revenue only comes from passengers and/or cargo. Consider the thousands of airline employees impacted by this brutal downturn.

U.S. Regional Airline Restructuring

In early 2018, Skywest, Inc., is most likely the only ONE publicly held regional air carriers in the U.S. Republic was publicly held and went into bankruptcy in 2016 an emerged in mid-2017, but appears to no longer be publicly traded. Most, like Trans States Airlines, are privately held companies. Trans States was going out of business in the fall of 2020, but with the economic downturn due to the COVID-19 pandemic, their liquidation has been accelerated. What other airlines will go out of business and not return?

Pinnacle, who had control over Colgan Air in 2009, filed for bankruptcy and was acquired by Delta, changing its name and operations to Endeavor.

Republic declared bankruptcy and has since reorganized under Chapter 11 bankruptcy protection. The Reorganization Plan illustrates the highly competitive nature of the regional airline business.

The attached 2017 10-K annual report of Skywest and its subsidiaries (Skywest Airlines and ExpressJet Airlnes) shows the significant headwinds faced by U.S. regional air carriers. An review of this SEC document provides an insight into a regional airline business model as Skywest, Inc., has contract agreements with four mainline air carriers: American, Alaska, Delta and United.

A 2005 paper examined the "role of regional air carriers" in the U.S. This paper looks at the relationship between regional air carriers and the mainline service providers in the early part of the 21st Century.

The FAA Aerospace Forecast is released each year in March. It is a good overview of the industry looking forward and has some value,

In the early 1990s, the NTSB expressed concerns on the issue of "code sharing agreements" between commuter airlines and large network air carriers.

In 2013, the Department of Transportation, Inspector General, issued a report to the FAA lawyers on the subject. Not surprisingly, the code-sharing agreement of Colgan Air with Continental Airlines was one of the reasons for this audit.

Within the Skywest Annual Report to the SEC (10-K), 2018, examine the "Business" section for descriptions of this company's code-share agreements with three network air carriers.

ASCI 3100 AIR CARRIER OPERATIONS

REGIONAL AIRLINES: RESTRUCTURING AND SUSTAINABILITY

The company was originally founded in 1965 as a typical fixed-base operator in Manassas, Virginia. It changed its name to Colgan Air, Inc. in early 1993. In 1997, it became a feeder for Continental Airlines for two years. Its partners eventually grew to include United and US Airways. Colgan became a subsidiary of Pinnacle Airlines Corp. in 2007 so that Pinnacle could gain access to Colgan's partners since Pinnacle was tied only to Northwest Airlines at the time. Colgan began providing service out of Newark Liberty International Airport as Continental Connection in early 2008. About one year later, the accident took place on a flight from Newark to Buffalo, NY. Pinnacle filed for bankruptcy in the spring of 2012. Colgan Air, Inc., went out of business in the fall of 2012. This is a brief history of only one company. Similar histories are found throughout the commuter/regional airline industry.

Let's examine the issue of ***business sustainability and its relationship to air carrier operations***.

1. Identify the current feeder airlines for the following majors: Alaska, American, Delta, United

2. Of these feeders, identify those that are publicly held companies. If it is a publicly held company, we may find company filings on the Securities and Exchange Commission (SEC) web site.

3. Can you identify a few regional airlines that have recently filed for bankruptcy? Who are they? Did they successfully reorganize and come back as viable airlines?

4. What elements from this air carrier operations course can you identify as contributing to this fragile state in which regionals exist?

5. What lies ahead for this feeder airline industry--this so-called regional airline industry? Going forward, what might the industry look like?

6. In early 2020, the COVID-19 pandemic created economic trauma for U.S. air carriers. The coronavirus has had a devastating toll on airline jobs and the business model. Currently, the U.S. air carriers are asking Congress for loans and grants in the billions of dollars. What observations do you have of the industry's current state of affairs?

Final Exam Question 40: During the second, third, and fourth fiscal quarters of 2020, the airline industry experienced an unprecedented downturn in passenger traffic as a result of the COVID-19 global health crisis. The volume of passengers passing through TSA airport checkpoints dropped by 95% year-over-year. Passenger air carriers parked thousands of aircraft on tarmacs and runways. Economic sustainability became an increasingly critical issue.

Of the following statements, addressing training, identify those that are accurate in this unprecedented time period. There is more than one correct response.

A.

Airline training classrooms capacity was reduced, in some cases by as much as 50%, to allow for social distancing and reduce unnecessary risk of exposure. This, in turn, increased costs.

B.

U.S. airlines have significantly reduced the passenger flight schedules. However, this has not significantly impacted crewmembers' ability to commute to airline training locations and facilities. All crewmembers have "jumpseat privileges" on all-cargo carriers which continue to fly. Crewmembers' access to training facilities have been unhampered by social distancing guidance and local shelter-in-place orders.

C.

Timeframes for completing recurrent training and qualification requirements have impacted ground personnel, pilots and flight attendants, and aircraft dispatchers. These requirements include training, testing, checking, evaluation, recency, and observation activities.

D.

It became increasingly difficult to schedule crewmembers for required training, checking, and qualification because of the dramatic downturns in flight operations. For example, crewmembers' recurrent training can be accomplished a month before the base month, during the base month, or in the month after the base month.

Undergraduate Course Assessment Form

Course: ASCI 3100 Air Carrier Operations
Section 10
Semester Taught:	Spring 2021
Number of Students in Course: 14
COVID protocols in place impacting students, teachers and course delivery

Student Learning Outcome Assessed	Assessment Results: (Indicate what % of class achieved a minimum 70%)	Benchmark achieved? (Benchmark: 80% of students will score a minimum of 70% = "C")
K. Apply knowledge of business sustainability to aviation issues.	"Sustainability in the midst of a pandemic" homework assignment in which students were to review a set of questions prior to the Zoom session. There was no grading of the assignment. March 30, 2021. Economic sustainability and capacity purchase agreements https://slu.zoom.us/rec/share/9Mqk4XcdN1BEQiE7zkznSfebwPysg1sZ4Ljy_Q6pObQFeA2nXZ3Sw5faa4w0UuzP.B-F41rq-0uH9gDPu Passcode: *e5+N2nw Final Exam Question 40. 100% achieved a minimum of 70	In-class Zoom discussion was not scored. Final Exam Question 40: Yes. 96% Class score 3.84 / 4.00

Course Assessment (Intended Use of Results)
The following will be used for recommendations to improve the quality of course delivery based on assessment results. These recommendations may include prerequisite change; changing course outline and adding more topics; adding a third assessment; changing the course sequence, etc.

To be determined in faculty discussions

**Attach description of assignment used for assessment and samples of student work.*

K. Apply knowledge of business sustainability to aviation issues.

March 2021. The global pandemic is creating significant economic fallout affecting virtually every industry. Airlines have been especially hard hit losing billions in revenue as high fixed costs continue. Fleets are being sent to the Southwest desert and airport tarmacs as U.S. airlines reduce the number of flights -- up to 50% in many cases -- and furlough employees. All new-hire classes have been cancelled. A couple of U.S. regional airlines are going out of business in the spring of 2020. Congress has legislated a multi-billion-dollar bailout package of loans and grants to U.S. airlines; three packages in 2020 and early 2021.
March 30, 2021
Sustainability in aviation sectors may be examined from the perspective of **economic sustainability, social sustainability and environmental sustainability**. Review the material posted within this folder. There is no textbook reading assignment.
Discussion: "***Sustainability in the midst of a pandemic"***

Homework assignment; not graded; not submitted. You must complete the assignment in order to actively understand the concepts. Question 6-addressing COVID-19-is especially important in light of the current economic trauma being experienced by the airlines and their employees.

This assignment examines the issue of business sustainability and its relationship to air carrier operations. For example, regional air carriers are in a fragile state. Can you identify elements from this air carrier operations course that may be contributing to the economic sustainability (or instability) of the regional air carriers? Regionals are really just feeder airlines for the **code-sharing** major airline. What lies ahead for this feeder airline industry? With the precipitous drop in demand, airlines are "dumping" supply (capacity) by parking airplanes at remote or underutilized airports, especially in the Southwest. Airlines have very high fixed costs with debt to pay. They are running through cash reserves very quickly. Revenue only comes from passengers and/or cargo. Consider the thousands of airline employees impacted by this brutal downturn.

U.S. Regional Airline Restructuring

In early 2018, Skywest, Inc., is most likely the only ONE publicly held regional air carriers in the U.S. Republic was publicly held and went into bankruptcy in 2016 an emerged in mid-2017, but appears to no longer be publicly traded. Most, like Trans States Airlines, are privately held companies. Trans States was going out of business in the fall of 2020, but with the economic downturn due to the COVID-19 pandemic, their liquidation has been accelerated. What other airlines will go out of business and not return?

Pinnacle, who had control over Colgan Air in 2009, filed for bankruptcy and was acquired by Delta, changing its name and operations to Endeavor.

Republic declared bankruptcy and has since reorganized under Chapter 11 bankruptcy protection. The Reorganization Plan illustrates the highly competitive nature of the regional airline business.

The attached 2017 10-K annual report of Skywest and its subsidiaries (Skywest Airlines and ExpressJet Airlnes) shows the significant headwinds faced by U.S. regional air carriers. An review of this SEC document provides an insight into a regional airline business model as Skywest, Inc., has contract agreements with four mainline air carriers: American, Alaska, Delta and United.

A 2005 paper examined the "role of regional air carriers" in the U.S. This paper looks at the relationship between regional air carriers and the mainline service providers in the early part of the 21st Century.

The FAA Aerospace Forecast is released each year in March. It is a good overview of the industry looking forward and has some value,

In the early 1990s, the NTSB expressed concerns on the issue of "code sharing agreements" between commuter airlines and large network air carriers.

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It became increasingly difficult to schedule crewmembers for required training, checking, and qualification because of the dramatic downturns in flight operations. For example, crewmembers' recurrent training can be accomplished a month before the base month, during the base month, or in the month after the base month.

Course Assessment Form

Course: ASCI 4022 Jet Flying Techniques II
Semester Taught: Spring 2021
Number of Students in Course: 15

Student Learning Outcome Assessed	Assessment Results: (Indicate what % of class achieved a minimum 70%)	Benchmark achieved? (Benchmark: 80% of students will score a minimum of 70% = "C")
D. Make professional and ethical decisions.	100%	Yes
I. Assess the national and international aviation environment.	100%	Yes

Course Assessment (Intended Use of Results)
The following will be used for recommendations to improve the quality of course delivery based on assessment results. These recommendations may include prerequisite change; changing course outline and adding more topics; adding a third assessment; changing the course sequence, etc.

- The course sequence continues to evolve, and I continue to add topics.
- The questions geared to assessing outcome D need to change from predominantly TRUE/FALSE questions to SHORT ANSWER/ESSAY questions to apply more evidence of critical thinking.

QUESTION 1: MULTIPLE CHOICE

1.

2.

In the event that a foreign regulation is different than a US regulation, FAR part 121.11 and AC 91-70B require that...

Given Answer: *C.*

we comply with foreign regulations unless the US regulation is more strict.

Correct Answer: *C.*

we comply with foreign regulations unless the US regulation is more strict.

1 **out of 1 points**

QUESTION 2: TRUE/FALSE

1.

2.

You need to have a current passport on your person if on a flight to Canada, even though you don't expect to get off of the aircraft.

Given Answer: *False*

Correct Answer: *True*

0 **out of 1 points**

QUESTION 3: TRUE/FALSE

1.

2.

You just arrive in O'Hare from your commute and you realize that your forgot you license and medical at home. In the US, you can call the company and they will fax you copies, thus allowing you to continue on your trip. However, your trip goes into Canada. Just like in the US, you can continue on your trip and fly into Canada with copies of your license and/or medical.

Given Answer: *False*

Correct Answer: *False*

1 ***out of 1 points***

QUESTION 4: SHORT ANSWER

1.

2.

Name three items that you are NOT allowed to bring into Canada.

Given Answer: *Firearms*

Narcotics

Endangered Species

Correct Answer: *[None]*

Response Feedback:

Mashups

Path: *p*

Words:0

3 ***out of 3 points***

QUESTION 5: SHORT ANSWER

1.

2.

Name three items you must have on you when traveling to Canada.

Given Answer:	*Valid Passport* *Original Airmen Certificate* *Original Medical Certificate*
Correct Answer:	*[None]*

Response Feedback:

Mashups

Path: p

Words:0

3 ***out of 3 points***

QUESTION 6: TRUE/FALSE

1.

2.

The aircraft you are flying to Canada must not have a temporary airworthiness certificate

Given Answer: *True*

Correct Answer: *True*

1 **out of 1 points**

QUESTION 7: MULTIPLE CHOICE

1.

2.

What is the minimum oxygen pressure we must have when dispatching to Canada?

Given Answer:

1650 psi

Correct Answer:

1650 psi

1 **out of 1 points**

QUESTION 8: FILL IN THE BLANK

1.

2.

Within _____ miles and _____ feet of a controlled airport we must be at a maximum of _____ knots

Given Answer: *10, 10000, 250*

Evaluation Method	*Correct Answer:*	*Case Sensitivity*
Exact Match	*10*	
Exact Match	*3000*	
Exact Match	*200*	

2 ***out of 3 points***

QUESTION 9: ESSAY

1.

2.

Describe in as much detail as possible what the MANDATORY FREQUENCY is and how we use it.

Given Answer:	*An airport with an MF is one that requires arriving and departing aircraft to communicate with other traffic or operators on that published frequency.*
Correct Answer:	*[None]*

Response Feedback:

Mashups

Path: p

Words:0

3 ***out of 3 points***

QUESTION 10: MULTIPLE CHOICE

1.

2.

What is the Canadian equivalent to the ATC clearance, "Descend at the pilot's discretion..."

Given Answer:

"Descend when ready"

Correct Answer:

"Descend when ready"

1 ***out of 1 points***

QUESTION 11: MULTIPLE CHOICE

1.

2.

What is the cut off time for a turn in Canada? (A turn is when we fly to an outstation, and "turn" around and come back to our origin). For example, for one of your IFR cross countries, you fly CPS SPI CPS. That would be considered a "Springfield turn".

Given Answer:

90

Correct Answer:

90

1 ***out of 1 points***

QUESTION 12: TRUE/FALSE

1.

2.

The person who does the exterior pre-flight/post'flight (walk around) MUST wear a high visibility vest.

Given Answer: True

Correct Answer: True

1 **out of 1 points**

QUESTION 13: TRUE/FALSE

1.

2.

If for some reason, ONE crew member has to go inside the terminal (in Canada) and leave the vicinity of the aircraft, ALL crew members must get off of the aircraft and go through customs.

Given Answer: True

Correct Answer: True

1 **out of 1 points**

QUESTION 14: FILL IN THE BLANK

1.

2.

Reference the Saskatoon RNAV RWY 15 approach and answer the following questions. You are currently 15 miles west of APDIM at 8,000'. ATC clears you, "Proceed direct to APDIM, cleared for the RNAV ruwnay 15 approach."

1. Answer yes or no. After you read back the clearance, you can begin your descent from 8,000' down to 4,000' feet.

2. What is the MAX speed at APDIM.

3. What altitude would you begin your final descent to the D-MDA?

4. What DME and from what fix would you being your final descent?

5. What is your final approach fix?

Given Answer:	*1. yes / 2. 250 / 3. 4,000 / 4. 3.1 / 5. gs intercept*	
Evaluation Method	***Correct Answer:***	***Case Sensitivity***
Exact Match	*Yes*	
Contains	*210*	
Contains	*4,000*	
Contains	*3.2 UDKUV*	
Exact Match	*UDKUV*	

3 ***out of 5 points***

QUESTION 15: FILL IN THE BLANK

1.

2.

For the following questions, reference the CYYC EBGAL 5 arrival.

1. Answer the following question YES or NO. You are cruising at FL370 and ATC issues you a clearance to descend to FL190. You MUST cross the EBGAL fix AT or BELOW FL210 even though they didn't give it to you in the clearance.

2. If landing on runway 17L, you will fly over the MUPUV fix. What is the max speed at MUPUV?

3. Answer the following question YES of NO. If landing on runway 11, you will fly over the PIDLA fix. If ATC clears you to "descend to 8,000", they expect you to cross PIDLA at 8,000.

Given Answer:	*1. yes / 2. 250 / 3. no*	
Evaluation Method	***Correct Answer:***	***Case Sensitivity***
Exact Match	*Yes*	
Contains	*210*	
Contains	*Yes*	

2 ***out of 3 points***

QUESTION 1: SHORT ANSWER

1.

2.

On the performance section of the release, it says we can takeoff at 77,000 lbs. Without any performance penalties, what would be on maximum takeoff weight? What is the purpose of the 77,000 lbs?

Given Answer:	*The maximum takeoff weight would be our the CRJ max takeoff weight. Or 75,000 pounds. If we have performance penalties, we subtract it from the 77,000 poound instead of the 75,000 pounds.*
Correct Answer:	*[None]*
Response Feedback:	Mashups *Path: p* *Words:0*

3 ***out of 3 points***

QUESTION 2: TRUE/FALSE

1.

2.

When shutting down the APU, we should press the APU PWR/FUEL switch before pressing the START/STOP switch.

Given Answer: False

Correct Answer: False

1 **out of 1 points**

QUESTION 3: TRUE/FALSE

1.

2.

The APU LCV will be open on the ground during taxi out if the APU is left on for taxi.

Given Answer: True

Correct Answer: True

1 **out of 1 points**

QUESTION 4: SHORT ANSWER

1.

2.

Name four ways to turn off the autopilot. Pulling the circuit breaker is NOT an acceptable answer.

Given Answer: 1. F/D off

2. AP disconnect on yoke

3. AP engage button on FCP

4. TOGA

Correct Answer: [None]

Response Feedback:

Mashups

Path: p

Words:0

3 ***out of 4 points***

QUESTION 5: SHORT ANSWER

1.

2.

On a non-precision approach, when do we begin our final descent to our derived minimums? What is "derived minimums"?

Given Answer: *We begin our final descent at .2 miles from the FAF. Derived minimums are MDA + 50 feet.*

Correct Answer: *[None]*

Response Feedback:

Mashups

Path: p

Words:0

2 *out of 2 points*

QUESTION 6: SHORT ANSWER

1.

2.

Per our takeoff profile, wWhat is our trigger to call, "SPEED MODE, HEADING/NAV MODE"?

Given Answer: *We say this at V2 + 20*

Correct Answer: *[None]*

Response Feedback:

Mashups

Path: p

Words:0

1 *out of 1 points*

QUESTION 7: SHORT ANSWER

1.

2.

Describe the CLOSED LOOP communication process. I am looking for three things for complete credit.

Given Answer: A closed loop communication process is sender gives message, receiver gets message, and sender verify s message was received

Correct Answer: [None]

Response Feedback:

Mashups

Path: p

Words:0

3 out of 3 points

QUESTION 8: MULTIPLE CHOICE

1.

2.

Can we depart with the following RVR report.

TDZ 1000

MID -

RO 400

The " - " means the MID RVR report is missing

Given Answer:

No

Correct Answer:

No

1 **out of 1 points**

QUESTION 9: MULTIPLE CHOICE

1.

2.

Can we depart using with the following RVR reports? All RVRs are operational.

TDZ 600

MID 400

RO 1000

Given Answer:

Yes

Correct Answer:

No

0 **out of 1 points**

QUESTION 10: FILL IN MULTIPLE BLANKS

1.

2.

*During departure, for operations below **[1600] [TDZ]** RVR, **[2]** RVRs must be operational. **[ALL]** are controlling.*

The first blank is a number.

The second blank is a RVR reporting station (TDZ, MID, RO, FAR)

The third blank is how many RVRs must be operational (1, 2, 3, 4, ALL).

The fourth blank is how many RVR reports are controlling (1, 2, 3, 4, ALL).

Selected Answer: *During departure, for operations below* ***1600*** ***TDZ*** *RVR,* ***2*** *RVRs must be operational.* ***All*** *are controlling.*

The first blank is a number.

The second blank is a RVR reporting station (TDZ, MID, RO, FAR)

The third blank is how many RVRs must be operational (1, 2, 3, 4, ALL).

The fourth blank is how many RVR reports are controlling (1, 2, 3, 4, ALL).

Evaluation Method	***Correct Answers for: 1600***	***Case Sensitivity***
Exact Match	*1600*	

Evaluation Method	***Correct Answers for: TDZ***	***Case Sensitivity***
Contains	*TDZ*	

Evaluation Method	***Correct Answers for: 2***	***Case Sensitivity***
Contains	*TWO 2*	

Evaluation Method	Correct Answers for: ALL	Case Sensitivity
Exact Match	ALL	

4 **out of 4 points**

QUESTION 11: MULTIPLE CHOICE

1.

2.

Consider the following TAF...

KTYS 061120Z 0612/0712 26006KT P6SM SCT060
FM061400 24009KT 1SM VCSH BKN004
TEMPO 0615/0617 1/4SM FG OVC001
FM061800 25015G25KT P6SM VCSH BKN025
BECMG0619/0621 3208 1/2SM FG BR -RA OVC002
FM070000 31009KT P6SM SCT050
FM070500 VRB03KT P6SM SKC

Our ETA is 1600Z, can we depart? KTYS has an ILS that has minimums at 200' and 1/2 mile with a note that allows to go down to 1800 RVR if we have a FD, AP or HUD.

Given Answer:

Yes using Exemption 3585

Correct Answer:

Yes using Exemption 3585

1 **out of 1 points**

QUESTION 12: MULTIPLE CHOICE

1.

2.

Consider the following TAF...

KTYS 061120Z 0612/0712 26006KT P6SM SCT060
FM061400 24009KT P6SM VCSH BKN040
TEMPO 0614/0616 -SHRA BKN025
FM061600 25006 1/4SM FG BR -RA OVC002
FM070000 31009KT P6SM SCT050
FM070500 VRB03KT P6SM SKC

Our ETA is 1800Z, can we depart? KTYS has an ILS that has 200' and 1/2 mile visibility with the note we can use 1800 RVR with an operative FD, AP or HUD.

Given Answer:

No

Correct Answer:

No

1 ***out of 1 points***

QUESTION 13: MULTIPLE CHOICE

1.

2.

Consider the following TAF...

KTYS 061120Z 0612/0712 26006KT P6SM SCT060
FM061400 24009KT P6SM VCSH BKN040
TEMPO 0614/0616 -SHRA BKN025
FM061600 25015G25KT P6SM VCSH BKN025
BECMG0617/0619 3208 1/4SM FG BR -RA OVC002

FM070000 31009KT P6SM SCT050
FM070500 VRB03KT P6SM SKC

Our ETA is 1800Z, can we depart? KTYS has an ILS with the note that says we can use 1800 RVR with an operable FD, AP or HUD.

Given Answer:

Yes, using Exemption 3585.

Correct Answer:

Yes

0 **out of 1 points**

QUESTION 14: MULTIPLE CHOICE

1.

2.

Consider the following TAF...

KTYS 061120Z 0612/0712 26006KT P6SM SCT060
FM061400 24009KT P6SM VCSH BKN040
TEMPO 0614/0616 1/2SM -SHRA BR BKN002
FM061600 25015G25KT P6SM VCSH BKN025
FM061900 32010G17KT P6SM BKN040
FM070000 31009KT P6SM SCT050
FM070500 VRB03KT P6SM SKC

KTYS has an ILS that has minimums of 200' and 1/2 mile. Our ETA is 1500Z. Can we depart for KTYS?

Given Answer:

Yes

Correct Answer:

Yes

1 ***out of 1 points***

QUESTION 15: MULTIPLE CHOICE

1.

2.

In the event we lose an engine after V1 but before 1,000 AFE, the engine failure departure is found in the ...

Given Answer:

takeoff section of the release.

Correct Answer:

takeoff section of the release.

1 ***out of 1 points***

QUESTION 16: TRUE/FALSE

1.

2.

BOTH the PIC and the Dispatcher must sign the release in order for the release to be valid.

Given Answer: *True*

Correct Answer: *True*

1 ***out of 1 points***

QUESTION 17: SHORT ANSWER

1.

2.

Why is it better that the captain assume the role of pilot monitoring during an abnormal/emergency situation as opposed to continuing as the pilot flying have the first officer handle the QRH?

Given Answer:	*Giving the FO the task of flying the airplane and doing the radios, allows the captain to put their full attention towards the emergency and devloping a plan without the stress of having to fly the plane.*
Correct Answer:	*[None]*
Response Feedback:	Mashups *Path: p* *Words:0*

2 ***out of 2 points***

QUESTION 18: SHORT ANSWER

1.

2.

What is the memory item (IN ORDER) for a REJECTED TAKEOFF? (hit enter after each line)

Given Answer:	*thrust levers idle, brakes max, thrust reverses max*
Correct Answer:	

Thrust levers idle

Wheel brakes maximum until safe stop

Thrust reversers maximum

Response Feedback:

Mashups

Path: p

Words:0

4 ***out of 4 points***

QUESTION 19: MATCHING

1.

2.

Match the following fuel amounts with their associated name.

Question	Correct Match	Given Match
Go-Around fuel (the amount that provides enough for a go-around and 10-mile final)	*A. 600 lbs*	*A. 600 lbs*
Minimum Fuel	*B. 2100 lbs*	*B. 2100 lbs*

Emergency Fuel	C. 1500 lbs	C. 1500 lbs

3 **out of 3 points**

QUESTION 20: TRUE/FALSE

1.

2.

When declaring "Minimum fuel" to ATC, they treat this as an emergency situation and provide priority handling to your destination.

Given Answer: False

Correct Answer: False

1 **out of 1 points**

QUESTION 21: TRUE/FALSE

1.

2.

Method 1 and Method 2 are ways to determine whether or not we can takeoff at a certain weight, even though the criteria for determining Method 1 and 2 have to deal with the enroute phase of flight. In other words, the takeoff weight works in conjunction with Method 1 and 2 to ensure the enroute terrain clearance is met.

Given Answer: True

Correct Answer: True

1 **out of 1 points**

QUESTION 22: FILL IN THE BLANK

1.

2.

It is ________ to takeoff at a weight that will have us landing over our max landing weight of ________ lbs because we can hold during the arrival phase in order to land under our max landing weight.

For the first line, answer OK or NOT OK.

For the second line, I'm looking for the CRJ 700 max landing weight. Please use a comma.

Given Answer:	OK, 67,000	
Evaluation Method	**Correct Answer:**	**Case Sensitivity**
Exact Match	NOT OK	
Exact Match	67,000	

1 **out of 2 points**

QUESTION 23: MATCHING

1.

2.

Match the definitions with their appropriate V-speeds.

Question	Correct Match	Given Match
The speed at which the decision to reject or continue a takeoff is made.	C. V1	C. V1
The speed at which the nose wheel begins to come off of the ground.	D.	D.

	Vr	*Vr*
Known as "Takeoff Safety Speed", it is the speed that we use to climb to our acceleration altitude with one engine inoperative.	*B.* *V2*	*B.* *V2*
This speed is used during the final segment to climb to a minimum safe/minimum vectoring altitude.	*A.* *Vfto*	*A.* *Vfto*

4 ***out of 4 points***

QUESTION 24: MULTIPLE CHOICE

1.

2.

For any given runway, taking off during active snow on a snow covered runway will likely _________ our maximum takeoff weight for that particular flight.

Given Answer:

Have no effect

Correct Answer:

Decrease

0 ***out of 1 points***

QUESTION 25: MULTIPLE CHOICE

1.

2.

When determining actual landing distance for Part 25 certification, the aircraft crosses 50 feet above the threshold at this speed...

Given Answer:

V ref + 5

Correct Answer:

V ref

1 ***out of 1 points***

QUESTION 26: TRUE/FALSE

1.

2.

It is possible to be takeoff weight limited by our ability to meet the part 25 single or two-engine climb requirement during a go-around.

Given Answer: *True*

Correct Answer: *True*

1 ***out of 1 points***

QUESTION 27: SHORT ANSWER

1.

2.

You are 20 miles southwest from LETUS at 8,000'(MSL). ATC says cleared "Billiken 6724 proceed direct LETUS, cross LETUS at or above 3200, cleared the LOC RWY 27 at Ogdensburg. Radar services terminated, change to advisory frequency approved."

With the following NOTAM, can we execute this approach? Answer yes or no and explain.

OGS 0/0213 IAP OGDENSBURG INTL, OGDENSBURG, NY.
LOC RWY 27, AMDT 4A...
PROC NA EXC FOR ACFT EQUIPPED WITH SUITABLE RNAV SYSTEM

WITH GPS. OGIVE OG LOM U/S. 2003231903-2005291903

Given Answer: *yes, because we have the correct RNAV system.*

Correct Answer: *[None]*

Response Feedback:

Mashups

Path: p

Words:0

3 **out of 3 points**

QUESTION 28: TRUE/FALSE

1.

2.

A circling-to-land maneuver is the only time we are concerned with a ceiling to begin the final approach segment of an instrument approach.

Given Answer: *False*

Correct Answer: *True*

0 **out of 1 points**

QUESTION 29: SHORT ANSWER

1.

2.

KSTL has more than two precision approaches, two or more of the approaches have minimums of 200' ceiling and 1/2 mile visibility. The winds are calm and everything is working on the ILS'. What is the required weather to list KSTL as an alternate?

Given Answer: *To list an alternate, they must have 600 - 2 for precision approaches*

Correct Answer:

400' - 1

Response Feedback:

Mashups

Path: p

Words:0

0 ***out of 1 points***

QUESTION 30: SHORT ANSWER

1.

2.

Refer to the KOGS charts. Everything is working regarding the approaches. Winds are calm. What weather is required to list KOGS as an alternate?

Given Answer: *For KOGS the weather must be at least 800-2*

Correct Answer:

Method 2

700' (648') & 1 7/8

Response Feedback:

Mashups

Path: p

Words:0

0 **out of 1 points**

QUESTION 31: SHORT ANSWER

1.

2.

Refer to the KOGS charts. The winds are 090 at 15, gusting 22. There is a NOTAM for a nationwide GPS outtage (actually happened to our fleet over the summer). What is required to list KOGS as an alternate? How did you come up with this answer?

Given Answer:	We can not file KOGS as an alternate because the only available non GPS approach is on runway 27. This would give us a tailwind of greater than 10 knots.
Correct Answer:	900' (838') - 2 1/4

Response Feedback:

Mashups

Path: p

Words:0

0 **out of 2 points**

QUESTION 32: MULTIPLE CHOICE

1.

2.

In the event that a foreign regulation is different than a US regulation, FAR part 121.11 and AC 91-70B require that...

Given Answer: *D.*

we comply with foreign regulations unless the US regulation is more strict.

Correct Answer: *D.*

we comply with foreign regulations unless the US regulation is more strict.

1 **out of 1 points**

QUESTION 33: TRUE/FALSE

1.

2.

If for some reason, ONE crew member has to go inside the terminal (in Canada) and leave the vicinity of the aircraft, ALL crew members must get off of the aircraft and go through customs.

Given Answer: *True*

Correct Answer: *True*

1 *out of 1 points*

QUESTION 34: SHORT ANSWER

1.

2.

Refer to the CQYR RNAV 26. You are 10 miles to the east of ERDAP, your clearance is, "Proceed direct to ERDAP, cross ERDAP at 4,000', cleared RNAV runway 26 approach."

1. From what FIX and what DME will you begin your final descent?

2. From what altitude will you begin your final descent?

3. What is your final approach fix?

4. What will you set for reference in the MDA? (top of the PFD)

5. What speed will you cross ERDAD at?

Please hit enter after each response.

Given Answer: 1. 4.3 (CRJ) DME at TANPU fix

2. 3,300 feet

3. TANPU

4. 2,305

5. 190 or slower

Correct Answer: [None]

Response Feedback:

Mashups

Path: p

Words:0

6 **out of 5 points**

QUESTION 35: TRUE/FALSE

1.

2.

We have never been to KELM. Per OpSpec C050, this chart will allow us *land at KELM.*

Given Answer: *True*

Correct Answer: *True*

1 *out of 1 points*

QUESTION 36: TRUE/FALSE

1\.

2\.

Per OpSpec C051, we can use military approach charts as long as they were developed by Ryan Laib since he is part of the USAF..

Given Answer: *False*

Correct Answer: *False*

1 *out of 1 points*

QUESTION 37: SHORT ANSWER

1\.

2\.

We are on vectors (outside the FAF) for an ILS that has minimums at 1/2 mile (2400 RVR) minimums. The last ATIS reported 1/4 mile visibility. However, when you checked on with approach control, they said tower has been reporting RVRs around 3000. If the RVR stays above at or above 2400, can you continue the approach past the final approach fix? Answer yes/no and explain.

Given Answer: *yes, because tower reports are valid to use as minimums.*

Correct Answer: *[None]*

Response Feedback:

Mashups

Path: p

Words:0

2 **out of 2 points**

QUESTION 38: SHORT ANSWER

1.

2.

Assuming we are outside of the final approach fix, what must the weather be (visibility only) for us to continue past the FAF? We are not certified to use LPV minimums.

fix?

Given Answer: RVR 6000 or 1 and 1/4 vis

Correct Answer:

1 1/4 mile

Response Feedback:

Mashups

Path: p

Words:0

1 ***out of 1 points***

QUESTION 39: SHORT ANSWER

1.

2.

Forecast winds are 090 @ 14, what must the weather be to list KOGS as an alternate? Use the charts if needed.

Given Answer: *800-2*

Correct Answer: *[None]*

Response Feedback:

Mashups

Path: *p*

Words:0

0 **out of 1 points**

QUESTION 40:   SHORT ANSWER

1.

2.

What is the lowest weather we can depart KOGS with? The winds are calm.

Given Answer: *1/4 of visual ref or 1 statute mile*

Correct Answer: *[None]*

Response Feedback:

Mashups

Path: p

Words:0

0 **out of 1 points**

QUESTION 41: SHORT ANSWER

1.

2.

Refer to the KGPI ILS 2 approach chart. The weather is: winds 200 @ 12, visibility 10 mi, OVC 012, 4/3, 30.28. Can we execute this approach? Answer yes or no and explain your answer.

Given Answer: yes, it is marginal VFR weather and the ILS will get us well below 012 OVC.

Correct Answer: [None]

Response Feedback:

Mashups

Path: p

Words:0

1.5 **out of 2 points**

QUESTION 42: SHORT ANSWER

1.

2.

Refer to the KGPI ILS 2 approach chart. The weather is: winds 200 @ 12, visibility 2 1/2 mi, OVC 09, 4/3, 30.28. Can we execute this approach? Answer yes or no and explain your answer.

Given Answer: *yes, minimums are low enough and the weather is good enough for this approach.*

Correct Answer: *[None]*

Response Feedback:

Mashups

Path: p

Words:0

0 **out of 2 points**

QUESTION 43: SHORT ANSWER

1.

2.

Name the six items required on a dispatch release.

Given Answer: *Aircraft tail number, flight number, minimum fuel, departure, arrival, alternate airports, and weather, type of flight (IFR or VFR)*

Correct Answer: *[None]*

Response Feedback:

Mashups

Path: p

Words:0

6 **out of 6 points**

QUESTION 44: MULTIPLE CHOICE

1.

2.

This is used to prevent numerous aircraft calling ground at the same time, thus blocking the frequency and preventing ground control to deliver taxi instructions.

Given Answer:

Ground Metering

Correct Answer:

Ground Metering

1 **out of 1 points**

QUESTION 45: TRUE/FALSE

1.

2.

Often overlooked, standard phraseology isn't that important and doesn't need to be practiced in aviation.

Given Answer: *False*

Correct Answer: *False*

1 **out of 1 points**

QUESTION 46: MULTIPLE CHOICE

1.

2.

A MASTER WARNING or MASTER CAUTION can be canceled when ___________ verify the message.

Given Answer:

Both pilots

Correct Answer:

Both pilots

1 **out of 1 points**

QUESTION 47: TRUE/FALSE

1.

2.

The aircraft you are flying to Canada must not have a temporary airworthiness certificate

Given Answer: *True*

Correct Answer: *True*

1 ***out of 1 points***

QUESTION 48: TRUE/FALSE

1.

2.

Any time anti-ice is required for landing, the WING anti-ice will ALWAYS be ON.

Given Answer: *True*

Correct Answer: *True*

1 ***out of 1 points***

QUESTION 49: TRUE/FALSE

1.

2.

Anytime an object moves in space, a pressure wave is created that travels at the speed of sound.

Given Answer: *True*

Correct Answer: *True*

1 ***out of 1 points***

QUESTION 50:   TRUE/FALSE

1.

2.

During a WINDSHEAR ALERT, a go-around is mandatory.

Given Answer: *False*

Correct Answer: *False*

1 ***out of 1 points***

QUESTION 51:   SHORT ANSWER

1.

2.

How does the leading edge of the tail prevent ice accumulation? What system...

Given Answer: *We do not have anti ice in the tail of the plane*

Correct Answer: *[None]*

Response Feedback:

Mashups

Path: *p*

Words:0

1 **out of 1 points**

QUESTION 52: TRUE/FALSE

1.

2.

During taxi, it is ok for the CA to manipulate the FMS as long as it is at a class D airport because it is on his side and those airports aren't as busy.

Given Answer: *False*

Correct Answer: *False*

1 **out of 1 points**

QUESTION 53: SHORT ANSWER

1.

2.

During abnormal/emergency operations on the ground, what switches, etc. must be verified by the other pilot?

Given Answer: *guarded, IDG, and thrust levers. As well as anytime it is told to you in the QRH*

Correct Answer: *[None]*

Response Feedback:

Mashups

Path: p

Words:0

0 out of 1 points

QUESTION 54: TRUE/FALSE

1.

2.

During any windshear escape maneuver, no configuration changes must occur until the aircraft is NOT annunciating windshear (clear of windshear).

Given Answer: *True*

Correct Answer: *True*

1 out of 1 points

QUESTION 55: MULTIPLE CHOICE

1.

2.

In the air, who reads the QRC?

Given Answer:

PM

Correct Answer:

PM

1 out of 1 points

QUESTION 56:   MULTIPLE CHOICE

1.

2.

In flight, what anti-ice is required?

Temperature 8 degrees C, aircraft is currently in the clouds, airspeed 250 KIAS.

Given Answer:

COWL only

Correct Answer:

COWL only

1 ***out of 1 points***

QUESTION 57:   MULTIPLE CHOICE

1.

2.

In flight, what anti-ice is required?

Temperature 3 degrees C, clear skies, airspeed 300 KIAS.

Given Answer:

None

Correct Answer:

None

1 ***out of 1 points***

QUESTION 58: TRUE/FALSE

1.

2.

ONE OF THE GREAT BARRIERS TO EFFECTIVE COMMUNICATION IS DEFENSIVENESS OR PREMATURE ASSUMPTIONS

Given Answer: *True*

Correct Answer: *True*

1 ***out of 1 points***

QUESTION 59: SHORT ANSWER

1.

2.

Name one of the two TAF codes that we can use for "conditional language"?

Given Answer: *TEMPO*

Correct Answer:

PROB

TEMPO

Response Feedback:

Mashups

Path: p

Words:0

2 out of 2 points

QUESTION 60: SHORT ANSWER

1.

2.

Name a time when you would de-ice and not anti-ice?

Given Answer: *When you are getting ice off the plane but icing conditions are gone*

Correct Answer: *[None]*

Response Feedback:

Mashups

Path: p

Words:0

1 out of 1 points

QUESTION 61: MATCHING

1.

2.

Match the definitions with their appropriate V-speeds.

Question	Correct Match	Given Match
The speed at which the decision to reject or continue a takeoff is made.	D. V1	D. V1
The speed at which the nose wheel begins to come off of the ground.	B. Vr	B. Vr
Known as "Takeoff Safety Speed", it is the speed that we use to climb to our acceleration altitude with one engine inoperative.	C. V2	C. V2
This speed is used during the final segment to climb to a minimum safe/minimum vectoring altitude.	A. Vfto	A. Vfto

4 **out of 4 points**

QUESTION 62: MATCHING

1.

2.

Match the checklist response with appropriate call.

Question	Correct Match	Given Match
CHECKED	A. Verification of the status of a system or verification of a switch, knob or switch/light position.	A. Verification of the status of a system or verification of a switch, knob or switch/light position.

SET	D. Checklist items having more than one correct setting for variable conditions.	D. Checklist items having more than one correct setting for variable conditions.
COMPLETE	C. Used to ensure a set of tasks or procedures are accomplished. Used to confirm a test or briefing has been accomplished.	C. Used to ensure a set of tasks or procedures are accomplished. Used to confirm a test or briefing has been accomplished.
(_____)	B. Used when a checklist item requires a specific response.	B. Used when a checklist item requires a specific response.

1 ***out of 1 points***

QUESTION 63: MULTIPLE CHOICE

1.

2.

Per Chapter 2, OPERATIONAL GUIDANCE, who is ultimately responsible for a flight under their command?

Given Answer:

CA

Correct Answer:

CA

1 ***out of 1 points***

QUESTION 64: SHORT ANSWER

1.

2.

Regarding de-icing fluid, how do you know if a fluid has failed?

Given Answer: *When the ice builds on top of the fluid*

Correct Answer: *[None]*

Response Feedback:

Mashups

Path: p

Words:0

1 **out of 1 points**

QUESTION 65: MULTIPLE ANSWER

1.

2.

Select all that apply.

In a TAF, what verbiage constitutes a change in the main body section of the forecast?

Given Answers:

Any time after a FM

At the end of a BECMG

Correct Answers:

Any time after a FM

At the end of a BECMG

2 ***out of 2 points***

QUESTION 66: MULTIPLE CHOICE

1.

2.

Take the following scenario...

We're scheduled to depart MCI (Kansas City) on the 25th at 2330Z. Block time is 1:34 giving us an ETA on the 26th was at 0104Z. Can we depart?

KORD 251130Z 2512/2618 03018G28KT P6SM BKN018 OVC035

FM252000 02016G26KT 4SM -RASN OVC015

FM260000 02016G26KT 2SM -SN OVC001

FM261200 01017G27KT 3SM -SN OVC015

Given Answer:

Yes

Correct Answer:

Yes

1 ***out of 1 points***

QUESTION 67: TRUE/FALSE

1.

2.

The APU can provide bleed air for the anti-ice system.

Given Answer: True

Correct Answer: False

0 ***out of 1 points***

QUESTION 68: TRUE/FALSE

1.

2.

The speed of sound increases with altitude.

Given Answer: False

Correct Answer: False

1 ***out of 1 points***

QUESTION 69: MULTIPLE CHOICE

1.

2.

This is used to prevent numerous aircraft calling ground at the same time, thus blocking the frequency and preventing ground control to deliver taxi instructions.

Given Answer:

Ground Metering

Correct Answer:

Ground Metering

1 **out of 1 points**

QUESTION 70: TRUE/FALSE

1.

2.

Under normal circumstances, non-essential, non-flight related communication should be limited to outside sterile flight deck.

Given Answer: *True*

Correct Answer: *True*

1 **out of 1 points**

QUESTION 71: SHORT ANSWER

1.

2.

What speed did the dispatched plan for us to fly in the descent?

Given Answer: *Mach .77 or 320 knots*

Correct Answer:

.77 / 320

Response Feedback:

Mashups

Path: p

Words:0

1 **out of 1 points**

QUESTION 72: SHORT ANSWER

1.

2.

What is the critical mach number?

Given Answer: The speed at which the local speed of sound, on the wing, reaches mach 1.

Correct Answer: [None]

Response Feedback:

Mashups

Path: p

Words:0

2 **out of 3 points**

QUESTION 73: SHORT ANSWER

1.

2.

What is the FMA (FLIGHT MODE ANNUNCIATOR) and why is it in chapter 2 OPERATIONAL GUIDANCE and how is it used/what is it used for?

Given Answer:	*The FMA tells you what mode your autopilot is in or what mode is armed. This allows you to always know what your autopilot is doing and what it is going to do. It is in chapter 2 becuase the PM must verify the state of the plane and autopilot before engaging it.*
Correct Answer:	*[None]*

Response Feedback:

Mashups

Path: p

Words:0

1 **out of 1 points**

QUESTION 74: MULTIPLE CHOICE

1.

2.

What is included in MINTO fuel?

Given Answer:

Enroute, alternate (if one is given/required), reserve, holding (if holding is expected)

Correct Answer:

Enroute, alternate (if one is given/required), reserve, holding (if holding is expected)

1 ***out of 1 points***

QUESTION 75: SHORT ANSWER

1.

2.

When do we need to list a takeoff alternate?

Given Answer: *If weather conditions at the departure airport are below landing mins for that airport.*

Correct Answer:

When the weather at the departing airport is less than the lowest approach minimums for that airport.

Response Feedback:

Mashups

Path: *p*

Words:0

1 ***out of 1 points***

QUESTION 76: TRUE/FALSE

1.

2.

When receiving a new altitude, the pilot who sets the altitude should say the altitude and "set", and then the other pilots verifies it and says the altitude "confirmed". Example... ATC says "climb and maintain one three thousand". The pilot who sets it says, "thirteen thousand set", and the other pilot says, "thirteen thousand confirmed".

Given Answer: True

Correct Answer: True

1 **out of 1 points**

QUESTION 77: MULTIPLE CHOICE

1.

2.

What is our max speed in the CRJ 700 at 10,000' MSL?

Given Answer:

335

Correct Answer:

335

1 **out of 1 points**

Course Assessment Form

Course: ASCI 4023 Jet Flying Techniques II Laboratory
Semester Taught: Spring 2021
Number of Students in Course: 15

Student Learning Outcome Assessed	Assessment Results: (Indicate what % of class achieved a minimum 70%)	Benchmark achieved? (Benchmark: 80% of students will score a minimum of 70% = "C")
C. Work effectively on multi-disciplinary and diverse teams.	93%	Yes
D. Make professional and ethical decisions.	93%	Yes
E. Communicate effectively, using both written and oral communication skills.	93%	Yes
H. Use the techniques, skills, and modern technology necessary for professional practice.	93%	Yes
I. Assess the national and international aviation environment.	93%	Yes

Course Assessment (Intended Use of Results)
The following will be used for recommendations to improve the quality of course delivery based on assessment results. These recommendations may include prerequisite change; changing course outline and adding more topics; adding a third assessment; changing the course sequence, etc.

- Pre-requisite has already been changed and goes into effect Spring 2022.
- Develop a grading rubric to better assess student performance.
- Based on the complexity of grading each individual, I do believe this course needs a completely different means of grading in conjunction with different benchmark and assessment parameters would be beneficial based on the complexity of grading.

Lesson #19 (Outcome C, D, E, H and I were assessed)

The purpose of simulator lesson #19 was to assess the students to apply decision-making and communication skills learned throughout their previous experiences during the previous 3 ½ years as Aviation Science majors. A simulated, passenger-carrying, revenue flight was operated from Chicago O'Hare to Traverse City, MI. The weather in Traverse City was set to allow for the students to legally start an instrument approach, but not low enough to allow for landing. However, utilizing an approach procedure for the opposite direction would allow for the students to land, but with a tailwind. The fuel load allowed for two instrument approaches before needing

- START THE LESSON WITH THE AIRCRAFT AT THE GATE AND THE SAFETY CHECK COMPLETE (STUDENTS SHOULD START WITH ORIGINATING CHECK).
- PROVIDE INSTRUCTIONS TO TAXI TO RUNWAY 10L/DD FOR DEPARTURE.
- DURING THE TAKEOFF CLEARANCE HAVE THEM FLY RUNWAY HEADING.
- HAVE THEM LEVEL OFF AT 5,000' FOR A MINUTE.
  - ENSURE THEY MAINTAIN 250 KIAS
- GIVETHEM A CLEARANCE TO CLIMB TO 13,000' AND PROCEED DIRECT TO MOBLE.
- AT 9,000' HAVE THEM CONTACT CENTER 126.27
  - ON THE NEW FREQUENCY GIVE THEM A CLIMB TO FL270
  - ENSURE THEY MAINTAIN 250 KIAS PER THE DEPARTURE PROCEDURE
  - ABOVE 13,000 GIVE THEM NORMAL SPEED.
- THERE SHOULDN'T BE MUCH TIME AT CRUISE, SO BE AWARE OF THIS WHEN GIVING DESCENT CLEARANCES.
  - AT 80 NM FROM TVC, GIVE
  - IF NEEDED/DESIRED, HAVE THEM BUILD A CROSSING FIX USING THE AIRPORT. THE FIX SHOULD BE 30 NM FROM THE AIRPORT AT 10,000 ABOVE THE GROUND.
    - THIS CAN BE GIVEN AS A CROSSING RESTRICTION.
- PROVIDE DIRECT TO **FEPEX** FOR THE GPS 10.
  - THE REQUIRED VISIBILITY FOR THE APPROACH IS 3 NM. HOWEVER, THE CEILING WHERE THEY SHOULD BREAK OUT IS ALMOST 1200' AGL. ENSURE TO SET THE CEILING LOWER TO REQUIRE A MISSED APPROACH.
  - AFTER THE MISSED APPROACH, THEY SHOULD COMMUNICATE AND DETERMINE A PLAN OF ACTION. IMMEDIATELY GOING TO DETROIT IS NOT PRUDENT AS THEY SHOULD HAVE PLENTY OF FUEL TO HOLD AND DISCUSS THE SITUATION.

CA / PM:

FO / PF:

I. PRE-DEPARTURE GROUND OPERATIONS:

a. Report for duty: A
   i. Pilots report to the aircraft on time.
   ii. Pilots report fit for duty.
   iii. Pilots report for duty with a flashlight.
   iv. Pilots report for duty with a headset.
   v. Pilots report for duty with a current company identification badge.
   vi. Pilots report for duty with a pilot certificate with appropriate type and class endorsement.
   vii. Pilots report for duty with a current FAA medical certificate.
   viii. Pilots report for duty with a valid passport.
   ix. Pilots report for duty with an FCC radio permit.
   x. Pilots report for duty wearing a Billiken Air Express approved uniform
   xi. **NOTES:**

b. Perform crew briefing: F
   i. Captain correctly conducts the initial crew briefing.
   ii. Captain correctly briefs cabin crew on pertinent items prior to each flight.
   iii. **NOTES:**
      1. FORGOT TO BRIEF ON INITIAL ARRIVAL TO THE AIRCRAFT

c. Perform external inspection: A
   i. Pilots correctly perform an external inspection prior to and after each flight.

d. Perform Originating Checklist: A-
   i. Captain correctly performs originating checklist flow.
   ii. First Officer correctly performs originating checklist flow.
   iii. Pilots correctly perform challenge and response checklist.
   iv. **NOTES:**

        1. PRESSURIZATION NOT SET ON ORIGINATING
        2. SEAT BELT SIGN COMES ON TO NOTIFY FA'S BOARDING

e. Perform Pre-Start Checklist: __A-__
    i. Captain correctly performs prestart checklist tasks.
    ii. First Officer correctly performs prestart checklist tasks.
    iii. PF correctly performs PF prestart checklist tasks.
    iv. PM correctly performs PM prestart checklist tasks.
    v. Pilots correctly perform challenge and response checklist
    vi. **NOTES:**
        1. FO BRIEFING WHILE CA SETTING UP THE FMS
        2. FMS SETUP SLIGHTLY OUT OF ORDER/CONFUSION DURING SET UP

f. Perform Takeoff Briefing: C+
    i. PF briefs weather.
    ii. PF briefs the airport, rejected takeoff plan, area departure, NOTAMs, and engine out procedure.
    iii. PF verifies the route with the PM in the FMS against the clearance.
    iv. PF briefs highest threat.
    v. **NOTES:**

g. Perform Weight and Balance: NA
    i. CA ensures weight and balance is calculated

h. Perform Engine Start Checklist and Pushback: C
    i. Captain correctly performs engine start checklist flow.
    ii. Captain and or First Officer correctly performs engine start checklist tasks.
    iii. Pilots correctly perform challenge and response checklist.
    iv. Pilots correctly perform pushback.
    v. Pilots correctly start engines.
    vi. **NOTES:**
        1. CA INSTRUCTED FO TO CALL METERING FOR PUSH WITHOUT DOING THE CHECKLIST, THE FO CAUGHT THE MISTAKE AND CORRECTED IT. THEN STILL CALLED RAMP WITHOUT CHECKLIST BEING COMPLETE.

2. CA INSTRUCTED FO TO START ENGINES WITHOUT GROUND CLEARANCE.
3. CHECKLIST INTERRUPTED AND ANDRE (FO) HAD HIM RESTART THE CHECKLIST. GOOD!
4. TAKEOFF DATA, "DO I HAVE TO SAY THE WHOLE THING AGAIN?"

i. Perform Pre-Taxi Checklist: B+
   - i. Captain correctly performs taxi checklist flow.
   - ii. First Officer correctly performs taxi checklist flow.
   - iii. Pilots correctly perform challenge and response checklist.
   - iv. **NOTES:**
     1. CA SHUT DOWN APU IMPROPERLY
     2. FO DOES ECP AFTER FLIGHT CONTROL CHECK

j. Perform Taxi: B
   - i. Captain conducts a single engine taxi when conditions permit.
   - ii. First Officer correctly performs engine start procedure during taxi.
   - iii. First Officer writes down complex taxi instructions.
   - iv. Pilots comply with taxi instructions issued by ATC.
   - v. Pilots correctly use aircraft deicing/anti-icing equipment during taxi.
   - vi. Captain taxis aircraft at a safe speed.
   - vii. Pilots use correct procedures when crossing active runways.
   - viii. Pilots maintain a sterile flight deck.
   - ix. Pilots have the airport diagram chart available for reference during taxi.
   - x. First Officer correctly calls out deviations and errors.
   - xi. **NOTES:**
     1. CALL FREQUENCIES WHILE TAXIING TO TRY AND AVOID STOPPING
        - a. RAMP ON COMM 2, METERING ON COMM 1
     2. TRY AND REMEMBER YOU AREN'T THE ONLY ONE ON THE AIRPORT
     3. WHO'S SETTING FREQUENCIES ON THE GROUND…

k. Perform Before Takeoff Checklist: A-__
   - i. First Officer correctly performs before takeoff checklist to the line flow.
   - ii. First Officer correctly performs before takeoff checklist to the line tasks.

iii. Captain correctly performs before takeoff below the line checklist flow.
iv. First Officer correctly performs before takeoff checklist below the line flow.
v. Pilots correctly perform challenge and response checklist.
vi. **NOTES:**
    1. WAIT UNTIL CA TELLS YOU BEFORE TAKEOFF CHECK TO THE LINE

II. TAKEOFF:
  a. Perform Normal Takeoff: B
    i. Pilots correctly use ice protection, radar, and ignition as required.
    ii. Pilots correctly transfer the controls (if applicable).
    iii. Pilots correctly set thrust.
    iv. PF correctly rotates.
    v. PF correctly makes required callouts.
    vi. PM correctly makes required callouts.
    vii. PM correctly retracts flaps.
    viii. Pilots correctly operate the flight director and autopilot.
    ix. PM correctly calls out deviations and errors.
    x. PF maintains centerline during takeoff roll.
    xi. PF maintains heading within +/- 5 degrees.
    xii. PF maintains airspeed within -0/+ 10 knots.
    xiii. **NOTES:**
        1. FORGOT TOGA BUTTONS
        2. GET TO V2+20???
        3. “NAV MODE AND ENGAGE AUTOPILOT”

III. CLIMB
  a. Climb: D
    i. PM correctly performs after takeoff checklist.
    ii. Pilots maintain a sterile flight deck through 10,000 ft.
    iii. Pilots correctly use ice protection, radar, and ignition.
    iv. Pilots comply with climb profile speeds.
    v. Pilots comply with SIDs and ATC clearances.
    vi. Pilots correctly operate the FMS.
    vii. Pilots correctly operate the flight director and autopilot.

viii. PM correctly calls out deviations and errors.
ix. PF maintains airspeed within +/- 10 knots or .02 mach.
x. PF maintains heading within +/- 5 degrees.
xi. PF maintains altitude within +/- 100 ft
xii. **NOTES:**
1. CHECK DEP PROCEDURE FOR SPEED RESTRICTIONS
2. ANTI-ICE ON DURING CLIMB

IV. CRUISE

a. Cruise: A

i. Pilots correctly perform top of climb fuel check.
ii. Pilots correctly use ice protection, radar, and ignition as required.
iii. Pilots comply with cruise profile speeds.
iv. Pilots comply with all ATC clearances.
v. Pilots are aware of their fuel situation and have enough fuel to complete the flight safely.
vi. Pilots correctly operate the FMS.
vii. Pilots correctly operate the flight director and autopilot.
viii. PM correctly calls out deviations and errors.
ix. PF maintains airspeed within +/- 10 knots or .02 mach.
x. PF maintains heading within +/-5 degrees.
xi. PF maintains altitude within +/- 100 ft.
xii. **NOTES:**
1. GOOD

V. DESCENT

a. Perform Descent: B

i. Pilots correctly perform descent checklist procedures.
ii. Pilots maintain a sterile flight deck below 18,000 ft.
iii. Pilots correctly use ice protection, radar, and ignition.
iv. Pilots comply with descent profile speeds.
v. Pilots comply with STARs and ATC clearances.
vi. Pilots are aware of their fuel situation and have enough fuel to complete the flight safely.
vii. Pilots correctly operate the FMS.
viii. Pilots correctly operate the flight director and autopilot.
ix. PM correctly calls out deviations and errors.
x. Pilots comply with airspace and airspeed restrictions during an arrival into a non-radar environment.

xi. PF maintains airspeed within +/- 10 knots or .02 mach.
xii. PF maintains heading within +/- 5 degrees.
xiii. PF maintains altitude within +/- 100 ft.
xiv. **NOTES:**

1. DESCENT TASKS NOT ACCOMPLISHED AT FL180. CHECKLIST CALLED FOR AT 12,000
2. ALTIMETER SET INCORRECTLY

b. Perform PF/PM Tasks: C-

i. Pilots correctly enter approach into FMS.
ii. Pilots correctly set up navigation frequencies and courses.
iii. Pilots correctly set approach minimums.
iv. Pilots correctly calculate landing distance.
v. PM correctly set landing speeds.
vi. PF briefs weather.
vii. PF briefs the arrival, approach, airport, and NOTAMs.
viii. PF briefs highest threat.
ix. **NOTES:**

1. TASKS LATE AGAIN.
2. NEVER GOT ATIS. ALTIMETER WRONG.
3. LANDING DATA NOT SET UNTIL READ ON THE CHECKLIST
4. DON'T READ THE CHECKLIST LIKE A BOOK
5. DON'T READ LANDING SPEEDS

VI. APPROACH:

a. Perform GPS Approach 1(2): B(C)

i. Pilots comply with the published approach procedure.
ii. Pilots correctly configure flaps and gear at appropriate times.
iii. PM correctly makes required callouts.
iv. PF correctly makes required callouts.
v. Pilots correctly perform before landing checklist.
vi. Pilots correctly identify the runway environment before descent below minimums.
vii. Pilots correctly decide to execute a missed approach when appropriate.
viii. Pilots correctly operate the FMS.
ix. Pilots correctly operate the flight director and autopilot.
x. PM correctly calls out deviations and errors.
xi. PF maintains no more than one-quarter deflection of the course and glide path.

xii. PF maintains airspeed within +/- 5 knots
xiii. PF maintains a stabilized approach.
xiv. **NOTES:**
1. FLAPS 18 MILES OUT… NOT A BAD IDEA.
2. AT 4,000 AND FEPEX GOT 18 KNOTS SLOW

xv. **2ND APPROACH NOTES:**
1. LANDING IS IMMINENT???
2. FMS NOT SET UP PROPERLY

b. Perform Missed Approach Procedure: C
i. Pilots correctly comply with the ATC instructions or charted missed approach procedure.
ii. PM correctly makes required callouts.
iii. PF correctly makes required callouts.
iv. Pilots correctly operate the FMS.
v. PM correctly retracts flaps.
vi. Pilots correctly operate the flight director and autopilot.
vii. PM correctly calls out deviations and procedure errors.
viii. PF descends no lower than -50 ft. below approach minimums on missed approach.
ix. PF maintains altitude within +/- 100 ft.
x. PF maintains heading within +/- 5 degrees.
xi. **NOTES:**
1. WHY DISCONNECTED THE AUTOPILOT?
2. DIDN'T CLICK TOGA
3. AFTER TAKEOFF CHECK???
4. LACK OF STANDARD CALLOUTS
5. SITUATIONAL AWARENESS VERY WEAK
6. PILOTING VERY WEAK

xii. **2ND MISSED APPROACH NOTES:**

VII. LANDING:
a. Perform Normal Landing: NA
i. PF lands in the touchdown zone, not to exceed one-third of the runway length.
ii. PF executes touchdown on the runway centerline.
iii. PF correctly uses brakes.

iv. PF correctly uses thrust reverse.
v. PM correctly makes required callouts.
vi. PF maintains positive directional control during the landing rollout.
vii. PM correctly calls out deviations and errors.
viii. PF maintains a stabilized flight path.
ix. PF maintains airspeed within +/- 5 knots.
x. **NOTES:**

b. Perform CA Shutdown Flow/Checklist: NA
i. Captain correctly performs shutdown checklist flow.
ii. Pilots correctly perform challenge and response shutdown checklist.
iii. Pilots debrief flight
iv. **NOTES:**

VIII. SYSTEMS:
a. Operate Autopilot: B+__
i. Autopilot general knowledge
ii. Autopilot controls and indications
iii. Autopilot limitations
iv. Autopilot operation
v. **NOTES:**

IX. ABNORMAL OPERATIONS
a. Perform Holding (if necessary): NA
i. Pilots maintain altitude + or - 100 ft.
ii. Pilots maintain holding pattern course.
iii. Pilots maintain an appropriate airspeed while holding + or - 10 kts.
iv. Pilots correctly receive required holding information from ATC
v. Pilots correctly program the hold into the FMS.
vi. **NOTES:**

b. Perform Fuel Planning: B+
i. Pilots know minimum and emergency fuel limitations.

ii. Pilots determine fuel requirements for an unplanned diversion.
iii. Pilots determine fuel requirements for a planned diversion.
iv. Pilots make appropriate diversion decision when fuel remaining is insufficient to safely complete the flight.
v. **NOTES:**
   1. FUEL WAS NEVER DISCUSSED, BUT HAVING LOW FUEL DID NOT BECOME AN ISSUE IN THIS LESSON

X. HUMAN FACTORS:

a. Demonstrate Communication Skills: C_
   i. Pilots use standard phraseology and language as specified in the SOP to communicate with other parties and in a manner that is clear to understand.
   ii. Listeners seek clarification to unclear plans and communicators clarify ideas that were not clear to the listener.
   iii. Pilots pre-brief operational requirements as well as identify threats, develop viable mitigation strategies for them, and communicate expectations to fellow crewmembers.
   iv. Pilots debrief threats encountered and assess the outcome of employed mitigation strategies.
   v. Pilots demonstrate teamwork by communicating concerns to fellow crewmembers and promptly and positively responding to communication from others.
   vi. Pilots demonstrate willingness to receive constructive feedback and accept critiques without becoming defensive.
   vii. **NOTES:**

b. Demonstrate Workload Management Skills: [redacted]
   i. Pilots prioritize tasks and distribute workload between PF/PM to manage the flight path and prioritize flying the airplane above all other tasks.
   ii. Pilots create time to manage threats and make decisions to prevent task saturation.
   iii. Pilots adjust automation levels to match situational demands, reduce workload for the crew, and enhance attention management.
   iv. Pilots recognize phases of flight where they are most vulnerable to flight path deviations and strategically plan workload to manage distractions by completing non-monitoring tasks during lower areas of vulnerability
   v. **NOTES:**
      1. PILOTS RECOGNIZED THEY WERE GETTING BEHIND THE AIRCRAFT BUT DID NOT VERBALIZE IT TO ONE ANOTHER
      2. PILOTS DID NOT DEVELOP A PLAN WHEN THEY BECAME OVERWHELMED DURING THE MISSED APPROACH
      3. PILOTS DID NOT DEVELOP A PLAN PRIOR TO STARTING THE APPROACH IN THE EVENT THEY WOULD BE UNABLE TO LAND

c. Demonstrate Problem Solving/Decision Making Skills: C
   i. Captains follow the decision-making process to review assumptions, choose the most viable solution based on the data and continue to evaluate the decision for viability.

ii. Pilots determine the criticality of threats encountered and match decisions to manage the threats.
iii. Pilots use available resources to expand the team as necessary to manage threats and make sound decisions.
iv. First Officers contribute pertinent information to enhance the decision-making process.
v. **NOTES:**
    1. NONE OF THE ABOVE HIGHLIGHTED CRITERIA WAS ACCOMPLISHED

d. Demonstrate Situational Awareness Skills: C
  i. Pilots recognize potentially distracting situations and develop strategies to mitigate the distraction potential.
  ii. Pilots recognize and communicate to other when individual awareness is low and work to raise awareness levels.
  iii. Pilots maintain an awareness of the aircraft position and potential hazards associated with it.
  iv. **NOTES:**
    1. SITUATIONAL AWARENESS WAS LOST AND NOT COMMUNICATED BY EITHER PILOT

e. Demonstrate Monitor and Cross-Checking Skills: C
  i. Pilots demonstrate acceptance of a flight path monitoring responsibility by maintaining constant situational awareness of the aircraft's flight path and immediately bringing any concerns to the PF's attention.
  ii. Pilots communicate effectively with each other to develop and maintain a shared mental model of how to assure the flight path of the aircraft.
  iii. Pilots callout deviations from intended flight path as specified in the SOP.
  iv. Pilots verify changes to flight path configuration and/or automation.
  v. Pilots monitor AC systems and status for threats to safety and callout observed indications.
  vi. Pilots comply with SOP PM assignments.
  vii. **NOTES:**
    1. NONE OF THE ABOVE HIGHLIGHTED CRITERIA WAS ACCOMPLISHED

f. Demonstrate Professionalism Skills: A-
  i. Pilots comply with the professional appearance, grooming, and dress standards as specified in the Billiken Air Express Pilot Policy Manual.
  ii. Pilots conduct themselves with an attitude, language, and demeanor aligned with Billiken Air Express guiding principles.
  iii. Pilots adjust leadership styles to match the situational demands and demeanor of the followers.
  iv. Captains assist the chief pilot in mentoring and furthering the progress of the SIC.
  v. First Officers apply the 10 rules of good followership as listed in the enhanced leadership manual.
  vi. Pilots demonstrate a commitment to being fully compliant with procedures.
  vii. Pilots correctly use Threat Management to organize CRM skills and manage anticipated/unanticipated threats.
  viii. **NOTES:**

Course Assessment Form

Course: ASCI 4350 01 Team Resource Management
Semester Taught: Spring 2021
Number of Students in Course: 28

Student Learning Outcome Assessed	Assessment Results: (Indicate what % of class achieved a minimum 70%)	Benchmark achieved? (Benchmark: 80% of students will score a minimum of 70% = "C")
C. Work effectively on multi-disciplinary and diverse teams.	Team 1 Peer Score 89.81 % Team 1 Group Score 93.67% Team 2 Peer Score 95.27% Team 2 Group Score 91.50% Team 3 Peer Score 88.27% Team 3 Group Score 75.00% Team 4 Peer Score 92.54 % Team 4 Group Score 93.2% Team 5 Peer Score 90.76% Team 5 Group Score 86.93% Team 6 Peer Score 92.04% Team 6 Group Score 92.25%	Yes Yes Yes and No Yes Yes Yes
E. Communicate effectively, using both written and oral communication skills.	Project Score Team 1 91.50% Project Score Team 2 94.60% Project Score Team 3 87.20% Project Score Team 4 95.75% Project Score Team 5 91.80% Project Score Team 6 94.40%	Yes Yes Yes Yes Yes Yes
F. Engage in and recognize the need for life-long learning.	Life-Long Learning Assignment 95.64% 28/28 students completed the assignment	Yes
J. Apply pertinent knowledge in identifying and solving problems.	Problem Solving Assignment 90.57% 28/28 students completed the assignment	Yes

Course Assessment (Intended Use of Results)

The following will be used for recommendations to improve the quality of course delivery based on assessment results. These recommendations may include prerequisite change; changing course outline and adding more topics; adding a third assessment; changing the course sequence, etc.

SLO C. Work effectively on multi-disciplinary and diverse teams.

A requirement for ASCI 4350 is participation in a multi-disciplinary team consisting of both flight science and aviation management students in development of a paper and corresponding presentation and in aviation problem. In order to assess individual and group performance I developed two forms. One form was a team evaluation form. This form was completed by teammates and rated each member of the team and their overall contributions and effectiveness. A second form was used for the presentation. This form was used by students in class who observed each team's presentation. The scores indicated in the table above represent aggregate values. Overall, teammates scored each other's performance quite well. The exception was Team 3 who experienced a significant level of acrimony. My plan for next year is to meet weekly with each team to determine who is completing deliverables. This should identify lower performing students earlier in the semester before the issue becomes significant. The Team Peer Scores represent the aggregate evaluation of each teams performance on the presentation. Overall, I'm satisfied with the score although it is my sense that some classroom evaluators did not take peer scoring as seriously as I would have preferred. As a means of continuous improvement, I plan to require peer evaluation forms to include the evaluators name as a means of ascertaining whether they are “pencil whipping” evaluations.

SLO E. Communicate effectively, using both written and oral communication skills.

As mentioned previously, ASCI 4350 requires each student to participate in a project that includes a written paper oral presentation. The presentation was graded by me and reflects both the written and presentation aspects of the assignment.

The overall scores for the project were quite strong and I am generally satisfied with each teams performance. It should be noted that team performance does not necessarily equate to individual scores. As a means of continuous improvement, I plan to require stronger documentation of each team members participation in the project.

SLO F. Engage in and recognize the need for life-long learning.

Assessing whether students engage in and recognize the need for life-long learning was accomplished through an assignment. The overall score for the assignment was quite strong and I am satisfied with the performance. In terms of continuous improvement, I would like to measure whether student opinions change with respect to the importance of life-long learning. I plan to offer 2-assignments. One assignment will be at the beginning of the semester while the other will be given at the end of the semester. I hope to measure the change in opinions on the topic of life-long learning after the topic has been discussed throughout the class.

SLO J. Apply pertinent knowledge in identifying and solving problems.

An assignment targeting the application of knowledge in identifying and solving problems was a required homework item. Overall, students scored quite well and the assignment and were able to both identify and create strategies for solving problems. As a means of continuous improvement, I would like to incorporate problem-solving as a measurable aspect of the project rather than being a standalone assignment. I believe the integration of the topic into the project will help students better identify of problem-solving.

SLO C. Work Effectively on Multi-Disciplinary and Diverse Teams Student Submission Examples.

As part of the comprehensive project and presentation, each student was part of a team/group. Each team member rated their peers performance in team activities/assignments. Additionally, each classmate rated each team's performance on the presentation.

ASCI 4350 Team Resource Management
Team Peer-Review

Your Name:

Teammates:

1. (Name of Teammate)

Rate this teammates' contributions (work quality) on the project: __________ (1 through 10)
Rate this teammates' contributions (amount/quantity) on the project: __________ (1 through 10)
Rate this teammates' timeliness on contributions to the project: __________ (1 through 10)
Rate this teammates' communication (team-related work): __________ (1 through 10)
Rate this teammate on their overall contributions to the team: __________ (1 through 10)
Total: __________
Would you be pleased to work with this teammate in a professional setting? (Yes or no)

2. (Name of Teammate)

Rate this teammates' contributions (work quality) on the project: __________ (1 through 10)
Rate this teammates' contributions (amount/quantity) on the project: __________ (1 through 10)
Rate this teammates' timeliness on contributions to the project: __________ (1 through 10)
Rate this teammates' communication (team-related work): __________ (1 through 10)
Rate this teammate on their overall contributions to the team: __________ (1 through 10)
Total: __________
Would you be pleased to work with this teammate in a professional setting? (Yes or no)

3. (Name of Teammate)

Rate this teammates' contributions (work quality) on the project: __________ (1 through 10)
Rate this teammates' contributions (amount/quantity) on the project: __________ (1 through 10)
Rate this teammates' timeliness on contributions to the project: __________ (1 through 10)
Rate this teammates' communication (team-related work): __________ (1 through 10)
Rate this teammate on their overall contributions to the team: __________ (1 through 10)
Total: __________
Would you be pleased to work with this teammate in a professional setting? (Yes or no)

Classmate Presentation Review Scoring Sheet:

ASCI 4350 Team Resource Management

Presentation Peer-Review

Peer Reviewer (your) Name:

Team Number You are Reviewing: (1-6):

Please rate the following aspects of the presentation on a scale of 1 – 10 (with 1 being the lowest and 10 being the highest)

1. Rate the quality and clarity of the PowerPoint Presentation: _________ (1 through 10)
2. Rate the quality of any visual graphics used in the presentation: _________ (1 through 10)
3. Rate whether the Team used all members in the presentation: _________ (1 through 10)
4. The pace of the presentation was appropriate: _________ (1 through 10)
5. The presentation was interesting: _________ (1 through 10)
6. The presentation well-represented the culmination of a semesters work: _________ (1 through 10)
7. The presentation was made in the 15-minute time limit: _________ (1 through 10)
8. The presentation included a description of how the research was conducted: _________ (1 through 10)
9. The presentation seemed to be well-rehearsed: _________ (1 through 10)
10. Rate the overall quality of the presentation: _________ (1 through 10)

Total Score __________

SLO E. Communicate Effectively, Using Both Written and Oral Communication Skills Student Submission Examples.

Students participated in group project that required a paper and presentation. The presentations were not recorded, consequently the PowerPoint used in the presentation is provided as evidence.

Example 1 Paper.

Nutritional Effects on the Performance of Aircrews

Names Redacted

Department of Aviation Science, Saint Louis University

ASCI 4350: Team Resource Management

Dr. Terrence Kelly

May 3, 2021

Abstract

A well-balanced diet provides the body with essential nutrients needed to build and maintain cells, regulate bodily functions, and supply sufficient energy in order to provide the highest level of physiological performance. We firmly believe an unhealthy diet negatively affects a pilot's ability to operate at peak performance. This is especially concerning in high risk and high consequence environments. Through our research into how nutritional intake affects the performance of aircrews, we analyzed food options, hydration, and caffeine. We administered a survey encompassing both general aviation pilots and professional pilots. Upon examination of our results, we concluded that most companies and flight schools do not provide guidance as to what a healthy, nutritious diet should consist of. Across all levels of the aviation industry, there is significant room for improvement with regards to food, water, and caffeine consumption. Accordingly, the creation and implementation of a nutrition checklist for pilots to assess their fitness to fly could lead to safer and optimized performance levels.

Introduction

One of the most significant yet undervalued contributors to a human-being's ability to perform at a high level, is their nutritional intake. Some of the most well-known individuals also happen to have diets that allow them to operate at peak performance in their profession. Lebron James, a professional basketball player, (widely considered as currently the best, actively-playing basketball player in the world), spends $1.5 million dollars per year to ensure his body and mind operate at the highest possible level of performance. A well-balanced diet provides the body with essential nutrients needed to build and maintain cells, regulate bodily functions, and supply sufficient energy in order to provide the highest level of physiological performance. This also stands true within the realm of aviation. Various studies analyzing the diets of individuals from all different backgrounds have found that there is significant correlation between the nutritional intake of individuals and their cognitive performance. Research done by CF Ferrar emphasized, "Specific meals and the proper timing for those meals can positively affect mission performance" because "the 'human machine' requires the proper fuel at the proper times to accomplish its mission" (Ferrar, 1995).

When assessing the nutritional properties of food, some of the important factors are sugar and caffeine levels and the type of sugar intake. These factors can affect one's physical and mental state. For example, caffeine can cause anything from restlessness to nausea and vomiting. Likewise, excessive sugar intake is harmful. However the main difference between the sugar found in fruit and candy is that the sugar found in candy is much more tightly packed than that in fruit and therefore contains more sugar in general. Candy, soft drinks and baked goods may also have addictive properties and contain a kind of unhealthy, chemically produced sugar known as high fructose corn syrup. Furthermore, candy, baked goods, and more, provide little, if any, nutritional value compared to fruit, which may contain vitamins, fibers and minerals. The unmoderated consumption of certain foods can even lead to more long-term, permanent effects such as diabetes and high blood pressure. The goal should not be to necessarily get rid of "unhealthy food", but rather consume everything in moderation.

Contribution of nutritional intake to each pilot's performance might seem minimal but is a serious contributing factor in reality, which may lead to a severe accident. In 2009 in Atlanta Georgia, a Delta Airlines

Boeing 767-300 flying from Rio de Janeiro to Atlanta inadvertently made a landing at destination in night VMC on parallel taxiway 'M' instead of the intended and ATC-cleared landing runway 27R. There were three pilots including a check captain onboard. The check captain had to leave his duty due to food poisoning, and the captain of this flight was not familiar with this route since he was being tested to obtain his special airport qualification. Thankfully, there were no injuries. However, the accident could have been prevented if the check captain was present during such a critical phase of flight. In another example from February 3, 1975, 197 people got food poisoning on a Japan Airlines Boeing 747 enroute from Anchorage to Copenhagen from the food provided in flight. 144 people needed hospitalization. Luckily, the pilots did not eat the contaminated food, but the FAA subsequently implemented a regulation for the cockpit crew members to eat different meals from the passengers due to the severity of the accident. Evidently from the accidents above, nutritional intake can be a crucial factor which could negatively affect air crew's performance. Therefore, it is important for the air crew to be aware of their dietary intake so that peak performance can be reached.

Our project is a culmination of both outside reliable research as well as data gathered on our own to determine the necessity and viability of a personal nutrition checklist for aircrew personnel. The outside research was used to examine the different effects that nutritional habits have on pilots and any potential threats that may be posed by an unhealthy diet. Additionally, we used published research to examine the effect of caffeine on the body and in what amounts it may positively or negatively affect a pilot's performance.

So as to suggest whether a personal nutrition checklist is a needed and viable option for pilots, we conducted a survey of student pilots, instructors, and professional pilots gathering data on their habits and attention to their nutrition and their caffeine intake. Based on the gathered data we made recommendations on whether or not a personal checklist of this sort is needed within the aviation industry.

The biggest outcome of our research is the creation of a checklist that can be used by pilots to determine their "fitness to fly". This "fitness to fly" is based on the information we have found regarding proper nutritional intake and the positive effects of having a balanced diet on overall performance inside the cockpit. Adding to the research is the data collected through the use of surveys to students, instructors, corporate pilots, and airline pilots as we assessed what their current diets encompassed as well as their need for the development of such a checklist. The checklist itself incorporates both qualitative and quantitative measures for pilots to be able to assess their nutritional intake for the day and hours leading up to their flight(s), and is constructed in the same manner as the "PAVE" checklist or "I'M SAFE" checklist using a memory item for ease of reference. Included on the checklist that we have developed is information regarding nutritious and substantial foods to eat before flights, safe versus unsafe levels of caffeine intake, and proper hydration.

Ultimately, our biggest takeaway from our research and data collection has been the chance to bring awareness to the importance of nutrition and its correlation to better performance when in a high consequence environment like that of aviation.

Literature Review

Nutritional Effects on Human Performance

Nutritional intake having a significant effect on human performance does not only pertain to pilots. Each and every human-being is affected on a daily basis, by the food and beverages they choose to consume. Whether you are a student, an employee working a standard 9:00 am to 5:00 pm job, or an athlete, you should be able to relate to the impact that your nutritional intake has on your ability to perform at a high level. Through the examination of three common categories in which most individuals can relate to student, employee, and athlete, we will express the significant effect that nutritional intake has on human performance.

To further understand the importance of proper nutrition, we will reference the World Health Organization which states, "Nutrition is a fundamental pillar of human life, health and development across the entire life span. From the earliest stages of fetal development, at birth, through infancy, childhood, adolescence, and on into adulthood and old age, proper food and good nutrition are essential for survival, physical growth, mental development, *performance and productivity*, health and well-being. It is an essential foundation of human and national development" (Stephen, 2007).

The first category we will examine is that of a student. We will be referencing a study done in 2020 by Peter Reuter from Florida Gulf Coast University, published by *The Journal of American College Health* titled, "The Influence of Eating Habits on the Academic Performance of University Students" (Reuter, 2020). To preface this part of our research, we understand that university students are far from reaching public, national, and global health recommendations when it comes to proper nutritional intake. This study states, "Student's eating behaviors can negatively impact cognitive function, and consequently, fail to properly support scholastic demands" (Reuter, 2020). Reuter's conclusions are supported by his own surveys/data along with other university-based studies which provided evidence that poor eating habits adversely impact academic performance, while healthy dietary behaviors are favorable predictors of academic success. "A systematic review on the relationship between eating habits and academic success for university students looked at seven different studies and found that five of those reported higher academic achievement with increased fruit intake. Alternatively, students who had an increased intake of fast food experienced a decrease in GPA in another study" (Reuter, 2020). One aspect examined in the study done by Reuter, specifically observing the correlation between breakfast consumption and GPA, concluded that students who had breakfast on at least five days per week reported a significantly higher GPA than students who had breakfast on three days or fewer. Another aspect examined in the study observed the correlation between fast food consumption and students' academic achievement. Reuter concluded that students who had fast food at least seven times in the past week reported significantly lower current GPAs than students who had eaten fast food less than four times or not at all (Reuter, 2020).

The next category we will examine is that of an employee. In any workplace setting, companies strive to hire employees who can work hard and perform at a high level. Productivity is key to operating at a high level in any work environment. In order for employees to be as productive as possible, their bodies have to be running on all cylinders, both physically and cognitively. A study conducted by Ray Merrill at Brigham Young University found that employees with an unhealthy diet were 66% more likely to report a productivity loss than healthy eaters (Hollingshead, 2019). The diet of most individuals in today's day and age consists of processed foods that lack essential nutrients and leads to a pattern of consuming meals with inadequate nutritional value.

When you do not provide your body with the proper nutrition, you prevent yourself from performing at the highest possible level, both physically and mentally. Unhealthy or unbalanced nutritional intake leads to fatigue, irritability, lack of focus, decreased energy levels, and increased stress. Conversely, proper or healthy nutritional intake promotes a balanced diet that reduces stress and allows individuals to operate at a high level with optimal energy and a greater ability to concentrate on the task at hand. That same study out of BYU found that, "Employees who rarely eat fruits, vegetables and other low-fat foods at work were 93% more likely to have a higher loss in productivity" (Hollingshead, 2019). In conclusion, the development of a healthy diet promoting proper nutritional intake leads to a higher level of productivity in any workplace environment.

The last category we will examine is that of an athlete. A study done by Nancy R Rodriguez, on behalf of the *American Dietetic Association,* found that physical activity/athletic performance is enhanced by optimal nutrition. According to that study, "adequate food and fluid should be consumed before, during, and after exercise to maximize exercise performance and improve recovery time" (Rodriguez, 2009). Proper nutrition is not only needed before and during the required task, but is also essential following the completion of that task. This ensures the body is ready to perform at the highest possible level at any time. A study conducted by the University of Ibadan in Nigeria found that, "Adequate feeding promotes good health for optimal and effective productivity. Good nutrition promotes preventative and curative health because it supplies all the necessary nutrients for the proper functioning, maintenance, and growth of the body" (Babatunde, 2016). In order for the body of an athlete to perform at the highest possible level, sufficient nutritional intake is required, even more so than that of the typical human-being. This is due to the physically demanding tasks they seek to accomplish, leading to even more of an importance placed on proper nutritional intake.

Human Performance in the Aviation Industry

The International Civil Aviation Organization (ICAO) defines human performance as the human capabilities and limitations which have an impact on the safety and efficiency of aeronautical operations. Furthermore in ICAO Annex 6 Part 1 Chapter 9 Para 9.3.1, the importance of an operator establishing and maintaining a ground and flight training program shall include training in knowledge and skills related to human performance. And, it is statistically proven that human performance has a strong correlation with the cause of aircraft accidents according to the National Transportation Safety Board's (NTSB) data in 2009, which reveals that 91% of general aviation accidents and 78% of air carrier accidents were caused by aircrew and pilot human factors issues (NTSB, 2009). Thus, maintaining the pilots' performances is reasonably the most important and crucial factor for the aviation industry to consider in their highest priority in order to perform their operations in the most safe way. And, nutritional intake is one of the most imperative components to contribute to human performances.

The time when the importance of nutritional intake in the aviation industry was highlighted after the food poisoning incident in Japan Airline in 1975 (Altman, 1975). It was a Boeing 747 flight from Anchorage, Alaska to Copenhagen, Denmark. There were 344 passengers, and 197 passengers fell ill. Out of the 197 passengers who fell ill, 144 were hospitalized due to consuming in-flight meals contaminated with Staphylococcus which can cause serious nausea, vomiting, and stomach cramps (CDC, 2018). Luckily, the pilots at the time skipped their meal. However, due to the severity of the accident, the Federal Aviation Administration (FAA) subsequently implemented a new regulation that cockpit crew members must eat different meals prepared by different cooks to prevent food poisoning outbreaks from incapacitating the entire crew. Despite the existence of the new in-flight meal regulation, it is still hard for individual crews to keep track of their diet, and it is almost impossible to expect when they will suddenly have a bad stomachache.

On October 19 2009, a Delta Boeing 767 flight from Rio de Janeiro to Atlanta accidentally landed on the parallel taxiway 'M' instead of assigned runway 27R during night Visual Meteorological Conditions (Yamanouchi, 2012). There were three pilots on this flight; two flying and one acting as a check airman. The two pilots who were flying the aircraft had never flown the route and the check pilot was observing the flight to give them an endorsement for it. So, for the two pilots who were flying the aircraft, the flight route was unfamiliar and the airport was unfamiliar as well. However, during the crucial landing phase of the flight, the check pilot had a severe stomachache and was in the restroom. Without the check pilot monitoring their landing, the two pilots who were completely unfamiliar with the airport landed on the taxiway instead of the assigned runway. From this example obviously, the cause of the check pilot's food poisoning was not an in-flight meal but something that the check pilot ate outside of the aircraft. These above historical accidents prove that even with the existence of the regulation, it is hard for the FAA or airline to fully control an individual's diet which is a very crucial contributor to the pilots' performances and safety of the flight operations.

Food

Different kinds of food affect our moods, energy levels and the state of our physical health differently. When in the high risk environments experienced in aviation, it is imperative that those involved in the flying process are well-equipped both mentally and physically to carry out their jobs. Unhealthy eating habits can do anything from distorting their vision to increasing the risk for heart strokes and other diseases (Millard, 2020).

Some of the properties of food that will ultimately determine whether they are "good" or "bad", include sugar, carbohydrates, fats and the lack of vitamins. Energy is also one of the factors taken into account and arguably one of the most most important as it keeps people awake and aware. However, just because a food provides energy does not mean it is necessarily a healthy food. While sugar is a good source of energy, the sugar found in some foods provides short-lived energy with little to no nutritional value. One original, glazed Krispy Kreme doughnut contains up to 10 grams of sugar (Krispy Kreme, 2018). According to Sanford Health, this leads to a high spike in blood sugar levels followed by an even bigger sugar crash. A sugar crash, also known as hypoglycemia, occurs when the body has more sugar than it's used to, so it rapidly produces insulin in an attempt to keep the levels consistent. The symptoms experienced may include irritability, fatigue, anxiety, headaches and dizziness and last anywhere from fifteen minutes to two hours (Sanford Health, 2019).

Like sugar, fats and carbohydrates can also negatively impact one's health. According to the National Health Service, too much saturated fat, found in margarine, pizza and fried foods, can cause cholesterol to build up in your arteries which can increase the risk for heart disease and stroke. Trans fats, found in red meat or dairy products, are worse than saturated fats as they are linked to decreasing serotonin levels, the hormone that stabilizes our mood and happiness (NHS, 2020). As for carbohydrates, Harvard University's School of Public Health states that refined carbs, the "bad" kind where any amount causes a negative impact, or an excess of unrefined carbs will affect one’s blood sugar levels. Fluctuating sugar levels is associated with periods of hyperactivity and lethargy. Refined carbohydrates can be found in white flour, white rice and pasta while “good” carbohydrates are found in whole grains such as cereal and yogurt, nuts and legumes.

Furthermore, these foods are considered good for a myriad of reasons, besides just the types of carbs it has. Basing the nutritional value of food on how much and what kind of vitamins it contains, pastries and pasta tend to be at the bottom of the list with fruits and vegetables at the top. Harvard Medical School has a list of vitamins, their benefits, and where they are found. According to their website, meat, poultry, fish and beans are rich in iron, which preserves vital functions in the body such as our focus, immune system and helps regulate body temperature. You may have heard that carrots help with our eyesight growing up and might even have bought into the misconception that enough of it will eliminate the need for glasses. Although this is not the case, carrots contain Vitamin A, as do spinach and kale, which affects our vision and may even help us see at night. It also protects eyes from age-related decline and helps support healthy bones. Vitamin E found in nuts, seeds and vegetable oil contains antioxidants which protect against the effects of radicals, molecules produced when your body is exposed to tobacco smoke and radiation. Thus, Vitamin E helps prevent heart disease, cancer, and other diseases.

Ultimately, eating unhealthily when engaging in a high risk task poses many health risks ranging from fatigue to anxiety, that transfer to physical dangers for all those aboard the aircraft or around it. It can also lead to more permanent or long term effects such as Type 2 Diabetes, cardiovascular disease, lower back pain and high blood pressure (SA Health, 2020). Those involved in aviation should be conscious of their nutritional intake.

Caffeine

Another aspect in examining how a pilot’s nutritional habits affect their performance is the consumption of caffeine. Caffeine is a stimulant drug naturally found in the seeds of a variety of different plants (ADF). It is generally consumed orally in the form of a capsule or as an ingredient in a liquid such as coffee, tea, or energy drinks. The effects of caffeine generally begin to appear within 30 minutes and can last as long as four hours.

The manner and time for which it affects each individual can vary based on a variety of factors including, but not limited to, weight, gender, and frequency of use. Some common effects of caffeine include: increased alertness, anxiety or restlessness, stomach pain, headaches, increased heart rate, increased respiratory rate, and higher body temperature (ADF).

Caffeine is one of the most commonly used drugs with the vast majority of Americans using it very frequently. A 2014 study published in the Food and Chemical Toxicology Journal found that approximately 85% of American adults consume caffeine in some form on a daily basis. Interestingly, the same study found that 98% of all caffeinated beverage consumption was from coffee. Even with the rise in popularity of energy drinks over the last decade or so, coffee remains the most consumed caffeinated beverage (Mitchell et al., 2013). According to that same study, “The average number of occasions that a caffeinated beverage was consumed was 12.7 times over 7 days or 1.8 occasions per day.” Additionally, “men consumed slightly more total caffeine from beverages than adult women; but, when adjusted for body weight (i.e., mg/kg/day), women consumed slightly more for all caffeinated beverages combined.”

As with any substance, the dosage level has a major impact on the effects and duration for which they are experienced. In August of 2012, the FDA released a letter stating that for healthy adults, caffeine intake up to 400 mg/day is not associated with adverse health effects (U.S. FDA, 2012). There are certain circumstances and lifestyles for which a higher dose and daily intake of caffeine have been considered safe. For individuals with physically demanding jobs or where sleep deprivation may be a factor, experts have determined that up to 1000mg/day is an acceptable amount of caffeine (Food and Nutrition Board, 2001, Lieberman et al., 2012).

This more recent research would seem to contradict studies from the 1980s and 1990s that proposed caffeine had mostly neutral or even negative effects on pilot performance and individuals with similar jobs. One author proposes that many of the early studies on caffeine involving human trials required the participants to abstain from using caffeine for 24-48 hours before the test and that the “negative effects” they experienced may have been side-effects of an interruption to a habitual caffeine user’s intake (U.S. Institute of Medicine, 2001).

Despite the widely accepted view that regular doses of caffeine at recommended levels and intervals can improve the cognitive and physical performance of the human body, there are some things to take into consideration. The first is that caffeine has been shown to give users a false gauge of their performance while they are sleep deprived. In a 2007 study of Finnish male military pilots, participants were sleep deprived for 36 hours, given a 200mg dose of caffeine and then tasked with flying a mission in a simulator. Post-mission, many of the pilots who received a dose of caffeine self-assessed their level of performance and ability to be greater than what they had actually demonstrated (Lohi, et al., 2007). Other research has shown that habitual caffeine users who suddenly stop taking caffeine may experience undesired side-effects that could negatively impact their ability to perform.

While each individual should take into consideration their own health and lifestyle, caffeine usage, in moderation, has the ability to positively impact the performance and ability of the user. More research is needed on the specific impact that caffeine combined with chronic sleep deprivation may have on pilot performance. As of now, all research points to caffeine being a useful aid to alertness in the cockpit. Pilots should be mindful of their intake level as well as sudden interruptions to consistent consumption. As a rule of thumb, pilots should always prioritize rest and plenty of sleep; caffeine should not be used as a crutch.

Hydration

Water is one of the most important things that the human body needs to survive. It makes up about 50% to 70% of a human's body (Mayo Clinic, 2020). Every single system within the body needs water in order to function properly. It helps keep a stable temperature, lubricates and pads joints, protects delicate tissues, and helps excrete wastes out of the body (CDC, 2021). Without daily proper fluid intake, dehydration can begin to take effect on the body. For serious athletes in competition, this could account for nearly a 6-10% loss in total body weight through sweating alone. This effect plays a large role in degrading the overall physical performance one can exert. This could mean a loss in endurance, an increase in fatigue, a decrease in enthusiasm, and an increase in perceived effort (Popkin, 2010, p. 443). While the impact of physical performance can be important in aviation, the effects dehydration can have on cognitive ability is tremendous.

"Mild dehydration produces alterations in a number of important aspects of cognitive function such as concentration, alertness, and short-term memory in children (10-12 y), young adults (18-25 y), and the oldest adults (50-82 y)" (Popkin, 2010, p. 443). Even the mildest amounts of dehydration can also play an impact in degrading psychomotor skills like hand-eye coordination, operating machinery, and coordinated physical activity.

An important question is how much water should the average person consume a day? Hydration will vary across climates with warmer climates generally needing more water a day to stay fully hydrated. However, the U.S. National Academies of Sciences, Engineering, and Medicine have determined that an appropriate amount of fluid intake a day is about 15.5 cups (3.7 liters) a day for men and about 11.5 cups (2.7 liters) a day for women (Mayo Clinic, 2020). Interestingly enough, drinking water is not the only source for staying hydrated. In fact, nearly 20% of all fluid intake each day comes from the foods that a person consumes. Foods like watermelon and spinach are great sources of hydration as they are nearly 100% water by weight. Additionally, other fluids like milk and juice that are made mostly from water can contribute to the daily fluids necessary to remain hydrated. The most important thing to remember is the minimum amount to drink a day in order to remain hydrated. One should drink water for each meal, between meals, at times of exercise, as well as whenever the feeling of thirst occurs (Mayo Clinic, 2020).

Contrary to popular belief, coffee and other caffeinated drinks do contribute to the daily fluid consumption necessary to remain hydrated. When drinking in moderation, these types of drinks do not specifically lead to dehydration in the body. Caffeine intake can actually increase performance while not contributing to dehydration of the body (Institute for Scientific Information on Coffee, 2019).

Methodology

Our primary method of data collection was a survey generated by our team to analyze the nutritional intake of pilots and how it affects pilots of varying career paths and experience levels. With the survey we sought to identify the type of pilot the individual is, their habits regarding food, water, and caffeine consumption, and their view of a healthy diet. This gave us insight on how the diets of pilots from various environments differed. The fact that we asked different types of pilots to participate rather than having only one specific type, such as student pilots or instructors, increased the validity of our survey data. The survey was based on voluntary responses and thus we made it somewhat short in order to motivate those who started it, to finish it. Due to its short length, our survey data is not as reliable as it could have been if it had not been based on voluntary responses. We placed a greater emphasis on having more individuals complete the survey rather than asking longer, more in-depth questions. When it came to analyzing the responses and drawing conclusions, we met up as a team and each of us pointed out different aspects of it. We looked for patterns within the survey to find any commonalities and differences amongst responses. Based on the results, we identified any trends among pilot groups as well as the survey sample as a whole.

Results/Conclusion

Based on the data we have collected through our research, we have concluded that most pilots don't pay particular attention to their eating habits. It is possible that nutritional intake could be neglected if one's personal health ranks low on their priority list while working in a high consequence environment. Two of the survey questions asked respondents to rank their nutrition habits on a scale of 1 - 5 (unhealthy - healthy) for times while they are flying/preparing to go fly versus times when they are not flying/preparing to fly. The responses showed that pilots tend to have unhealthier diets when they are flying/preparing to fly. This trend could be influenced by numerous factors including, limited food options at airports and on planes and lack of emphasis on nutrition in high consequence environments. Furthermore, the results showed a majority of pilots across all backgrounds (78.6%) who stated that their current employer/flight school either did not currently provide, or were unsure if they provided any guidance on food/caffeine intake. Additionally, 63.8% of the respondents indicated that they would be at least somewhat likely to use a fit-to-fly checklist focusing on nutrition. These two results suggest the need for some type of nutrition checklist to be created/implemented in order for pilots to better assess their overall fitness to fly. In our checklist, we have highlighted the quality of the food, the quantity, hydration, and caffeine intakes due to their crucial impacts on human performances.

From our survey data and research, we have gathered that flight crews tend to prioritize their duty over their health. Also, they tend not to put enough considerations over possible adverse effects of malnutrition on their performances. In order to maximize crew performance and minimize the risk of crew members making mistakes, especially during emergencies or critical phases of flight, it is important to place greater emphasis on the crew's nutritional intake.

Ultimately, since our research is preliminary, greater depth of research could be conducted to provide further guidance. For future extensive research, we recommend age/gender segmentation to further understand background and see if there is a particular pilot group where there is an issue or if it's more of an overarching problem across all backgrounds.

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Example Paper #2

Effects of Covid on the Air Cargo Industry

Team Resource Management

Spring 2021

Names Redacted

Abstract

The development of the aviation industry is a product of globalization. The impact of this pandemic on the aviation industry may not only have an impact on short- and medium-term traffic and benefits, but also have long-term and profound impacts and changes. The development potential of the air cargo industry will also drive the increase in demand for cargo aircraft, even with greater room for growth than passenger aircraft, which will also help the recovery of the global aviation industry. Covid-19 boosted the unseen side of air cargo as the demand of cargo shipments increased. During the pandemic, consumers began to purchase their essentials online and shipping companies were unable to keep up. Air cargo emerged and became known as one of the key industries that kept the world moving. Companies like Amazon, UPS, and FedEx saw an increase in transporting shipments via aircraft. This resulted in delays and facility expansions that made cargo companies realize the need for additional investment in the industry. Hiring more employees and staff was necessary to recuperate expenses within air cargo and generate billions in revenue. Airlines were forced to halt commercial flights due to the pandemic and turned to air cargo to generate revenue. Despite the Covid-19 and the ensuing pandemic spread across the globe, the air cargo industry was able to generate revenue streams of $117.7 billion, making it the buoy that kept the airline industry afloat despite their $84 billion in losses. Now, the air cargo and airline industry came together to be one of the main methods in transporting covid-19 vaccines and medical supplies across the globe. In addition, cargo airlines increased their demands for pilots as commercial airlines furlough hundreds of them. The air cargo industry played a key role during the pandemic and kept the aviation industry alive during this unprecedented time.

Introduction

In the year prior to the Covid-19 pandemic, 2019, the air cargo industry was facing the worst performance it had seen since the global financial crisis in 2009. This was also the first time in eight years since the last decline in freight volumes, occurring in 2012. The reason behind the weak performance in 2019 can be attributed to the weak growth of global trade that year, as well as slow gross domestic product (GDP) growth coupled with falling export orders. Overall, in 2019, the air cargo dollar revenue streams fell a staggering 11.7%

in the US and European airfreight lost over 16% of its dollar revenue streams. More specifically, in 2019 the total amount of freight tons carried was 57.6 million tons with a decline of 2.9% in total scheduled freight traffic in terms of tons per kilometer. Companies like FedEx saw revenue streams increase to 2.9% totaling to $17.8 billion in 2019 but they also saw a net loss of $1.97 billion. In the year prior to that, 2018, FedEx had an overall profit of $1.13 billion. Other airlines such as Qatar Airways had also seen revenue increases in 2019, an increase of 16.8%, but despite this they too reported a loss of income for the end of that year. As 2019 ended with global trade market seeing no improvement and the coronavirus beginning to sweep the world, it was projected that airlines would suffer drastically as flights are cancelled and travel restrictions tighten. To stay afloat during the pandemic, airlines began to improvise and started removing passenger seats and overhead compartment bins, in aircrafts that were no longer being used to transport people, to create pseudo air freighters. This allowed companies like Qatar Airways and other smaller passenger carriers to generate revenue streams by transporting cargo instead of people. For example, Qatar Airways was able reportedly able to transport 1.4 million tons of cargo, this gave them an increase of 6.8% from 2018 and allowed them to expand their fleet to become the second largest cargo carrier in the world. Despite projections for 2020 to be an incredibly weak year in the airline industry, most airlines were able to keep revenue streams going due to an increase in online shopping and trade around the world. The pandemic may have brought the transportation of people to a grinding halt, but it also brought with it a need for increased cargo transportation, allowing airlines to stay in business despite weak overall gains.

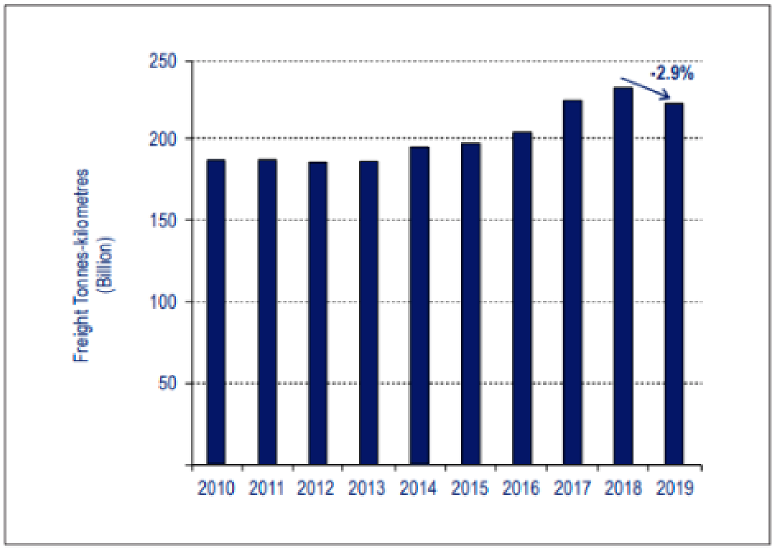
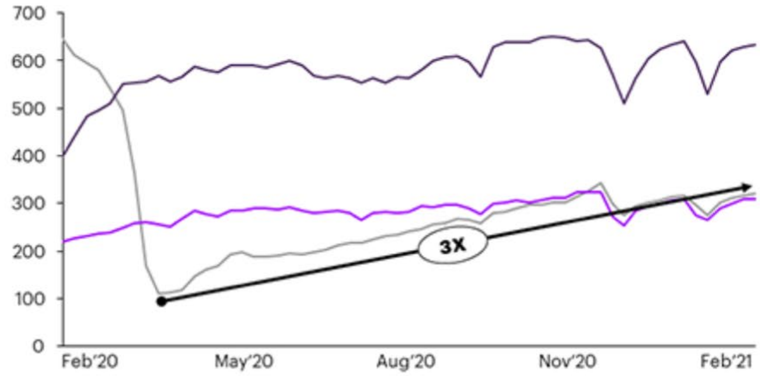


Figure 2. Freight Tonnes-Kilometres
Total Scheduled Traffic, 2010-2019

Before the COVID-19 pandemic, the aviation industry was already facing severe challenges. Reasons include, but are not limited to, the trade war, macroeconomic uncertainty, and Britain's departure from the European Union, which have made the global trade atmosphere depressing. But when the COVID-19 crisis began, the situation became more rigorous. Global passenger flights have come to a standstill, causing airlines to be unable to maintain basic passenger capacity. However, transportation of important medical supplies worldwide has become a top priority, and this has led to an increase in demand for charter flights and airlines that can adjust operations in a timely manner. The Covid-19 pandemic has brought unprecedented global travel restrictions and lockdowns. This has led to the suspension of passenger flights, resulting in a serious loss of cargo capacity in the world. Belly capacity is currently three times higher than it was almost a year ago, during the belly capacity peak decline. However, belly capacity remains 54% below pre-COVID-19 levels. Chart showing weekly international air cargo capacity, February 2020-March 2021 (*COVID-19: Effects on Air Cargo Capacity* 2021).

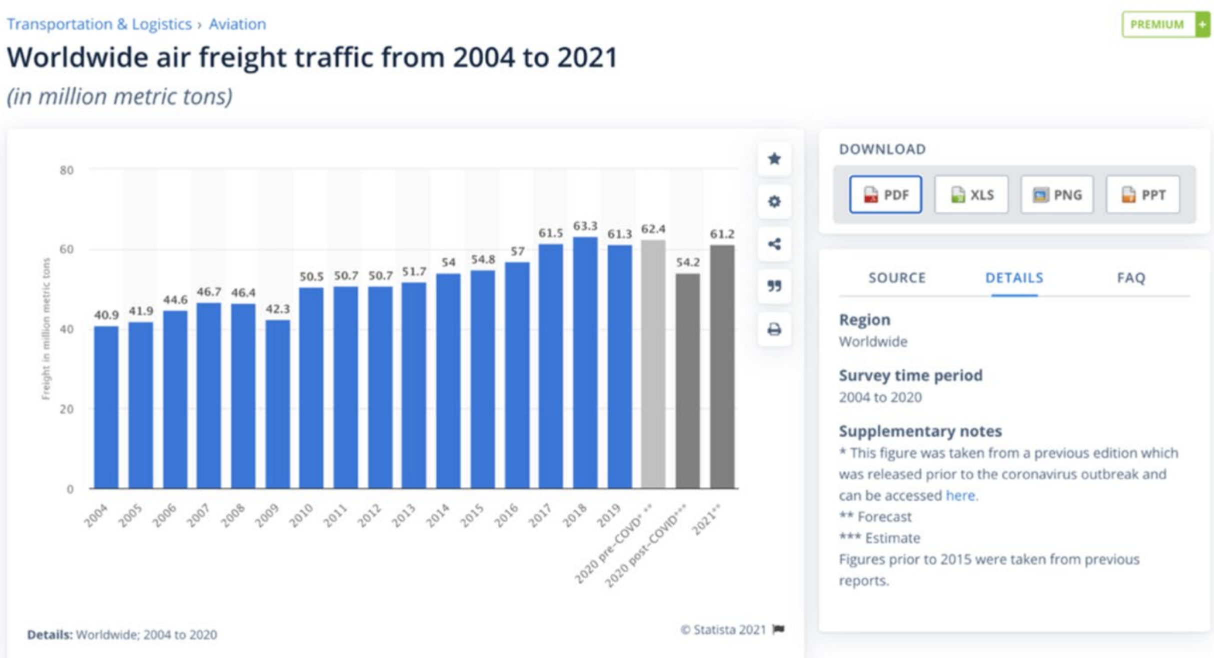


Cargo capacity growth, 8 – 21 Mar

	vs. previous two weeks[1]	vs. same weeks 2019[2]
Airline freighter	+4%	+22%
Express freighter	+5%	+29%
Passenger belly	+4%	-54%

In order to maintain the lifeline of important global supply and supply chains, freighter operators have extended their aircraft to stay in the air longer to solve the problem of insufficient capacity. Many passenger airlines have converted their aircraft to cargo-only flights, and some passenger airlines have even removed cabin seats to increase cargo capacity.

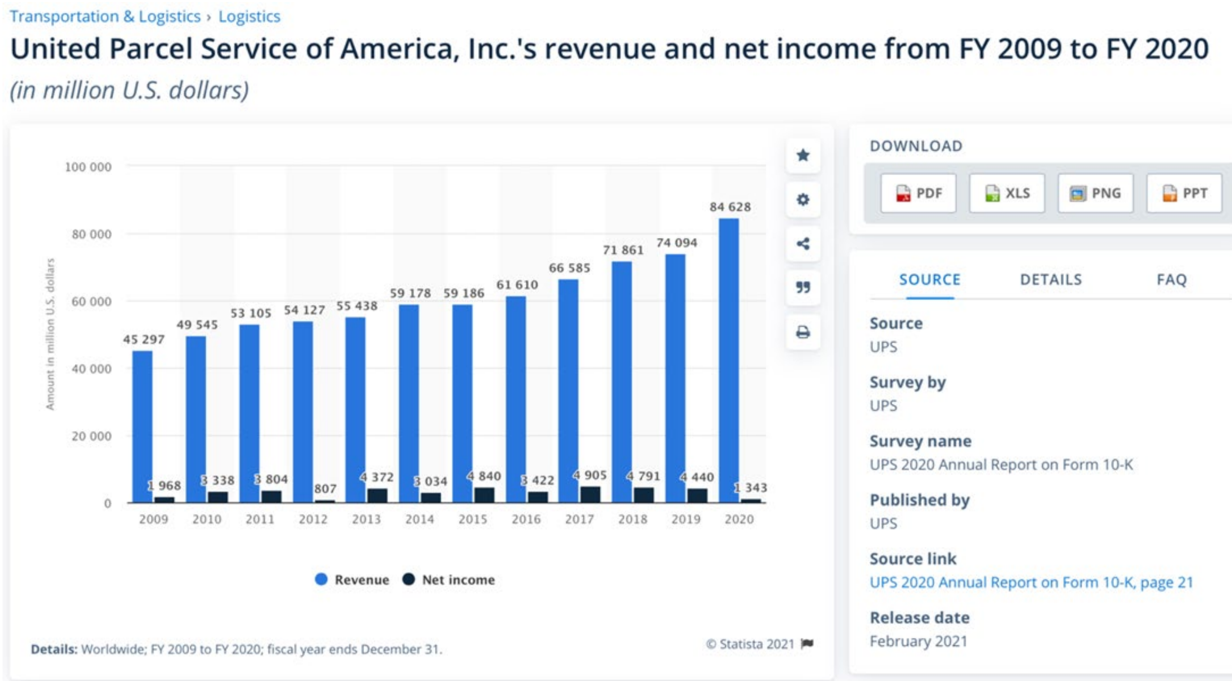
In terms of air cargo infrastructure, the sector was struggling before covid-19 hit the global trades and economy. Cargo facilities were facing a surge in volumes flowing through airports. They were unable to keep up with such demand. Many of the airport cargo facilities are in need of modern cargo traffic equipment as the demand remains strong. Airports are running out of space and the economic downturn put a halt to cargo facility development in recent years. Much of the investment has gone to keeping up with the maintenance of certain cargo facilities across the United States. Since as early as 1997, industries knew about the surge in air cargo for the coming years. Infrastructure facilities needed renovations to keep up with the rising flow of goods and services. According to the article, *Air Cargo Success is in the Infrastructure,* "many airports have limited land available for expansion or they have air quality controls or noise restrictions which puts a limit on growth. There is the talk about alternative airports for just air cargo" (Trunick 1997). Air cargo operations have dealt with the increase in operations over time. This article was written in 1997 and there was already an existing pressure to expand and accommodate air cargo operations. Many airports already deal with air pollution and noise limitations that adding air cargo operations can affect them. Over the years "air cargo continues to be overlooked in system planning. Air cargo development has been hampered by landside congestion, inadequate investment in modern facilities, limitations on the amount of cargo that can be carried on passenger aircraft, and nighttime curfews that restrict air-freight operations" (Howard 2000). In 2018, many airports are operating close to capacity and have existing facilities that are not suited for the requirements of modern air cargo traffic. Pressure has been increasing as airports have gotten overwhelmed with the peak season and exposing inadequate cargo capacity. The demand for air cargo is forecast to remain strong and increase. Below is a graph of the traffic Worldwide of air cargo from 2004 to 2021:



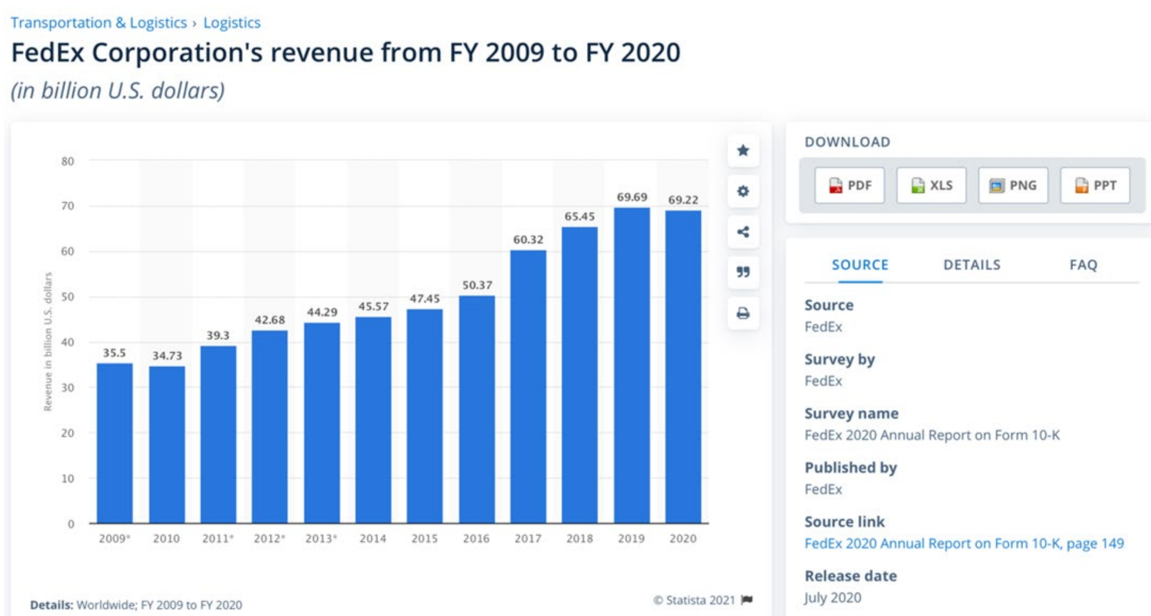
Through the past 16 years, air freight has slightly increased every year and will continue with a strong demand.

When the pandemic began, there was a slight decrease in cargo for a period of time. As people began to know that ordering online was safer than in person, the surge continued. Amazon, who uses one- or two-day shipping, began taking longer to deliver its packages. Between May and July, "Amazon added nine planes to its Amazon Air fleet, the most it has added over a three-month span…Amazon air expanded rapidly during summer 2020" to accelerate their one – two-day deliveries for prime members (Palmer 2020). Cargo facilities lacked proper resources to protect employees from contracting covid and when they did they had to close and sanitize the area, resulting in delays of packages. These cargo facilities were struggling to keep up with such high demand. As airlines were unable to transport passengers many of them turned to deliver cargo. UPS and FedEx kept their revenue stream positive, and covid-19 did not affect their numbers. Below are the revenues for UPS and FedEx, during the years of 2019 and 2020 revenue did not decrease:

UPS



FedEx



As we are entering the final stages of the covid-19 pandemic, we are reflecting how the air cargo industry is in need of various repairs. IATA has launched an online platform which helps the air cargo industry match shipping needs with the availability of infrastructure capabilities of service providers across the chain. Currently, the air cargo industry has played an important role in delivering vaccines that are temperature sensitive shipments. Much of the problem has been storing these vaccines and transporting them around the world with such temperature sensitivity. Overall, the covid-19 pandemic has shown industries that air cargo facilities are in need of a modernization in their infrastructure. Air cargo will continue its positive track and demand will increase every year. Investments and renovations need to take place as soon as possible or the air cargo infrastructure will collapse.

During this challenging year, the COVID-19 pandemic has forced shippers, carriers, and logistics providers to adjust to wrenching market shifts, including a deep recession, a rapid freight snapback. What changed during 2020 is that the cargo industry tried to reach a better curve that will minimize all the losses. One of the methods that they try to change is to allow more freedom to the industry. Also reevaluating the dispute between China and the USA trade, which resulted in this great boost. Some airline companies have bought stock shares during the pandemic, to invest later in the future. And what they did is all companies knew that there is a big recession but to solve this problem they need to be together to survive.

One of the methods is that airlines have used more booking platforms to facilitate the flight booking process for the cargo industry. It all shows that this pandemic has brought a lot of challenges but, those challenges have created all these great solutions. According to IATA, only 1% of global trade moves by air, but that 1% accounts for 35% of global trade by volume, a fact that has economists searching for forward financial indicators closely examining air cargo performance. More encouraging signals came from the North American air cargo industry, which saw a 5% increase in demand in November, indicating a weak rebound from the pandemic lead recession. The whole region has seen a lot of improvement during the 5-month period of 2021, which is a great deal during these circumstances.

Sources: IATA Economics, IATA Monthly Statistics

The issues the air cargo industry and infrastructure are facing are important and crucial to our global trades and economy. Over the years, the infrastructure has been struggling and on the verge of collapsing. During covid-19 we experienced both a decrease and then a surge in traffic flow as we battled with such pandemic. We saw both spectrums on the table and what the implications could be. We learned how to deal with these challenges, but we also figured out that we need to innovate the industry and invest in air cargo. We need modern infrastructure and efficient technology to process the increase of volume over the next years. We will research the problem and cause of such issue and trajectory trends of air cargo and its infrastructure throughout our project.

Literature Review

Pre-Covid Air Cargo Operations

2019 worst year for air FREIGHT demand since 2009. (2020, February 5). Retrieved March 14, 2021, from https://www.iata.org/en/pressroom/pr/2020-02-05-01/

Purpose of Article:

- The purpose of this article is to show just how poor air freight was doing prior to the Covid pandemic.

Identifying Themes, Debates, or Useful Information:

- In total, the United States cargo volumes declined by 1.5% as compared to a capacity increase of 1.6% in 2019.
- Multiple factors contributed to air cargo's underperformance compared with global trade outcomes. There were manufacturing sectors that experienced weak demand conditions. Air freight relies upon these sectors for the timely distribution of spare parts and high value inputs.
- Softer business and consumer confidence also contributed to the lower annual freight outcome.
- Freight volumes fell 2.9% in 2019, for North America.
- Industry-wide freight ton kilometers (FTKs) contracted by 3.3% in 2019. The first year of declining freight volumes since 2012, the weakest since the global financial crisis in 2009.
- Weak growth in global goods trade was due to international trade tensions, resulting in only a +0.9% increase in 2019. Trade tensions were a key factor for the decline in air freight volumes.

Results/Conclusion:

- Due to weak global trades and less consumer confidence, the air cargo industry suffered globally in 2019.

Morrison, M. (2020, June 12). How coronavirus has turned the airfreight market on its head. Retrieved March 15, 2021, from https://www.aircargonews.net/freighters-world/how-coronavirus-has-turned-the-airfreight-market-on-its-head/

Purpose of Article:

- The purpose is to look at how the coronavirus, and other factors, have impacted the air cargo industry and what measures had to be taken to adapt to the pandemic.

Identifying Themes, Debates, or Useful Information:

- Airlines converted their aircrafts into 'mini-USPS' flights to operate as stand-in freighters, by removing seats and overhead baggage areas.
- Airlines to repurpose aircraft include Finnair, Icelandair, and British Airways
- The services of these airlines were made possible by updating guidelines from the European Union Aviation Safety Agency to exempt airlines from their normal limits on transporting critical cargo in passenger cabins during the coronavirus crisis.
- Airbus launched its own modification plan to convert its A330s, A340s and A350s into auxiliary freighters by removing the economy seats and fitting pallets onto the seat tracks.
- The coronavirus crisis has caused a spike in demand for medical equipment, but national lockdowns have also boosted e-commerce. Consumers have turned to online shopping, accelerating the already booming trend.
- Despite this looming recession flights, demand for purpose-built freighter aircraft could remain in high demand even after many of the auxiliary cargo aircraft return to passenger service again.

Results/Conclusion:

- Due to a drastic decline in passenger flights, airlines were forced to modify their aircrafts into pseudo-freighters by removing seats and overhead bins. This trend of airlines using makeshift freighters has been successful enough where airlines are now considering keeping the aircrafts as they are.

U. (2020, December). Covid-19 Impact Assessment and Outlook on Global Logistics. Retrieved March 20, 2021, from https://www.unicef.org/supply/media/6171/file/%20COVID-19-impact-on-logistics-December-2020.pdf

Purpose of the Article:

- How Covid-19 has impacted different forms of freight transportation across the globe to show what has been done to adapt to the changing situations.

Identifying Themes, Debates, or Useful Information:

- All existing contract airfreight rates had been suspended, with UNICEF registering rate increases by as much as 100-500% per charter, all while airlines continued to seek financial support from governments.
- The decline in widebody aircraft capacity from passenger fleets has levelled off, but the belly capacity across all regions has not begun show signs of any recovery even though there have been small increases on some intra-Asia routes.
- Air freight transit times had increased during the year to about 3-6 days longer than previous standard transit times due to the reduced flight departures from Covid-19.
- Freighter capacity for the aircraft that are dedicated to cargo has increased and is 20% higher than it was in 2019.
- The overall global air freight capacity is still critical and is at approximately 30% below the levels registered for same time in the prior year, 2019.

Results/Conclusion:

- Initially, air cargo flights suffered intensely at the end of 2019 and the beginning of 2020. After a brief adjustment period, air freighters began to adjust their operations and even began to modify their aircrafts to compensate for the decline in passenger flights.

The world of air transport in 2019 //. (n.d.). Retrieved April 10, 2021, from https://www.icao.int/annual-report-2019/Pages/the-world-of-air-transport-in-2019.aspx

Purpose of the Article:

- The purpose of this article is to illustrate how airline industries fared in 2019, despite the exceptional circumstances facing the aviation industry at the time.

Identifying Themes, Debates, or Useful Information:

- In 2019, the total amount of freight tons carried was 57.6 million tons.
- There was a decline in the amount of total scheduled freight traffic in terms of tons per kilometer, of 2.9%.

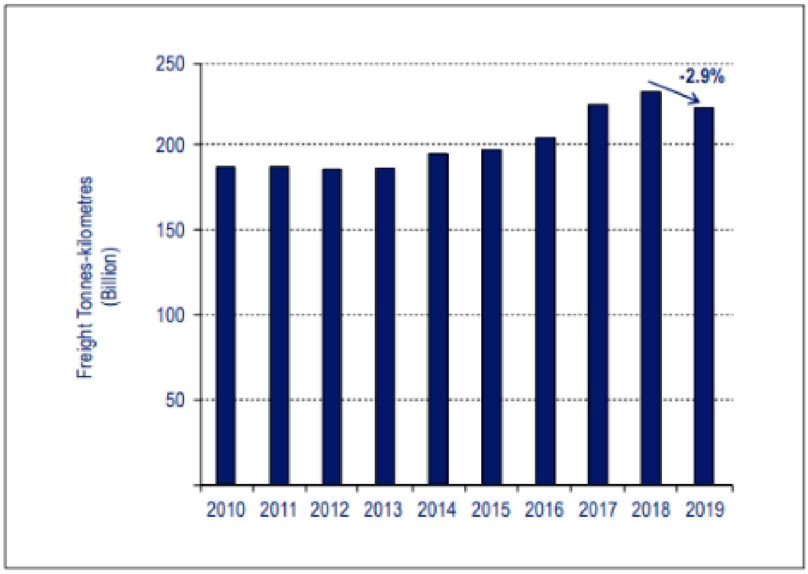
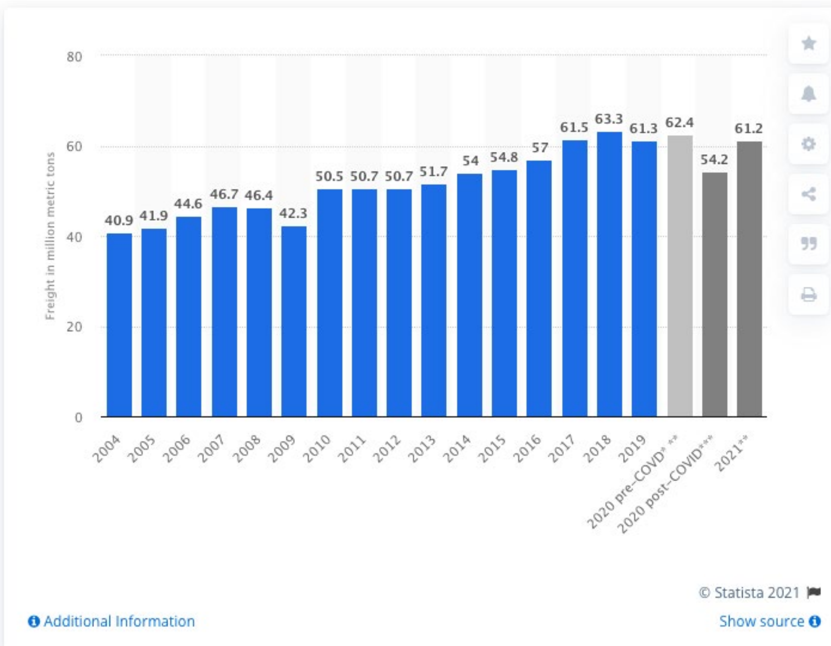


Figure 2. Freight Tonnes-Kilometres
Total Scheduled Traffic, 2010-2019



Results/Conclusion:

- The weak global trade economy in 2019 is reflected in this article by illustrating just how much cargo was transported in the year as compared to years prior. The graph above shows this drastic decline in trade volume.

FedEx reports Q4 results and warns of a tough year ahead. (2019, June 26). Retrieved April 24, 2021, from https://www.aircargonews.net/airlines/freighter-operator/fedex-reports-q4-results-and-warns-of-a-tough-year-ahead/

Purpose of the Article:

- This article illustrates the difficult year FedEx had in 2019, warning that 2020 would be an even worse year due to weak global trade.

Identifying Themes, Debates, or Useful Information:

- In 2019, FedEx Express had seen revenue increases of 2.9% totaling to $17.8 billion in their fourth quarter, but they also had a net loss of $1.97 billion. In the year prior, 2018, the company had seen an overall profit of 1.13 billion.
- FedEx Express expected 2020 to be an especially low year due to a weakness in global trade.
- FedEx would have seen an overall profit of $1.3 billion in 2019 but due to a series of one-off expenses, such as retirement plan accounting adjustments and integration costs, totaling to $1.7 billion at the end of the quarter, they lost money overall.

Results/Conclusion:

- FedEx follows the trend of airlines struggling in 2019, expecting to have an even worse year in 2020. The only big difference between FedEx and other competitors was that they lost money due to expenses rather than something such as a loss of business.

Adaptations During and Post Covid

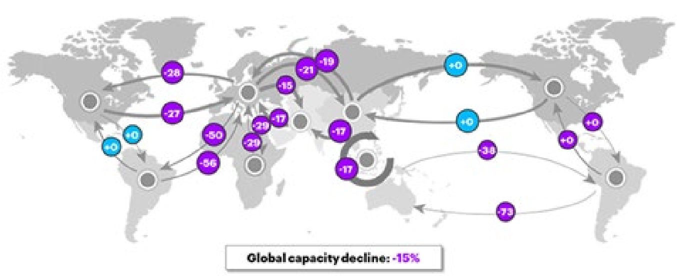
COVID-19: Effects on air cargo capacity. (2021, March 15). Retrieved from https://www.accenture.com/us-en/insights/travel/coronavirus-air-cargo-capacity

Purpose of Article:

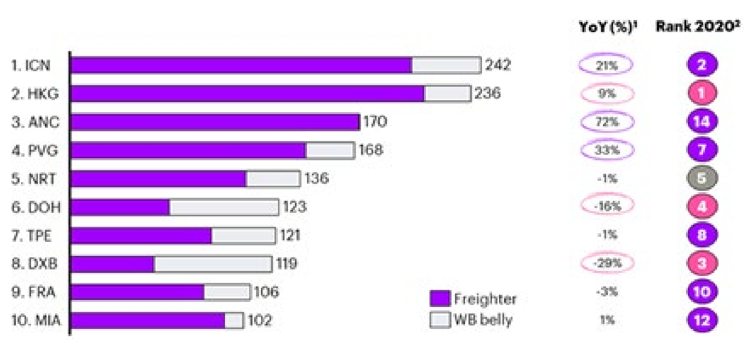
- Air cargo capacity compared to the same weeks in 2019.
    - The latest data about global air cargo capacity

Identifying themes, debates, or useful information:

- Air cargo capacity declined 15% compared to the same weeks in 2019.



- Incheon is now the largest airport for cargo capacity, with a 21% increase compared to last year.
- Top 10 largest airports by inbound capacity, Feb 2021 vs 2020



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Results/conclusion:

- The COVID-19 pandemic is a health and humanitarian crisis as well as an economic shock.

Zubkov, V. (2020, April 28). How is the air cargo industry responding to the COVID-19 pandemic? Retrieved March 29, 2021, from https://www.internationalairportreview.com/article/115426/air-cargo-industry-reacting-responding-covid-19/

Purpose of Article:

- The impact on the worldwide air cargo logistics industry is significant and will affect the industry's ability to recover from COVID-19.

Identifying themes, debates, or useful information:

- What financial impact has COVID-19 had on the air cargo industry?
    - Global air cargo capacity is down by 35%
    - Only 20% of belly cargo is still flying.
    - Freighter's capacity has been stable for the last four weeks.
- In what way have the imposed travel restrictions and border closures impacted the movement of air cargo?
    - The existing structure of bi-lateral and multi-lateral agreements imposes restrictions for the delivery of emergency supplies – restrictions should be relaxed.
    - Airlines need to quickly change the geography of the flights – this should be facilitated.
    - Slots at airports remain a problem – recognition should be given to the importance of cargo operations.
    - The danger of flight crews to be placed in quarantine – prudent exceptions are needed for key workers.
    - Some countries do not allow the transit of certain goods through their territories – messages should be channeled through WCO.
- Will the future of the air cargo industry be different as a result of this pandemic?
    - One of the key tasks is to safeguard the functionality of the air cargo supply chain to the maximum extent possible. A presumably stable element in recovery scenarios, air cargo will play a significant role in supporting the recovery of the global supply chain and the economy.

Results/conclusion:

- The development of the aviation industry is a product of globalization, serving the rapid flow of people and logistics. In the eyes of many people, the impact of this epidemic on the aviation industry may not only have an impact on short- and medium-term traffic and benefits, but also have long-term and profound impacts and changes.

MAJERES, A. (2020, May 26). COVID-19: Air CARGO transforms to Facilitate e-commerce. Retrieved March 29, 2021, from https://www.parcelandpostaltechnologyinternational.com/opinion/covid-19-air-cargo-transforms-to-facilitate-e-commerce.html

Purpose of Article:

- Changes in people's consumption habits will lead to a bright future for the air cargo industry.

Identifying themes, debates, or useful information:

- Air transport will play an important role in supporting e-commerce driven global trade.
- Air cargo carries 80% of cross-border B2C e-commerce freight. E-commerce consumers demand fast delivery, and speed is the main advantage of air cargo.
- The opportunities presented by e-commerce are clear: since it is a global trend, small businesses can now export their goods and enter global markets, thus diversifying competition and creating new

jobs. For the air cargo industry, this means we need to adjust the day-to-day operations of freight managers and airlines to cope with growing volumes of cargo and ensure that new players abide by international rules, especially in terms of safety and security, and conduct business in an ethical manner.

- The coronavirus pandemic will also bring areas for improvement. The crisis has the potential to be a key wake-up call to the digitization of air cargo. The public will expect health and safety provisions; Other requirements such as sustainability, ethics, security and border and customs procedures will change more frequently; Transparency will be key to speeding up the process and avoiding blockades.

Results/conclusion:

- Because of the current coronavirus crisis, consumers are avoiding crowds and staying home. Many people have replaced online retail with traditional retail. Online demand for products related to recreation, gardening and maintenance, as well as medical equipment, especially face masks, is on the rise. After this crisis, many people will learn how easy and convenient it is to order online and receive products at home. In the aftermath of the pandemic, new e-commerce consumers are likely to continue shopping online.

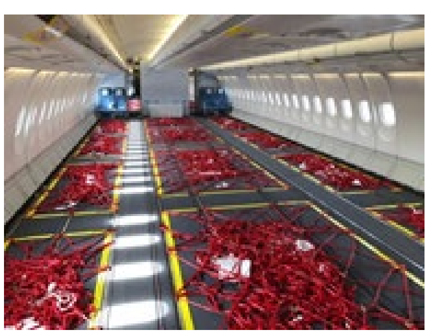
Morrison, M. (2020, June 12). How coronavirus has turned the airfreight market on its head. Retrieved from https://www.aircargonews.net/freighters-world/how-coronavirus-has-turned-the-airfreight-market-on-its-head/

Purpose of Article:

- Passengers --> Cargo. This quick adjustment to a new business model has helped the worldwide airline recover from the impact of the pandemic.

Identifying themes, debates, or useful information:

- One of the strangest sights of the coronavirus crisis has been airliners jetting into near-deserted airports, their cabins brimming with cardboard boxes secured with netting, either atop seats or stacked on the floor of a stripped-out interior. While lockdowns and travel restrictions have starved the skies of passengers, air cargo demand – particularly for personal protective equipment (PPE) manufactured in Asia and desperately needed in Europe and North America – has been racing ahead of capacity.
- The global economic slowdown prompted by the pandemic saw air freight volume plunge by almost 28% year on year in April, according to IATA. About half of all air freight normally travels as belly cargo on passenger aircraft, and the sharp reduction in flights has seen forwarders scrambling to transport urgent consignments – not just of PPE and other medical items, but also goods crucial to just-in-time global supply chains. The collapse of airline networks means there simply are not enough aircraft to shift the items consumers, businesses and governments need.




- The coronavirus crisis has, of course, seen a spike in demand for medical equipment, but national lockdowns have also boosted e-commerce as consumers turn from shopping in high streets and malls to online, accelerating a two-decade-long trend. This has prompted some to suggest that, despite a looming recession, demand for purpose-built freighter aircraft could remain strong even after many of these auxiliary cargo aircraft return to passenger service.

Results/conclusion:

- The only way seems to be up for e-commerce, with consumers demanding a quicker journey from factory to doorstep than many supply chains – catering for delivering large consignments of inventory to bricks-and-mortar retail networks – are geared up for. And combi configurations might find favor with airlines nervous about relaunching routes with aircraft that are too large before sufficient passenger demand returns. For some passengers, sharing an economy cabin with consignments of freight might be something they have to get used to in the coming months and years.

Cargo Infrastructure Pre and Post Covid

Chronological Order:

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1997

Trunick, P. A. (1997, 05). Air cargo success is in the infrastructure. *Transportation & Distribution, 38*, 27-30. Retrieved from https://ezp.slu.edu/login?url=https://www.proquest.com/magazines/air-cargo-success-is-infrastructure/docview/234185596/se-2?accountid=8065

- **Purpose of article:**
  - The purpose is to find the infrastructure necessary for air cargo to be a success.
- **Identifying themes, debates, or useful information:**
  - Cargo growth should outpace passenger growth over the next 10 years and the problem will be how are air cargo companies going to handle such increase of cargo? The Federal aviation administration, Boeing company, McDonnell Douglas, and Airbus industry all showcase a growth projection of air cargo over the next years.
  - Over the years, there will be some military bases closing across the United States. The closures are from the Base Realignment and Closure task force and they recommend that they bases could be industrial parks or air cargo airports.
  - Rickenbacker Air Force Base in Columbus, Ohio handles approximately 235 metric tons of freight per day. It has tripled since 1991.
  - Air cargo revenues account for only about 15% of total scheduled airline revenue. By volume air cargo is a small portion of global travel, but by value it has a significant role. Airlines may see 5% of less of their revenue derived from cargo.
  - 75% of the world's air freight is international, 25% domestic.
  - LAX showed 60% of the world's economic growth in the next 10 years will occur in the Pacific Rim countries. Asia pacific will account for half the world's air traffic volume by 2010. In 1996, LAX handled the second greatest freight and mail tonnage in the world, second only to Memphis (FedEx).
  - March air force base is easily accessible in LAX and we see an overflow or surplus market that March base can help alleviate.
  - As LAX saw an increase in air cargo, Las Vegas started to see more truck and rail traffic develop.

- Many airports have limited land available for expansion or they have air quality controls or noise restrictions which puts a limit on growth. There is the talk about alternative airports for just air cargo.
- Many airlines are increasing revenue by trucking cargo to Las Vegas airport and then loading it aboard its widebody aircraft.

- **Results/conclusion:**
  - Air cargo operations have dealt with the increase in operations over time. This article was written in 1997 and there was already an existing pressure to expand and accommodate air cargo operations. Many airports already deal with air pollution and noise limitations that adding air cargo operations can affect them. It is a good idea to use abandoned military airports as reliever airports for air cargo. Over the years, air cargo has significantly increased and will continue its trend.

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2000

Howard, L., & Keller, W. (2000). Addressing Airport Infrastructure Needs. *Aviation System Planning*, 1–8. http://onlinepubs.trb.org/Onlinepubs/millennium/00009.pdf

- **Purpose of article:**
  - The purpose of the article is to show the problem we will face if air transportation continues to grow over time. Airport infrastructure needs to be addressed and if not, it might create an impact for commercial aviation and air cargo operations.

- **Identifying themes, debates, or useful information:**
  - Surrounding communities often strongly resist the construction of additional runways. There might be the need to use surrounding airports as relievers or construct new airports.
  - Airport infrastructure planning takes place at the regional and state levels and then uses the plan to identify federal aid for such projects.
  - Air cargo continues to be overlooked in system planning. Air cargo development has been hampered by landside congestion, inadequate investment in modern facilities, limitations on the amount of cargo that can be carried on passenger aircraft, and nighttime curfews that restrict air-freight operations. As the economy grows, new cargo facilities with improved access will become a higher priority in system planning.

- **Results/conclusion:**
  - Airport capacity and funding will continue to constrain the expansion of air travel. New aircraft types, while stimulating the demand for air travel, also will require expensive improvements, especially for the major airports. Creative funding approaches, such as private venture capital, will be needed to supplement established financial sources.
  - This article was published in 2000 and they were experiencing challenges with expansion and airport infrastructure. Airport planning continues to modernize the infrastructure of airports for commercial and cargo. A greater investment for air cargo infrastructure is needed and as air cargo continues to increase, we will need updated facilities. Airport infrastructure and expansion takes place at the cost of the airport or any federal funding they may receive. How will air cargo companies afford to update their infrastructure? Will they have to pay it out of their own pockets? Should airports help with air cargo facilities that are located in the surrounding areas?

2018

Putzger, I. (2018). *Air cargo infrastructure in crisis as it faces a perfect storm*. The Loadstar. https://theloadstar.com/air-cargo-infrastructure-crisis-faces-perfect-storm/

- **Purpose of article:**
  - The purpose of this article is to show the crisis the air cargo infrastructure is facing and what the future rise of air cargo might delay transit times. Not many facilities are suited to keep up with the surging volume flow through airports.

- **Identifying themes, debates, or useful information:**
  - Many airports are operating close to capacity and have existing facilities that are not suited for the requirements of modern air cargo traffic.
  - Pressure has been increasing as airports have gotten overwhelmed with the peak season and exposing inadequate cargo capacity. The demand for air cargo is forecast to remain strong and increase.
  - Air cargo is very fragile in terms of economic downturns and the overall economy. If people are financially able to purchase more goods and services, the air cargo traffic will increase.
  - 2018 was not a good year for the stock market and this had caused a global economic downturn which largely put a halt to cargo facility development.
  - The challenge is not expanding the facilities but updating the inadequate infrastructure to process types of traffic like temperature sensitive and e-commerce.
  - In January a 15-year lease was signed for a new 346,000 sq ft cargo terminal that is planned to come on stream in 2020 at New York's JFK airport. This will allow the handler to consolidate operations that are now spread over a number of buildings around the airport.

- **Results/conclusion:**
  - This is a 2018 article that talks about the constant challenges the air cargo industry faces with its infrastructure. This challenge has been known for the past years but now expansion will not fix the issue. Inadequate infrastructure is affecting these facilities and their employees. It is a challenge to keep up with cargo if facilities do not have the proper infrastructure to accommodate sensitive cargo. The volume and traffic of air cargo continues to increase, and this can become a bigger issue during peak time season affecting the timing of deliveries.

2020

(2020) IATA launches platform to improve visibility on air cargo infrastructure and capabilities. *Gulf Times*. https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:60TC-TNM1-JDJN-602W-00000-00&context=1516831

- **Purpose of article:**
  - The purpose of this article is to inform that IATA has launched an online source platform that can help the air cargo industry match the needs with availability of infrastructure capabilities and certifications of services across the value chain.

- **Identifying themes, debates, or useful information:**

- IATA's online platform is named ONE Source.
- This online platform is currently important and useful particularly amid the Covid-19 crisis when shippers of medical supplies and pharmaceuticals need accurate information for time sensitive and temperature sensitive shipments.
- ONE Source lists the latest operational information on airlines, airports, cargo handling facilities, freight forwarders, ground handlers, shippers, and trucking companies.
- ONE Source is part of the IATA Smart Facility program, an initiative to create transparency in cargo handling services and enhance essential cargo operational capabilities to a consistently higher baseline level across the industry.
- Air cargo has been essential in the global fight against Covid-19, transporting vital equipment and medicines to those who need them most. However, with over 3,500 differently sized cargo handling facilities worldwide, the industry until now has lacked visibility on the capacities and services these facilities can offer.
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- **Results/conclusion:**
  - ONE Source is one major implementation that is helping the air cargo industry with transparency and consistency. This has helped with handling services for temperature sensitive cargo and potentially bring awareness of the need to update facility infrastructure.

Reliance on Air Cargo

The aviation industry has been largely affected by COVID-19. During the time of this pandemic, billions of dollars have been lost by aviation companies all around the world. However, not all aspects of the field have struggled so severely. Air Cargo Operations were not as riddled with restrictions due to lack of passengers. This may allow this industry to have an easier time hoisting themselves out of recession than the passenger markets. However, the air cargo industry was still negatively affected. Some of the factors that contributed were lack of cargo space due to decreased passenger flights, decreased demand due to decreased production and distribution of goods, and lastly increased expense to ship goods with more delays. Research was done on this topic through the Saint louis University Library database. Full text articles from the last three years were used. The articles included in this review are, A *SWOT Analysis of China's Air Cargo Sector in the Context of COVID-19 Pandemic, To What Extent is Air Freight Affected by the Coronavirus Pandemic?, COVID-19 Outbreak in Columbia: An Analysis of Its Impact on Transport Systems,* and *Impact of different control policies for COVID-19 outbreak on the* ***air*** *transportation industry: A comparison between China, the U.S. and Singapore.* These articles worked to determine what has been occurring in the air cargo industry during the pandemic. The air cargo industry has been able to survive due to distribution of medical supplies and vaccines, essential goods, food, and e-commerce.

Air cargo and COVID-19: How is the air cargo industry surviving this recession?

The aviation industry's losses in revenue have been disastrous during the COVID-19 pandemic. However, unlike the passenger sector of the industry, air cargo has been able to maintain fairly well. Despite the challenges of increased expense and delays, decreased cargo space, and decreased demand and production, the air cargo industry had been able to find profit in distributing PPE, food, essential supplies, vaccines, and e-commerce. The use and length of restrictions differed between countries which greatly interrupted global commerce transportation.

COVID-19 Negative Impacts

COVID-19 has affected all industries. The negative impacts of this pandemic are far reaching. One of the industries that was greatly affected was aviation. "According to the predictions by International Air Transport Association (IATA), the COVID-19 pandemic may cause a total loss of 21.5 billion USD in 2020 for European airlines, and the predicted losses for Asia Pacific airline markets range from 47 billion to 57 billion USD for different scenarios of COVID-19 evolvements "(Meng et al., 2021). These massive loses are for the aviation industry as a whole. Both Passenger aviation and cargo were affected by the pandemic. Some factors impacted passenger aviation such as passenger quantity restrictions and fear while others such as decreased market activity and increased expenses affected cargo. Because these markets are intertwined, the repercussions of negativity in one area of the industry affect the other. Bouali, Douha, and Khadri (2020) discuss how these two industries affect each other. In their article written in 2020 it is stated, "However, passenger belly space is a massive contributor to cargo capacity" (Bouali et al., 2020). Lack of passenger aircrafts taking off means that there is less available space for cargo to be transported in. Worldwide, goods are not able to be transported as efficiently as they were in the past. **"**The outcome is harming worldwide gracefully chains with longer transportation times and greater expenses" (Bouali et al., 2020). Worldwide delays have made it more difficult for companies to ship product thus decreasing air cargo transported and decreasing profit. The lack of product being shipped can be tracked down all the way to the consumer. “On a macro level, consumers are buying less, which means less is shipped, which means companies are buying less, which means less is shipped, which means suppliers are making less, which means less is shipped" (Bouali et al., 2020). Another article by Arellana, Marquez, and Cantillo (2020) discusses air cargo transport within the context of Columbia. The result of their research is, “Overall, the amount of air cargo decreased in all cities. Interestingly, Bucaramanga, Barranquilla, and Pereira reported minimal movement of air cargo during March, while Bogota, Medellin, Cali, and Cartagena presented reduction between 40% and 70% compared to the same month of the previous year. “(Arellana et al., 2020). The decrease in air cargo traffic is not just decreased internationally. On a local single country basis, it is also shown that there is a massive reduction in movement of cargo. Despite all of these issues, there is evidence that with proper control of the pandemic and efficient restoration of trade, countries may be able to rebound from the losses they took during 2020. Meng, Gong, Liang, Li, Zeng, Yang discuss in their analysis of the United States, China, and Singapore the possibility of the market rebounding to its predicted level and beyond. “Well-controlling the domestic epidemiological situation would enable the country to restore its consumer good demand and travel demand, so that the industry would rebound beyond normal levels “(Meng et al., 2021). Although COVID-19 drastically reduced cargo transport through the presence of government restrictions, decreased consumer activity, and less passenger flights companies and countries were still able to find ways to keep the industry afloat. In the next section the opportunities made possible by the pandemic will be discussed through the analysis of literature.

COVID-19 Opportunities

China suffered as they were the first to begin mass infection and lockdown. However, they were able to find opportunities in this pandemic despite all of the negatives. Medical equipment, PPE, and essential supplies are made in many countries, but highly concentrated production is found in China. Meng et al. discusses how China was able to turn the worldwide increase in demand for medical supplies and PPE into a productive way to maintain air cargo transport. “Facing the urgent demand for fighting the unknown epidemic, the Chinese government has taken the lead to actively stimulate its productivity of medical supplies such as masks and protective suits and has deployed them to the areas with the highest demands, which resulted in an increase in its air cargo demands” (Meng et al., 2021). Because this equipment was so necessary, and China had the means to manufacture, they had an opportunity to provide a global need. Bouali et al. also discusses this topic stating, “Thanks to this unprecedented and urgent demand for PPE and other medical supplies, demand for air cargo only dropped by 15% in March 2020. Considering air cargo capacity dropped by 23% that means that there was an 8% gap between supply and demand “(Bouali et al., 2020). It is also mentioned in this article that food became an increased factor in the upkeep of cargo transport. Mass use of e-commerce to buy food during lockdown continued to keep this industry productive. **“**However, given air cargo's usual added sensitivity to economic downturns, it is ironic that it is currently proving more robust than passenger traffic. Crucial for keeping supply chains open, particularly for food, pharmaceuticals and other essential sectors, air freight is not subject to the same COVID-19-related restrictions as passengers” (Bouali et al., 2020). E-commerce is not only used for food but also for the accumulation of any product that can be purchased when an in-person store is closed. The development of e-commerce many years ago makes it possible for manufacturers to sell their goods online without need for physical contact with the product or others. This concept is vital for the continuing use of cargo transport. As people are stuck inside their homes, the ease of e-commerce allowed for online shopping to increase. Li (2020) used a SWOT analysis in order to determine COVID-19s effect on the air cargo sector of China. A conclusion of this article was, “The development of e-commerce promotes growing demand for air cargo in China” (Li, 2020). Because of these opportunities made possible by the pandemic air cargo was not hit as hard financially as other sectors of the aviation industry. Although these times have been very difficult, the innovation and fulfillment of greatly demanded products has made the industry survive.

This Modern Pandemic has negatively affected industry, but it also has brought space for innovators and manufacturers to develop products and equipment that can be distributed through air transport to help people all across the world. Although people were not flying and an equal amount of goods were not being bought, cargo was still being transported due to different and evolving needs. The use of air transport for cargo and passengers may be decreased but with effective pandemic suppression and efficient return to industry the industry will have the opportunity to bounce back. Analysis of how countries have dealt with pandemic born restrictions into 2021 could reveal how certain tactics more effectively restored the economy than others. Air cargo found a path through equipment, food, and e-commerce despite all of the negatives that were affecting the industry.

Results & Discussion

Key Facts/effects and Findings that Happened During Covid

- Air cargo capacity declined 15% compared to 2019
- Global air cargo capacity is down by 35%, Only 20% of belly cargo is still flying.
- IATA (International Air Transport Association) predicted at the beginning of the epidemic that people's demand for cross-border e-commerce will increase by 25%-30% during the epidemic.
- Since 1997, there has been a push to modernize air cargo facilities as they see cargo growth outpacing passenger growth over the next years.
- Many airports are operating close to capacity and have existing facilities that are not suited for the requirements of modern air cargo traffic.
- Air cargo continues to be overlooked in system planning. During covid, many warehouses and cargo facilities had to close due to employees contracting covid. This resulted in cargo delays and congestion.

Conclusion

Due to the weak global trade economy in 2019, many air cargo airlines saw drastic declines in revenue streams, resulting in their year ending less than ideal. Air cargo operations measure, track, and record how many freight tons of cargo they transport each year and how many kilometers it travels; this is known as FTK. In 2019 the global amount of FTK's carried was measured to be roughly 57.6 million, a 2.9% decrease in the global amount of FTK's from the previous year. Other contributing factors to the decline in 2019 include manufacturing sectors experiencing weak demand when air freight operations rely on these sectors for timely distribution of spare parts and other high value inputs they require, resulting in slower operation times. Overall, 2019 was a poor year for the air cargo industry and projections for 2020 looked just as bad.

With the in-depth development of trade globalization from 2000 to 2019, global air cargo has increased significantly along with the growth of global trade, but at the same time it is also very susceptible to external factors. For example, the September 11 incident in 2001, the financial crisis in 2008, the subsequent subprime mortgage crisis and the global trade frictions in 2019 have all had a short-term but obvious impact on the global air cargo industry, especially the demand for transportation. The outbreak of the epidemic in 2020 has had a very large impact on global air cargo. Due to the lack of belly hold capacity, the global air cargo volume has been reduced significantly in the short term. However, starting from the second half of 2020, driven by the transportation demand for personal protective equipment, medical supplies and subsequent home office products, the global air cargo volume has shown a recovery. Under normal circumstances, half of the global air cargo materials are completed by all-cargo aircraft, and the other half is completed by the belly compartment. With the advent of the epidemic, borders began to tighten, and a large number of passenger planes were grounded, resulting in a significant shortage of belly cabin capacity. Even during the most severe period of the epidemic, the abdominal capacity basically disappeared. Therefore, in 2020, the global belly hold capacity was 53% lower than the same period last year, and the operational capacity provided by all-cargo aircraft is 20% higher than in 2019. But overall, the operating capacity for the whole year of 2020 is more than 20% lower than the same period. In response to the recovery of the air cargo market after the epidemic, the next year will see a gradual recovery process. It is expected that in 2022, global air traffic will return to the level before the epidemic. However, whether these freight volumes are ultimately completed by all-cargo aircraft or belly compartments will depend on the strength and effectiveness of epidemic control in different countries and regions. If the epidemic is brought under timely control and wide-body aircraft, especially transcontinental wide-body belly compartment capabilities, can be restored in time, then global air cargo will return to the previous pattern: belly compartments and all-cargo aircraft are equally divided. However, if the epidemic in various regions of the world cannot be controlled in time, or the control effect is not satisfactory, and the transcontinental belly tank capacity cannot be restored to the previous level in a short time, the demand and importance of all-cargo aircraft will not improve.

The air cargo industry around the world continues to lack the proper infrastructure required to process the thousands of goods and services transported each year. Demand continues to increase every year and it is projected to increase steadily for more years to come. The covid-19 pandemic tested how fragile the air cargo infrastructure was. Delivery and transportation of goods and services were delayed or damaged because warehouses and facilities do not have up to date infrastructure. Warehouses and facilities had to close every time an employee tested positive for covid-19 or was exposed. Cleaning crew took days to disinfect and clean the entire facility. Packages that were temperature or timely sensitive were damaged and other packages from stores like Amazon or Target that do 2-day delivery were delayed. Facilities were unable to keep up with such demand as they lacked proper technology, machinery, and employees. For over two decades, air cargo facilities have been pushing to modernize their infrastructure for the coming years, but nothing has changed. Airports are operating close to capacity and have existing facilities that are not suited for modern day cargo traffic. Many airports already deal with air pollution and noise limitations that adding more air cargo operations can affect the surrounding areas. Surrounding communities often restrict the construction of additional runways and might take years to buy off the properties. Air cargo is fragile, and it is aligned with economic activity, when there is a downturn, we will see a decrease but when the demand increases it will be difficult to manage it. The main problem is not expanding facilities but updating the inadequate infrastructure to process such traffic. Our recommendations for airlines, industries, and government officials are as follow; invest towards updating air cargo facilities, provide better employee working conditions, work with airport officials on expansion projects, and have air cargo reliever facilities nearby. These recommendations will help sustain and manage the rapid increase of air cargo as the years progress. Investing towards facilities and warehouses with new technology will save money in the long run and alleviate the stress and amounts of packages. Airlines and companies should work closely with airport operations and create a joint expansion that will benefit the airport and the air cargo division. Lastly, having small to medium air cargo reliever facilities around huge distribution centers can aid during the peak seasons. These projects can be completed fast to avoid backlogs and delays. With the many air cargo industries around the world, they should work together to create a better process not only for them but also for the consumer as they continue to purchase goods online.

The Covid-19 pandemic has had an unprecedented impact on the aviation industry. Many countries chose to lock down quickly, choking commerce in the short term. Fortunately, because the greatly decreased cases of the virus, commerce was able to restart with less delays. Swift decisions made by government officials enabled return to shipping. The air cargo industry was able to take advantage of this by using their fleets of aircrafts to transport e-commerce, PPE, food, and supplies all around the world. China was a main beneficiary of the need for PPE as they house many factories for creating and distributing these products. Although the lack of passenger aircrafts in flight decreased air cargo space, the industry was still able to hold on and be creative to bounce back to pre-covid numbers soon.

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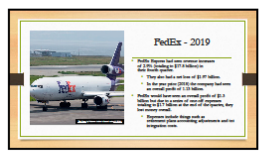

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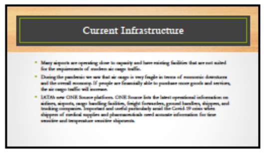

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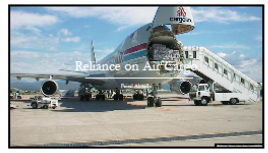

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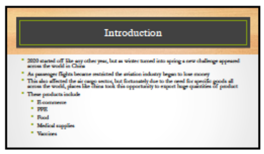

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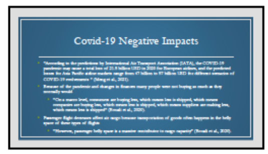

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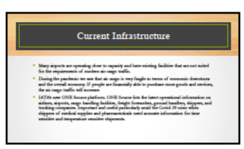

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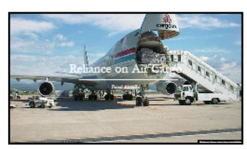

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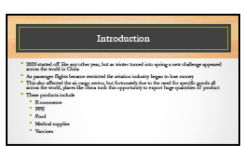

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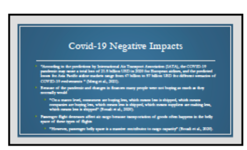

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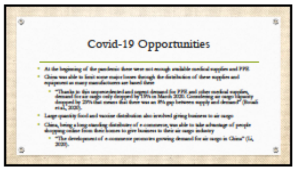

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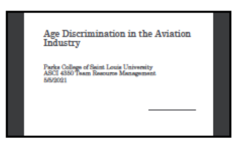

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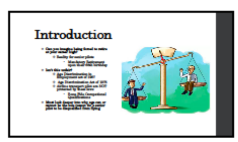

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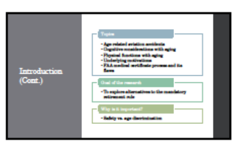

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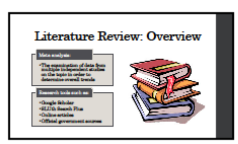

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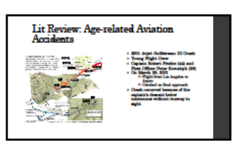

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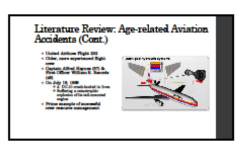

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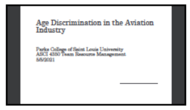

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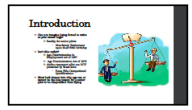

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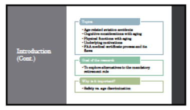

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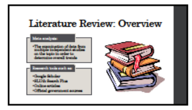

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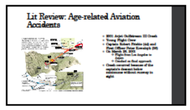

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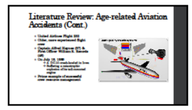

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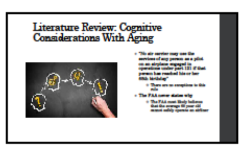

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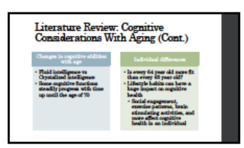

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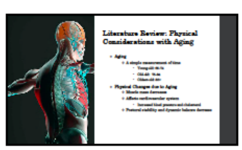

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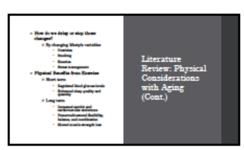

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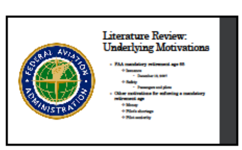

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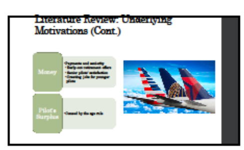

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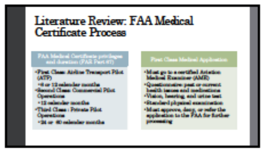

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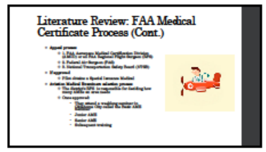

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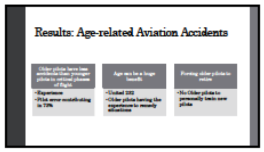

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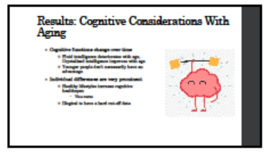

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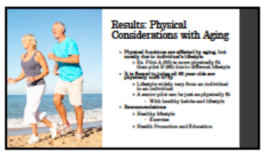

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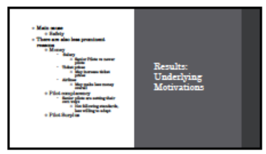

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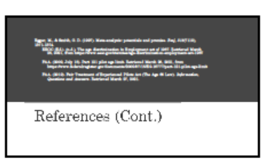

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SLO F. Engage in And Recognize the Need for Life-Long Learning Student Submission Examples.

Students completed an assignment related to life-long learning.

Life-Long Learning Assignment Example 1

ASCI 4350 Team Resource Management

Lifelong Learning Assignment

1. Why is important for a leader to engage in a process of lifelong learning?

It's a really important characteristic of a leader to be involved in the process of lifelong learning. Also, being a leader means you have to be distinctive from others to shine and provide for the organization. Lifelong learning is one of the elements that a leader needs to have especially in the aviation field. Lifelong learning is optional learning for managers but in my own perspective leaders must and need to have lifelong learning. In the aviation field, people need to be learning about the new technologies that are coming into the field and being able to manage them well. Leaders need to be managing the teams in a way that they could engage with him/her in lifelong learning to succeed in the business operation. Lastly, Leaders are those people that influence the people under his/her supervision, so they need to be a good influence.

2. How is communication facilitated by a commitment to lifelong learning?

Communication is one of the main elements that lead to successful lifelong learning. So, people who are successful in their communication will be able to show off their mistakes and how to better mitigate them in the future. Also, if an organization focuses on successful communication employees would gather together to widen their knowledge about some aspects of the work. Even more, if leaders are communicative with their employees that will influence the vibes in the organization to keep it a learning environment.

3. Describe how lifelong learning improves an individual's situational awareness?

Being situationally aware of what is going around in the industry is one of the critical parts that keep the organization successful. Also, the ability to know what around keeps the person informed of the mistakes and the right things they are doing. People in the aviation field have to be involved in lifelong learning to make a better field and a sustainable one. Also, lifelong learning helps the field to look out for new technology that might improve the field. Even more, it enhances the goal setting for people and organizations, so they achieve their goals at the time they scheduled it to be. Lastly, lifelong help in decision-making that makes people aware of their surroundings.

4. How might lifelong learning improve crew/team resource management skills.

Lifelong learning has the ability to better improve team resource management skills. In lifelong learning, a person has to engage in every related knowledge and news that comes into his field. Therefore, if those people who got engaged in lifelong learning, they will be able to learn at their own pace without any supervision. However, any new existing knowledge needs to be shared with others to validate it and sharing the knowledge with others for the organization's overall benefit. Lastly, it provides the team the ability to share their information and be more communicative for the purpose of knowledge that leads to lifelong learning.

5. Describe how you plan to continue to learn when you enter your professional job post-graduation.

My plan is always to engage in lifelong learning even while I’m in college due to the benefits that it provides for me and my community. Also, lifelong learning teaches me and others the ability to better communicate with others for the purpose to make our team skills better. It keeps me informed in life end especially in my field. Therefore, my job requires me to be an informed employee in my field to mitigate any errors that we might encounter in the future. So, I and the organization will be gaining a lot of benefits that make the aviation field better for generations.

Life-Long Learning Assignment Example 2.

ASCI 4350 Team Resource Management

Lifelong Learning Assignment

1. Why is important for a leader to engage in a process of lifelong learning?

Lifelong learning is a quality that should be present in each and every individual because world is growing at a never before rapid pace, but this quality is a must for a leader. Having leadership skill doesn’t mean that you want your own ideas to be implemented all the time. In fact, qualities that leaders of today should possess are better decision making, ensuring smooth working of a team, building confidence in each member to work independently and in a group, self-awareness, good communication skills and the list is endless. When leaders are lifelong learners, they will have a habit of experimenting and look for alternative strategies. They will not like stagnating. They will welcome other people perspective and will always share their honest opinion.

2. How is communication facilitated by a commitment to lifelong learning?
Communication is the way toward understanding and sharing information where listening plays an important job. Intrapersonal or internal communication includes planning, critical thinking, self-talk, and evaluation of self as well as other people. By committing to lifelong learning, you must communicate in some form of way to actually receive some sort of lesson.

3. Describe how lifelong learning improves an individual's situational awareness?
Lifelong learning improves situational awareness because you're constantly observing your surroundings trying to learn as much as possible. Any small detail could possibly be a potential lesson.
4. How might lifelong learning improve crew/team resource management skills.
The aim of resource management is to do more in the most efficient way possible. Whether it is a daily task or trying to solve an issue, the goal of CRM remains the same. Lifelong learning may improve CRM skills because through lifelong learning you are constantly learning the ins and outs of your profession. When paired with someone else who has engaged in lifelong learning, you know have multiple people who are willing to learn from each other. This will leave less and less room for error as time increases.
5. Describe how you plan to continue to learn when you enter your professional job post-graduation.
I play to continue to learn when I enter my professional job post-graduation by continuously watching those above me and those who have been doing the same job as me for a much longer time. I believe there is always something you could learn yourself by watching

those around you. I do plan to make mistakes because mistakes have the ability to give the best lessons.

Life-Long Learning Assignment Example 3.

ASCI 4350 Team Resource Management

Lifelong Learning Assignment

1. Why is important for a leader to engage in a process of lifelong learning?

They need to do this because the world is always changing and people coming into the workplace are changing as well. Leaders need to be able to be able to adapt to the changing environment and grow as a leader. Sticking to the same routine and going through the motions as a leader make it hard for them to learn new things and be less likely accommodate change as they will not enjoy the deviation from the same routine. There are always better ways to do things that is why taking the time to learn new things everyday helps leaders become better.

2. How is communication facilitated by a commitment to lifelong learning?

It is facilitated by learning new ways to communicate with in the organization. With diversification in the organization, it is pertinent to understand different ways to communicate with new employees. With new people coming into the workforce lifelong learning of new ways to communicate makes it important for leaders to understand how to communicate. Not everyone receives messages the same way, that is why it is important to for leaders to have multiple tools in their bag to approach these kind of situations.

3. Describe how lifelong learning improves an individual's situational awareness?

It helps situational awareness because you can learn to look for different aspects that can affect outcomes. I took a CCW (concealed carry) class this past weekend and we were taught how to look for suspicious behaviors and how to read situations that can turn deadly. Before the class I had no way to understand and look for different traits that overlap most situations that can go bad in seconds. For example, someone who looks like they are minding their business but are standing in a weird spot doing so is something to take note of when having to enter the situation. They taught us that we need to constantly understand what's going on around us to keep us from being blindsided. The class also taught us how to read someone with a knife and how they can either be intimidating you or planning on causing serious harm to you. Someone who has the blade facing you is just trying to intimidate you.

Someone with the blade facing away from you is looking to kill you and you most likely should shoot them as soon as they start taking steps towards you.

4. How might lifelong learning improve crew/team resource management skills.
With the ever-changing technology in the cockpit, being able to understand how to manipulate the controls and how to use your crew to the most effective they can be. Being able to also understand what everyone brings to the table also changes as time goes on. Learning how to use everyone to the best of their ability comes with learning how they work and learning how to utilize is important. The lifelong learning comes with being able to learn how to read people and having the ability to lead in a way that makes it so that people can express their talents without feeling like they need to stay reserved. That is a talent that is learned overtime and not in a 2 hour seminar, that is why it is important to keep learning everyday to help make tomorrow better for everyone.

5. Describe how you plan to continue to learn when you enter your professional job post-graduation.
I like having subscriptions to aviation magazines to learn about the leading technology and industry practices to stay on top of the game. Those magazines provide a lot great information that can help you in everyday situations. Being able to stat ahead of the curve makes you more versatile. Learning at least one new thing everyday can help you in tremendous ways. Just because you've graduated doesn't mean you stop learning as soon as you step out the door. In order to stay on top of the game you need to be constantly evolving and constantly learning new things.

SLO J. Apply Pertinent Knowledge in Identifying and Solving Problems Student Submission Examples.

Students were asked to complete an assignment on problem solving.

Problem Solving Assignment Example 1.

Problem Solving Assignment

Apply pertinent knowledge in identifying and solving problems.

1. Describe the importance of engendering teamwork in a high-consequence environment.
Engendering teamwork is crucial for good teams that are involved in high-consequence environments as high-consequence environments are more prone to hazards and risks. Engendering

quality teamwork allows team members to be sufficient in strong communication and group dynamics. Strong group dynamics make the team members to be interdependent to each other for mutual support and assistance, and for expertise and information. It also allows team members to develop and follow their own team culture that enforces individual and team behavior norms. Strong communication, group dynamics, and team culture all work together to create a common goal of team and individual team member's success.

2. Describe how an individual might identify a coworker who does not possess the characteristics necessary for teamwork.

An individual can identify a coworker who does not possess the characteristics necessary for teamwork by picking up on subtle cues that affects our behaviors and actions. Those negative subtle cues to the other team members can decrease team productivity and morale, which can lead to less focused common team goal, decreased individual and team commitments, and worse team efficiency. If these negative subtle cues from the coworker who lacks proper teamwork characteristics continue on for a long period of time, then the more frustrated the other team members will become.

a. What are those characteristics?

There are many team characteristics that define proper teamwork. Mutual trust must have been established among the team members to ensure smooth teamwork. A good team has clear goals, roles, and responsibilities to form strong commitment, engagement, and support system for the team. Coordinative relationship and positive atmosphere among the team members allow more seamless and transplant workflow to quickly resolve conflicts without negatively affecting team morale, trust, and effectiveness. Also, a good diverse team allows various viewpoints to come up with better decision-making process and intuitive solutions. Lastly, a good team has a clear and open communication that utilizes effective communication methods, which allows the team to exercise participative leadership to engage team members.

3. What do you consider to be the most important skill to be a good teammate? Why?

The most important skill to be a good team member is to have a strong commitment to the team and the team’s shared common goal. It is also the most difficult skill to master as committing to the team’s goals is often an individual choice, and the individual must consciously and actively choose to participate in achieving the goals. Having a strong commitment allows team members to hold themselves and each other accountable for the team’s performance. It also allows team members to have a strong sense of responsibility and obligation to try their best to achieve the defined team goals, which boosts the team’s productivity and efficiency. Committed team member’s accountability, responsibility, and obligation work together to help maintain a clear understanding of how their independent individual decisions affect the collective psyche and success of their goals. Being committed is especially important for us, pilots and people in the aviation industry, because the commitment to have the highest standards maintain safety can save our lives and other people’s lives as well.

4. Assume you are in a high-consequence environment working with an individual who is not a good teammate. How would you go about motivating this individual to be a team player?
I would definitely try to motivate an individual who is not a good team member to be a good team player because not being a good team player in a high-consequence environment can lead to serious accidents. First, I would start a friendly dialogue to learn more about this particular team member’s motivations, priorities, and interests to get a better grasp and understanding of the causes of his or her behavior and perspective. Secondly, I would utilize this opportunity to revisit our team’s common goals and purpose, and clarify the roles of each team members because this team member might not be performing well due to an underlying issue of a team that affects the team as a whole. Clear goals and roles should enable each team members to boost their sense of productivity and purpose. Lastly, I would search for better suited opportunities and roles that match this team member’s specific skill set to allow him to perform better in a team environment. This way will boost this team member’s confidence in doing his role and working with a team.

5. How do you go about identifying emerging groupthink in a high-consequence environment?
Groupthink occurs within a team when team members make irrational or non-optimal decisions

due to the urge to conform due to peer pressure, or the discouragement of dissent. It typically happens in a team culture where the team member fears having a different opinion than the majority. The best way to identify groupthink in a high-consequence environment is to know the common symptoms of groupthink. Group coherency is valued higher than each team member's freedom of expression as there is no standard methods and procedures established to evaluate ideas and decisions. Groupthink is more likely to occur in a non-diverse team as the team members' social backgrounds and ideology are homogenous, which prevents the team to analyze and compare multiple different ideas and solutions that could benefit the team the most. Also, a team operating in a closed work atmosphere causes the team members to feel excessive stress to perform their roles within their team. A team rationalizing its unquestioned beliefs can ignore moral problems and their consequences, and prevent the team to reconsider its beliefs. The best way to avoid groupthink for a team is to create team environment and culture that enable team members to have opportunities to freely express their own ideas to other team members.

Problem Solving Assignment Example 2.

Problem Solving Assignment

Apply pertinent knowledge in identifying and solving problems.

1. Describe the importance of engendering teamwork in a high-consequence environment.

Engendering team in a high-consequence environment is of the utmost importance. It means that the teams are able to work at a very high level with consistent communication and an overall strong group dynamic. Interdependence is key as it allows for each member's expertise and skill set to be utilized for the overall success of the team. It also helps with support and assistance where if one member is struggling with something, they can turn to a fellow team member for help. Engendering teamwork also creates a strong commitment and a drive for success for both the team's overall mission/goal as well as the individual's. A perfect example of this is Captain Al Haynes who was able to engender a high performing team where each member's attributes and skills were utilized in order to get the aircraft on the ground as quickly, safely, and efficiently as possible.

2. Describe how an individual might identify a coworker who does not possess the characteristics necessary for teamwork.

An individual may identify a coworker who does not possess the characteristics necessary for teamwork by noticing a lack of effort on working on the task at hand. I would also say that the coworker individually focusing on the problem your group is attempting to solve shows not only a lack of participation and interdependence on their part, but also a strong lack of communication with the team. Being negative or being driven by their own personal goals rather than that of the team or organization would also be a red flag when it comes to displaying good teamwork by the coworker.

a. What are those characteristics?

Those characteristics include participative leadership, effective decision making, open and clear communication, a certain degree of diversity, mutual trust, good conflict management, clear goals, defined roles and responsibilities, a coordinative relationship, and an overall positive atmosphere.

3. What do you consider to be the most important skill to be a good teammate? Why?

I think the most important skill to possess in order to be a good teammate is open and clear communication. Based on my experience in ROTC, the biggest problem since moving to running the operations of the Detachment has been communication up and down the chain of command. In order for all team members to buy in to the process of whatever the team is trying to accomplish, it is necessary that everyone is on the same page. This will not only allow everyone to feel valued by the entire team for doing their part, but it will also motivate them to accomplish the team's objectives and receive the critical "buy-in" from all members of the team. Not to mention, it also will motivate members to do more in whatever role/position they are in so that the overall mission can have success.

4. Assume you are in a high-consequence environment working with an individual who is not a good teammate. How would you go about motivating this individual to be a team player?

I would try and motivate this individual by finding out what they value the most when in that high consequence environment. If there is a particular role they feel they are best at, or even that they feel is what they are most valuable/valued at, I would consider putting them in that role to see if that increases their motivation and their willingness to participate in the team. I would also talk to the individual and see if they had any suggestions to making the process run smoother or even see if they think there is a problem that needs to be addressed (their voice isn't being heard). This can help them feel like they are a valued member of the team and that what they say and incorporate into the mission will ultimately help the team succeed. Lastly, I would try and give this person the bigger picture of what we are doing. It may help them to realize that while they maybe don't think what they are doing is important/valued/necessary/etc., but that there is a larger scope to what the team is ultimately trying to accomplish. For instance, a military pilot transporting cargo repeatedly between two locations may not be motivated to do the same thing every day or week, but if provided the larger scope (that what they are doing is helping soldiers on the ground gain necessary supplies to defeat the enemy etc.), then quite possibly this will make the job they are doing feel valuable and necessary.

5. How do you go about identifying emerging groupthink in a high-consequence environment?
Identifying groupthink in a high-consequence environment, I would think, starts with smaller examples. For instance, maybe you realize in the pre-brief before a flight that a piece of weather is mentioned about the flight. Maybe the captain brushes it aside and the FO casually agrees because they feel what the captain knows is most likely correct. This seems to be a problem with rationalization where the FO, despite evidence to the contrary, decides that what the captain is telling him is what he should go with. Another emerging principle of groupthink could be something like peer pressure. Maybe management at the company is pushing employees to do things either unethical or that break the law. And instead of resisting or explaining to them the issues with their rules, the employees go ahead and follow the instructions because "management is in charge." This is more of an extreme problem, but it could be anything that management enforces that you know is not right, but choose to follow anyway. I think the best example of this where there were warning signs early on of groupthink was with the Challenger space shuttle disaster in the 1980s. The documentary was fantastic on Netflix detailing how even one of the

most professional organizations in NASA could fall victim to groupthink. Inspections on the rocket boosters after each launch and subsequent testing proved that if temperatures fell below a certain mark, catastrophic failure of the O-rings would be imminent. However, management continuously turned a blind eye to the problem along with employees. This went all the way until the day of the doomed flight when NASA ultimately pressured the company that made the rocket boosters to sign off that the flight was permitted to happen. Employees of both parties still to this day feel the guilt of being lured into the trap of groupthink. If more was done to recognize the problem at the beginning, then perhaps the disaster could have been adverted all together.

Problem Solving Assignment Example 3.

Problem Solving Assignment

Apply pertinent knowledge in identifying and solving problems.

1. Describe the importance of engendering teamwork in a high-consequence environment.

Teamwork provides organizations with many advantages. Inspiring a spirit of cooperation will create synergy between teammates and lead to better results for the team. In my opinion, teamwork will bring the following advantages to the organization: First, the team will contribute more professionals in the team environment. Secondly, the team can complete more challenging tasks. Third, teamwork will provide guidance to members and decisions will be consensus-based. This will make success more likely. Last but not least, teams can achieve different goals at the same time compared to in a single work environment. In this way, we can conclude that organizations should adopt a team-based approach to work in order to achieve complex efficiency, milestones and higher levels of performance results.

2. Describe how an individual might identify a coworker who does not possess the characteristics necessary for teamwork.

By observing the behavior of the coworker, we can determine whether the coworker has the necessary characteristics of teamwork. I firmly believe that a person who lacks certain qualities required for teamwork is not necessarily a bad person, because he or she may just perform better in a leadership role or work individually. For example, good communication skills play an important role in effective teamwork, but if one of the members rarely participates in the communication between group members, such as phone calls and emails, and does not cooperate with other team members. Here, I can be sure that coworker does not have characteristics necessary for teamwork. The other way is to identify is based on the performance of the coworker in the team. If he or she is always unable to contribute to the team, this is definitely wrong, it means that he or she should not be a good collaborator.

a. What are those characteristics?

Good listening skills are a necessary trait to help team leaders communicate their goals to other team members. Members also need to effectively understand the concerns of other members, or they will turn the team into an underperforming team. Second, solidarity; Teamwork is defined as working together to achieve a clear, specific goal that all participants agree must be achieved. Third, job-related skills. All teams should have participants who, based on their experience or skill level, have the ability to contribute to achieving their goals. However, if one team is responsible for designing the cost table, one or more participants will have little or no budgeting experience, and the team will struggle as a result. Fourth, time management. If you know how to balance multiple deadlines and tasks at work, you'll be more comfortable in the fast-paced, collaborative work environment of a modern work or learning place. Working with a team can be intimidating at times, but it's also a great way to come up with new ideas, exchange different ideas and experiences, and develop your talents. By viewing each group project as a learning opportunity, you can help create a more positive work environment.

3. What do you consider to be the most important skill to be a good teammate? Why?

Have a Positive Attitude. A good teammate is positive and full of energy and enthusiasm regardless of the situation. The enthusiasm will be transferred to the other members of the team. Similarly, if you are always being negative, the whole team will be affected by you.

4. Assume you are in a high-consequence environment working with an individual who is not a good teammate. How would you go about motivating this individual to be a team player?

Working with someone who is not a good teammate is definitely difficult to manage, but diversified abilities, commitment, focused attitude, visualization, self-affirmation, patience and coordination, and cooperation can do bring a lot of benefits to the team. I will inspire the individual to be a team player through my interaction, support, participate in the individual, understand his thoughts, according to his actions, I will try my best to support in each field, explain his advantages as a team player, share their The feeling of the role motivates him to establish and maintain a good relationship with team members about friendship.

5. How do you go about identifying emerging groupthink in a high-consequence environment?
Group thinking in consequential environments is the way to solve problems in a team, in a high-consequence environment teamwork is always better than individual. Groupthink can lead to collective bargaining with a lack of individual accountability and approval pressure. Collective perception is a common factor in making bad decisions and serious breaches of ethics. It's often hard to stand up for your beliefs. This is even more difficult when you are under personal evasion or attack. However, these are common tools used by people who express their positions and attitudes in group thinking. It is not uncommon for people involved in misconduct to claim that the actions of their opponents were immoral, rather than their actions. Smart leaders understand the importance of disagreement. They need to be careful to prevent groupthink from moving forward. They are looking for rivals and are actively working to solve their problems. They build defenses to prevent groupthink, such as formal procedures to encourage dissent.

Undergraduate Course Assessment Form

Course: ASCI 4650 Economics of Air Transportation
Semester Taught: Spring 2021 Section 01A/B
Number of Students in Course: 2

Student Learning Outcome Assessed	Assessment Results: (Indicate what % of class achieved a minimum 70%)	Benchmark achieved? (Benchmark: 80% of students will score a minimum of 70% = "C")
J. Apply pertinent knowledge in identifying and solving problems.	Economic, operational, and financial applications. Through competitive online airline simulation platform by Interpretive Simulations. Based on instructor-weighted scores of performance and operational metrics, 75% of the class were successful in identifying and solving economic, operational and financial issues arising within the simulation. One airline team ended the simulation near bankruptcy.	No. Only 1 of the 2 students within Section 01A/01B achieved the benchmark score. This student scored 714 (713.7) of 1000. They were part of a three-person airline management team.
K. Apply knowledge of business sustainability to aviation issues.	Through in-class (Zoom) discussions; Module 7. These discussions were not measured. Through competitive online airline simulation platform by Interpretive Simulations. Economic sustainability and social sustainability. Environmental sustainability was not measured. Simulation performance metrics of four airlines included Quality and Social Performance (social responsibility). Quality improves revenue and keeps costs down. Quality scores: 100% of class achieved Team 1: 91 Team 2: 78 Team 3: 87 and Team 4: 95	The 2 students from Sections 01A/01B were combined into airline simulation teams within Section 10's 11 students. No. Only 23% (3 of 13 students) scored a minimum of 70% Benchmark: cumulative simulation weighted scores above 700 (of 1000 perfect score). Team 1: 617.9 Team 2: 713.7 (achieved) Team 3: 475.9 Team 4: 556.2

	Social Performance cumulative contributions. Improves airline image and has slight impact on sales. Effective range $3,000 - $20,000: 100% of class achieved Team 1: $21,000 Team 2: $34,000 Team 3: $26,000 and Team 4: $40,000.	

Course Assessment (Intended Use of Results)
The following will be used for recommendations to improve the quality of course delivery based on assessment results. These recommendations may include prerequisite change; changing course outline and adding more topics; adding a third assessment; changing the course sequence, etc.

To be determined through department faculty discussion

*****Attach description of assignment used for assessment and samples of student work.*

J. Apply pertinent knowledge in identifying and solving problems.

Each student participated in an airline simulation where each member became a part of an executive team of a small airline firm. The Department paid the fee for the simulation for each student. Each team met to formulate their firm level strategy and submitted ongoing – quarterly - decisions concerning critical issues facing the firm. Decisions were due online on the Airline Simulation site on a weekly basis. These decisions influenced market consequences on each airline's performance, and as a result, on the simulation project grade. The economic, financial and operational performance metrics are listed as headers in the final simulation results table illustrated below.

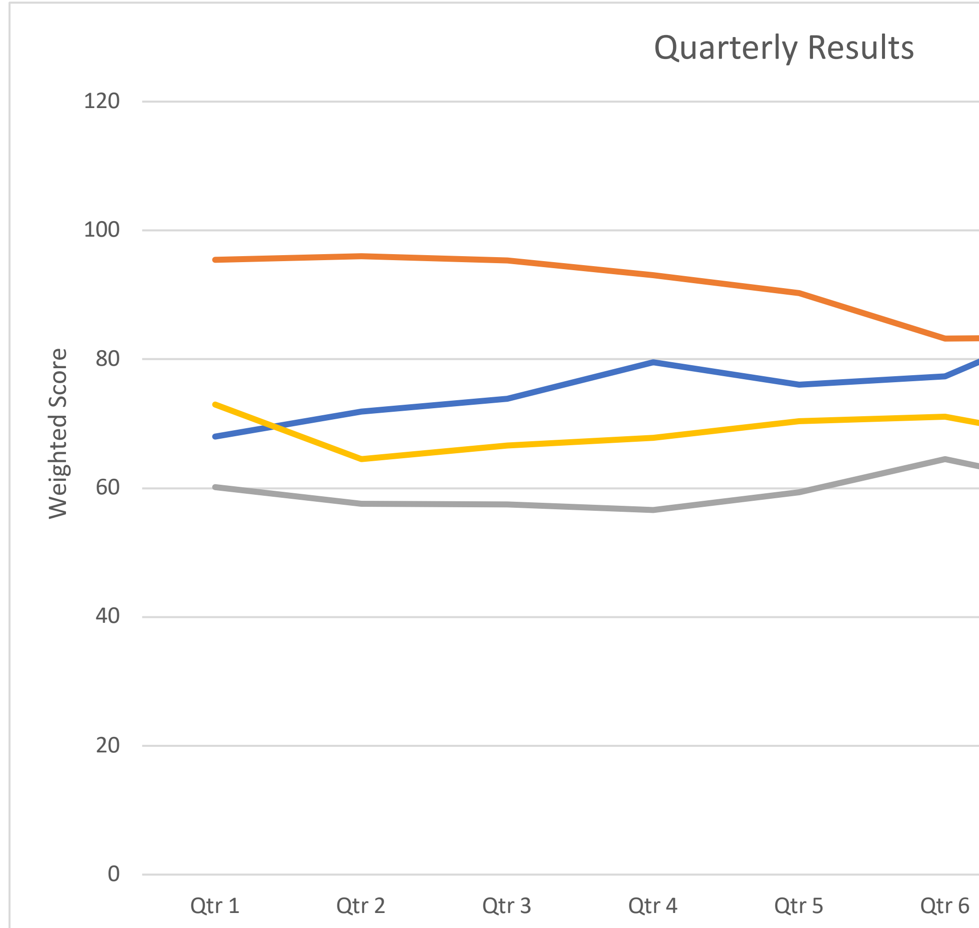
Several decisions had positive or negative impacts on revenue. Such decisions included: advertising, aircraft type, number of flights, cabin service, staff compensation, maintenance, training, seasonal weather, business index forecast, competition from other airline teams, and air fares. Some decisions triggered positive or negative messages to the management team to alert the students to decisions that may not be in line with industry norms.

The airline simulation activities were integrated into the classroom learning experience. The group project required collaborative work and everyone was expected to carry an equal share of the work load within each airline team. Each airline team prepared a final presentation.

Periods	Elevate	RedJets	GreenFalcon	StLExpress
Qtr 1	68	95.4	60.2	73
Qtr 2	71.9	96	57.6	64.5
Qtr 3	73.9	95.3	57.5	66.6
Qtr 4	79.5	93.1	56.6	67.8
Qtr 5	76.1	90.3	59.4	70.4
Qtr 6	77.3	83.2	64.5	71.1
Qtr 7	87	83.4	59.8	66.9
Qtr 8	84.2	77	60.3	75.9
Cum. Total	**617.9**	**713.7**	**475.9**	**556.2**
Cum. Net Profit	***$1,405,937***	***$3,284,772***	***($102,732)***	***$425,680***
Stock Price	***44.65***	***30.18***	***20.51***	***31.40***
Cash Balance	**$1,952,223**	**$5,977,668**	**$3,284,454**	**$2,273,585**
Line of Credit	**$11,300,000**	**$16,900,000**	**$3,300,000**	**$9,000,000**

Tailwinds became Elevate Airlines Qtr 5

Skyteam became Green Falcon Qtr 5



END OF 2 Fiscal Years of Ops	Airline Strategy	Cumlative Net Income	Cumulative Revenue	Cash Balance	Loan Balance	Profit Margin	Current Ratio	Debt to Equity	Return on Assets
Elevate Airlines		$1,720,747	$46,739,480	$1,952,223	$3,128,864	3.680%	2.724	0.827	0.038
Red Jets		$3,360,796	$83,161,942	$5,977,668	$2,087,113	4.040%	3.58	0.372	0.007
Green Falcon		($86,283)	$40,105,113	$3,284,454	$2,237,143	-0.220%	3.431	1.020	0.003
St. Louis Express		$740,456	$42,005,244	$2,273,585	$2,087,113	1.760%	2.694	0.696	0.047

	Return on Equity	Return on Sales	Line of Credit	Stock Price	Earnings per Share (EPS)	Quality	Reliability	Seat Productivity	Turnover
Elevate Airlines	0.083	0.055	$11,300,000	$44.65	$1.92	91	94.8	6.7	5.5%
Red Jets	0.014	0.008	$16,900,000	$30.18	$0.34	78	93.8	7.0	7.1%
Green Falcon	0.008	0.003	$3,300,000	$20.51	$0.10	87	92.0	6.5	9.7%
St. Louis Express	0.105	0.048	$9,000,000	$31.40	$2.10	95	94.1	6.2	7.9%

	Aircraft Utilization	Passenger Load	Yield per SeatMile	Cumulative Dividends	Cumulative Advertising	Cumulative Promotion	Cumulative Social Perform	Cumulative Training	Fare
Elevate Airlines	96.0%	62.0%	$0.220	$330,000	$108,000	$59,000	$21,000	$120,500	$36
Red Jets	99.0%	65.0%	$0.180	$2,000	$97,500	$88,000	$34,000	$123,000	$30
Green Falcon	88.0%	76.0%	$0.248	$0	$91,500	$81,500	$26,000	$152,000	$35
St. Louis Express	94.0%	61.0%	$0.226	$0	$479,997	$285,000	$40,000	$331,000	$37

	Discounted Fare	Max Daily Miles	Miles Flown Daily	Total Aircraft	Total Flights	Total Routes	Total Seats	Sales Persons	Weighted Points	End Position
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K. Apply knowledge of business sustainability to aviation issues.

Method 1: Airline Simulation

Airline Simulation – Learning Objectives

- Experience strategy formulation and implementation in a dynamic (ever-changing and competitive) environment
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- Monitor implementation of plan
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- Identify target segments
- Match aircraft fleet with target segments
    - Aircraft acquisition
- Evaluate new business opportunities
    - Route selection
- Understand risk mitigation

    - Fuel price changes/fuel hedging purchase
- Respond to changing environment

Marketing:

- Fares management
- Cabin service and fees
- Promotion/advertising
- Sales force
- Quality rating
- Yield/seat mile (Revenue/Revenue Passenger Mile)

Operations Management:

- Operational efficiency
    - Training
    - Compensation
- Maximize aircraft reliability
    - Fleet maintenance
    - Reliability
- Manage aircraft scheduling
    - Aircraft scheduling
- Maintain profitable load factor
    - Passenger load factor

Corporate/Finance:

- Respond to ethical issues in business
    - Social responsibility/investments
- Analyze financial performance
    - Net income
    - Stock issue/dividend payment
    - Return on assets (ROA)
- Project financial needs
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- Fund capital investment

    - Debt management
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Teamwork:

- Allocate responsibilities fairly
- Collaborate with other team members

Attached is the Audit Presentation slides of *STL Express* airline team.

Method 2: In-class discussion (Module 7)

Module 7: In this module, we will address sustainability issues for airports and air carriers.

COVID-19 has created an economic downturn that has moved the economy into a recession-like state. Airlines are bleeding cash and are forced to remove fleet inventory. How will they economically sustain and come out of this cycle healthy? How does economic pressures on airlines impact the sustainability of airports?

There is no evidence attachment for this method.


STL Express


1.
Overview
General, Industry, Competition

General

- Normal Airline finances
  - .40 then dropped to .37 in Quarter 8
- Made Passenger Satisfaction a priority
  - Level 3 cleaning
  - Level 2 soft drinks and snacks
- Decided not to offer cargo services because it was too expensive to start and would not have a high pay off

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Industry and Competition

- RedJets
- Elevate Airlines
- Green Falcon


2.
Operational Highlights
Product enhancements, Fleet,
Network/Routes, Customer Service

Product Enhacements

- Level 2 - soft drink and snacks
  - to improve reliability and public perception
  - Quarter 1
- Level 3 - clean the aircraft
  - improve public perception and address complaints of dirty aircraft
  - Quarter 1
- Auto rental business
  - it has a high probability of success and will be worth the investment
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Fleet

Quarter 1

- Sold 1 TP- 300 so that we owned in order to have extra cash to lease new aircraft
- Terminated 1 lease of TP - 300 to upgrade the aircraft
- Leased 3 RJ-350E to upgrade fleet, be able to fly more routes, and increase seat capacity

Quarter 3

- Leased RJ-350E

Quarter 5

- Rented RJ-350 E to run more routes

4 - RJ-350 E - LEASED
1 - TP – 300 - OWNED

7

Network and Routes

- Focused on Region 2 in hopes of performing well in that region
  - In hindsight, it would have been better to have the aircraft spread amongst more routes.
- There should have been more money invested in marketing earlier on in the process

Customer Service

- ➢ STL Express decided early on that honesty and quality customer service were important cornerstones to the business
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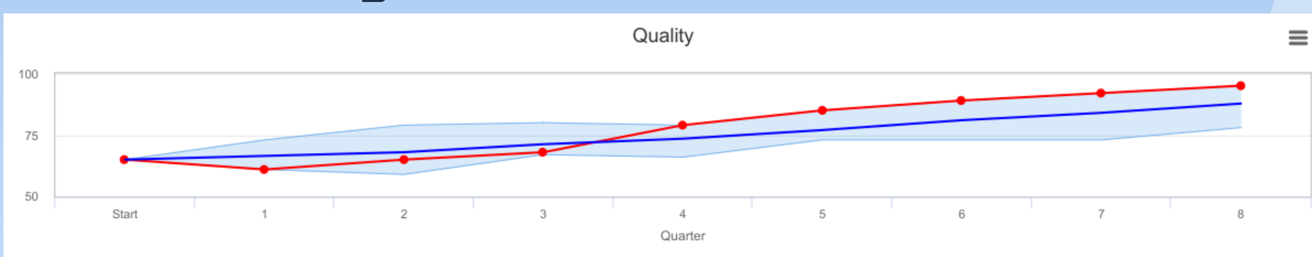
- ➢ Quarter 4 - Was honest in press release about safety incident
- ➢ Led the industry in customer service



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Operations & Cost Strucutre

Route Strucutre, Fleet Maintenance, Aircraft Fuel

Route Strucutre

- ➢ Over saturated the market in region 2
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  - ➢ *Passenger Load Factor* suffered as a result
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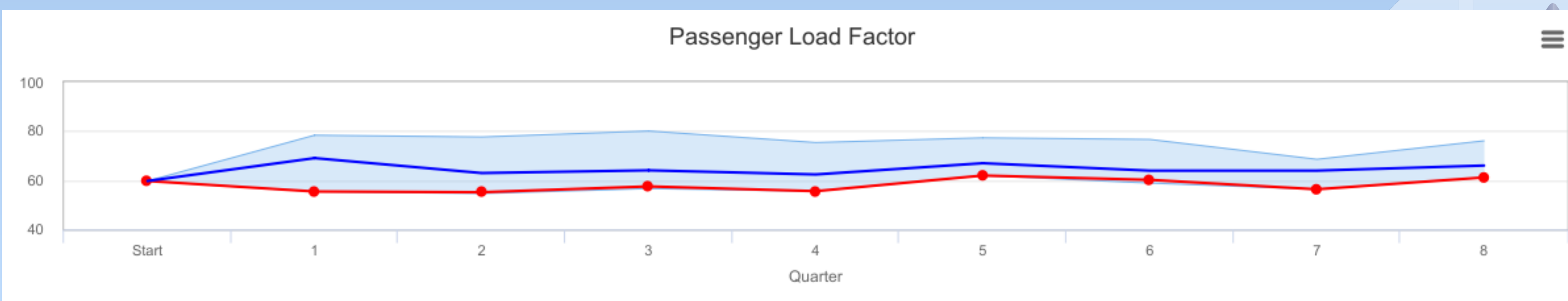

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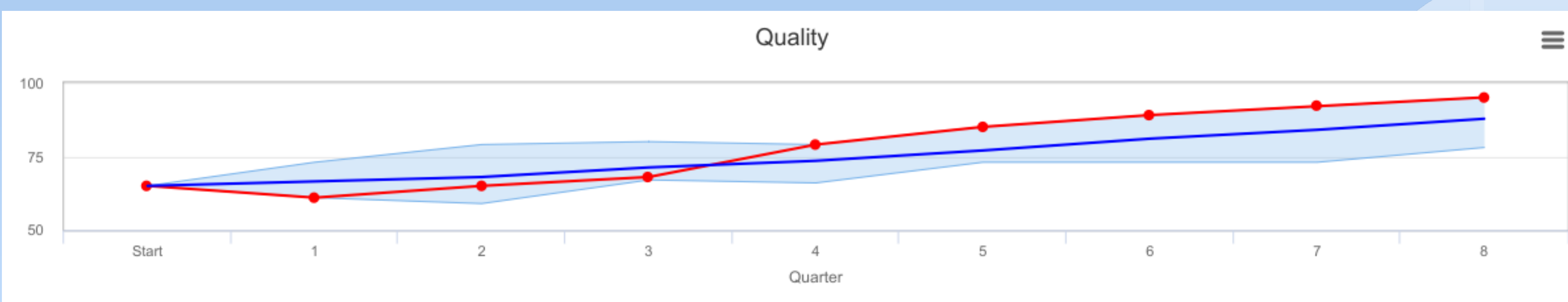

12

Aircraft Fuel

- Quarter 4 – Changed to 50/50 contract and non-contracted fuel
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Corporate Social Responsibility

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- Aviation Mechanics Programs at a local college because STL Express believes training the next generation of mechanics is important and valuable.

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Company Performance
Risk Factors Encountered, Stock Price, &
Selected Financial Data

Risk Factors Encountered

Special Decisions – Risks if Not Handled Properly

- Quarter 1 – Press Release on Medical Emergency During Flight
  - If STL Express was not honest the company could have lost reputation
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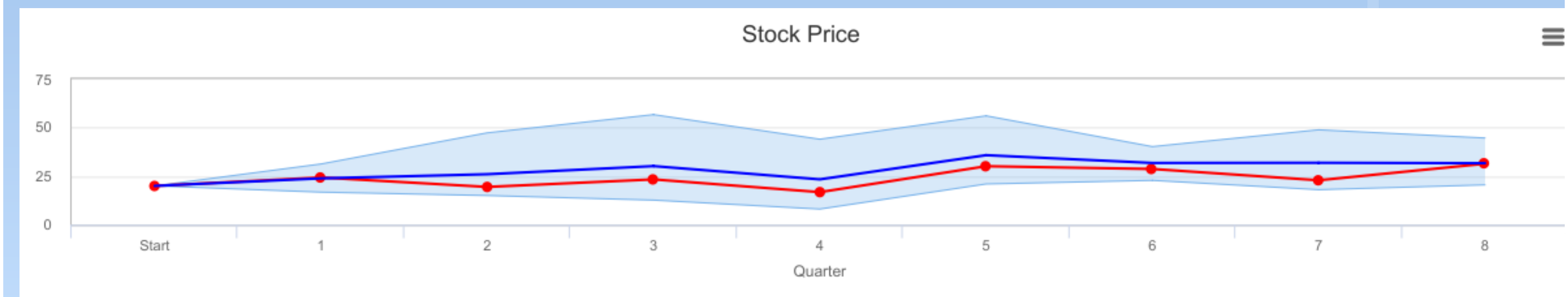
- ➢ Marketing budget improvement helped the stock price to rise



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Gross Revenue for Quarter 8
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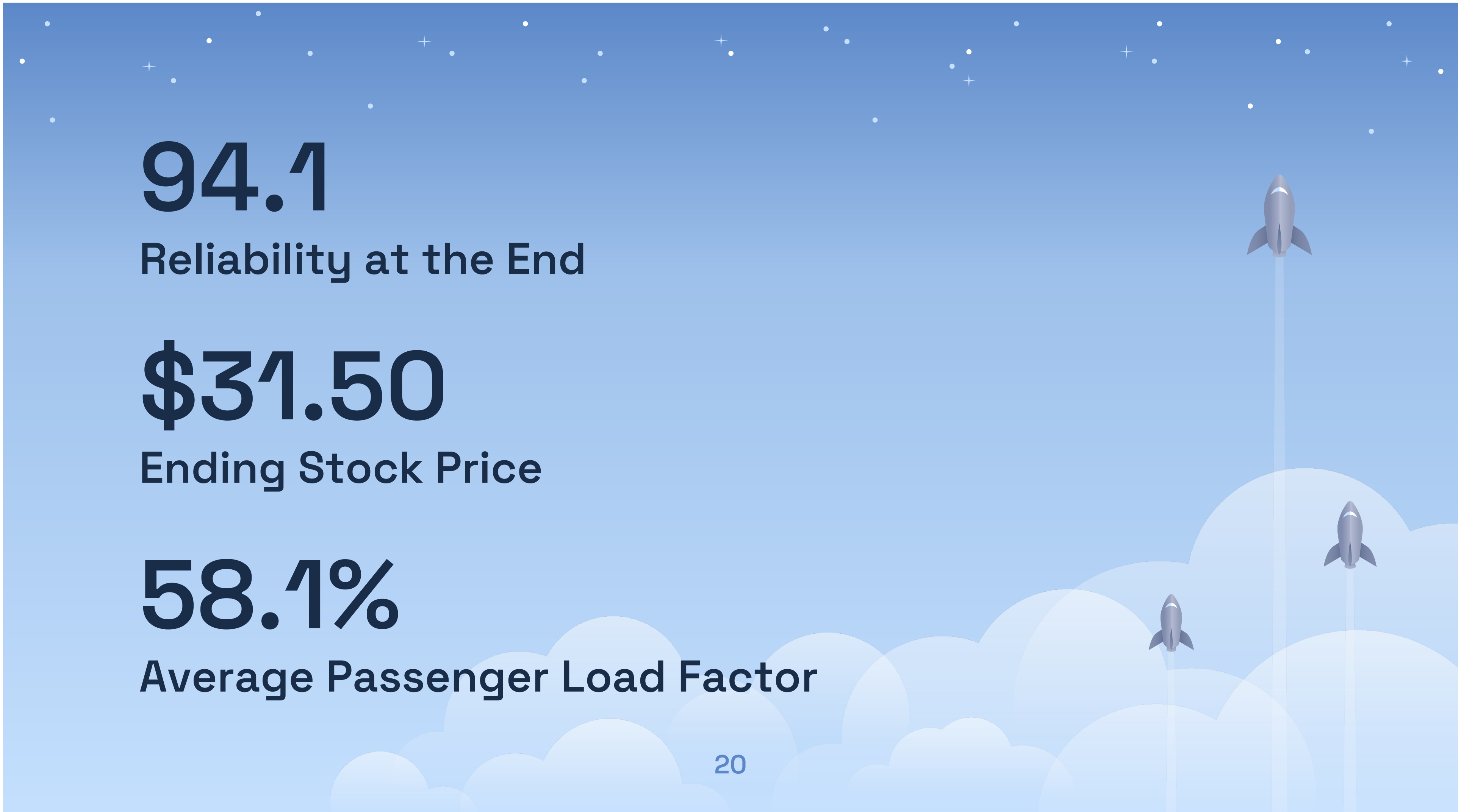
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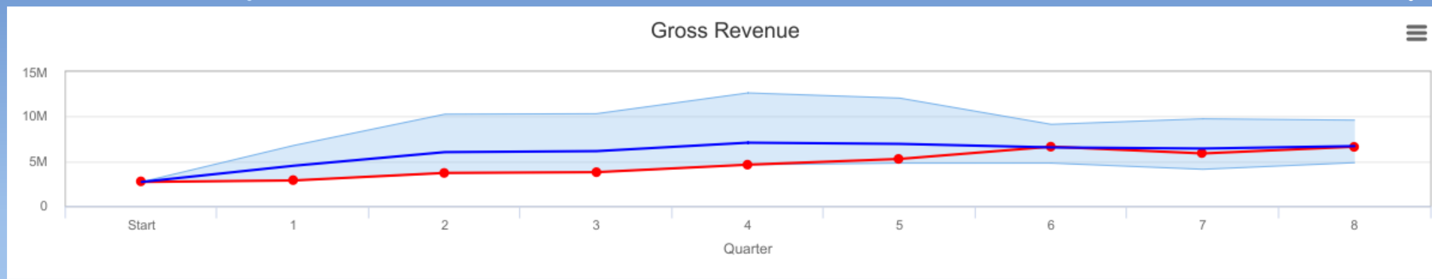

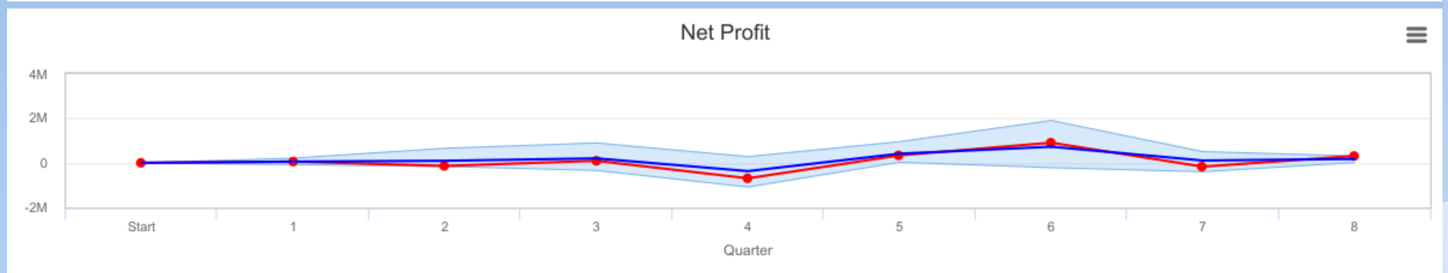

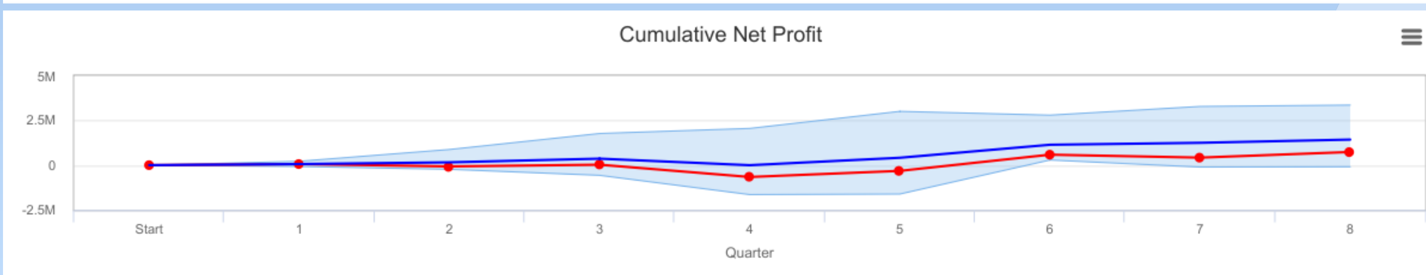

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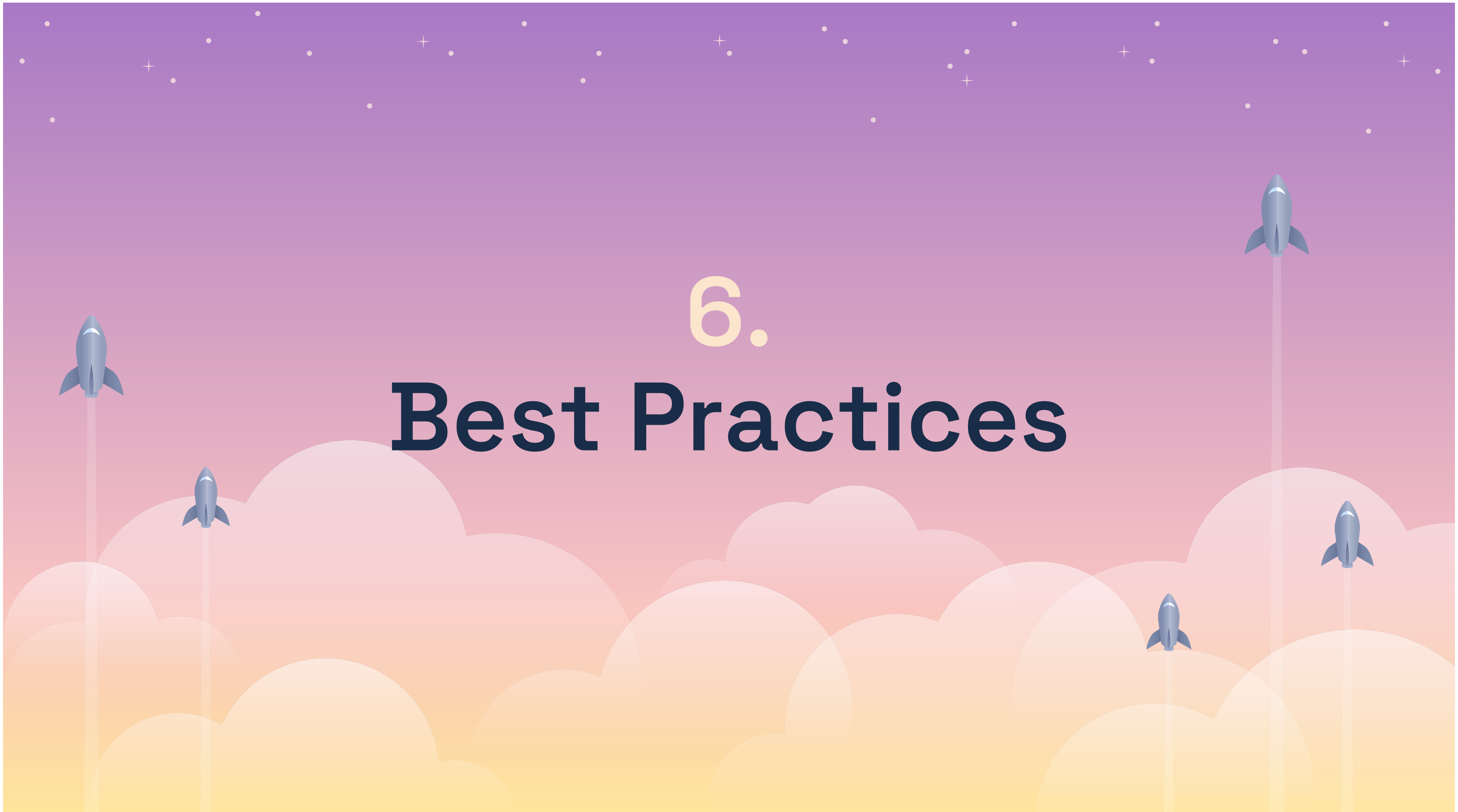
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"TOO LOW"
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Advice If Starting From Scratch

- ➢ Diversify routes
- ➢ Hire Salespeople
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- ➢ Provide bonuses when you can afford it
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- ➢ Purchase Quarterly Reports

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Advice If Transitioning Management

- Utilize Hoover Consulting
- Expand routes
- Don't be afraid to spend money on investments
- Don't be afraid to sell an aircraft if you have too many flights on the current routes
- Find a new sales team


7.
Audit Discussion

Final Financial Situation

- STL Express would have performed better sooner if more money had been invested in *advertising* and *promotion*.
- More money should have been invested sooner in training and paying employee's above average pay.
- Overall, STL Express consistently improved in profits

Final Results of Operations

- Biggest component that would have made a large impact would have been diversifying the routes so that the market was not over-saturated
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  - If more routes were flown it is likely the number of passengers per aircraft would have gone up

Thanks!

Any questions?

Email us at:

ST. LOUIS EXPRESS

Express Get's You There

29

Undergraduate Course Assessment Form

Course: ASCI 4650 Economics of Air Transportation
Semester Taught: Spring 2021 Section 10
Number of Students in Course: 11

Student Learning Outcome Assessed	Assessment Results: (Indicate what % of class achieved a minimum 70%)	Benchmark achieved? (Benchmark: 80% of students will score a minimum of 70% = "C")
J. Apply pertinent knowledge in identifying and solving problems.	Economic, operational, and financial applications. Through competitive online airline simulation platform by Interpretive Simulations. Based on instructor-weighted scores of performance and operational metrics, 75% of the class were successful in identifying and solving economic, operational and financial issues arising within the simulation. One airline team ended the simulation near bankruptcy.	No. Only 2 of the 11 students within Section 10 achieved the benchmark score. These two students scored 714 (713.7) of 1000. They were part of a three-person airline management team.
K. Apply knowledge of business sustainability to aviation issues.	Through in-class (Zoom) discussions; Module 7. These discussions were not measured. Through competitive online airline simulation platform by Interpretive Simulations. Economic sustainability and social sustainability. Environmental sustainability was not measured. Simulation performance metrics of four airlines included Quality and Social Performance (social responsibility). Quality improves revenue and keeps costs down. Quality scores: 100% of class achieved Team 1: 91 Team 2: 78 Team 3: 87 and Team 4: 95	The 2 students from Sections 01A/01B were combined into teams within Section 10's 11 students. No. Only 23% (3 of 13 students) scored a minimum of 70% Benchmark: cumulative simulation weighted scores above 700 (of 1000 perfect score). Team 1: 617.9 Team 2: 713.7 (achieved) Team 3: 475.9 Team 4: 556.2

	Social Performance cumulative contributions. Improves airline image and has slight impact on sales. Effective range $3,000 - $20,000: 100% of class achieved Team 1: $21,000 Team 2: $34,000 Team 3: $26,000 and Team 4: $40,000.	

Course Assessment (Intended Use of Results)
The following will be used for recommendations to improve the quality of course delivery based on assessment results. These recommendations may include prerequisite change; changing course outline and adding more topics; adding a third assessment; changing the course sequence, etc.

To be determined through department faculty discussion

**Attach description of assignment used for assessment and samples of student work.*

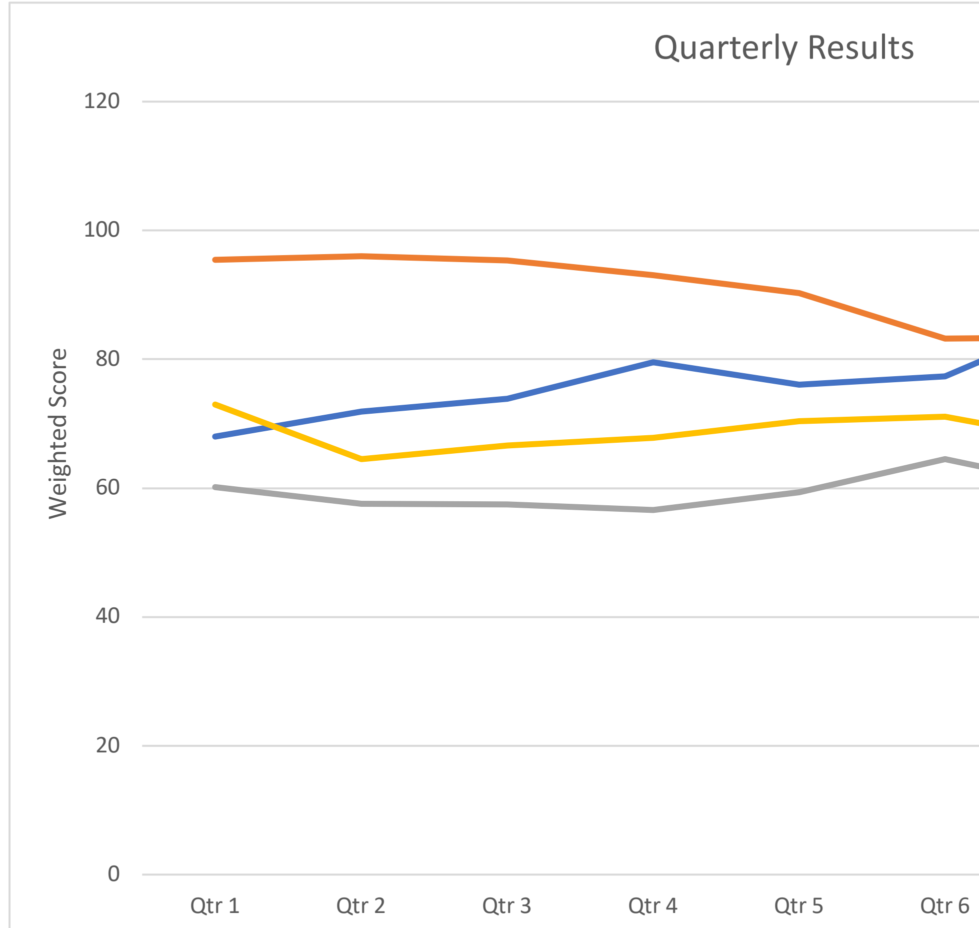
J. Apply pertinent knowledge in identifying and solving problems.

Each student participated in an airline simulation where each member became a part of an executive team of a small airline firm. The Department paid the fee for the simulation for each student. Each team met to formulate their firm level strategy and submitted ongoing – quarterly - decisions concerning critical issues facing the firm. Decisions were due online on the Airline Simulation site on a weekly basis. These decisions influenced market consequences on each airline's performance, and as a result, on the simulation project grade. The economic, financial and operational performance metrics are listed as headers in the final simulation results table illustrated below.

Several decisions had positive or negative impacts on revenue. Such decisions included: advertising, aircraft type, number of flights, cabin service, staff compensation, maintenance, training, seasonal weather, business index forecast, competition from other airline teams, and air fares. Some decisions triggered positive or negative messages to the management team to alert the students to decisions that may not be in line with industry norms.

The airline simulation activities were integrated into the classroom learning experience. The group project required collaborative work and everyone was expected to carry an equal share of the work load within each airline team. Each airline team prepared a final presentation.

Periods	Elevate	RedJets	GreenFalcon	StLExpress
Qtr 1	68	95.4	60.2	73
Qtr 2	71.9	96	57.6	64.5
Qtr 3	73.9	95.3	57.5	66.6
Qtr 4	79.5	93.1	56.6	67.8
Qtr 5	76.1	90.3	59.4	70.4
Qtr 6	77.3	83.2	64.5	71.1
Qtr 7	87	83.4	59.8	66.9
Qtr 8	84.2	77	60.3	75.9
Cum. Total	**617.9**	**713.7**	**475.9**	**556.2**
Cum. Net Profit	***$1,405,937***	***$3,284,772***	***($102,732)***	***$425,680***
Stock Price	***44.65***	***30.18***	***20.51***	***31.40***
Cash Balance	**$1,952,223**	**$5,977,668**	**$3,284,454**	**$2,273,585**
Line of Credit	**$11,300,000**	**$16,900,000**	**$3,300,000**	**$9,000,000**



Tailwinds became Elevate Airlines Qtr 5
Skyteam became Green Falcon Qtr 5

END OF 2 Fiscal Years of Ops	Airline Strategy	Cumlative Net Income	Cumulative Revenue	Cash Balance	Loan Balance	Profit Margin	Current Ratio	Debt to Equity	Return on Assets
Elevate Airlines		$1,720,747	$46,739,480	$1,952,223	$3,128,864	3.680%	2.724	0.827	0.038
Red Jets		$3,360,796	$83,161,942	$5,977,668	$2,087,113	4.040%	3.58	0.372	0.007
Green Falcon		($86,283)	$40,105,113	$3,284,454	$2,237,143	-0.220%	3.431	1.020	0.003
St. Louis Express		$740,456	$42,005,244	$2,273,585	$2,087,113	1.760%	2.694	0.696	0.047

	Return on Equity	Return on Sales	Line of Credit	Stock Price	Earnings per Share (EPS)	Quality	Reliability	Seat Productivity	Turnover
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Red Jets	0.014	0.008	$16,900,000	$30.18	$0.34	78	93.8	7.0	7.1%
Green Falcon	0.008	0.003	$3,300,000	$20.51	$0.10	87	92.0	6.5	9.7%
St. Louis Express	0.105	0.048	$9,000,000	$31.40	$2.10	95	94.1	6.2	7.9%

	Aircraft Utilization	Passenger Load	Yield per SeatMile	Cumulative Dividends	Cumulative Advertising	Cumulative Promotion	Cumulative Social Perform	Cumulative Training	Fare
Elevate Airlines	96.0%	62.0%	$0.220	$330,000	$108,000	$59,000	$21,000	$120,500	$36
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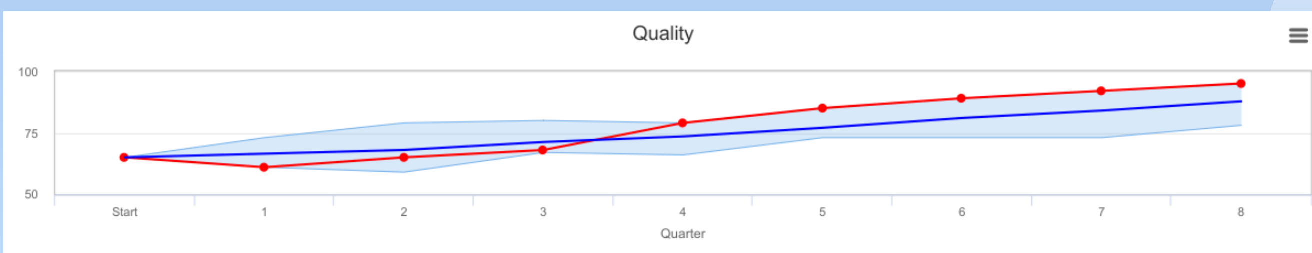

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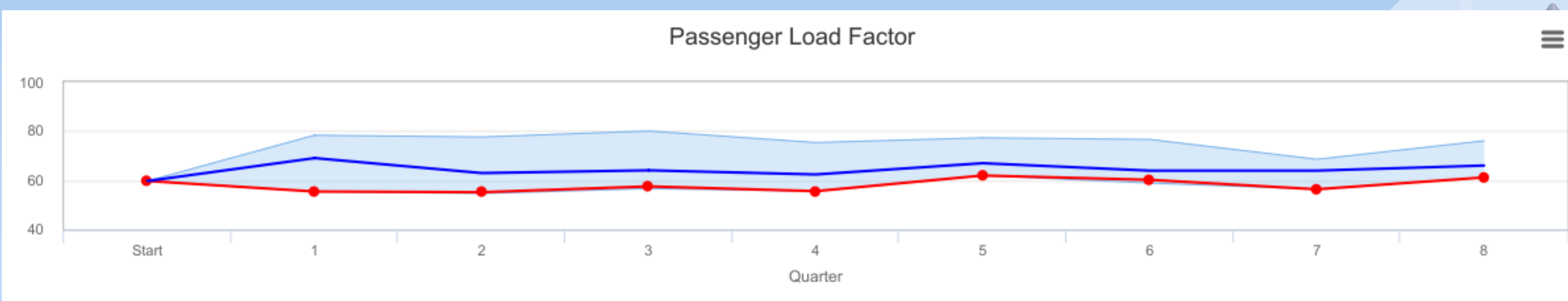

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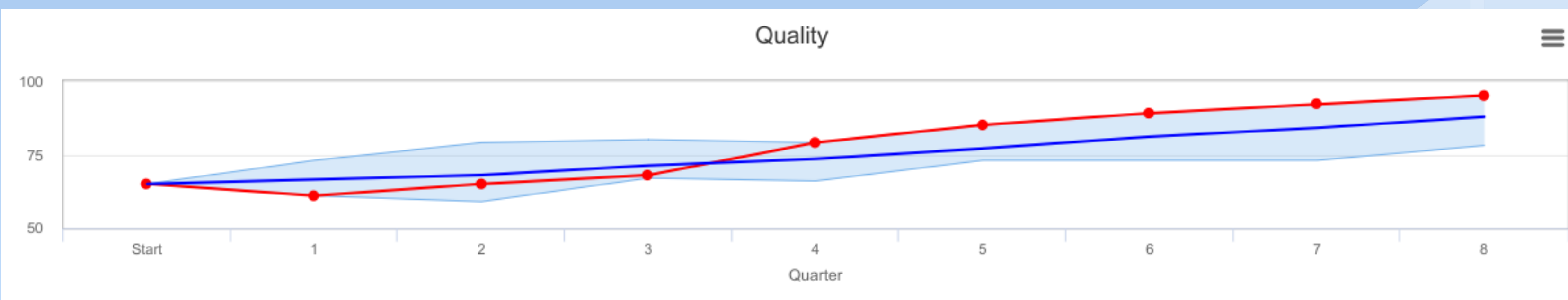

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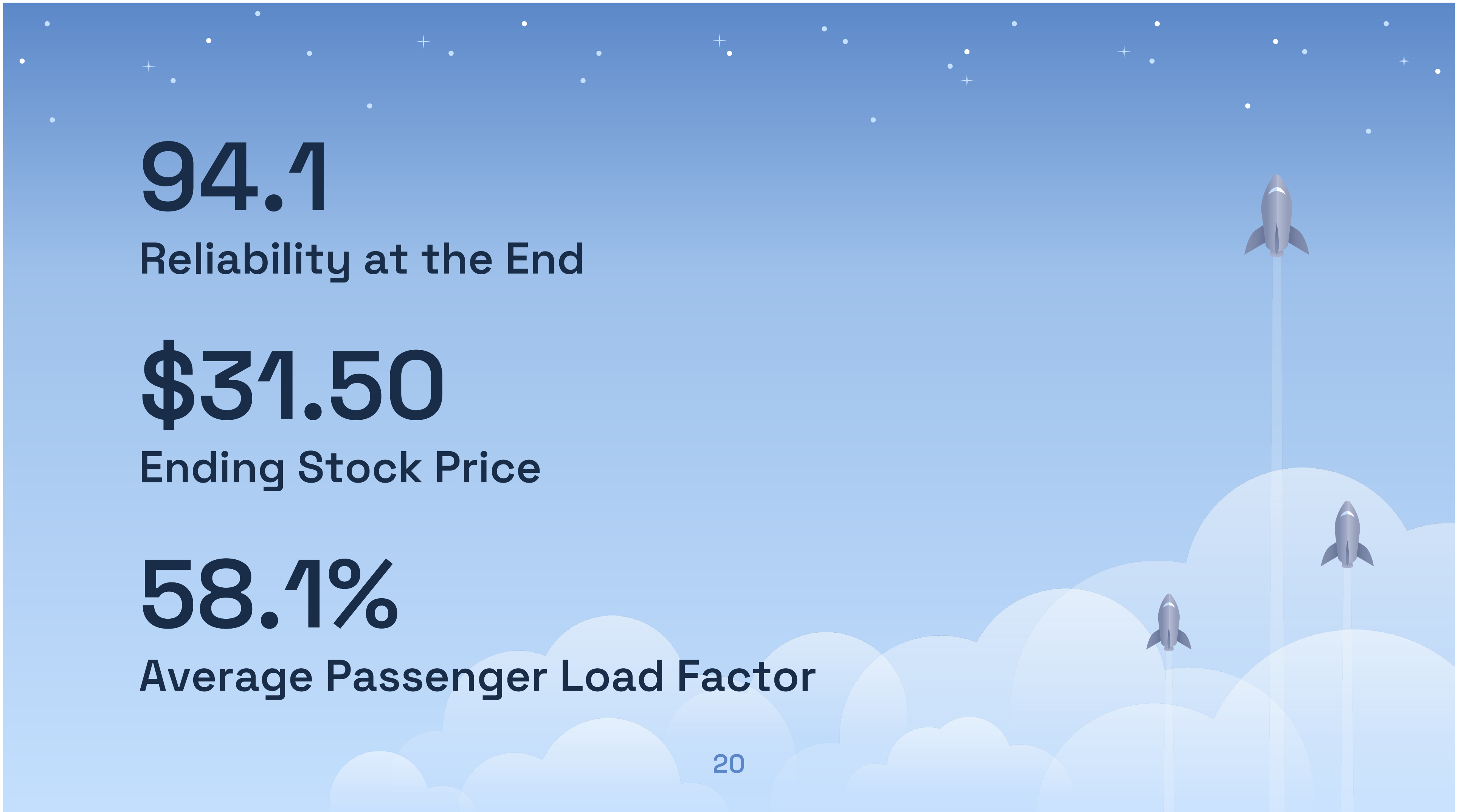
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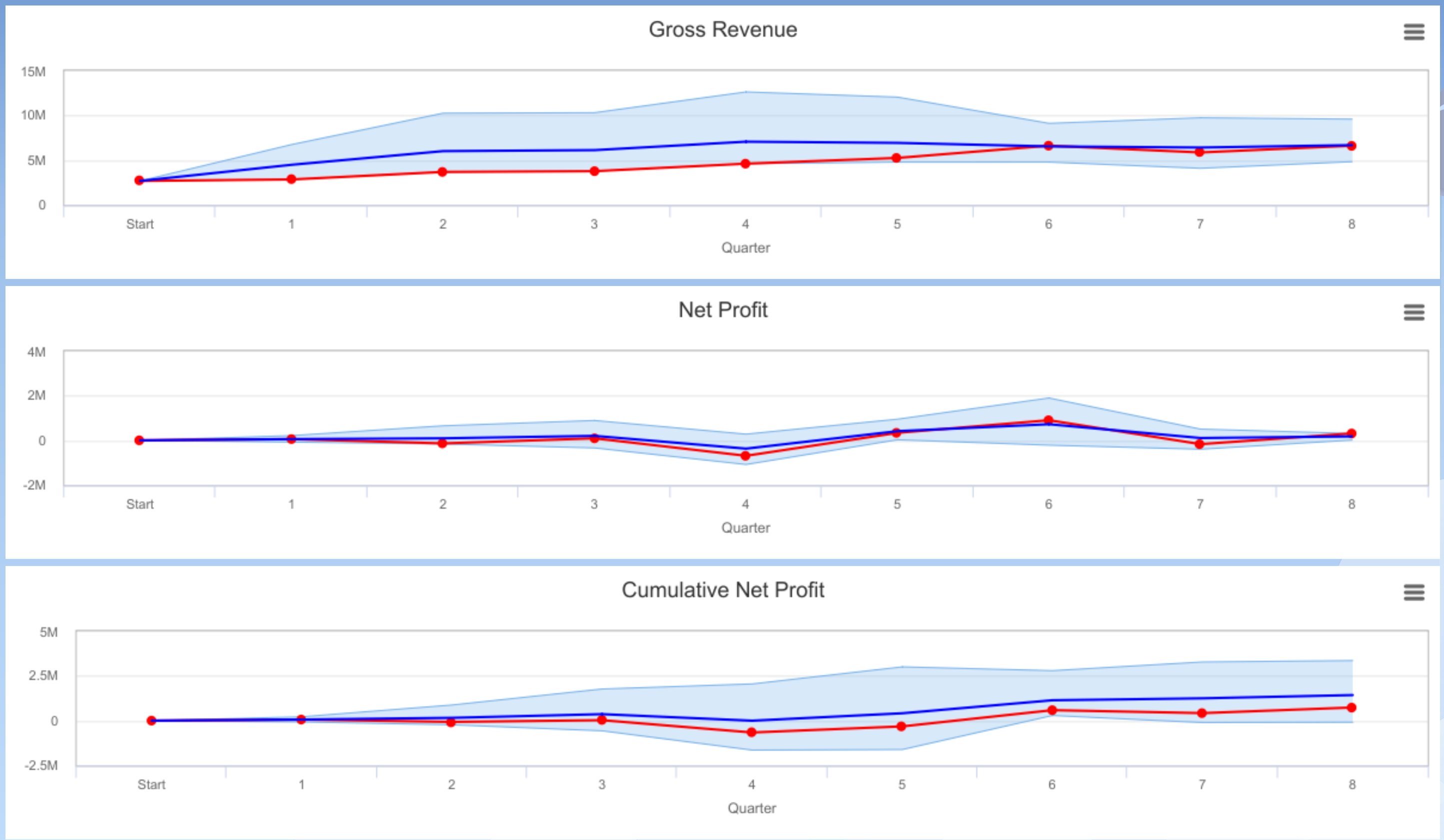

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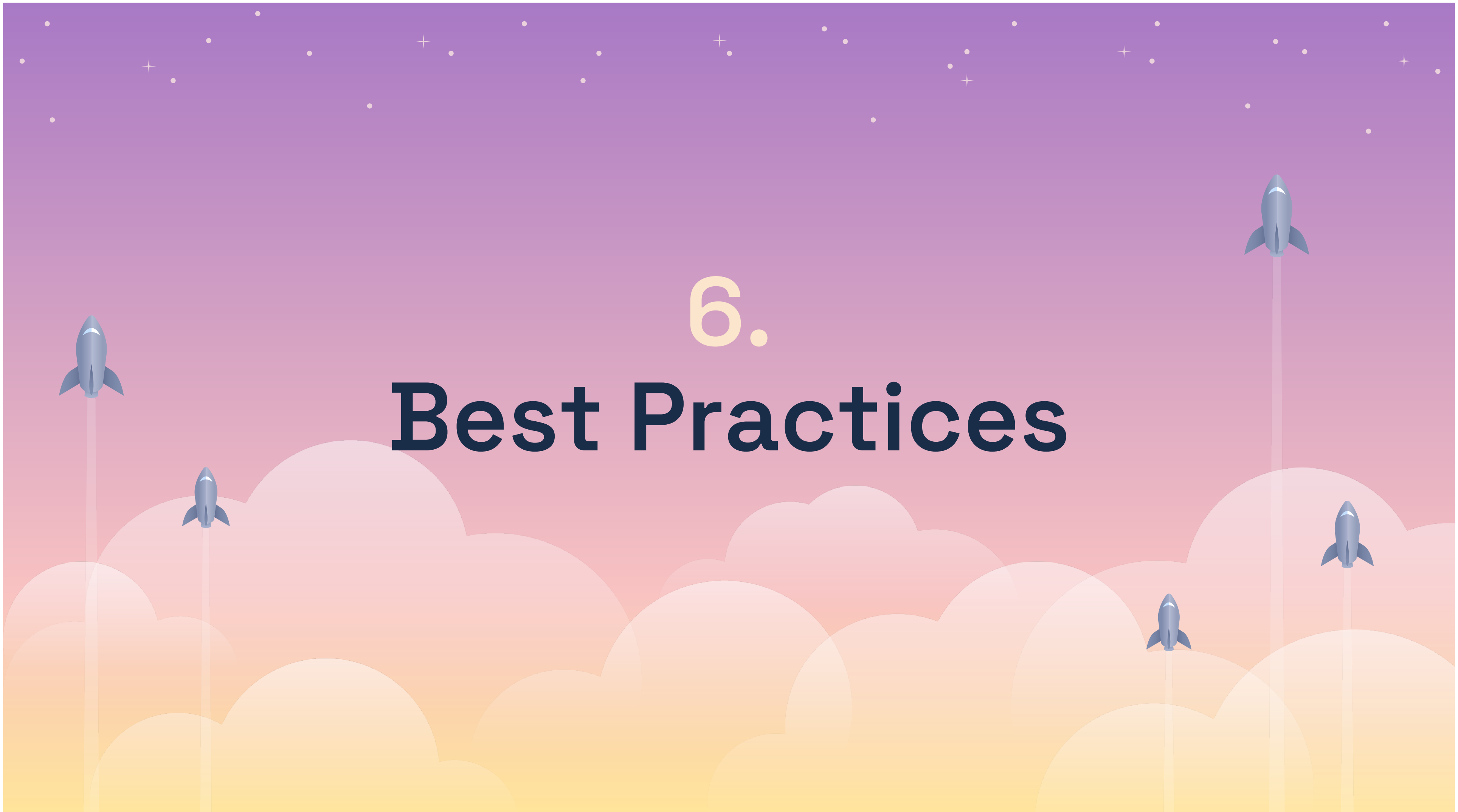
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Any questions?

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Course Assessment Form

Course: ASCI 4800 – 01 International Aviation (On-Site)
Semester Taught: Spring 2021
Number of Students in Course: 9
Taught by: Stephen Magoc

Student Learning Outcome Assessed	Assessment Results: (Indicate what % of class achieved a minimum 70%)	Benchmark achieved? (Benchmark: 80% of students will score a minimum of 70% = "C")
B. Analyze and interpret data.	Test 4 Question 23 – 88.89% Test 4 Question 33 – 100% Test 5 Questi0n 24 – 100%	Embedded test questions to analyze the students' ability to use the techniques, skills, and modern technology necessary for professional practice yielded an average of 92.3%, achieving the benchmark.
C. Work effectively on multi-disciplinary and diverse teams.	Presentation: due to COVID-19 and restrictions the group presentation was revised to be individual presentations made via Zoom. The average score on the presentations was 31.5 out of 34 possible points.	Embedded test questions to analyze the students' ability to use the techniques, skills, and modern technology necessary for professional practice yielded an average of 92.6%, achieving the benchmark.
E. Communicate effectively, using both written and oral communication skills.	Test 1 Question 8 – 100% Test 1 Question 14 – 100% Test 3 Question 31 – 100% Presentation: due to COVID-19 and restrictions the group presentation was revised to be individual presentations made via Zoom. The average score on the presentations was 31.5 out of 34 possible points.	Embedded test questions to analyze the students' ability to use the techniques, skills, and modern technology necessary for professional practice yielded an average of 98.15%, achieving the benchmark.
F. Engage in and recognize the need for life-long learning.	Test 1 Question 20 – 77.78% Test 1 Question 21 – 66.67% Test 2 Question 1 – 100% Test 3 Question 31 – 100% Test 5 Question 5 – 100% Test 6 Question 21 – 100% Test 6 Question 24 – 22.23%	Embedded test questions to analyze the students' ability to use the techniques, skills, and modern technology necessary for professional practice yielded an average of 80.95%, achieving the benchmark. **See recommendation below.**

I. Assess the national and international aviation environment.	Test 1 Question 6 – 100% Test 1 Question 10 – 100% Test 2 Question 15 – 88.89% Test 2 Question 21 – 88.89% Test 3 Question 2 – 100% Test 3 Question 21 – 88.89% Test 6 Question 25 – 88.89% Final Exam Question 4 – 55.56%	Embedded test questions to analyze the students' ability to use the techniques, skills, and modern technology necessary for professional practice yielded an average of 88.89%, achieving the benchmark.
J. Apply pertinent knowledge in identifying and solving problems.	Test 2 Question 2 – 100% Test 2 Question 8 – 66.67% Test 4 Question 10 – 100% Test 4 Question 14 – 100% Test 5 Question 8 – 100% Test 5 Question 31 – 77.78% Test 6 Question 23 – 100%	Embedded test questions to analyze the students' ability to use the techniques, skills, and modern technology necessary for professional practice yielded an average of 92.06%, achieving the benchmark.

Course Assessment (Intended Use of Results)
The following will be used for recommendations to improve the quality of course delivery based on assessment results. These recommendations may include prerequisite change; changing course outline and adding more topics; adding a third assessment; changing the course sequence, etc.

- Student Learning Outcome B: Recommendation is to continue the current methods of presenting the course materials to the class.
- Student Learning Outcome C: Recommendation is to continue the current methods of presenting the course materials to the class.
- Student Learning Outcome E: Recommendation is to continue the current methods of presenting the course materials to the class.
- **Student Learning Outcome F: Recommendation is to use additional course materials to reinforce the need for life-long learning in the aviation industry.**
- Student Learning Outcome I: Recommendation is to continue the current methods of presenting the course materials to the class.
- Student Learning Outcome J: Recommendation is to continue the current methods of presenting the course materials to the class.

**Attach description of assignment used for assessment and samples of student work.*

ASCI 4800 – 01 International Aviation – Spring 2021 (On-site)

1. Column

   ASCI 4800 Test 1 2021 (Test)

2. Points Possible

   105

3. Description

STATISTICS

Count	9
Minimum Value	78.78
Maximum Value	98.93
Range	20.15
Average	90.31111
Median	92.87
Standard Deviation	7.29668
Variance	53.24165

STATUS DISTRIBUTION

Null	0
In Progress	0
Needs Grading	0
Exempt	0

GRADE DISTRIBUTION

Greater than 100	0
90 - 100	2
80 - 89	5
70 - 79	2
60 - 69	0
50 - 59	0
40 - 49	0
30 - 39	0
20 - 29	0
10 - 19	0
0 - 9	0
Less than 0	0

ASCI 4800 International Aviation TEST 1 **Name ______________________________**

Place circle your answer, write your essay answer in the space provided, place an X in the box to denote "true" or "false," and write your answer on the line provided.

1. In which century did Hugo Grotius author the principle ***Mare Liberum***, otherwise known as the "freedom of the seas?"

   A. 1600s.
   B. 1800s.
   C. 1900s.

2. Briefly describe what Hugo Grotius meant by the term "freedom of the seas."

3. At the end of World War I, the allied and associated nations formed the International Commissioner for Air Navigation, and enacted the International Air Navigation Code, which is also referred to as which convention?

   A. The Chicago Convention.
   B. The Paris Convention.
   C. The Warsaw Convention.

4. Which of the following aspects of international aviation was NOT regulated by the International Commission for Air Navigation as determined by the International Air Navigation Code?

   A. Each nation's registry of aircraft.
   B. Flight of aircraft from one country across the territory of another country.
   C. Issuance of airworthiness certificates.
   D. International navigation rules.
   E. Allows the transportation of arms and explosives on aircraft of one country flying across the territory of a second country without the second country's permission.
   F. None of the above.

5. True or False: Article 1 of the International Air Navigation Code recognized that none of the High Contracting Parties has complete and exclusive sovereignty over the airspace above its territory or the territorial waters adjacent thereto. Place an "X" in the box next to your answer

   ☐ TRUE ☐ FALSE

6. Which of the following was NOT a result of the Warsaw Convention of 1929?

   A. The convention defined that the carrier was NOT liable in case of loss, damage, injury or death due to an accident on an international flight.
   B. The convention spelled out procedures for claims and restitution against carriers.
   C. The convention laid down the requirements for format and content of air transport documents, passenger tickets, luggage tickets and air consignment notes.

7. Towards the end of World War II in 1944, representatives of several of the allied nations held the Convention on International Civil Aviation, which is also referred to as:

   ____.

8. Briefly describe the aim or the main purpose of the Convention on International Civil Aviation.

9. Which of the following are part of the international standards and practices that Contracting States of the Convention on International Civil Aviation agreed to comply with to the highest degree of uniformity?

   A. Communication and navigation aid and support.
   B. Rules of the air and air traffic control practices.
   C. Licensing of operations and mechanical personnel.
   D. Airworthiness of aircraft.
   E. Aeronautical maps and charts.
   F. All of the above.

10. What international organization was developed by the Convention on International Civil Aviation?

   A. The International Air Transport Association (IATA).
   B. The International Airline Pilots Association (IALPA).
   C. The International Civil Aviation Organization (ICAO).

11. Which of the following are part of ICAO's Strategic Objectives for the 2017-2019 Triennium?

   A. Safety.
   B. Air Navigation Capacity and Efficiency.
   C. Security and Facilitation.
   D. Economic Development of Air Transport.
   E. Environmental Protection.
   F. All of the above.

12. At the Chicago Convention, delegates of the States acknowledged which of the following Freedoms of the Air that were previously agreed to with the International Air Transit Services Agreement?

    A. Freedoms of the Air 1 and 2.
    B. Freedoms of the Air 1 through 5.
    C. Freedoms of the Air 3, 4 and 5.

13. At the Chicago Convention, delegates of the States ratified which of the following Freedoms of the Air?

    A. Freedoms of the Air 1 and 2.
    B. Freedoms of the Air 1 through 5.
    C. Freedoms of the Air 3, 4 and 5.

14. Why are the 6th through 9th Freedoms of the Air considered as "so-called" freedom?

15. Refer to Figure 1. The Freedom of the Air depicted in Figure 1 is the:

    A. Freedom of the Air #1.
    B. Freedom of the Air #3.
    C. Freedom of the Air #7.

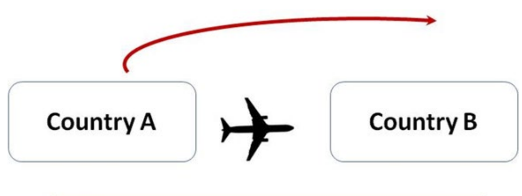


Figure 1

16. Refer to Figure 2. The Freedom of the Air depicted in Figure 2 is the:

    A. Freedom of the Air #4.
    B. Freedom of the Air #6.
    C. Freedom of the Air #8.

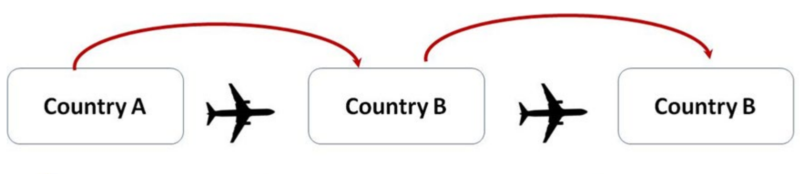


Figure 2

17. Refer to Figure 2. The Freedom of the Air depicted in Figure 2 is also known as:

    A. Consecutive cabotage.
    B. Stand-alone cabotage.
    C. Coupled cabotage.

18. True or False. The Five Freedoms Agreement is applicable to international civil aircraft engaged in scheduled air services.

☐ TRUE ☐ FALSE

19. The 9th Freedom of the Air is also referred to as:

A. Consecutive cabotage.
B. Stand-alone cabotage.
C. Coupled cabotage.

20. The following statement – "Any specification for physical characteristics, configuration, material, performance, personnel or procedure, the uniform application of which is recognized as necessary for the safety or regularity of international air navigation and to which Contracting States will conform in accordance with" – defines which of the following?

A. An ICAO Standard.
B. An ICAO Recommended Practice.
C. Both of the above.

21. The following statement – "Any specification for physical characteristics, configuration, material, performance, personnel or procedure, the uniform application of which is recognized as desirable in the interest of safety, regularity or efficiency of international air navigation, and to which Contracting States should endeavor to conform in accordance with" – defines which of the following?

A. An ICAO Standard.
B. An ICAO Recommended Practice.
C. Both of the above.

22. Which of the following ICAO Annexes contains the Standards and Recommended Practices (SARPs) that assures that pilots and other air and ground personnel have the competence, skill and training necessary to guarantee efficient and safe operations?

A. Annex 1 – Personnel Licensing.
B. Annex 2 – Rules of the Air.
C. Annex 9 – Facilitation.

23. Which of the following ICAO Annexes contains the SARPs which require that the operation of aircraft engaged in international air transportation must be standardized as much as possible to ensure the highest levels of safety and efficiency?

A. Annex 3 - Meteorological Service for International Air Navigation.
B. Annex 6 – Operation of Aircraft.
C. Annex 11 – Air Traffic Services.

24. Which of the following ICAO Annexes contains the SARPs which require that all aircraft must be registered and contain a certificate of registration identifying its nationality along with its common registration mark?

    A. Annex 2 – Rules of the Air.
    B. Annex 6 – Operation of Aircraft.
    C. Annex 7 – Aircraft Nationality and Registration Marks.

25. Which of the following ICAO Annexes contains the SARPs which are used so that to assure safety, all aircraft must be designed, constructed and operated in compliance with the airworthiness requirements of the State of Registry of the aircraft?

    A. Annex 6 – Operation of Aircraft.
    B. Annex 8 – Airworthiness of Aircraft.
    C. Annex 11 – Air Traffic Services.

26. Which of the following ICAO Annexes contains the SARPs which were put in place because air traffic is projected to grow rapidly over the next couple of decades and safety risks of these increased operations must be assessed?

    A. Annex 19 – Safety Management.
    B. Annex 16 - Environmental Protection.
    C. Annex 18 – The Safe Transport of Dangerous Goods by Air.

27. Within the organization of the ICAO, the 192-member States comprise which of the following?

    A. The Assembly.
    B. The Council.
    C. The Secretariat.

28. At the Chicago Convention, a Multilateral Transport Agreement was rejected by a majority of the states and all that was left to work out in terms of commercial freedoms were negotiations between two countries, known as a:

    A. Multi-lateral Air Services Agreement.
    B. Bilateral Air Services Agreement.
    C. Plurilateral Air Services Agreement.

29. Which of the following type certificate is used under 14 CFR Part 23 for an aircraft having a seating configuration, excluding pilot seats, of nine or less, a maximum certificated takeoff weight of 12,500 or less, and intended for non-acrobatic operation?

    A. Normal category.
    B. Utility category.
    C. Limited category.

30. Which category of special airworthiness certificate is issued to operate aircraft that are limited to special purposes identified in the applicable type design, such as aircraft used for agricultural purposes?

    A. Limited category.
    B. Restricted category.
    C. Experimental category.

31. The four-stroke cycle used by aircraft reciprocating engines is referred to as the:

    A. Brayton Cycle.
    B. Otto Cycle.
    C. Carnot Cycle.

32. The process by which the typical jet engine operates is referred to as the:

    A. Brayton Cycle.
    B. Otto Cycle.
    C. Carnot Cycle.

33. Refer to Figure 3. Typical classification of piston engines is done by noting how the cylinders are arranged around the engine's crankshaft. The type of engine depicted in Figure 3 is classified as a:

    A. Horizontally opposed engine.
    B. In-line engine.
    C. Radial engine.

Figure 3

34. The ICAO statement, "The country where the manufacturer who developed the aircraft design is located" refers to:

    A. The State of Manufacture.
    B. The State of Registration.
    C. The State of Operator.

35. The ICAO statement, "The country in which the owner of the aircraft has that aircraft registered" refers to:

    A. The State of Registration.
    B. The State of Manufacture.
    C. The State of Operator.

36. The FAA term “When an aircraft or one of its component parts meets its type design and is in a condition for safe operation” is used to define:

A. The type certification process.
B. The airworthiness of an aircraft.
C. The aircraft’s Approved Maintenance Schedule.

37. The ICAO SARPs allow the civil aviation authority (CAA) of a state to approve a type certificate for an aircraft and subsequently issue an airworthiness certificate for the aircraft. In the U.S., the CAA is referred to as:

A. The Department of Homeland Security (DHS).
B. The Federal Aviation Administration (FAA).
C. The Department of Transportation (DOT).

38. The ICAO statement “All the processes ensuring that, at any time in its life, an airplane complies with the technical conditions fixed to the issue of its Certificate of Airworthiness and is condition for safe operation” refers to the subject of:

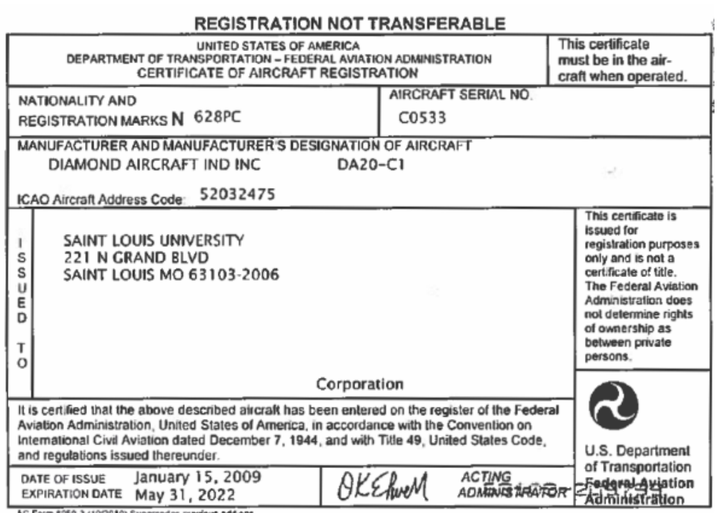
A. Air Operator Certificate (AOC) holders.
B. Approved Maintenance and Repair Organizations (MROs).
C. Continued Airworthiness of an aircraft.

39. ICAO states that aircraft maintenance is to be conducted by whom?

______________________________________.

40. True or false. Refer to Figure 4. The certificate in Figure 4 is required to be in the aircraft when the aircraft is being operated.

☐ TRUE ☐ FALSE


REGISTRATION NOT TRANSFERABLE

UNITED STATES OF AMERICA
DEPARTMENT OF TRANSPORTATION – FEDERAL AVIATION ADMINISTRATION
CERTIFICATE OF AIRCRAFT REGISTRATION

This certificate must be in the aircraft when operated.

NATIONALITY AND REGISTRATION MARKS N 628PC

AIRCRAFT SERIAL NO. C0533

MANUFACTURER AND MANUFACTURER'S DESIGNATION OF AIRCRAFT
DIAMOND AIRCRAFT IND INC DA20-C1

ICAO Aircraft Address Code 52032475

ISSUED TO
SAINT LOUIS UNIVERSITY
221 N GRAND BLVD
SAINT LOUIS MO 63103-2006

Corporation

This certificate is issued for registration purposes only and is not a certificate of title. The Federal Aviation Administration does not determine rights of ownership as between private persons.

It is certified that the above described aircraft has been entered on the register of the Federal Aviation Administration, United States of America, in accordance with the Convention on International Civil Aviation dated December 7, 1944, and with Title 49, United States Code, and regulations issued thereunder.

DATE OF ISSUE January 15, 2009
EXPIRATION DATE May 31, 2022

ACTING ADMINISTRATOR

U.S. Department of Transportation
Federal Aviation Administration

AC Form 8050-3 (10/2010) Supersedes previous editions

Figure 4

EXTRA CREDIT – If you want to answer an extra credit question, choose only one of the following to answer. You can earn up to five (5) points for your answer.

1. The case study at the end of Chapter 1 details the shooting down of a civil aircraft, KAL 007, by the Soviet Union on Sept. 1, 1983. The case states that the "ICAO found itself in the middle of a heated debate between rival States." Describe what this debate was about.

2. The case study at the end of Chapter 2 details the accident of China Airlines Flight 611 (CI 611). The Boeing 747 aircraft had encountered a tail strike. The aircraft was not repaired in accordance with the Boeing Structural Repair Manual. The incorrect repair placed a doubler over the damaged skin, which prevented subsequent inspections of the damaged skin. The scratches on the tail skin eventually led to metal fatigue in the in the skin, which turned into cracks and caused the tail to separate the aircraft. This resulted in a loss of cabin pressure and shortly after the rest of the aircraft came apart. Who ultimately bears the responsibility for this tragic event?

   Place an "X" next to the name(s) of the organization or person that you feel is responsible for the accident.

   ICAO ________

   Chinese Civil Aviation Authority ________

   Boeing Aircraft Company ________

   China Airlines ________

   The Aircraft Maintenance Engineer who performed the repair ________

1. Column

   ASCI 4800 Test 2 Spring 2021 (Test)

2. Points Possible

   104

3. Description

STATISTICS

Count	9
Minimum Value	90.91
Maximum Value	101.97
Range	11.06
Average	95.01777
Median	92.88
Standard Deviation	3.34105
Variance	11.16261

STATUS DISTRIBUTION

Null	0
In Progress	0
Needs Grading	0
Exempt	0

GRADE DISTRIBUTION

Greater than 100	0
90 - 100	4
80 - 89	5
70 - 79	0
60 - 69	0
50 - 59	0
40 - 49	0
30 - 39	0
20 - 29	0
10 - 19	0
0 - 9	0
Less than 0	0

ASCI 4800 International Aviation TEST 2 **Name** ______________________________

Place circle your answer, write your essay answer in the space provided, place an X in the box to denote "true" or "false," and for fill-in-the-blank questions, write your answer on the line provided.

1. In accordance with ICAO's Annex 1, Personnel Licensing, which of the following are required to be eligible for and/or to hold a certificate?

   D. Minimum age is reached.
   E. Minimum amount of experience met.
   F. Any medical requirement met.
   G. The required amount of operational experience is met.
   H. Competency is proven.
   I. Currency requirements are met.
   J. All of the above.

2. Who determines whether a pilot needs to be type rated in a particular aircraft?

   A. The State Civil Aviation Authority (CAA).
   B. ICAO.
   C. The International Air Transport Association (IATA).

3. What is meant by a pilot being "type rated" in an aircraft?

   A. The pilot has received the minimum amount of training required for the certificate or license required to fly that class of aircraft.
   B. The pilot has received additional training in that class of aircraft that is considered to be beyond the scope of what is necessary to obtain a certificate or license required to fly that class of aircraft.

4. True or False. ICAO requires a pilot to be type rated to legally fly any aircraft over 12,500 lbs. Maximum gross Takeoff weight (MGTOW) and/or is equipped with a turbojet powerplant. Place an "X" in the box next to your answer.

   ☐ TRUE ☐ FALSE

5. True or False. ICAO considers the medical standards that a person must meet if required for a certificate or license to be a maximum set of standards to be met. Place an "X" in the box next to your answer.

   ☐ TRUE ☐ FALSE

6. An airline transport pilot is required to obtain which class of medical certificate?

   A. Class 1.
   B. Class 2.
   C. Class 3.

7. A private pilot is required to obtain which class of medical certificate?

   A. Class 1.
   B. Class 2.
   C. Class 3.

8. An example of a complex aircraft that requires a type rating for each aircraft type is:

   A. Aircraft weighing less than 5,700 kgs. (or 12,500 lbs.)
   B. Aircraft requiring only one pilot.
   C. Small unmanned aerial vehicles.
   D. Aircraft capable of vertical take-offs and landings.
   E. All of the above.

9. Which Part of ICAO Annex 6 Operations of Aircraft is applicable to international general aviation airplanes?

   A. Part 1.
   B. Part 2.
   C. Part 3.

10. Aviation operations which include personal (recreational) flying, flight instruction, corporate flight departments, medical transport, and aerial work define which of the following categories of aviation?

    A. Military aviation.
    B. Commercial aviation.
    C. General aviation.

11. Aviation organizations that provide scheduled, commercial air transport of passengers, cargo, or both defines which type of aviation organizations?

    A. Military aviation.
    B. Commercial aviation.
    C. General aviation.

12. How does ICAO define “business aviation?”

13. What term is used by ICAO to describe an airline that charges fares, or carries persons for hire as a business with the intent of earning profits?

    A. Legacy air carrier.
    B. Regional air carrier.
    C. Commercial air carrier.

14. Fill in the blank. The airline term, "the times and dates of flights are determined in advance" defines:

    ___________________________________.

15. Briefly describe how the airline performance indicator known as "available seat miles" is calculated.

16. The percentage of seats sold on a flight defines which airline performance indicator?

    A. Revenue kilometers (or miles).
    B. Passenger load factor.
    C. Unit costs.
    D. Yield (average unit revenue.

17. The airline performance indicator that adds all fixed and variable costs associated eith a particular flight leg is referred to as:

    A. Revenue kilometers (or miles).
    B. Passenger load factor.
    C. Unit costs.
    D. Yield (average unit revenue.

18. Which of the following transportation models best describes how low-cost carriers (LLCs) transport passengers through the carrier's system?

    A. Hub and spoke (H&S).
    B. Point-to-point (P2P).

19. Which od the ICAO Annexes outlines how the air transportation of dangerous goods must be packed, labeled, documented and periodically inspected?

    A. Annex 6.
    B. Annex 12.
    C. Annex 15.
    D. Annex 18.

20. ICAO's Global Aviation Safety Plan (GASP) requires which of the following for contracting States?

    A. Implement an effective safety oversight system.
    B. Implement a State safety program.
    C. Develop an advanced safety oversight system that includes predictive risk managemet.
    D. All of the above.

21. Which of the ICAO Safety Performance Enablers refers to "the uniform and consistent implementation of ICAO provisions?"

    A. Resources.
    B. Standardization.
    C. Collaboration.

22. Which of the ICAO Safety Performance Enablers refers to "a lack of an adequate safety oversight organization and infrastructure within the civil aviation authority (CAA)?"

    A. Resources.
    B. Standardization.
    C. Safety Information Exchange.

23. Which of the following State Safety Performance Indicators "enables States and regions to review the safety performance of their systems and to take action, if needed, to address discrepancies between existing and desired performance levels?"

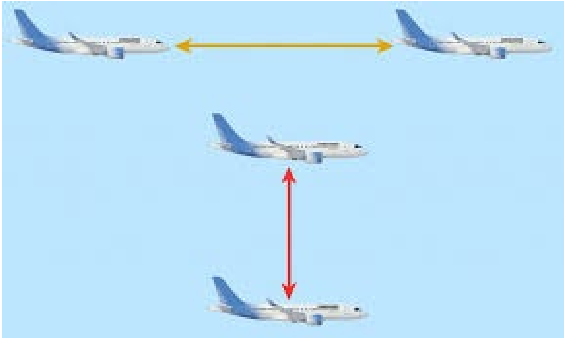
    A. Performance-based approach.
    B. Phased approach to implementation.

24. Global air traffic management (ATM) requires which of the following?

    A. An international network of ground and satellite-based navigation aids.
    B. Regulations dictating the rules of the sky.
    C. Human expertise.
    D. All of the above.

25. Fill in the Blank: The figure below is used to depict the air traffic controller's primary responsibility of maintaining:

___________________________________.



26. The figure below depicts which type of air traffic control used by air traffic control officers?

A. Visual reference.
B. Surveillance radar.
C. Procedural separation.

27. Which type of radar provides the air traffic controller with information such as aircraft call sign and altitude?

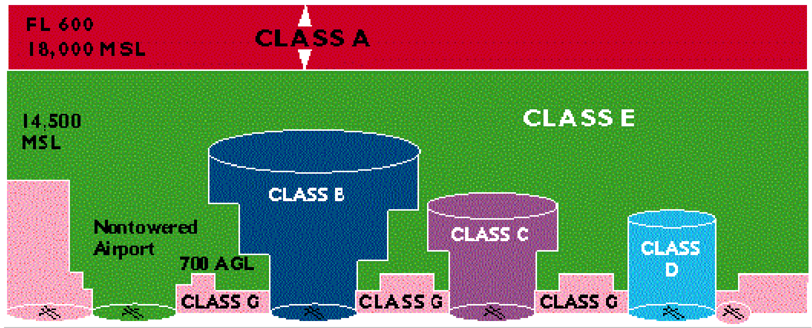
A. Primary radar.
B. Secondary radar.

28. Fill in the Blank: The satellite navigation system which transmits information automatically to ATC and other aircraft in the vicinity is the:

__________________________________.

29. The illustration below depicts which of the following?

A. Airspace where visual flight rules can only be used during aircraft operation.
B. Airspace where instrument flight rules can only be used during aircraft operations.
C. Airspace classifications for controlled and uncontrolled airspace when operating an aircraft.



30. The air navigation technology that provides multiple sources of information to pilots, including a flight management computer (FMC), aircraft navigation system, automatic flight control/flight guidance system (AFCS or AFGS) and an electronic flight instrument system (EFIS) is referred to as:

A. Inertial navigation system (INS).
B. Global navigation satellite system (GLONASS).
C. Flight management system (FMS).
D. Instrument landing system (ILS).

31. A ground-based transponder that provides the pilot with a precise slant-range distance, or the distance from an aircraft in the air to the transponder on the ground refers to:

A. Area Navigation (RNAV).
B. Distance measuring equipment (DME).
C. Tactical air navigation system (TACAN).
D. VHF omni-directional range (VOR).

32. In which type of approach does the pilot have both lateral (side-to-side) and vertical (up and down) guidance to the runway?

A. Non-precision approach.
B. Precision approach.

33. Fill in the blank. The FAA's initiative to evolve the air traffic management system of the U.S. is referred to as:

______________________________________.

EXTRA CREDIT – If you want to answer an extra credit question, choose only one of the following to answer. You can earn up to five (%) points for your answer.

1. The Chapter 3 case study discusses Colgan Air Flight 3407 and the 1,500-Hour Rule. Does the hour-building time of the 1,500-hour rule if accomplished in small general aviation aircraft better prepare a person to be a better airline transport pilot?

2. The case study of Chapter 4 Malaysia Airlines Flight 370 – A Modern Aviation Mystery. In the case, questions of the cause of the accident are brought up. Causes listed in the case questions range from a massive in-flight emergency, a loss of cabin pressure incapacitating the crew, a hijacking, to a crewmember deliberately diverting the aircraft. Discuss what you think could be the cause of this issue and explain why.

1. Column

   ASCI 4800 Spring 2021 Test 3 (Test)
2. Points Possible

   105
3. Description

STATISTICS

Count	9
Minimum Value	72.00
Maximum Value	99.00
Range	27.00
Average	91.66666
Median	96.00
Standard Deviation	8.01387
Variance	64.22222

STATUS DISTRIBUTION

Null	0
In Progress	0
Needs Grading	0
Exempt	0

GRADE DISTRIBUTION

Greater than 100	0
90 - 100	5
80 - 89	3
70 - 79	0
60 - 69	1
50 - 59	0
40 - 49	0
30 - 39	0
20 - 29	0
10 - 19	0
0 - 9	0
Less than 0	0

ASCI 4800 International Aviation TEST 3 **Name _______________________________**

Place circle your answer, write your essay answer in the space provided, place an X in the box to denote “true” or “false,” and write your answer on the line provided.

1. An international airport can have which of the following impacts on the local economy?

    A. Airports create direct job opportunities.
    B. Airports create indirect jobs associated with infrastructure development and the required supply chain needed to support the airport.
    C. Airports serve to link local economies to international markets.
    D. All of the above.

2. Which of the following organizations is considered the voice of the world’s airports?

    A. Airports Council International (ACI).
    B. International Aviation Handler’s Association (IAHA).
    C. International Society of Aerodromes (ISA).

3. Which volume of ICAO Annex 14 contains the SARPs used for the design and construction of international airports (aerodromes?)

    A. Volume I.
    B. Volume II.
    C. Volume III.
    D. All of the above.

4. St. Louis Lambert International Airport can have either an ICAO airport identifier or an IATA airport identifier. The identifier “KSTL” is which type of airport identifier?

    Answer: _____________________

5. Which of the following is “the only global trade representative of the world’s airports?”

    A. Airport Purchasing Group (APG).
    B. American Association of Airport Executives (AAAE).
    C. Airport Council International (ACI).

6. The international standardization of time used by airports to ensure consistency is:

   A. Greenwich Mean Time (GMT).
   B. Coordinated Universal Time (UTC).

7. The area of an airport that includes parking lots, fuel tank farms and access roads is known as:

   A. Airside area.
   B. Landslide area.

8. Which of the following types of airport revenue includes airline terminal space rentals, airline landing fees, and usage fees for terminals, gates, services and passenger counts?

   A. Aeronautical revenue.
   B. Non-aeronautical revenue.

9. A fee charged based on an aircraft's maximum weight is known as a:

   A. Landing fee.
   B. Terminal fee.
   C. Other fee.

10. A fee based on an aircraft's seat capacity is known as a:

   A. Landing fee.
   B. Terminal fee.
   C. Other fee.

11. True or False. ICAO has established airport (aerodrome) reference codes that are assigned to airports based on the size of the aircraft that can be accommodated.

   ☐ TRUE ☐ FALSE

12. An airport which is centrally located and linked by air routes to many smaller destinations is known as a:

   A. Reliever airport.
   B. Hub airport.

13. An airport which primarily serves domestic flights and supports smaller populations such as short flights feeding into international airports is known as a:

    A. Regional airport.
    B. Local airport.

14. An airport which serves a majority of passengers (more than 70%) who begin or end their journey at that airport is referred to as a:

    A. Origin-destination airport.
    B. Transit airport.
    C. Alliance hub airport.

15. Refer to Figure 2. During a ramp inspection, a person found the items depicted in Figure 2. The items found are commonly referred to as:

    ____________________________________.

Figure 2

16. Which ICAO annex contains the minimum SARPs for aviation security?

    A. Annex 8.
    B. Annex 17.
    C. Annex 24.

17. Security is best defined as:

    A. Protecting the aviation system from risks associated with intentional wrongdoing and criminal behavior.
    B. Preventing accidents through the identification and elimination of risk within aviation operations.

18. Which of the following transportation models best describes how low-cost carriers (LLCs) transport passengers through the carrier's system?

    A. Hub and spoke (H&S).
    B. Point-to-point (P2P).

19. What is the purpose of the security tamper-evident bags (STEBs)?

    A. To allow unchecked baggage to be checked only once by security personnel.
    B. To allow items such as computers and other personal electronic devices to be screened without the need to turn them on.
    C. To allow an exemption to volumetric controls for liquids purchased at airport retailers or on-board aircraft and carried by transfer passengers.

20. "The establishment of evidence, that when combined, provides confidence that an individual is who they claim to be" is used to describe the term:

    A. Evidence of Identity.
    B. Machine Readable Travel Document.
    C. Advance Passenger Information.

21. As it pertains to the ICAO security annex, a signatory state must:

    A. Implement security standards which extend far beyond the Annex's SARP's.
    B. Implement security standards which meet the minimum standards for international aviation.

22. The ICAO security annex requires that all passengers and their luggage is to be screened before flight. Who is responsible to decide what screening tools and methods to implement?

    A. The ICAO
    B. The Civil Aviation Authority (CAA) of the state.
    C. The airline upon which the traveler is to travel.

23. How will the International Air Transportation Association's (IATA's) Smart Security program enhance security and passenger facilitation?

    A. The program will screen passengers based on relative information that is currently known about each individual passenger.
    B. The program will allow the implementation of a single security system for all operators and airports.
    C. The program will require secondary screening of all passengers who transfer flights.

24. TRUE or FALSE: The IATA Security Management System (SeMS) requires that the air carrier have an Aviation Security Program (ASP) as it provides a structure for security policy and awareness, which flows from senior management to all levels of operational personnel within an organization.

    ☐ TRUE ☐ FALSE

25. Briefly describe at the purpose of the International Air Transport Association's (IATA's) One-Stop Security Program.*

26. IATA's data provided by passengers at the time of booking a flight which is held in the airline's reservation system until the flight is open for check-in is referred to as the:

    A. Passenger manifest (PM).
    B. Passenger security initiative (PSI).
    C. Passenger name record (PNR).

27. The civil aviation security regulations that are used to protect the European Union's (EU's) transportation of persons and goods is commonly referred to as the:

    A. EU Common Basic Policy.
    B. EU Common Rules.
    C. EU Common Standards and Procedures.

28. Terrorist acts, including bombings and hijackings of commercial aircraft, are referred to as:

    A. Criminal acts.
    B. Unlawful acts of interference.

29. Aggressive, senseless or violent acts such as drug smuggling or human trafficking are referred to as:

    A. Criminal acts.
    B. Unlawful acts of interference.

30. Within the aviation industry, acts of terrorism are typically considered to be politically motivated criminal acts that takes the form of:

    ______________________________.

31. Describe at least three methods of detection used to thwart drug smuggling through airports.

32. What program did the ICAO require as a measure to ensure that contracting States adequately implement the required security SARPs?

    A. ICAO Comprehensive Aviation Security Strategy (ICASS).
    B. Universal Security Audit Program (USAP).
    C. Smart Security Initiative.

33. The joint security initiative between ICAO and ACI is known as:

    A. International Aviation Security Agreement.
    B. Comprehensive Aviation Security Strategy (CASS).
    C. Smart Security.

EXTRA CREDIT – If you want to answer an extra credit question, choose only one of the following to answer. You can earn up to five (5) points for your answer.

1. The Chapter 5 case study discusses an overrun of a runway by Southwest Airlines Flight 1248. The case study concludes with the development of the runway end safety area (RESA). Discuss who should be required to pay for such an upgrade to an airport; the airport or the users (air carriers) taking off from and landing at such an airport.

2. The case study of Chapter 6 discusses the "Underwear Bomber" and his willingness to commit suicide to take down a commercial aircraft with 289 people on board. A baggage reconciliation system requires a person to be on board an aircraft before that person's baggage is placed in the cargo compartment. Does baggage reconciliation still have value in today's commercial aviation industry?

1. Column

   ASCI 4800 Spring 2021 Test 4 (Test)

2. Points Possible

   103

3. Description

STATISTICS

Count	9
Minimum Value	88.00
Maximum Value	103.00
Range	15.00
Average	95.44444
Median	94.00
Standard Deviation	4.76354
Variance	22.69135

STATUS DISTRIBUTION

Null	0
In Progress	0
Needs Grading	0
Exempt	0

GRADE DISTRIBUTION

Greater than 100	0
90 - 100	6
80 - 89	3
70 - 79	0
60 - 69	0
50 - 59	0
40 - 49	0
30 - 39	0
20 - 29	0
10 - 19	0
0 - 9	0
Less than 0	0

ASCI 4800 International Aviation TEST 4 **Name** ______________________________

Place circle your answer, write your essay answer in the space provided, place an X in the box to denote “true” or “false,” and write your answer on the line provided.

1. The term convection describes:

   A. The horizontal movement of air.
   B. The vertical movement of air.
   C. The spiral movement of air on land.

2. The distance at which a black object on a white background (or vice versa) describes:

   Answer: ____________________

3. Which weather phenomenon can occur when moist air at ground level cools to its dew point temperature?

   A. Snow.
   B. Ice.
   C. Fog and mist.
   D. All of the above.

4. Which weather phenomenon has wind that changes abruptly in speed, direction or both and is typically associated with thunderstorms or air mass fronts?

   A. Wind shear.
   B. Tornadoes.
   C. Hurricanes.

5. Which of the following ICAO annexes contains the SARPS for the dissemination of weather information?

   A. Annex 3
   B. Annex 8
   C. Annex 13.

6. Which organization of the World Meteorological Organization to assist underdeveloped states improve their access to national climate and metrological capabilities?

   A. The Global Framework for Climate Services (GFCS).
   B. The World Weather Information Service (WWIS).

7. The scientific study of the atmosphere associated with forecasting the weather is known as:

   Answer: ____________________

8. True or False. “Climate” describes the average weather condition over a period of time, typically years.

   ☐ TRUE ☐ FALSE

9. Another name for the United Nations Framework Convention on Climate Change, adopted in 1992, is:

   A. The Paris Convention.
   B. The Geneva Convention.
   C. The Rio Convention.

10. A specific aim of the Paris Agreement (2016) is to:

    A. Hold the global average temperature increase to well below two degrees Celsius above pre-industrial levels.
    B. Increase the ability to adapt to adverse impacts of climate change and to foster climate resilience and low greenhouse gas (GHG) emissions development without threatening food production.
    C. Make financial pathways that support low GHG emissions and climate resilient development.
    D. All of the above.

11. True or False. ICAO has promoted the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA).

    ☐ TRUE ☐ FALSE

12. Which of the following ICAO annexes contains the SARPS for Environmental Protection?

    A. Annex 8.
    B. Annex 16.
    C. Annex 22.

13. Which Volume of the annex noted in the previous question addresses Aircraft Engine Emissions?

    A. Volume I.
    B. Volume II.
    C. Volume III.

14. Refer to Figure 1. The type of environmental harm depicted in Figure 1 that ICAO is attempting to address is known as:

    Answer: ____________________

Figure 1.

15. Name at least two initiatives which segments of the international aviation industry are implementing to reduce aircraft emissions.

16. Aircraft condensation trails (contrails) are actually:

    A. Smoke.
    B. Pollution.
    C. Clouds.

17. Development that meets the needs of the present without sacrificing future generations' ability to meet their needs is known as:

    A. Environmental protection.
    B. Sustainable development.
    C. Security and facilitation.

18. Which of the ICAO Annexes contains the SARPs used for aircraft incident and accident investigation?

    A. Annex 7.
    B. Annex 13.
    C. Annex 14.

19. Which of the ICAO Annexes contains the SARPs used for search and rescue operations?

    A. Annex 12.
    B. Annex 13.
    C. Annex 18.

20. Which of the following documents is considered to be the ICAO's top strategic safety document?

    A. The Trip Strategy Compendium.
    B. The ICAO Safety Management Manual.
    C. The Global Aviation Safety Plan.
    D. The Universal Safety Oversight Audit Program.

21. Over the last 10 years ICAO reports that commercial aircraft accident rates have generally been:

    A. Increasing.
    B. Remaining flat.
    C. Decreasing.
    D. Decreasing for the first five years and increasing after that.

22. ICAO defines "an occurrence which includes the loss of life or the loss of the aircraft" as an:

    A. Accident.
    B. Incident.
    C. Neither of the above.

23. True or False. Refer to Figure 2. The mechanical failure which causes the greatest number of accidents coupled with the highest % of total for all primary causes in the aircraft electrical systems/instruments.

☐ TRUE ☐ FALSE

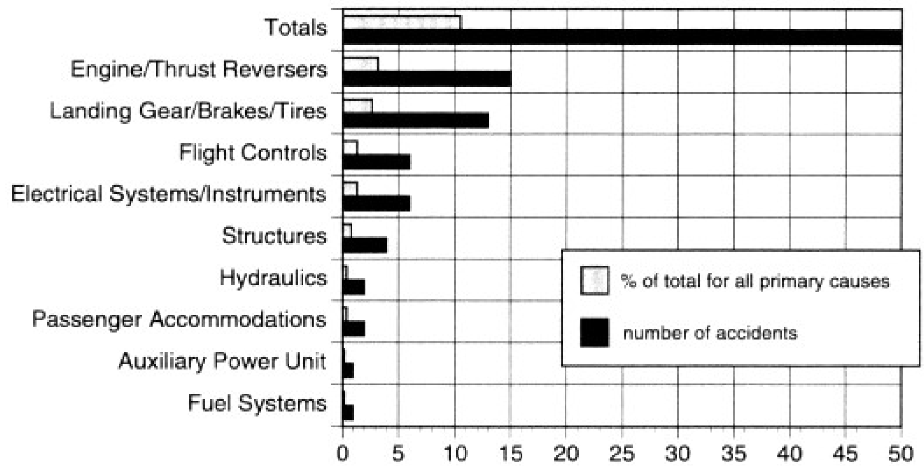


Figure 2.

24. ICAO's Annex on Search and Rescue is supplemented by which of the following?

A. The International Aeronautical and Maritime Search and Rescue (IAMSAR) Manual.
B. The Regional Air Navigation Agreement.
C. The Global Aeronautical Distress and Safety System.

25. True or False. The authorities of a Contracting State who wish their search and rescue units to enter the territory of another Contracting State for search and rescue purposes shall transmit a request, giving full details of the projected mission and the need for it, to the rescue coordination center of the State concerned or to such other authority as has been designated by that State.

☐ TRUE ☐ FALSE

26. International aviation law requires installation of which of the following safety devices within an aircraft?

A. An emergency locator transmitter (ELT).
B. Cockpit voice recorder (CVR).
C. Flight recorder.
D. All of the above.

27. True or False. To assure the correct gathering of evidence in the event of an aviation accident, the Accident Investigation Authorities (AIA) of a State must be completely under the jurisdiction of that State's Civil Aviation Authority (CAA).

☐ TRUE ☐ FALSE

28. ICAO designates which State to have jurisdiction over an international aircraft accident investigation?

A. The State of the Aircraft's Registry.
B. The State of the Occurrence of the accident.
C. The State of Manufacture of the Aircraft.

29. ICAO allows which of the following stakeholders to be included in the investigation of an international aircraft accident?

A. The State of Occurrence.
B. The State of Registry.
C. The State of the Operator.
D. The State of Design.
E. The State of Manufacture.
F. All of the above.

30. The cause of an aircraft accident involving one aircraft striking another on an aircraft ramp or taxiway would classified as which type of accident?

A. Airborne: abrupt maneuver.
B. Ground operation; ground collision.
C. Miscellaneous; other.

31. An aircraft accident that is the result of the crew losing the ability to control an aircraft during flight and deviating from the flight path is known as a:

A. Controlled flight into or toward terrain (CFIT) accident.
B. Abnormal runway contact (ARC) accident.
C. Loss of control-in flight (LOC-I) accident.

32. The European Aviation Safety Agency (EASA) reports which type of general aviation aircraft category accounts for the highest number of aircraft accidents in Europe?

A. Helicopters.
B. Ultralight/Microlight.
C. Airplane.

33. Refer to Figure 3. What is being listed in Figure 3 as the primary cause of aircraft accidents?

   A. Human causes.
   B. Technical causes.

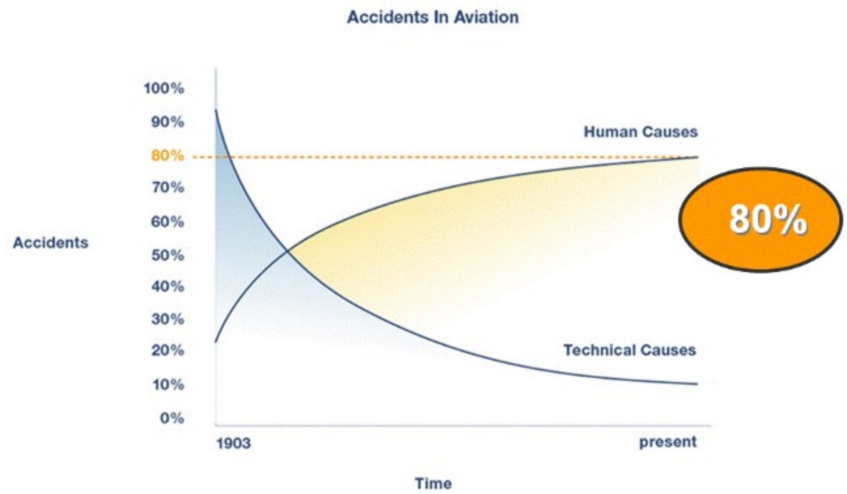


Figure 3.

EXTRA CREDIT – If you want to answer an extra credit question, choose only one of the following to answer. You can earn up to five (5) points for your answer.

1. The Chapter 7 case study discusses Delta Flight 191 and its accident caused by a weather-related microburst. Which do you think could have improved safety for this flight and why: Crew training, aircraft-based technologies, or ground-based technologies?

2. The case study of Chapter 7 discusses the Swissair Flight 111 accident and with Canada being the State of Occurrence, its Accident Investigation Authority (AIA) was in charge of the investigation. Describe why it is important that the AIA be independent from the Civil Aviation Authority (CAA) of State and its regulators.

1. Column

   ASCI 4800 Test 5 Spring 2021 (Test)

2. Points Possible

   104

3. Description

STATISTICS

Count	9
Minimum Value	78.00
Maximum Value	104.00
Range	26.00
Average	94.00
Median	95.00
Standard Deviation	6.79869
Variance	46.22222

STATUS DISTRIBUTION

Null	0
In Progress	0
Needs Grading	0
Exempt	0

GRADE DISTRIBUTION

Greater than 100	0
90 - 100	6
80 - 89	2
70 - 79	1
60 - 69	0
50 - 59	0
40 - 49	0
30 - 39	0
20 - 29	0
10 - 19	0
0 - 9	0
Less than 0	0

ASCI 4800 International Aviation TEST 5

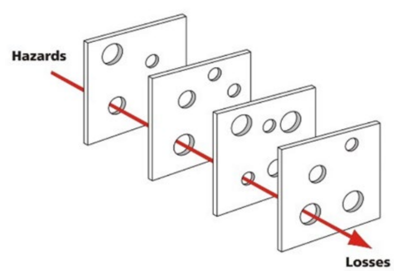
1. ICAO defines "Human Factors: as being:

   A. About people in their living and working situations.
   B. About people and their relationship with machines.
   C. About people and their relationship with procedures.
   D. About people and their relationship with the environment about them.
   E. About people and their relationships with other people (at work).
   F. All of the above.

2. True or False. The safety output is best illustrated by past accidents where Human Factors have been either the cause of the accident or a contributory element to it.

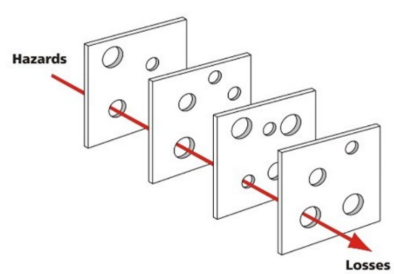
3. True or False. The efficiency output of a flight crew can be affected by levels of motivation, flight deck design, crew training, supervision, adherence to standard operating procedures and crew resource management.

4. Refer to the figure. What is the name of theoretical model that illustrates how accidents occur in organizations?

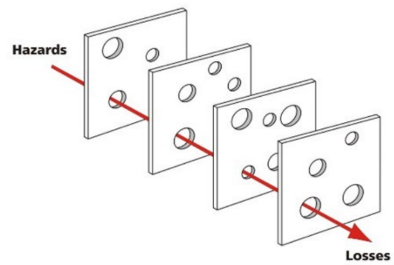


5. Refer to the figure. In this theoretical model, the proximal causes of an accident such as the pilot getting distracted are referred to as:

   A. Active errors.
   B. Latent errors.
   C. Windows of opportunity.
   D. None of the above.

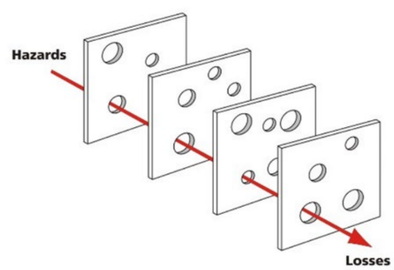


6. In the theoretical model shown in the figure, elements in the organization which contributed to the accident such as senior managers' purchasing decisions, line management pressures, unsafe climate and culture coupled with fatigue and confusing warnings are referred to as:



A. Active errors.
B. Latent errors.
C. Windows of opportunity.
D. None of the above.

7. In the theoretical model shown in the figure, the alignment of all necessary windows of opportunity at all levels in the organization, thus leading to the occurrence of an accident is called the:



A. Active errors.
B. Latent errors.
C. Windows of opportunity.
D. None of the above.

8. To allow pilots to practice in-flight challenges and to apply CRM skills is referred to as:

A. Crew resource management (CRM).
B. Line oriented flight training (LOFT).
C. Threat and error management (TEM).
D. State Safety Program (SSP).

9. Which type of training is used by flight crew (and others in a safety critical role within aviation) to enhance the safety of every flight by promoting the use of non-technical skills, like teamwork and decision making to ensure sound situational awareness and problem solving?

A. Crew resource management (CRM).
B. Line Operations Safety Audit (LOSA).
C. Threat and error management (TEM).
D. State Safety Program (SSP).

10. Which of the following safety concepts uses the Line Operations Safety Audit (LOSA) as an important way to help develop countermeasures to operational errors?

A. Crew Resource Management CRM).
B. Line oriented flight training (LOFT).
C. Threat and error management (TEM).
D. State safety program (SSP).

11. Which of the following safety concepts uses flight simulators to take pilots through situations that could occur in flight?

A. Crew resource management (CRM).
B. Line oriented flight training (LOFT).
C. Threat and error management (TEM).
D. State Safety Program (SSP).

12. The safety concept that requires the organization itself to examine its operations and the decisions around those operations, allows an organization to adapt to change, facilitates continuous hazard identification and risk assessment to proactively predict how accidents may happen and eliminate the risk before any harm is done is referred to as:

13. The ICAO Annex which contains the SARPs outlining the safety management steps that contracting States must follow is:

A. Annex 15.
B. Annex 19.
C. Annex 7.
D. Annex 25.

14. In accordance with ICAO's safety management annex the foundation of a proactive safety strategy is based on the implementation of a:

A. System of regulations enacted by the Civil Aviation Authority of each contracting state.
B. A State Safety Program (SSP).
C. Threat and error management (TEM) system.

15. Which of the following is a web-based system on the ICAO Secure Portal linking a collection of safety and efficiency datasets and web applications to perform online safety, efficiency, and risk analysis?

A. The integrated Safety Trend Analysis and Reporting System (iSTARS).
B. The Global Aviation Safety Plan (GASP).
C. The Line operated safety audit (LOSA).
D. The Universal Safety Oversight Audit Program (USOAP).

16. Which ICAO program was initially launched in January 1999, in response to widespread concerns about the adequacy of aviation safety oversight around the world?

A. The Global Aviation Safety Plan (GASP).
B. The State Safety Program (SSP).
C. The Universal Safety Oversight Audit Program (USOAP).
D. The line operated safety audit (LOSA).

17. The International Air Transport Association (IATA) provides members and other eligible industry members with information and acts as a gateway to the multiple sources and areas of aircraft operation and now includes information from over 470 different organizations?

A. The Universal Safety Oversight Audit Program (USOAP).
B. The Global Aviation Data Management (GADM) program.
C. Integrated Management Solutions (IMX).
D. The integrated Safety Trend Analysis and Reporting System (iSTARS).

18. True or False. The Universal Safety Audit Program (USOAP) audits focuses on a State's capability in providing safety oversight by assessing whether the State has effectively and consistently implemented the critical elements (CEs) of a safety oversight system.

19. Any aircraft intended to be flown without a pilot on board is referred to in the Convention on International Civil Aviation (Doc 7300), signed at Chicago on December 7, 1944 and amended by the ICAO Assembly as a:

A. Pilotless aircraft.
B. Drone.
C. Remotely piloted aircraft (RPA).

20. Which of the following terms describes the condition when an RPAS can operate along with some level of adaptation or support that compensates for its inability to comply within existing operational constructs?

A. Accommodation.
B. Integration.

21. The availability of regulations, standards, and relevant supporting technology to allow remotely piloted aircraft to fly amongst manned aircraft is referred to as:

A. Accommodation.
B. Integration.

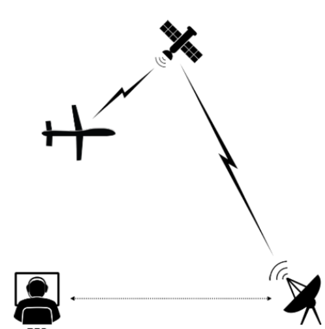
22. A feature of a remotely piloted aircraft system that involves employing sensors of some type (such as radar or cameras) to sense if the aircraft is flying too close to an object (such as a tall building or another aircraft) and then takes steps to fly away from the potential danger is referred to as:

A. Detect and Avoid (DAA).
B. Command and Control (C2).

23. A feature of a remotely piloted aircraft system that involves technology that ensures the unmanned aircraft remains in constant, secure contact via radio with ground-based pilots and air traffic control – but also knows what to do on its own to stay safe in case that signal is lost is referred to as:

A. Detect and Avoid (DAA).
B. Command and Control (C2).

24. True or False. Refer to the figure. The type of data link shown between the remotely piloted aircraft and the remote pilot station is referred to as radio line of sight.



25. The term that takes into consideration all components of the system needed for operational safety, i.e. the Remotely Piloted Aircraft (RPA), Remote Pilot Station (RPS), and the Command and Control (C2) Link system(s) takes into account system configuration, usage, environment, and the hardware and software of the entire system is:

26. Which of the following are categories of unmanned aircraft?

A. Autonomous aircraft – flying with no intervention of an operator.
B. Model aircraft – small, unmanned devices usually used for recreational purposes.
C. Remotely piloted aircraft (RPA).
D. All of the above.

27. A primary goal of RPA regulation is to:

A. Protect from hazards as mid-air collisions.
B. Protect from damage that damages property.
C. Protect from crashes causing injuries to persons.
D. All of the above.

28. Which of the following international rules is NOT correct concerning RPAs that are flown internationally?

A. The RPA must be issued a type certificate.
B. The RPA does not require a certificate of airworthiness.
C. The RPA must be registered with the owner's CAA.
D. RPA operators must maintain a maintenance control manual.

29. True or False. During the Visual Line-of-Sight (VLOS) operation of an RPA, the remote pilot does not need to maintain constant unaided visual line-of-sight with the RPA .

30. In the U.S. the difference in weight between a microdrone (sUAS) and a macrodrone (UAS) is:

A. 0.55 pounds.
B. 5.5 pounds.
C. 55 pounds.
D. 550 pounds.

31. Refer to the figure. Scenario – you just purchased a DroneX Pro quadcopter for $49.90 USD. This device weighs 0.793664 pounds (360 grams). Are you required to register this drone with the FAA Registry?

A. Yes.
B. No.

32. The equipment used to pilot an RPA that functions the same way that a traditionally piloted aircraft would and therefore must incorporate equivalent capability to control and manage a flight refers to:

A. Remotely Piloted Aircraft System (RPAS).
B. Command and Control link (C2).
C. Remote pilot station (RPS).

33. True or False. The Remotely Piloted Aircraft System (RPAS) operator is not required to have an RPAS Operator Certificate (ROC).

34. **EXTRA CREDIT** – The case study of Chapter 9 concerned Air France 447's accident which was attributed to several human errors in the cockpit. Describe at least three errors made by the crew of this aircraft.

1. Column

   ASCI 4800 Test 6 Spring 2021 (Test)

2. Points Possible

   104

3. Description

STATISTICS

Count	9
Minimum Value	92.00
Maximum Value	104.00
Range	12.00
Average	96.88888
Median	96.00
Standard Deviation	4.1216
Variance	16.98765

STATUS DISTRIBUTION

Null	0
In Progress	0
Needs Grading	0
Exempt	0

GRADE DISTRIBUTION

Greater than 100	0
90 - 100	7
80 - 89	2
70 - 79	0
60 - 69	0
50 - 59	0
40 - 49	0
30 - 39	0
20 - 29	0
10 - 19	0
0 - 9	0
Less than 0	0

ASCI 4800 International Aviation TEST 6

1. Agreements between two or more airlines to cooperate on a substantial level are referred to as:

2. The first airline alliance between Pan American Airways and Pan air do Brasil was formed in which year?

A. 1982.
B. 1974.
C. 1939.

3. The first large airline alliance, between Northwest Airlines and KLM, was created when both airlines agreed to code share on a large scale in which year?

A. 1989.
B. 1992.
C. 1974.

4. Benefits for airlines doing business in an alliance include cost reduction for airlines from which of the following?

A. Sharing sales offices.
B. Sharing maintenance facilities.
C. Sharing operational facilities, e.g. catering or computer systems.
D. Sharing operational staff, e.g. ground handling personnel, at check-in and boarding desks.
E. Sharing investments and purchases, e.g. in order to negotiate extra volume discounts.
F. All of the above.

5. Which of the following is NOT a benefit for the traveler flying with an airline alliance?

A. Lower prices due to lowered operational costs for a given route.
B. More departure times to choose from on a given route.
C. Decreased number of destinations.

6. Which of the following are considered potential disadvantages for travelers flying with an airline alliance?

A. Higher prices when all competition is erased on a certain route.
B. Less frequent flights on certain routes.
C. Both of the above.

7. An international policy in which the U.S. calls for the liberalization of the rules and regulations of the international aviation industry is referred to as:

8. True or False. The primary objectives of a liberalization policy are to liberalize the rules for international aviation markets and maximize government intervention as it applies to passenger, all-cargo, and combination air transportation as well as scheduled and charter services.

9. Which of the following are advantages of Open Skies policies?

A. Vastly expanded international passenger and cargo flights to and from the United States.
B. Promoting increased travel and trade.
C. Enhancing productivity and spurring high-quality job opportunities and economic growth.
D. All of the above.

10. An Open Skies agreement signed by the U.S. with New Zealand, Singapore, Brunei, and Chile, later joined by Samoa, Tonga, and Mongolia is referred to as the:

A. 2007 Air Transport Agreement.
B. WOW Alliance.
C. 2001 Multilateral Agreement on the Liberalization of International Air Transportation (MALIAT).

11. True or False. In the ICAO Working Paper on ANTITRUST IMMUNITY FOR AIRLINE ALLIANCES, it states that in the case of merger-like integration, since the violation of competition laws is more likely, whether each State grants antitrust immunity to such type of airline alliances is usually a point of discussion.

12. In the United States, which of the following has the sole authority to grant antitrust immunity to airline alliances?

A. The FAA.
B. The Department of Transportation.
C. The Department of Homeland Security.

13. Have the ICAO States established uniform international standards for antitrust immunity for airline alliances?

A. Yes.
B. No.
C. The standards are due to be set in 2020.

14. There are currently three major airline alliances across the globe. Which of the following is not one of these three?

A. Oneworld.
B. Star Alliance.
C. Regional Airline Alliance.
D. Skyteam.

15. True or False. As a trade association the International Air Transport Association (IATA) mission is to represent, lead, and serve the airline industry.

16. What does the IATA attempt to promote for the customers of international aviation?

A. The highest possible levels of customer service.
B. Safe, reliable, secure and economical air services.
C. Safe, reliable and secure transportation regardless of its cost.

17. What is the mission of the IATA's Simplifying the Business (StB) program?

A. Improve the customer experience.
B. Reduce industry costs.
C. Both of the above.
D. Neither of the above.

18. Which of the following are benefits of IATA Safety Audits for the airline industry?

A. Internationally recognized and accepted audit programs.
B. Continuous upgrading of standards to ensure that industry best practices are being used.
C. Auditors formally trained and qualified to IATA requirements.
D. All of the above.

19. Which of the following does IATA use to implement a risk-based passenger security process that will enhance security and passenger facilitation?

A. Cyber Security.
B. Passenger Data.
C. Smart Security.
D. All of the above.

20. What is the purpose of the IATA Operational Safety Audit (IOSA) Program Manual (IPM)?

A. To provide the standards used in the IOSA audit to the airlines when preparing for the IOSA.
B. To be used to monitor the quality of the IOSA audit process.
C. To provide the complete body of standards that govern all aspects of the IATA Operational Safety Audit (IOSA) Program, available in a single source, ensuring that each audit is conducted in a consistent manner

21. What is the purpose of the IATA's IOSA Quality Assurance (QA) Program?

A. To define the lines of managerial authority and responsibility.
B. To monitor, assess and measure the performance in all areas of the IOSA program.
C. To implement periodic surveys of customer expectations.

22. What is the purpose of the IOSA Standards Manual (ISM)?

A. To provide the operational standards, guidance material and support information to be used by the airlines when preparing for the IATA Operational Safety Audit (IOSA).
B. To specify the complete list of information that is found in an IOSA Audit Report (AR).
C. To provide information about the Auditing Organization which will conduct an IOSA audit of an airline.

23. What is used as the primary source of the IOSA Standards and Recommended Practices (ISARPs)?

A. The ICAO's Standards and Recommended Practices (SARPS).
B. The FAA's International Aviation Safety Assessment Program (IASA).
C. The European Community's Safety Assessment of Foreign Aircraft (EC-SAFA).

24. What is the Auditor charged with assessing the operator against during an IOSA?

A. The information in the IOSA Program Manual (IPM.)
B. The information in the IOSA Standards Manual (ISM.)
C. The information in the IOSA Auditor's Inspection Handbook (IAIH.)

25. An IOSA Standard will always contain the word

A. Should.
B. Shall.
C. If.

26. EXTRA CREDIT - List two reasons why certain airlines might be willing to enter into an alliance or joint venture with other airlines.

1. Column

   ASCI 4800 Final Exam Spring 2021 (Test)

2. Points Possible

   100

3. Description

STATISTICS

Count	9
Minimum Value	87.50
Maximum Value	95.00
Range	7.50
Average	92.22222
Median	92.50
Standard Deviation	2.41363
Variance	5.82561

STATUS DISTRIBUTION

Null	0
In Progress	0
Needs Grading	0
Exempt	0

GRADE DISTRIBUTION

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80 - 89	2
70 - 79	0
60 - 69	0
50 - 59	0
40 - 49	0
30 - 39	0
20 - 29	0
10 - 19	0
0 - 9	0
Less than 0	0

ASCI 4800 International Aviation – FINAL EXAM

1. In which century did Hugo Grotius author the principle Mare Liberum, otherwise known as the "freedom of the seas?"

   A. 1600s.
   B. 1800s.
   C. 1900s.

2. At the end of World War I, the allied and associated nations formed the International Commission for Air Navigation, and enacted the International Air Navigation Code, which is also referred to as which convention?

   A. The Chicago Convention.
   B. The Paris Convention.
   C. The Warsaw Convention.

3. Which of the following aspects of international aviation was NOT regulated by the International Commission for Air Navigation as determined by the International Air Navigation Code?

   A. Each nation's registry of aircraft.
   B. Flight of aircraft from one country across the territory of another country.
   C. Issuance of airworthiness certificates.
   D. International navigation rules.
   E. Allows the transportation of arms and explosives on aircraft of one country flying across the territory of a second country without the second country's permission.
   F. None of the above.

4. Which of the following was NOT a result of the Warsaw Convention of 1929?

   A. The convention defined that the carrier was NOT liable in case of loss, damage, injury or death due to an accident on an international flight.
   B. The convention spelled out procedures for claims and restitution against carriers.
   C. The convention laid down the requirements for format and content of air transport documents, passenger tickets, luggage tickets and air consignment notes.

5. Which of the following are part of the international standards and practices that Contracting States of the Convention on International Civil Aviation agreed to comply with to the highest degree of uniformity?

   A. Communication and navigation aid and support.
   B. Rules of the air and air traffic control practices.
   C. Licensing of operations and mechanical personnel.
   D. Airworthiness of aircraft.
   E. Aeronautical maps and charts.
   F. All of the above.

6. What international organization was developed by the Convention on International Civil Aviation?

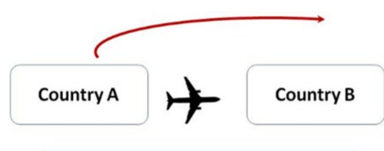
A. The International Air Transport Association (IATA).
B. The International Airline Pilots Association (IALPA).
C. The International Civil Aviation Organization (ICAO).

7. At the Chicago Convention, delegates of the States acknowledged which of the following Freedoms of the Air that were previously agreed to with the International Air Transit Services Agreement?

A. Freedoms of the Air 1 and 2.
B. Freedoms of the Air 1 through 5.
C. Freedoms of the Air 3, 4 and 5.

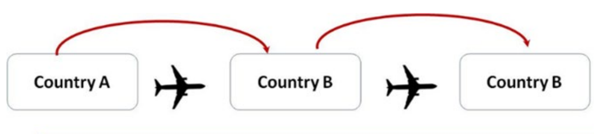
8. Refer to the figure. The Freedom of the Air depicted in the figure is the:

A. Freedom of the Air #1; fly over without landing.
B. Freedom of the Air #3; set down passengers in a foreign State.
C. Freedom of the Air #7; operate between two foreign States.



9. Refer to the figure. The Freedom of the Air depicted in the figure 2 is also known as:

A. Consecutive cabotage.
B. Stand-alone cabotage.
C. Coupled cabotage.



10. The following statement – "Any specification for physical characteristics, configuration, material, performance, personnel or procedure, the uniform application of which is recognized as necessary for the safety or regularity of international air navigation and to which Contracting States will conform in accordance with" – defines which of the following?

A. An ICAO Standard.
B. An ICAO Recommended Practice.
C. Both of the above.

11. The following statement – "Any specification for physical characteristics, configuration, material, performance, personnel or procedure, the uniform application of which is recognized as desirable in the interest of safety, regularity or efficiency of international air navigation, and to which Contracting States should endeavor to conform in accordance with" – defines which of the following?

A. An ICAO Standard.
B. An ICAO Recommended Practice.
C. Both of the above.

12. At the Chicago Convention, a Multilateral Transport Agreement was rejected by a majority of the states and all that was left to work out in terms of commercial freedoms were negotiations between two countries, known as a :

A. Multi-lateral Air Services Agreement.
B. Bilateral Air Services Agreement.
C. Plurilateral Air Services Agreement.

13. In accordance with ICAO's Annex 1, Personnel Licensing, which of the following are required to be eligible for and/or to hold a certificate?

A. Minimum age is reached.
B. Minimum amount of experience met.
C. Any medical requirement met.
D. The required amount of operational experience is met.
E. Competency is proven.
F. Currency requirements are met.
G. All of the above.

14. Aviation operations which include personal (recreational) flying, flight instruction, corporate flight departments, medical transport, and aerial work define which of the following categories of aviation?

A. Military aviation.
B. Commercial aviation.
C. General aviation.

15. Aviation organizations that provide scheduled, commercial air transport of passengers, cargo, or both defines which type of aviation organizations?

A. Military aviation.
B. Commercial aviation.
C. General aviation.

16. What term is used by ICAO to describe an airline that charges fares, or carries persons for hire as a business with the intent of earning profits?

A. Legacy air carrier.
B. Regional air carrier.
C. Commercial air carrier.

17. The percentage of seats sold on a flight defines which airline performance indicator?

A. Revenue kilometers (or miles).
B. Passenger load factor.
C. Unit costs.
D. Yield (average unit revenue.)

18. The airline performance indicator that adds all fixed and variable costs associated with a particular flight leg is referred to as:

A. Revenue kilometers (or miles).
B. Passenger load factor.
C. Unit costs.
D. Yield (average unit revenue.)

19. Which of the following transportation models best describes how low-cost carriers (LLCs) transport passengers through the carrier's system?

A. Hub and spoke (H&S).
B. Point-to-point (P2P).

20. ICAO's Global Aviation Safety Plan (GASP) requires which of the following for contracting States?

A. Implement an effective safety oversight system.
B. Implement a State safety program.
C. Develop an advanced safety oversight system that includes predictive risk managemet.
D. All of the above.

21. Global air traffic management (ATM) requires which of the following?

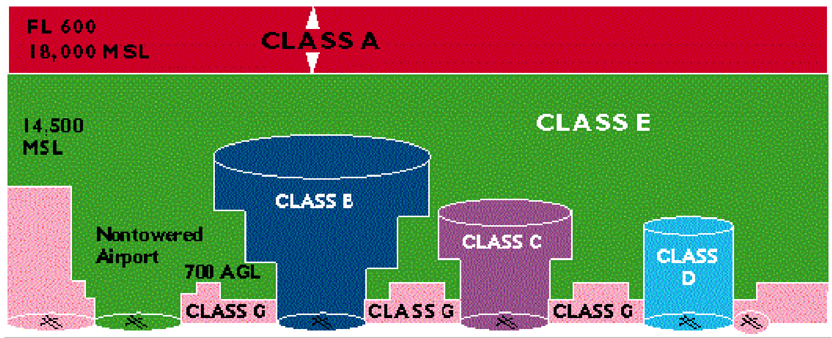
A. An international network of ground and satellite-based navigation aids.
B. Regulations dictating the rules of the sky.
C. Human expertise.
D. All of the above.

22. Refer to the figure. The figure depicts which type of air traffic control used by air traffic control officers?

A. Visual reference.
B. Surveillance radar.
C. Procedural separation.

23. Refer to the figure. The figure depicts which of the following?

A. Airspace where visual flight rules can only be used during aircraft operation.
B. Airspace where instrument flight rules can only be used during aircraft operations.
C. Airspace classifications for controlled and uncontrolled airspace when operating an aircraft.



24. A ground-based transponder that provides the pilot with a precise slant-range distance, or the distance from an aircraft in the air to the transponder on the ground refers to:

A. Area Navigation (RNAV).
B. Distance measuring equipment (DME).
C. Tactical air navigation system (TACAN).
D. VHF omni-directional range (VOR).

25. An international airport can have which of the following impacts on the local economy?

A. Airports create direct job opportunities.
B. Airports create indirect jobs associated with infrastructure development and the required supply chain needed to support the airport.
C. Airports serve to link local economies to international markets.
D. All of the above.

26. Which of the following organizations is considered the voice of the world's airports?

A. Airports Council International (ACI).
B. International Aviation Handler's Association (IAHA).
C. International Society of Aerodromes (ISA).

27. The international standardization of time used by airports to ensure consistency is:

A. Greenwich Mean Time (GMT).
B. Coordinated Universal Time (UTC).

28. The area of an airport that includes parking lots, fuel tank farms and access roads is known as:

A. Airside area.
B. Landslide area.

29. Which of the following types of airport revenue includes airline terminal space rentals, airline landing fees, and usage fees for terminals, gates, services and passenger counts?

A. Aeronautical revenue.
B. Non-aeronautical revenue.

30. An airport which serves a majority of passengers (more than 70%) who begin or end their journey at that airport is referred to as a:

A. Origin-destination airport.
B. Transit airport.
C. Alliance hub airport.

31. Security is best defined as:

A. Protecting the aviation system from risks associated with intentional wrongdoing and criminal behavior.
B. Preventing accidents through the identification and elimination of risk within aviation operations.

32. What is the purpose of the security tamper-evident bags (STEBs)?

A. To allow unchecked baggage to be checked only once by security personnel.
B. To allow items such as computers and other personal electronic devices to be screened without the need to turn them on.
C. To allow an exemption to volumetric controls for liquids purchased at airport retailers or on-board aircraft and carried by transfer passengers.

33. As it pertains to the ICAO security annex, a signatory state must:

A. Implement security standards which extend far beyond the Annex's SARP's.
B. Implement security standards which meet the minimum standards for international aviation.

34. The ICAO security annex requires that all passengers and their luggage are to be screened before flight. Who is responsible to decide what screening tools and methods to implement?

A. The ICAO
B. The Civil Aviation Authority (CAA) of the state.
C. The airline upon which the traveler is to travel.

35. How will the International Air Transportation Association's (IATA's) Smart Security program enhance security and passenger facilitation?

A. The program will screen passengers based on relative information that is currently known about each individual passenger.
B. The program will allow the implementation of a single security system for all operators and airports.
C. The program will require secondary screening of all passengers who transfer flights.

36. Terrorist acts, including bombings and hijackings of commercial aircraft, are referred to as:

A. Criminal acts.
B. Unlawful acts of interference.

37. Aggressive, senseless, or violent acts such as drug smuggling or human trafficking are referred to as:

A. Criminal acts.
B. Unlawful acts of interference.

38. The term convection describes:

A. The horizontal movement of air.
B. The vertical movement of air.
C. The spiral movement of air on land.

39. Which weather phenomenon can occur when moist air at ground level cools to its dew point temperature?

A. Snow.
B. Ice.
C. Fog and mist.
D. All of the above.

40. Which weather phenomenon has wind that changes abruptly in speed, direction or both and is typically associated with thunderstorms or air mass fronts?

A. Wind shear.
B. Tornadoes.
C. Hurricanes.

41. A specific aim of the Paris Agreement (2016) is to:

A. Hold the global average temperature increase to well below two degrees Celsius above pre-industrial levels.
B. Increase the ability to adapt to adverse impacts of climate change and to foster climate resilience and low greenhouse gas (GHG) emissions development without threatening food production.
C. Make financial pathways that support low GHG emissions and climate resilient development.
D. All of the above.

42. Aircraft condensation trails (contrails) are actually:

A. Smoke.
B. Pollution.
C. Clouds.

43. Development that meets the needs of the present without sacrificing future generations' ability to meet their needs is known as:

A. Environmental protection.
B. Sustainable development.
C. Security and facilitation.

44. Which of the following documents is considered to be the ICAO's top strategic safety document?

A. The Trip Strategy Compendium.
B. The ICAO Safety Management Manual.
C. The Global Aviation Safety Plan.
D. The Universal Safety Oversight Audit Program.

45. ICAO defines "an occurrence which includes the loss of life or the loss of the aircraft" as an:

A. Accident.
B. Incident.
C. Neither of the above.

46. ICAO's Annex on Search and Rescue is supplemented by which of the following?

A. The International Aeronautical and Maritime Search and Rescue (IAMSAR) Manual.
B. The Regional Air Navigation Agreement.
C. The Global Aeronautical Distress and Safety System.

47. International aviation law requires installation of which of the following safety devices within an aircraft?

A. An emergency locator transmitter (ELT).
B. Cockpit voice recorder (CVR).
C. Flight recorder.
D. All of the above.

48. ICAO designates which State to have jurisdiction over an international aircraft accident investigation?

A. The State of the Aircraft's Registry.
B. The State of the Occurrence of the accident.
C. The State of Manufacture of the Aircraft.

49. ICAO allows which of the following stakeholders to be included in the investigation of an international aircraft accident?

A. The State of Occurrence.
B. The State of Registry.
C. The State of the Operator.
D. The State of Design.
E. The State of Manufacture.
F. All of the above.

50. The cause of an aircraft accident involving one aircraft striking another on an aircraft ramp or taxiway would classified as which type of accident?

A. Airborne: abrupt maneuver.
B. Ground operation; ground collision.
C. Miscellaneous; other.

51. An aircraft accident that is the result of the crew losing the ability to control an aircraft during flight and deviating from the flight path is known as a:

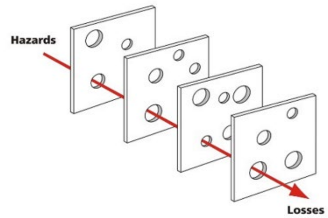
A. Controlled flight into or toward terrain (CFIT) accident.
B. Abnormal runway contact (ARC) accident.
C. Loss of control-in flight (LOC-I) accident.

52. ICAO defines "Human Factors: as being:

A. About people in their living and working situations.
B. About people and their relationship with machines.
C. About people and their relationship with procedures.
D. About people and their relationship with the environment about them.
E. About people and their relationships with other people (at work).
F. All of the above.

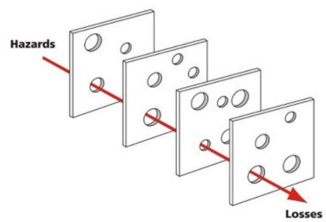
53. Refer to the figure. In the theoretical model shown by the figure, the proximal causes of an accident such as the pilot getting distracted are referred to as:

A. Active errors.
B. Latent errors.
C. Windows of opportunity.
D. None of the above.



54. Refer to the figure. In the theoretical model shown by the figure, elements in the organization which contributed to the accident such as senior managers' purchasing decisions, line management pressures, unsafe climate and culture coupled with fatigue and confusing warnings are referred to as:

A. Active errors.
B. Latent errors.
C. Windows of opportunity.
D. None of the above.



55. To allow pilots to practice in-flight challenges and to apply CRM skills is referred to as:

A. Crew resource management (CRM).
B. Line oriented flight training (LOFT).
C. Threat and error management (TEM).
D. State Safety Program (SSP).

56. Which type of training is used by flight crew (and others in a safety critical role within aviation) to enhance the safety of every flight by promoting the use of non-technical skills, like teamwork and decision making to ensure sound situational awareness and problem solving?

A. Crew resource management (CRM).
B. Line Operations Safety Audit (LOSA).
C. Threat and error management (TEM).
D. State Safety Program (SSP).

57. Which of the following safety concepts uses flight simulators to take pilots through situations that could occur in flight?

A. Crew resource management (CRM).
B. Line oriented flight training (LOFT).
C. Threat and error management (TEM).
D. State Safety Program (SSP).

58. The ICAO Annex which contains the SARPs outlining the safety management steps that contracting States must follow is:

A. Annex 15.
B. Annex 19.
C. Annex 7.
D. Annex 25.

59. In accordance with ICAO's safety management annex the foundation of a proactive safety strategy is based on the implementation of a:

A. System of regulations enacted by the Civil Aviation Authority of each contracting state.
B. A State Safety Program (SSP).
C. Threat and error management (TEM) system.

60. Which of the following is a web-based system on the ICAO Secure Portal linking a collection of safety and efficiency datasets and web applications to perform online safety, efficiency and risk analysis?

A. The integrated Safety Trend Analysis and Reporting System (iSTARS).
B. The Global Aviation Safety Plan (GASP).
C. The Line operated safety audit (LOSA).
D. The Universal Safety Oversight Audit Program (USOAP).

61. Which ICAO program was initially launched in January 1999, in response to widespread concerns about the adequacy of aviation safety oversight around the world?

A. The Global Aviation Safety Plan (GASP).
B. The State Safety Program (SSP).
C. The Universal Safety Oversight Audit Program (USOAP).
D. The line operated safety audit (LOSA).

62. Any aircraft intended to be flown without a pilot on board is referred to in the Convention on International Civil Aviation (Doc 7300), signed at Chicago on December 7, 1944 and amended by the ICAO Assembly as a:

A. Pilotless aircraft.
B. Drone.
C. Remotely piloted aircraft (RPA).

63. Which of the following terms describes the condition when an RPAS can operate along with some level of adaptation or support that compensates for its inability to comply within existing operational constructs?

A. Accommodation.
B. Integration.

64. The availability of regulations, standards, and relevant supporting technology to allow remotely piloted aircraft to fly amongst manned aircraft is referred to as:

A. Accommodation.
B. Integration.

65. A feature of a remotely piloted aircraft system that involves employing sensors of some type (such as radar or cameras) to sense if the aircraft is flying too close to an object (such as a tall building or another aircraft) and then takes steps to fly away from the potential danger is referred to as:

A. Detect and Avoid (DAA).
B. Command and Control (C2).

66. A feature of a remotely piloted aircraft system that involves technology that ensures the unmanned aircraft remains in constant, secure contact via radio with ground-based pilots and air traffic control – but also knows what to do on its own to stay safe in case that signal is lost is referred to as:

A. Detect and Avoid (DAA).
B. Command and Control (C2).

67. Which of the following are categories of unmanned aircraft?

A. Autonomous aircraft – flying with no intervention of an operator.
B. Model aircraft – small, unmanned devices usually used for recreational purposes.
C. Remotely piloted aircraft (RPA).
D. All of the above.

68. A primary goal of RPA regulation is to:

A. Protect from hazards as mid-air collisions.
B. Protect from damage that damages property.
C. Protect from crashes causing injuries to persons.
D. All of the above.

69. Benefits for airlines doing business in an alliance include cost reduction for airlines from which of the following?

A. Sharing sales offices.
B. Sharing maintenance facilities.
C. Sharing operational facilities, e.g. catering or computer systems.
D. Sharing operational staff, e.g. ground handling personnel, at check-in and boarding desks.
E. Sharing investments and purchases, e.g. in order to negotiate extra volume discounts.
F. All of the above.

70. Which of the following are considered potential disadvantages for travelers flying with an airline alliance?

A. Higher prices when all competition is erased on a certain route.
B. Less frequent flights on certain routes.
C. Both of the above.

71. Which of the following are advantages of Open Skies policies?

A. Vastly expanded international passenger and cargo flights to and from the United States.
B. Promoting increased travel and trade.
C. Enhancing productivity and spurring high-quality job opportunities and economic growth.
D. All of the above.

72. An Open Skies agreement signed by the U.S. with New Zealand, Singapore, Brunei, and Chile, later joined by Samoa, Tonga, and Mongolia is referred to as the:

A. 2007 Air Transport Agreement.
B. WOW Alliance.
C. 2001 Multilateral Agreement on the Liberalization of International Air Transportation (MALIAT).

73. In the United States, which of the following has the sole authority to grant antitrust immunity to airline alliances?

A. The FAA.
B. The Department of Transportation.
C. The Department of Homeland Security.

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A. The highest possible levels of customer service.
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1. Column

   Presentation ()
2. Points Possible

   34
3. Description

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Count	9
Minimum Value	27.50
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STATUS DISTRIBUTION

Null	0
In Progress	0
Needs Grading	0
Exempt	0

GRADE DISTRIBUTION

Greater than 100	0
90 - 100	6
80 - 89	3
70 - 79	0
60 - 69	0
50 - 59	0
40 - 49	0
30 - 39	0
20 - 29	0
10 - 19	0
0 - 9	0
Less than 0	0

International

BUSINESS AVIATION

[redacted]

PREVIEW OF TOPICS

1. What is business aviation?
2. Economic Impacts
3. Safety Standards
4. International Business Aviation Organizations
5. Community Involvement
6. Sustainability

BUSINESS AVIATION

USE OF GENERAL AVIATION AIRCRAFT FOR A BUSINESS PURPOSE

BENEFITS

SAVES EMPLOYEE TIME

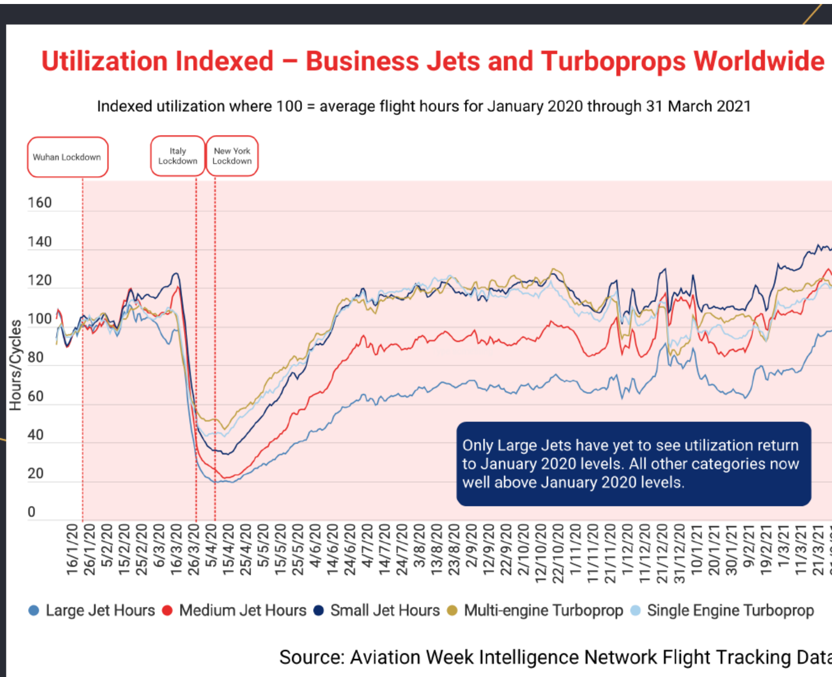
REACH NUMEROUS DESTINATIONS

CHARITY EFFORTS

INCREASES PRODUCTIVITY

MOVE EQUIPMENT

REMOTE COMMUNITIES



OPTIONS FOR INVOLVEMENT

- Full Ownership
- Fractional Ownership
- Charter

Companies with
business aircraft return
more to stakeholders
than competitors
without an aircraft

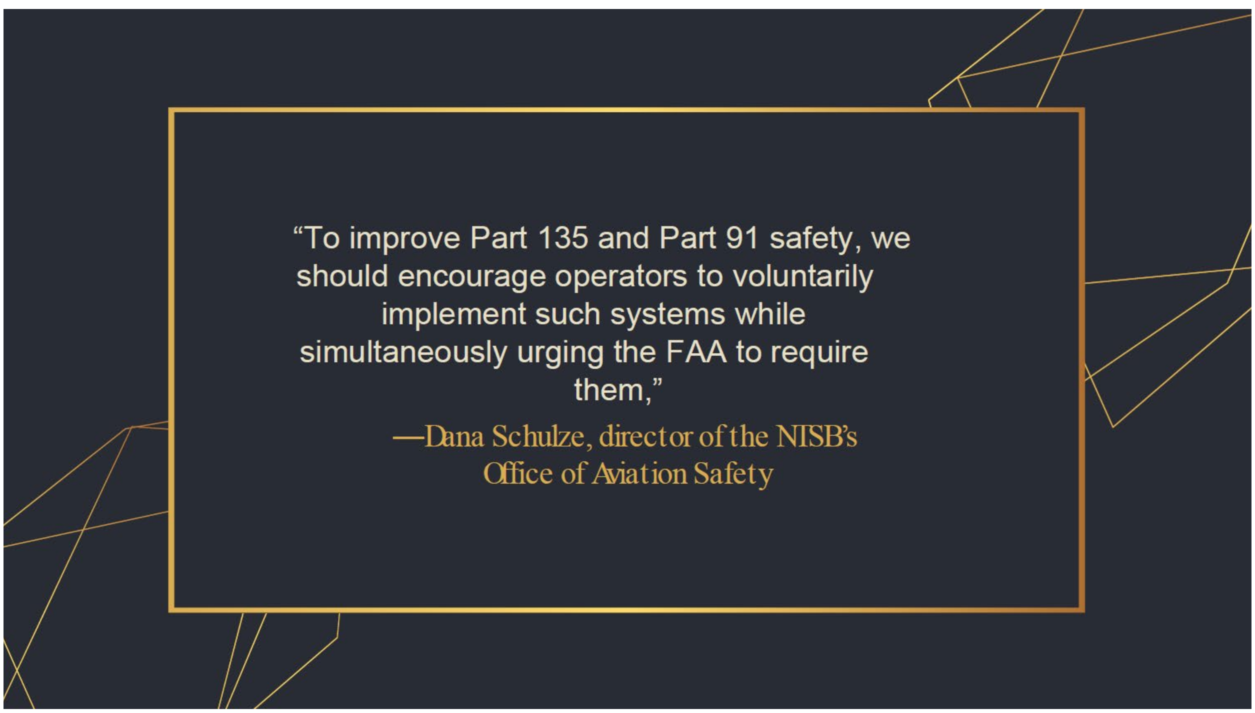
$150 billion

To U.S. economic output

1.2 million

People employed


SAFETY STANDARDS
IS-BAO™
International Standard for Business Aircraft Operations
WYVERN
National Air Transportation Association
IS-BAO
Defines best practices for flight departments
WYVERN
Wyvern's Wingman Standard audit is defined by ICAO for Operation of Aircraft (Annex 6) and Safety Management (Annex 19)
NATA
Represents business aviation on legislative and regulatory levels


"To improve Part 135 and Part 91 safety, we should encourage operators to voluntarily implement such systems while simultaneously urging the FAA to require them,"
—Dana Schulze, director of the NISB's Office of Aviation Safety

NBAA Top Safety Focus Areas for 2019-2020

REDUCE
the risk of LOC -I

REDUCE
the risk of CFIT

REDUCE
the risk of runway excursions

IMPROVE
Safety performance in single pilot ops, use and sharing of safety data, defenses against automation mismanagement

REDUCE
the risk of aircraft ground operation and handling incidents

INTERNATIONAL BUSINESS AVIATION COUNCIL

- Helps ensure that global aviation standards reflect aviation needs
- Mission: to serve the diverse needs of business aviation across the globe
- Initiatives: IS-BAO, IS-BAH, SafetyNet Webinars, environmental leadership

OTHER BUSINESS AVIATION ORGANIZATIONS

National Business Aviation Association

Voice for business aviation in the US and helps bridge together international business aviation organizations

Asian Business Aviation Association

Represents business aviation in Asia to support advancement of the industry in Asia. Recognized member of IBAC and affiliate of NBAA

European Business Aviation Association

Represents over 700 companies across the European Business aviation industry

COMMUNITY INVOLVEMENT

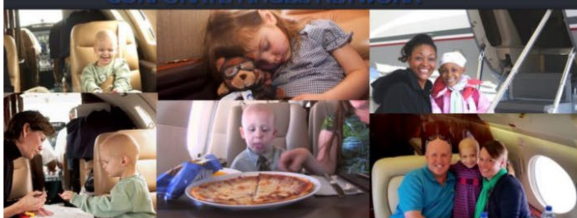
- Disaster relief
- Life -flight service
- Emergency organ and blood transfers
- Volunteer transportation for U.S. Military, Red Cross and National Guard Units

15,000+

Flights a year in humanitarian aid

38%

Of pilots have flown humanitarian missions in the past year



CORPORATE ANGEL NETWORK

Works with about half of Fortune 100 companies and many Fortune 500 and 1000 companies to find seats for about 250 patients each month

SUSTAINABILITY

Global business aviation operations represent .04% of anthropogenic CO_2 emissions

Sustainable aviation fuels – Jet A with non-fossil fuel element, blended with up to a 50% mix and is indistinguishable from the completely petroleum-based product

BACCC pledged to improve fuel efficiency 2% per year from 2010 to 2020 with a 50% reduction in carbon emissions by 2050

TO CONCLUDE

- Business aviation is essential to our economy
- The industry adheres to high safety standards
- It contributes a lot to communities
- Works towards the betterment of the environment

THANK YOU!

Questions?

RESOURCES

PHOTOS

https://www.cirium.com/thoughtcloud/the-impact-of-covid-19-on-business-aviation/
https://connectedaviationtoday.com/crystal-ball-business-aviation-2019/#.YIn4oi2cZQI
http://jdasolutions.aero/blog/corporate-angel-network/
http://interactive.aviationtoday.com/the-business-of-connecting-the-private-jet/

INFORMATION

HTTPS://WWW.BIZAVADVISOR.COM/WHY-COMPANIES-UTILIZE-BUSINESS-AVIATION/
HTTPS://WWW.SKYBRARY.AERO/INDEX.PHP/INTERNATIONAL_BUSINESS_AVIATION_COUNCIL_(IBAC)
HTTPS://NBAA.ORG/WP-CONTENT/UPLOADS/2018/01/BUSINESS-AVIATION-FACT-BOOK.PDF
HTTP://WWW.NATA.AERO/COMMITTEES/SAFETY
HTTPS://NBAA.ORG/AIRCRAFT-OPERATIONS/SAFETY/2019-NBAA-TOP-SAFETY-FOCUS-AREAS/
HTTPS://ASBAA.ORG/ADVOCACY-REPRESENTATION-COMMUNITY
HTTPS://WWW.ICAO.INT/ENVIRONMENTAL-PROTECTION/DOCUMENTS/ENVIRONMENTALREPORTS/2019/ENVREPORT2019_PG177-181.PDF
HTTPS://WWW.AOPA.ORG/NEWS-AND-MEDIA/ALL-NEWS/2021/APRIL/07/NTSB-WOULD-MANDATE-AVIATION-SAFETY-PROGRAMS-SOME-DATA-RECORDING
HTTPS://WWW.WYVERNLTD.COM/AUDIT-PROGRAMS/#PART-91
https://nbaa.org/news/business-aviation-insider/2020-july-aug/moving-toward-sustainability/
https://aviationweek.com/business-aviation/business-aviation-utilization-mostly-above-pre-covid-levels?PostID=29287233&MessageRunDetailID=5039084116

Course Assessment Form

Course: ASCI 4800 – 10 International Aviation (Online)
Semester Taught: Spring 2021
Number of Students in Course: 15
Taught by: Stephen Magoc

Student Learning Outcome Assessed	Assessment Results: (Indicate what % of class achieved a minimum 70%)	Benchmark achieved? (Benchmark: 80% of students will score a minimum of 70% = "C")
B. Analyze and interpret data.	Test 4 Question 23 – 100% Test 4 Question 33 – 100% Test 5 Questi0n 24 – 100%	Embedded test questions to analyze the students' ability to use the techniques, skills, and modern technology necessary for professional practice yielded an average of 100.0%, achieving the benchmark.
C. Work effectively on multi-disciplinary and diverse teams.	Presentation: due to COVID-19 and restrictions the group presentation was revised to be individual presentations made via Zoom. The average score on the presentations was 30.1 out of 34 possible points.	Embedded test questions to analyze the students' ability to use the techniques, skills, and modern technology necessary for professional practice yielded an average of 88.5%, achieving the benchmark.
E. Communicate effectively, using both written and oral communication skills.	Test 1 Question 8 – 100% Test 1 Question 14 – 100% Test 3 Question 31 – 100% Presentation: due to COVID-19 and restrictions the group presentation was revised to be individual presentations made via Zoom. The average score on the presentations was 30.1 out of 34 possible points.	Embedded test questions to analyze the students' ability to use the techniques, skills, and modern technology necessary for professional practice yielded an average of 97.13%, achieving the benchmark.
F. Engage in and recognize the need for life-long learning.	Test 1 Question 20 – 100.0% Test 1 Question 21 – 93.34% Test 2 Question 1 – 100% Test 3 Question 31 – 100% Test 5 Question 5 – 86.67% Test 6 Question 21 – 100% Test 6 Question 24 – 40.0%	Embedded test questions to analyze the students' ability to use the techniques, skills, and modern technology necessary for professional practice yielded an average of 88.57%, achieving the benchmark.

I. Assess the national and international aviation environment.	Test 1 Question 6 – 86.67% Test 1 Question 10 – 100% Test 2 Question 15 – 80.0% Test 2 Question 21 – 100% Test 3 Question 2 – 100% Test 3 Question 21 – 93.34% Test 6 Question 25 – 88.89% Final Exam Question 4 – 100%	Embedded test questions to analyze the students' ability to use the techniques, skills, and modern technology necessary for professional practice yielded an average of 93.61%, achieving the benchmark.
J. Apply pertinent knowledge in identifying and solving problems.	Test 2 Question 2 – 80.0% Test 2 Question 8 – 73.34% Test 4 Question 10 – 100% Test 4 Question 14 – 100% Test 5 Question 8 – 100% Test 5 Question 31 – 73.34% Test 6 Question 23 – 100%	Embedded test questions to analyze the students' ability to use the techniques, skills, and modern technology necessary for professional practice yielded an average of 89.53%, achieving the benchmark.

Course Assessment (Intended Use of Results)
The following will be used for recommendations to improve the quality of course delivery based on assessment results. These recommendations may include prerequisite change; changing course outline and adding more topics; adding a third assessment; changing the course sequence, etc.

- Student Learning Outcome B: Recommendation is to continue the current methods of presenting the course materials to the class.
- Student Learning Outcome C: Recommendation is to continue the current methods of presenting the course materials to the class.
- Student Learning Outcome E: Recommendation is to continue the current methods of presenting the course materials to the class.
- Student Learning Outcome F: Recommendation is to continue the current methods of presenting the course materials to the class.
- Student Learning Outcome I: Recommendation is to continue the current methods of presenting the course materials to the class.
- Student Learning Outcome J: Recommendation is to continue the current methods of presenting the course materials to the class.

**Attach description of assignment used for assessment and samples of student work.*

ASCI 4800 – 10 International Aviation – Spring 2021 (Online)

1. Column

   ASCI 4800 Test 1 2021 (Test)

2. Points Possible

   105

3. Description

STATISTICS

Count	15
Minimum Value	79.84
Maximum Value	101.96
Range	22.11999
Average	91.796
Median	93.93
Standard Deviation	7.03049
Variance	49.42787

STATUS DISTRIBUTION

Null	0
In Progress	0
Needs Grading	0
Exempt	0

GRADE DISTRIBUTION

Greater than 100	0
90 - 100	5
80 - 89	8
70 - 79	2
60 - 69	0
50 - 59	0
40 - 49	0
30 - 39	0
20 - 29	0
10 - 19	0
0 - 9	0
Less than 0	0

ASCI 4800 International Aviation TEST 1 **Name ______________________________**

Place circle your answer, write your essay answer in the space provided, place an X in the box to denote “true” or “false,” and write your answer on the line provided.

1. In which century did Hugo Grotius author the principle ***Mare Liberum***, otherwise known as the “freedom of the seas?”

   A. 1600s.
   B. 1800s.
   C. 1900s.

2. Briefly describe what Hugo Grotius meant by the term “freedom of the seas.”

3. At the end of World War I, the allied and associated nations formed the International Commissioner for Air Navigation, and enacted the International Air Navigation Code, which is also referred to as which convention?

   A. The Chicago Convention.
   B. The Paris Convention.
   C. The Warsaw Convention.

4. Which of the following aspects of international aviation was NOT regulated by the International Commission for Air Navigation as determined by the International Air Navigation Code?

   A. Each nation’s registry of aircraft.
   B. Flight of aircraft from one country across the territory of another country.
   C. Issuance of airworthiness certificates.
   D. International navigation rules.
   E. Allows the transportation of arms and explosives on aircraft of one country flying across the territory of a second country without the second country’s permission.
   F. None of the above.

5. True or False: Article 1 of the International Air Navigation Code recognized that none of the High Contracting Parties has complete and exclusive sovereignty over the airspace above its territory or the territorial waters adjacent thereto. Place an “X” in the box next to your answer

   ☐ TRUE ☐ FALSE

6. Which of the following was NOT a result of the Warsaw Convention of 1929?

   A. The convention defined that the carrier was NOT liable in case of loss, damage, injury or death due to an accident on an international flight.
   B. The convention spelled out procedures for claims and restitution against carriers.
   C. The convention laid down the requirements for format and content of air transport documents, passenger tickets, luggage tickets and air consignment notes.

7. Towards the end of World War II in 1944, representatives of several of the allied nations held the Convention on International Civil Aviation, which is also referred to as:

   ______________________________________.

8. Briefly describe the aim or the main purpose of the Convention on International Civil Aviation.

9. Which of the following are part of the international standards and practices that Contracting States of the Convention on International Civil Aviation agreed to comply with to the highest degree of uniformity?

   A. Communication and navigation aid and support.
   B. Rules of the air and air traffic control practices.
   C. Licensing of operations and mechanical personnel.
   D. Airworthiness of aircraft.
   E. Aeronautical maps and charts.
   F. All of the above.

10. What international organization was developed by the Convention on International Civil Aviation?

    A. The International Air Transport Association (IATA).
    B. The International Airline Pilots Association (IALPA).
    C. The International Civil Aviation Organization (ICAO).

11. Which of the following are part of ICAO’s Strategic Objectives for the 2017-2019 Triennium?

    A. Safety.
    B. Air Navigation Capacity and Efficiency.
    C. Security and Facilitation.
    D. Economic Development of Air Transport.
    E. Environmental Protection.
    F. All of the above.

12. At the Chicago Convention, delegates of the States acknowledged which of the following Freedoms of the Air that were previously agreed to with the International Air Transit Services Agreement?

    A. Freedoms of the Air 1 and 2.
    B. Freedoms of the Air 1 through 5.
    C. Freedoms of the Air 3, 4 and 5.

13. At the Chicago Convention, delegates of the States ratified which of the following Freedoms of the Air?

    A. Freedoms of the Air 1 and 2.
    B. Freedoms of the Air 1 through 5.
    C. Freedoms of the Air 3, 4 and 5.

14. Why are the 6th through 9th Freedoms of the Air considered as "so-called" freedom?

15. Refer to Figure 1. The Freedom of the Air depicted in Figure 1 is the:

    A. Freedom of the Air #1.
    B. Freedom of the Air #3.
    C. Freedom of the Air #7.

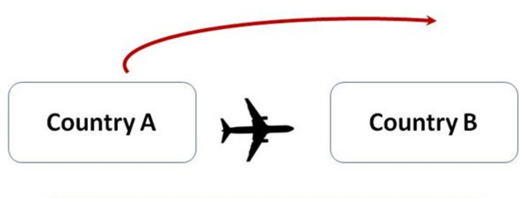


Figure 1

16. Refer to Figure 2. The Freedom of the Air depicted in Figure 2 is the:

    A. Freedom of the Air #4.
    B. Freedom of the Air #6.
    C. Freedom of the Air #8.

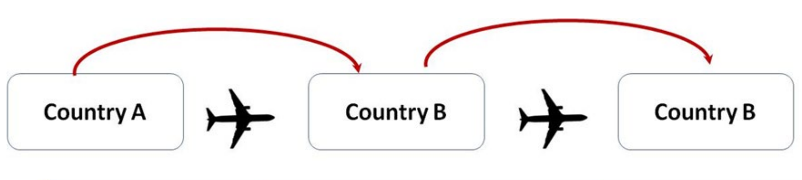


Figure 2

17. Refer to Figure 2. The Freedom of the Air depicted in Figure 2 is also known as:

    A. Consecutive cabotage.
    B. Stand-alone cabotage.
    C. Coupled cabotage.

18. True or False. The Five Freedoms Agreement is applicable to international civil aircraft engaged in scheduled air services.

☐ TRUE ☐ FALSE

19. The 9th Freedom of the Air is also referred to as:

    A. Consecutive cabotage.
    B. Stand-alone cabotage.
    C. Coupled cabotage.

20. The following statement – "Any specification for physical characteristics, configuration, material, performance, personnel or procedure, the uniform application of which is recognized as necessary for the safety or regularity of international air navigation and to which Contracting States will conform in accordance with" – defines which of the following?

    A. An ICAO Standard.
    B. An ICAO Recommended Practice.
    C. Both of the above.

21. The following statement – "Any specification for physical characteristics, configuration, material, performance, personnel or procedure, the uniform application of which is recognized as desirable in the interest of safety, regularity or efficiency of international air navigation, and to which Contracting States should endeavor to conform in accordance with" – defines which of the following?

    A. An ICAO Standard.
    B. An ICAO Recommended Practice.
    C. Both of the above.

22. Which of the following ICAO Annexes contains the Standards and Recommended Practices (SARPs) that assures that pilots and other air and ground personnel have the competence, skill and training necessary to guarantee efficient and safe operations?

    A. Annex 1 – Personnel Licensing.
    B. Annex 2 – Rules of the Air.
    C. Annex 9 – Facilitation.

23. Which of the following ICAO Annexes contains the SARPs which require that the operation of aircraft engaged in international air transportation must be standardized as much as possible to ensure the highest levels of safety and efficiency?

    A. Annex 3 - Meteorological Service for International Air Navigation.
    B. Annex 6 – Operation of Aircraft.
    C. Annex 11 – Air Traffic Services.

24. Which of the following ICAO Annexes contains the SARPs which require that all aircraft must be registered and contain a certificate of registration identifying its nationality along with its common registration mark?

    A. Annex 2 – Rules of the Air.
    B. Annex 6 – Operation of Aircraft.
    C. Annex 7 – Aircraft Nationality and Registration Marks.

25. Which of the following ICAO Annexes contains the SARPs which are used so that to assure safety, all aircraft must be designed, constructed and operated in compliance with the airworthiness requirements of the State of Registry of the aircraft?

    A. Annex 6 – Operation of Aircraft.
    B. Annex 8 – Airworthiness of Aircraft.
    C. Annex 11 – Air Traffic Services.

26. Which of the following ICAO Annexes contains the SARPs which were put in place because air traffic is projected to grow rapidly over the next couple of decades and safety risks of these increased operations must be assessed?

    A. Annex 19 – Safety Management.
    B. Annex 16 - Environmental Protection.
    C. Annex 18 – The Safe Transport of Dangerous Goods by Air.

27. Within the organization of the ICAO, the 192-member States comprise which of the following?

    A. The Assembly.
    B. The Council.
    C. The Secretariat.

28. At the Chicago Convention, a Multilateral Transport Agreement was rejected by a majority of the states and all that was left to work out in terms of commercial freedoms were negotiations between two countries, known as a :

    A. Multi-lateral Air Services Agreement.
    B. Bilateral Air Services Agreement.
    C. Plurilateral Air Services Agreement.

29. Which of the following type certificate is used under 14 CFR Part 23 for an aircraft having a seating configuration, excluding pilot seats, of nine or less, a maximum certificated takeoff weight of 12,500 or less, and intended for non-acrobatic operation?

    A. Normal category.
    B. Utility category.
    C. Limited category.

30. Which category of special airworthiness certificate is issued to operate aircraft that are limited to special purposes identified in the applicable type design, such as aircraft used for agricultural purposes?

    A. Limited category.
    B. Restricted category.
    C. Experimental category.

31. The four-stroke cycle used by aircraft reciprocating engines is referred to as the:

    A. Brayton Cycle.
    B. Otto Cycle.
    C. Carnot Cycle.

32. The process by which the typical jet engine operates is referred to as the:

    A. Brayton Cycle.
    B. Otto Cycle.
    C. Carnot Cycle.

33. Refer to Figure 3. Typical classification of piston engines is done by noting how the cylinders are arranged around the engine's crankshaft. The type of engine depicted in Figure 3 is classified as a:

    A. Horizontally opposed engine.
    B. In-line engine.
    C. Radial engine.

Figure 3

34. The ICAO statement, "The country where the manufacturer who developed the aircraft design is located" refers to:

    A. The State of Manufacture.
    B. The State of Registration.
    C. The State of Operator.

35. The ICAO statement, "The country in which the owner of the aircraft has that aircraft registered" refers to:

    A. The State of Registration.
    B. The State of Manufacture.
    C. The State of Operator.

36. The FAA term “When an aircraft or one of its component parts meets its type design and is in a condition for safe operation” is used to define:

A. The type certification process.
B. The airworthiness of an aircraft.
C. The aircraft’s Approved Maintenance Schedule.

37. The ICAO SARPs allow the civil aviation authority (CAA) of a state to approve a type certificate for an aircraft and subsequently issue an airworthiness certificate for the aircraft. In the U.S., the CAA is referred to as:

A. The Department of Homeland Security (DHS).
B. The Federal Aviation Administration (FAA).
C. The Department of Transportation (DOT).

38. The ICAO statement “All the processes ensuring that, at any time in its life, an airplane complies with the technical conditions fixed to the issue of its Certificate of Airworthiness and is condition for safe operation” refers to the subject of:

A. Air Operator Certificate (AOC) holders.
B. Approved Maintenance and Repair Organizations (MROs).
C. Continued Airworthiness of an aircraft.

39. ICAO states that aircraft maintenance is to be conducted by whom?

____.

40. True or false. Refer to Figure 4. The certificate in Figure 4 is required to be in the aircraft when the aircraft is being operated.

☐ TRUE ☐ FALSE

REGISTRATION NOT TRANSFERABLE

UNITED STATES OF AMERICA
DEPARTMENT OF TRANSPORTATION – FEDERAL AVIATION ADMINISTRATION
CERTIFICATE OF AIRCRAFT REGISTRATION

This certificate must be in the aircraft when operated.

NATIONALITY AND REGISTRATION MARKS N 628PC

AIRCRAFT SERIAL NO. C0533

MANUFACTURER AND MANUFACTURER'S DESIGNATION OF AIRCRAFT
DIAMOND AIRCRAFT IND INC DA20-C1

ICAO Aircraft Address Code 52032475

ISSUED TO
SAINT LOUIS UNIVERSITY
221 N GRAND BLVD
SAINT LOUIS MO 63103-2006

Corporation

This certificate is issued for registration purposes only and is not a certificate of title. The Federal Aviation Administration does not determine rights of ownership as between private persons.

It is certified that the above described aircraft has been entered on the register of the Federal Aviation Administration, United States of America, in accordance with the Convention on International Civil Aviation dated December 7, 1944, and with Title 49, United States Code, and regulations issued thereunder.

DATE OF ISSUE January 15, 2009
EXPIRATION DATE May 31, 2022

OKEhweM ACTING ADMINISTRATOR

U.S. Department of Transportation
Federal Aviation Administration

AC Form 8050-3 (10/2010) Supersedes previous editions

Figure 4

EXTRA CREDIT – If you want to answer an extra credit question, choose only one of the following to answer. You can earn up to five (5) points for your answer.

1. The case study at the end of Chapter 1 details the shooting down of a civil aircraft, KAL 007, by the Soviet Union on Sept. 1, 1983. The case states that the "ICAO found itself in the middle of a heated debate between rival States." Describe what this debate was about.

2. The case study at the end of Chapter 2 details the accident of China Airlines Flight 611 (CI 611). The Boeing 747 aircraft had encountered a tail strike. The aircraft was not repaired in accordance with the Boeing Structural Repair Manual. The incorrect repair placed a doubler over the damaged skin, which prevented subsequent inspections of the damaged skin. The scratches on the tail skin eventually led to metal fatigue in the in the skin, which turned into cracks and caused the tail to separate the aircraft. This resulted in a loss of cabin pressure and shortly after the rest of the aircraft came apart. Who ultimately bears the responsibility for this tragic event?

   Place an "X" next to the name(s) of the organization or person that you feel is responsible for the accident.

   ICAO ________

   Chinese Civil Aviation Authority ________

   Boeing Aircraft Company ________

   China Airlines ________

   The Aircraft Maintenance Engineer who performed the repair ________

1. Column

   ASCI 4800 Test 2 Spring 2021 (Test)

2. Points Possible

   104

3. Description

STATISTICS

Count	15
Minimum Value	87.88
Maximum Value	101.97
Range	14.09
Average	95.24199
Median	95.91
Standard Deviation	4.56473
Variance	20.83684

STATUS DISTRIBUTION

Null	0
In Progress	0
Needs Grading	0
Exempt	0

GRADE DISTRIBUTION

Greater than 100	0
90 - 100	8
80 - 89	7
70 - 79	0
60 - 69	0
50 - 59	0
40 - 49	0
30 - 39	0
20 - 29	0
10 - 19	0
0 - 9	0
Less than 0	0

ASCI 4800 International Aviation TEST 2 Name ______________________________

Place circle your answer, write your essay answer in the space provided, place an X in the box to denote "true" or "false," and for fill-in-the-blank questions, write your answer on the line provided.

1. In accordance with ICAO's Annex 1, Personnel Licensing, which of the following are required to be eligible for and/or to hold a certificate?

   D. Minimum age is reached.
   E. Minimum amount of experience met.
   F. Any medical requirement met.
   G. The required amount of operational experience is met.
   H. Competency is proven.
   I. Currency requirements are met.
   J. All of the above.

2. Who determines whether a pilot needs to be type rated in a particular aircraft?

   A. The State Civil Aviation Authority (CAA).
   B. ICAO.
   C. The International Air Transport Association (IATA).

3. What is meant by a pilot being "type rated" in an aircraft?

   A. The pilot has received the minimum amount of training required for the certificate or license required to fly that class of aircraft.
   B. The pilot has received additional training in that class of aircraft that is considered to be beyond the scope of what is necessary to obtain a certificate or license required to fly that class of aircraft.

4. True or False. ICAO requires a pilot to be type rated to legally fly any aircraft over 12,500 lbs. Maximum gross Takeoff weight (MGTOW) and/or is equipped with a turbojet powerplant. Place an "X" in the box next to your answer.

   ☐ TRUE ☐ FALSE

5. True or False. ICAO considers the medical standards that a person must meet if required for a certificate or license to be a maximum set of standards to be met. Place an "X" in the box next to your answer.

   ☐ TRUE ☐ FALSE

6. An airline transport pilot is required to obtain which class of medical certificate?

   A. Class 1.
   B. Class 2.
   C. Class 3.

7. A private pilot is required to obtain which class of medical certificate?

   A. Class 1.
   B. Class 2.
   C. Class 3.

8. An example of a complex aircraft that requires a type rating for each aircraft type is:

   A. Aircraft weighing less than 5,700 kgs. (or 12,500 lbs.)
   B. Aircraft requiring only one pilot.
   C. Small unmanned aerial vehicles.
   D. Aircraft capable of vertical take-offs and landings.
   E. All of the above.

9. Which Part of ICAO Annex 6 Operations of Aircraft is applicable to international general aviation airplanes?

   A. Part 1.
   B. Part 2.
   C. Part 3.

10. Aviation operations which include personal (recreational) flying, flight instruction, corporate flight departments, medical transport, and aerial work define which of the following categories of aviation?

    A. Military aviation.
    B. Commercial aviation.
    C. General aviation.

11. Aviation organizations that provide scheduled, commercial air transport of passengers, cargo, or both defines which type of aviation organizations?

    A. Military aviation.
    B. Commercial aviation.
    C. General aviation.

12. How does ICAO define “business aviation?”

13. What term is used by ICAO to describe an airline that charges fares, or carries persons for hire as a business with the intent of earning profits?

    A. Legacy air carrier.
    B. Regional air carrier.
    C. Commercial air carrier.

14. Fill in the blank. The airline term, "the times and dates of flights are determined in advance" defines:

    ___________________________________.

15. Briefly describe how the airline performance indicator known as “available seat miles” is calculated.

16. The percentage of seats sold on a flight defines which airline performance indicator?

    A. Revenue kilometers (or miles).
    B. Passenger load factor.
    C. Unit costs.
    D. Yield (average unit revenue.

17. The airline performance indicator that adds all fixed and variable costs associated eith a particular flight leg is referred to as:

    A. Revenue kilometers (or miles).
    B. Passenger load factor.
    C. Unit costs.
    D. Yield (average unit revenue.

18. Which of the following transportation models best describes how low-cost carriers (LLCs) transport passengers through the carrier's system?

    A. Hub and spoke (H&S).
    B. Point-to-point (P2P).

19. Which od the ICAO Annexes outlines how the air transportation of dangerous goods must be packed, labeled, documented and periodically inspected?

    A. Annex 6.
    B. Annex 12.
    C. Annex 15.
    D. Annex 18.

20. ICAO's Global Aviation Safety Plan (GASP) requires which of the following for contracting States?

    A. Implement an effective safety oversight system.
    B. Implement a State safety program.
    C. Develop an advanced safety oversight system that includes predictive risk managemet.
    D. All of the above.

21. Which of the ICAO Safety Performance Enablers refers to "the uniform and consistent implementation of ICAO provisions?"

    A. Resources.
    B. Standardization.
    C. Collaboration.

22. Which of the ICAO Safety Performance Enablers refers to "a lack of an adequate safety oversight organization and infrastructure within the civil aviation authority (CAA)?"

    A. Resources.
    B. Standardization.
    C. Safety Information Exchange.

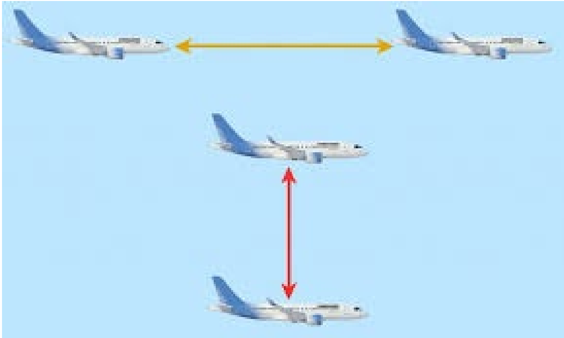
23. Which of the following State Safety Performance Indicators "enables States and regions to review the safety performance of their systems and to take action, if needed, to address discrepancies between existing and desired performance levels?"

    A. Performance-based approach.
    B. Phased approach to implementation.

24. Global air traffic management (ATM) requires which of the following?

    A. An international network of ground and satellite-based navigation aids.
    B. Regulations dictating the rules of the sky.
    C. Human expertise.
    D. All of the above.

25. Fill in the Blank: The figure below is used to depict the air traffic controller's primary responsibility of maintaining:



____________________________________.

26. The figure below depicts which type of air traffic control used by air traffic control officers?

A. Visual reference.
B. Surveillance radar.
C. Procedural separation.

27. Which type of radar provides the air traffic controller with information such as aircraft call sign and altitude?

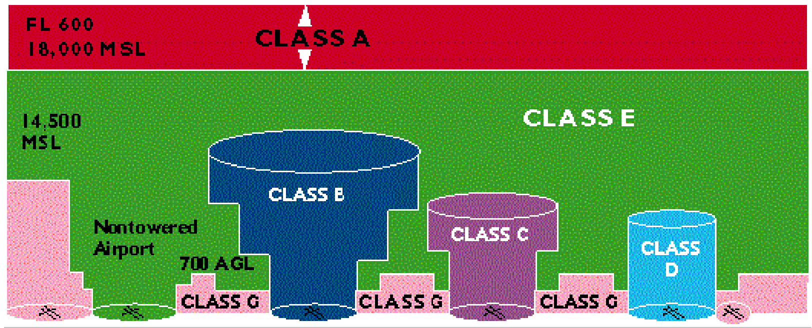
A. Primary radar.
B. Secondary radar.

28. Fill in the Blank: The satellite navigation system which transmits information automatically to ATC and other aircraft in the vicinity is the:

____________________________________.

29. The illustration below depicts which of the following?

A. Airspace where visual flight rules can only be used during aircraft operation.
B. Airspace where instrument flight rules can only be used during aircraft operations.
C. Airspace classifications for controlled and uncontrolled airspace when operating an aircraft.



30. The air navigation technology that provides multiple sources of information to pilots, including a flight management computer (FMC), aircraft navigation system, automatic flight control/flight guidance system (AFCS or AFGS) and an electronic flight instrument system (EFIS) is referred to as:

A. Inertial navigation system (INS).
B. Global navigation satellite system (GLONASS).
C. Flight management system (FMS).
D. Instrument landing system (ILS).

31. A ground-based transponder that provides the pilot with a precise slant-range distance, or the distance from an aircraft in the air to the transponder on the ground refers to:

A. Area Navigation (RNAV).
B. Distance measuring equipment (DME).
C. Tactical air navigation system (TACAN).
D. VHF omni-directional range (VOR).

32. In which type of approach does the pilot have both lateral (side-to-side) and vertical (up and down) guidance to the runway?

A. Non-precision approach.
B. Precision approach.

33. Fill in the blank. The FAA's initiative to evolve the air traffic management system of the U.S. is referred to as:

____________________________________.

EXTRA CREDIT – If you want to answer an extra credit question, choose only one of the following to answer. You can earn up to five (%) points for your answer.

1. The Chapter 3 case study discusses Colgan Air Flight 3407 and the 1,500-Hour Rule. Does the hour-building time of the 1,500-hour rule if accomplished in small general aviation aircraft better prepare a person to be a better airline transport pilot?

2. The case study of Chapter 4 Malaysia Airlines Flight 370 – A Modern Aviation Mystery. In the case, questions of the cause of the accident are brought up. Causes listed in the case questions range from a massive in-flight emergency, a loss of cabin pressure incapacitating the crew, a hijacking, to a crewmember deliberately diverting the aircraft. Discuss what you think could be the cause of this issue and explain why.

1. Column

   ASCI 4800 Spring 2021 Test 3 (Test)

2. Points Possible

   105

3. Description

STATISTICS

Count	15
Minimum Value	75.00
Maximum Value	105.00
Range	30.00
Average	93.66666
Median	93.00
Standard Deviation	7.39068
Variance	54.62222

STATUS DISTRIBUTION

Null	0
In Progress	0
Needs Grading	0
Exempt	0

GRADE DISTRIBUTION

Greater than 100	0
90 - 100	7
80 - 89	7
70 - 79	1
60 - 69	0
50 - 59	0
40 - 49	0
30 - 39	0
20 - 29	0
10 - 19	0
0 - 9	0
Less than 0	0

ASCI 4800 International Aviation TEST 3   **Name ______________________________**

Place circle your answer, write your essay answer in the space provided, place an X in the box to denote “true” or “false,” and write your answer on the line provided.

1. An international airport can have which of the following impacts on the local economy?

   A. Airports create direct job opportunities.
   B. Airports create indirect jobs associated with infrastructure development and the required supply chain needed to support the airport.
   C. Airports serve to link local economies to international markets.
   D. All of the above.

2. Which of the following organizations is considered the voice of the world’s airports?

   A. Airports Council International (ACI).
   B. International Aviation Handler’s Association (IAHA).
   C. International Society of Aerodromes (ISA).

3. Which volume of ICAO Annex 14 contains the SARPs used for the design and construction of international airports (aerodromes?)

   A. Volume I.
   B. Volume II.
   C. Volume III.
   D. All of the above.

4. St. Louis Lambert International Airport can have either an ICAO airport identifier or an IATA airport identifier. The identifier “KSTL” is which type of airport identifier?

   Answer: ____________________

5. Which of the following is “the only global trade representative of the world’s airports?”

   A. Airport Purchasing Group (APG).
   B. American Association of Airport Executives (AAAE).
   C. Airport Council International (ACI).

6. The international standardization of time used by airports to ensure consistency is:

   A. Greenwich Mean Time (GMT).
   B. Coordinated Universal Time (UTC).

7. The area of an airport that includes parking lots, fuel tank farms and access roads is known as:

   A. Airside area.
   B. Landslide area.

8. Which of the following types of airport revenue includes airline terminal space rentals, airline landing fees, and usage fees for terminals, gates, services and passenger counts?

   A. Aeronautical revenue.
   B. Non-aeronautical revenue.

9. A fee charged based on an aircraft's maximum weight is known as a:

   A. Landing fee.
   B. Terminal fee.
   C. Other fee.

10. A fee based on an aircraft's seat capacity is known as a:

   A. Landing fee.
   B. Terminal fee.
   C. Other fee.

11. True or False. ICAO has established airport (aerodrome) reference codes that are assigned to airports based on the size of the aircraft that can be accommodated.

   ☐ TRUE ☐ FALSE

12. An airport which is centrally located and linked by air routes to many smaller destinations is known as a:

   A. Reliever airport.
   B. Hub airport.

13. An airport which primarily serves domestic flights and supports smaller populations such as short flights feeding into international airports is known as a:

    A. Regional airport.
    B. Local airport.

14. An airport which serves a majority of passengers (more than 70%) who begin or end their journey at that airport is referred to as a:

    A. Origin-destination airport.
    B. Transit airport.
    C. Alliance hub airport.

15. Refer to Figure 2. During a ramp inspection, a person found the items depicted in Figure 2. The items found are commonly referred to as:

    ___________________________________.

Figure 2

16. Which ICAO annex contains the minimum SARPs for aviation security?

    A. Annex 8.
    B. Annex 17.
    C. Annex 24.

17. Security is best defined as:

    A. Protecting the aviation system from risks associated with intentional wrongdoing and criminal behavior.
    B. Preventing accidents through the identification and elimination of risk within aviation operations.

18. Which of the following transportation models best describes how low-cost carriers (LLCs) transport passengers through the carrier's system?

    A. Hub and spoke (H&S).
    B. Point-to-point (P2P).

19. What is the purpose of the security tamper-evident bags (STEBs)?

    A. To allow unchecked baggage to be checked only once by security personnel.
    B. To allow items such as computers and other personal electronic devices to be screened without the need to turn them on.
    C. To allow an exemption to volumetric controls for liquids purchased at airport retailers or on-board aircraft and carried by transfer passengers.

20. “The establishment of evidence, that when combined, provides confidence that an individual is who they claim to be” is used to describe the term:

    A. Evidence of Identity.
    B. Machine Readable Travel Document.
    C. Advance Passenger Information.

21. As it pertains to the ICAO security annex, a signatory state must:

    A. Implement security standards which extend far beyond the Annex’s SARP’s.
    B. Implement security standards which meet the minimum standards for international aviation.

22. The ICAO security annex requires that all passengers and their luggage is to be screened before flight. Who is responsible to decide what screening tools and methods to implement?

    A. The ICAO
    B. The Civil Aviation Authority (CAA) of the state.
    C. The airline upon which the traveler is to travel.

23. How will the International Air Transportation Association's (IATA's) Smart Security program enhance security and passenger facilitation?

    A. The program will screen passengers based on relative information that is currently known about each individual passenger.
    B. The program will allow the implementation of a single security system for all operators and airports.
    C. The program will require secondary screening of all passengers who transfer flights.

24. TRUE or FALSE: The IATA Security Management System (SeMS) requires that the air carrier have an Aviation Security Program (ASP) as it provides a structure for security policy and awareness, which flows from senior management to all levels of operational personnel within an organization.

    ☐ TRUE ☐ FALSE

25. Briefly describe at the purpose of the International Air Transport Association's (IATA's) One-Stop Security Program.*

26. IATA's data provided by passengers at the time of booking a flight which is held in the airline's reservation system until the flight is open for check-in is referred to as the:

    A. Passenger manifest (PM).
    B. Passenger security initiative (PSI).
    C. Passenger name record (PNR).

27. The civil aviation security regulations that are used to protect the European Union's (EU's) transportation of persons and goods is commonly referred to as the:

    A. EU Common Basic Policy.
    B. EU Common Rules.
    C. EU Common Standards and Procedures.

28. Terrorist acts, including bombings and hijackings of commercial aircraft, are referred to as:

    A. Criminal acts.
    B. Unlawful acts of interference.

29. Aggressive, senseless or violent acts such as drug smuggling or human trafficking are referred to as:

    A. Criminal acts.
    B. Unlawful acts of interference.

30. Within the aviation industry, acts of terrorism are typically considered to be politically motivated criminal acts that takes the form of:

    ________________________________.

31. Describe at least three methods of detection used to thwart drug smuggling through airports.

32. What program did the ICAO require as a measure to ensure that contracting States adequately implement the required security SARPs?

    A. ICAO Comprehensive Aviation Security Strategy (ICASS).
    B. Universal Security Audit Program (USAP).
    C. Smart Security Initiative.

33. The joint security initiative between ICAO and ACI is known as:

    A. International Aviation Security Agreement.
    B. Comprehensive Aviation Security Strategy (CASS).
    C. Smart Security.

EXTRA CREDIT – If you want to answer an extra credit question, choose only one of the following to answer. You can earn up to five (5) points for your answer.

1. The Chapter 5 case study discusses an overrun of a runway by Southwest Airlines Flight 1248. The case study concludes with the development of the runway end safety area (RESA). Discuss who should be required to pay for such an upgrade to an airport; the airport or the users (air carriers) taking off from and landing at such an airport.

2. The case study of Chapter 6 discusses the “Underwear Bomber” and his willingness to commit suicide to take down a commercial aircraft with 289 people on board. A baggage reconciliation system requires a person to be on board an aircraft before that person’s baggage is placed in the cargo compartment. Does baggage reconciliation still have value in today’s commercial aviation industry?

1. Column

   ASCI 4800 Spring 2021 Test 4 (Test)
2. Points Possible

   103
3. Description

STATISTICS

Count	15
Minimum Value	69.00
Maximum Value	101.00
Range	32.00
Average	92.66666
Median	96.00
Standard Deviation	8.62296
Variance	74.35555

STATUS DISTRIBUTION

Null	0
In Progress	0
Needs Grading	0
Exempt	0

GRADE DISTRIBUTION

Greater than 100	0
90 - 100	10
80 - 89	3
70 - 79	1
60 - 69	1
50 - 59	0
40 - 49	0
30 - 39	0
20 - 29	0
10 - 19	0
0 - 9	0
Less than 0	0

ASCI 4800 International Aviation TEST 4 **Name** ______________________________

Place circle your answer, write your essay answer in the space provided, place an X in the box to denote “true” or “false,” and write your answer on the line provided.

1. The term convection describes:

   E. The horizontal movement of air.
   F. The vertical movement of air.
   G. The spiral movement of air on land.

2. The distance at which a black object on a white background (or vice versa) describes:

   Answer: ____________________

3. Which weather phenomenon can occur when moist air at ground level cools to its dew point temperature?

   E. Snow.
   F. Ice.
   G. Fog and mist.
   H. All of the above.

4. Which weather phenomenon has wind that changes abruptly in speed, direction or both and is typically associated with thunderstorms or air mass fronts?

   A. Wind shear.
   B. Tornadoes.
   C. Hurricanes.

5. Which of the following ICAO annexes contains the SARPS for the dissemination of weather information?

   D. Annex 3
   E. Annex 8
   F. Annex 13.

6. Which organization of the World Meteorological Organization to assist underdeveloped states improve their access to national climate and metrological capabilities?

   C. The Global Framework for Climate Services (GFCS).
   D. The World Weather Information Service (WWIS).

7. The scientific study of the atmosphere associated with forecasting the weather is known as:

   Answer: ____________________

8. True or False. “Climate” describes the average weather condition over a period of time, typically years.

   ☐ TRUE ☐ FALSE

9. Another name for the United Nations Framework Convention on Climate Change, adopted in 1992, is:

   D. The Paris Convention.
   E. The Geneva Convention.
   F. The Rio Convention.

10. A specific aim of the Paris Agreement (2016) is to:

    D. Hold the global average temperature increase to well below two degrees Celsius above pre-industrial levels.
    E. Increase the ability to adapt to adverse impacts of climate change and to foster climate resilience and low greenhouse gas (GHG) emissions development without threatening food production.
    F. Make financial pathways that support low GHG emissions and climate resilient development.
    G. All of the above.

11. True or False. ICAO has promoted the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA).

    ☐ TRUE ☐ FALSE

12. Which of the following ICAO annexes contains the SARPS for Environmental Protection?

    C. Annex 8.
    D. Annex 16.
    E. Annex 22.

13. Which Volume of the annex noted in the previous question addresses Aircraft Engine Emissions?

    C. Volume I.
    D. Volume II.
    E. Volume III.

14. Refer to Figure 1. The type of environmental harm depicted in Figure 1 that ICAO is attempting to address is known as:

    Answer: ____________________

Figure 1.

15. Name at least two initiatives which segments of the international aviation industry are implementing to reduce aircraft emissions.

16. Aircraft condensation trails (contrails) are actually:

    D. Smoke.
    E. Pollution.
    F. Clouds.

17. Development that meets the needs of the present without sacrificing future generations' ability to meet their needs is known as:

    C. Environmental protection.
    D. Sustainable development.
    E. Security and facilitation.

18. Which of the ICAO Annexes contains the SARPs used for aircraft incident and accident investigation?

    A. Annex 7.
    B. Annex 13.
    C. Annex 14.

19. Which of the ICAO Annexes contains the SARPs used for search and rescue operations?

    A. Annex 12.
    B. Annex 13.
    C. Annex 18.

20. Which of the following documents is considered to be the ICAO's top strategic safety document?

    A. The Trip Strategy Compendium.
    B. The ICAO Safety Management Manual.
    C. The Global Aviation Safety Plan.
    D. The Universal Safety Oversight Audit Program.

21. Over the last 10 years ICAO reports that commercial aircraft accident rates have generally been:

    A. Increasing.
    B. Remaining flat.
    C. Decreasing.
    D. Decreasing for the first five years and increasing after that.

22. ICAO defines "an occurrence which includes the loss of life or the loss of the aircraft" as an:

    A. Accident.
    B. Incident.
    C. Neither of the above.

23. True or False. Refer to Figure 2. The mechanical failure which causes the greatest number of accidents coupled with the highest % of total for all primary causes in the aircraft electrical systems/instruments.

☐ TRUE ☐ FALSE

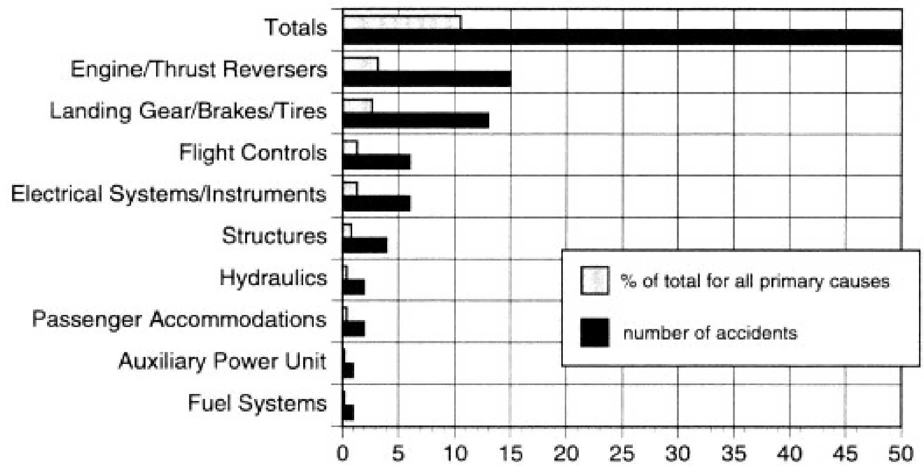


Figure 2.

24. ICAO's Annex on Search and Rescue is supplemented by which of the following?

A. The International Aeronautical and Maritime Search and Rescue (IAMSAR) Manual.
B. The Regional Air Navigation Agreement.
C. The Global Aeronautical Distress and Safety System.

25. True or False. The authorities of a Contracting State who wish their search and rescue units to enter the territory of another Contracting State for search and rescue purposes shall transmit a request, giving full details of the projected mission and the need for it, to the rescue coordination center of the State concerned or to such other authority as has been designated by that State.

☐ TRUE ☐ FALSE

26. International aviation law requires installation of which of the following safety devices within an aircraft?

A. An emergency locator transmitter (ELT).
B. Cockpit voice recorder (CVR).
C. Flight recorder.
D. All of the above.

27. True or False. To assure the correct gathering of evidence in the event of an aviation accident, the Accident Investigation Authorities (AIA) of a State must be completely under the jurisdiction of that State's Civil Aviation Authority (CAA).

☐ TRUE ☐ FALSE

28. ICAO designates which State to have jurisdiction over an international aircraft accident investigation?

A. The State of the Aircraft's Registry.
B. The State of the Occurrence of the accident.
C. The State of Manufacture of the Aircraft.

29. ICAO allows which of the following stakeholders to be included in the investigation of an international aircraft accident?

A. The State of Occurrence.
B. The State of Registry.
C. The State of the Operator.
D. The State of Design.
E. The State of Manufacture.
F. All of the above.

30. The cause of an aircraft accident involving one aircraft striking another on an aircraft ramp or taxiway would classified as which type of accident?

A. Airborne: abrupt maneuver.
B. Ground operation; ground collision.
C. Miscellaneous; other.

31. An aircraft accident that is the result of the crew losing the ability to control an aircraft during flight and deviating from the flight path is known as a:

A. Controlled flight into or toward terrain (CFIT) accident.
B. Abnormal runway contact (ARC) accident.
C. Loss of control-in flight (LOC-I) accident.

32. The European Aviation Safety Agency (EASA) reports which type of general aviation aircraft category accounts for the highest number of aircraft accidents in Europe?

A. Helicopters.
B. Ultralight/Microlight.
C. Airplane.

33. Refer to Figure 3. What is being listed in Figure 3 as the primary cause of aircraft accidents?

    A. Human causes.
    B. Technical causes.

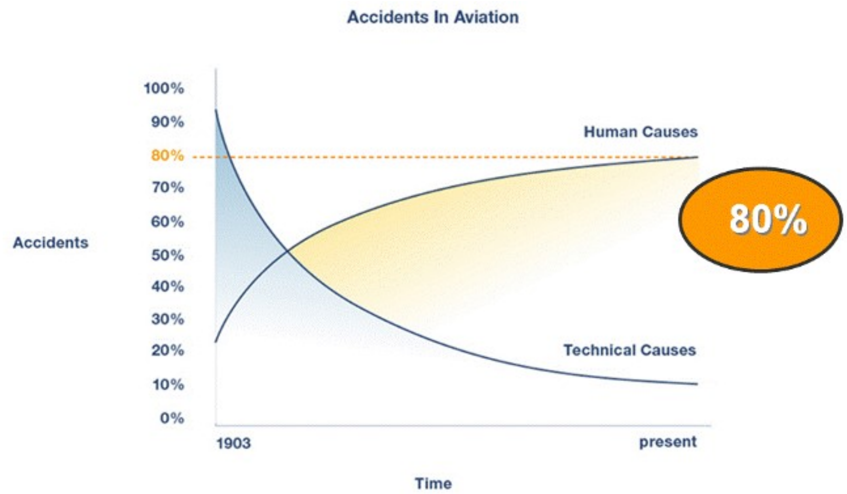


Figure 3.

EXTRA CREDIT – If you want to answer an extra credit question, choose only one of the following to answer. You can earn up to five (5) points for your answer.

1. The Chapter 7 case study discusses Delta Flight 191 and its accident caused by a weather-related microburst. Which do you think could have improved safety for this flight and why: Crew training, aircraft-based technologies, or ground-based technologies?

2. The case study of Chapter 7 discusses the Swissair Flight 111 accident and with Canada being the State of Occurrence, its Accident Investigation Authority (AIA) was in charge of the investigation. Describe why it is important that the AIA be independent from the Civil Aviation Authority (CAA) of State and its regulators.

1. Column

   ASCI 4800 Test 5 Spring 2021 (Test)

2. Points Possible

   103

3. Description

STATISTICS

Count	15
Minimum Value	79.00
Maximum Value	103.00
Range	24.00
Average	96.33333
Median	97.00
Standard Deviation	6.01849
Variance	36.22222

STATUS DISTRIBUTION

Null	0
In Progress	0
Needs Grading	0
Exempt	0

GRADE DISTRIBUTION

Greater than 100	0
90 - 100	12
80 - 89	2
70 - 79	1
60 - 69	0
50 - 59	0
40 - 49	0
30 - 39	0
20 - 29	0
10 - 19	0
0 - 9	0
Less than 0	0

ASCI 4800 International Aviation TEST 5

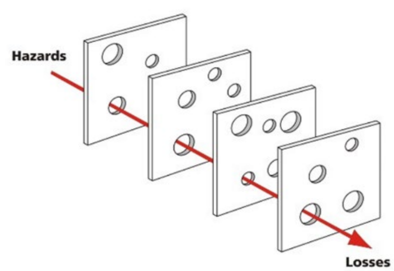
1. ICAO defines "Human Factors: as being:

A. About people in their living and working situations.
B. About people and their relationship with machines.
C. About people and their relationship with procedures.
D. About people and their relationship with the environment about them.
E. About people and their relationships with other people (at work).
F. All of the above.

2. True or False. The safety output is best illustrated by past accidents where Human Factors have been either the cause of the accident or a contributory element to it.

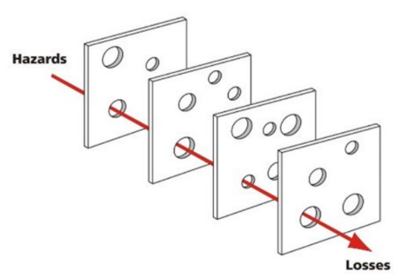
3. True or False. The efficiency output of a flight crew can be affected by levels of motivation, flight deck design, crew training, supervision, adherence to standard operating procedures and crew resource management.

4. Refer to the figure. What is the name of theoretical model that illustrates how accidents occur in organizations?



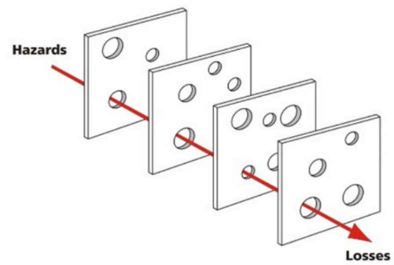
5. Refer to the figure. In this theoretical model, the proximal causes of an accident such as the pilot getting distracted are referred to as:

A. Active errors.
B. Latent errors.
C. Windows of opportunity.
D. None of the above.



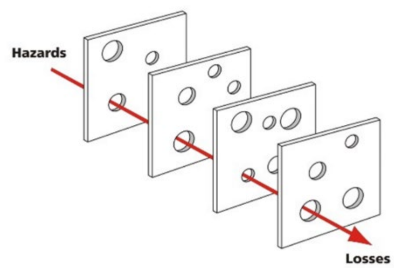
6. In the theoretical model shown in the figure, elements in the organization which contributed to the accident such as senior managers' purchasing decisions, line management pressures, unsafe climate and culture coupled with fatigue and confusing warnings are referred to as:

A. Active errors.
B. Latent errors.
C. Windows of opportunity.
D. None of the above.



7. In the theoretical model shown in the figure, the alignment of all necessary windows of opportunity at all levels in the organization, thus leading to the occurrence of an accident is called the:

A. Active errors.
B. Latent errors.
C. Windows of opportunity.
D. None of the above.



8. To allow pilots to practice in-flight challenges and to apply CRM skills is referred to as:

A. Crew resource management (CRM).
B. Line oriented flight training (LOFT).
C. Threat and error management (TEM).
D. State Safety Program (SSP).

9. Which type of training is used by flight crew (and others in a safety critical role within aviation) to enhance the safety of every flight by promoting the use of non-technical skills, like teamwork and decision making to ensure sound situational awareness and problem solving?

A. Crew resource management (CRM).
B. Line Operations Safety Audit (LOSA).
C. Threat and error management (TEM).
D. State Safety Program (SSP).

10. Which of the following safety concepts uses the Line Operations Safety Audit (LOSA) as an important way to help develop countermeasures to operational errors?

A. Crew Resource Management CRM).
B. Line oriented flight training (LOFT).
C. Threat and error management (TEM).
D. State safety program (SSP).

11. Which of the following safety concepts uses flight simulators to take pilots through situations that could occur in flight?

A. Crew resource management (CRM).
B. Line oriented flight training (LOFT).
C. Threat and error management (TEM).
D. State Safety Program (SSP).

12. The safety concept that requires the organization itself to examine its operations and the decisions around those operations, allows an organization to adapt to change, facilitates continuous hazard identification and risk assessment to proactively predict how accidents may happen and eliminate the risk before any harm is done is referred to as:

13. The ICAO Annex which contains the SARPs outlining the safety management steps that contracting States must follow is:

A. Annex 15.
B. Annex 19.
C. Annex 7.
D. Annex 25.

14. In accordance with ICAO's safety management annex the foundation of a proactive safety strategy is based on the implementation of a:

A. System of regulations enacted by the Civil Aviation Authority of each contracting state.
B. A State Safety Program (SSP).
C. Threat and error management (TEM) system.

15. Which of the following is a web-based system on the ICAO Secure Portal linking a collection of safety and efficiency datasets and web applications to perform online safety, efficiency, and risk analysis?

A. The integrated Safety Trend Analysis and Reporting System (iSTARS).
B. The Global Aviation Safety Plan (GASP).
C. The Line operated safety audit (LOSA).
D. The Universal Safety Oversight Audit Program (USOAP).

16. Which ICAO program was initially launched in January 1999, in response to widespread concerns about the adequacy of aviation safety oversight around the world?

A. The Global Aviation Safety Plan (GASP).
B. The State Safety Program (SSP).
C. The Universal Safety Oversight Audit Program (USOAP).
D. The line operated safety audit (LOSA).

17. The International Air Transport Association (IATA) provides members and other eligible industry members with information and acts as a gateway to the multiple sources and areas of aircraft operation and now includes information from over 470 different organizations?

A. The Universal Safety Oversight Audit Program (USOAP).
B. The Global Aviation Data Management (GADM) program.
C. Integrated Management Solutions (IMX).
D. The integrated Safety Trend Analysis and Reporting System (iSTARS).

18. True or False. The Universal Safety Audit Program (USOAP) audits focuses on a State's capability in providing safety oversight by assessing whether the State has effectively and consistently implemented the critical elements (CEs) of a safety oversight system.

19. Any aircraft intended to be flown without a pilot on board is referred to in the Convention on International Civil Aviation (Doc 7300), signed at Chicago on December 7, 1944 and amended by the ICAO Assembly as a:

A. Pilotless aircraft.
B. Drone.
C. Remotely piloted aircraft (RPA).

20. Which of the following terms describes the condition when an RPAS can operate along with some level of adaptation or support that compensates for its inability to comply within existing operational constructs?

A. Accommodation.
B. Integration.

21. The availability of regulations, standards, and relevant supporting technology to allow remotely piloted aircraft to fly amongst manned aircraft is referred to as:

A. Accommodation.
B. Integration.

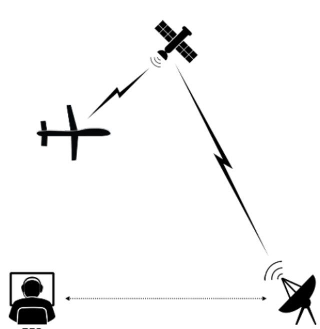
22. A feature of a remotely piloted aircraft system that involves employing sensors of some type (such as radar or cameras) to sense if the aircraft is flying too close to an object (such as a tall building or another aircraft) and then takes steps to fly away from the potential danger is referred to as:

A. Detect and Avoid (DAA).
B. Command and Control (C2).

23. A feature of a remotely piloted aircraft system that involves technology that ensures the unmanned aircraft remains in constant, secure contact via radio with ground-based pilots and air traffic control – but also knows what to do on its own to stay safe in case that signal is lost is referred to as:

A. Detect and Avoid (DAA).
B. Command and Control (C2).

24. True or False. Refer to the figure. The type of data link shown between the remotely piloted aircraft and the remote pilot station is referred to as radio line of sight.



25. The term that takes into consideration all components of the system needed for operational safety, i.e. the Remotely Piloted Aircraft (RPA), Remote Pilot Station (RPS), and the Command and Control (C2) Link system(s) takes into account system configuration, usage, environment, and the hardware and software of the entire system is:

26. Which of the following are categories of unmanned aircraft?

A. Autonomous aircraft – flying with no intervention of an operator.
B. Model aircraft – small, unmanned devices usually used for recreational purposes.
C. Remotely piloted aircraft (RPA).
D. All of the above.

27. A primary goal of RPA regulation is to:

A. Protect from hazards as mid-air collisions.
B. Protect from damage that damages property.
C. Protect from crashes causing injuries to persons.
D. All of the above.

28. Which of the following international rules is NOT correct concerning RPAs that are flown internationally?

A. The RPA must be issued a type certificate.
B. The RPA does not require a certificate of airworthiness.
C. The RPA must be registered with the owner's CAA.
D. RPA operators must maintain a maintenance control manual.

29. True or False. During the Visual Line-of-Sight (VLOS) operation of an RPA, the remote pilot does not need to maintain constant unaided visual line-of-sight with the RPA .

30. In the U.S. the difference in weight between a microdrone (sUAS) and a macrodrone (UAS) is:

A. 0.55 pounds.
B. 5.5 pounds.
C. 55 pounds.
D. 550 pounds.

31. Refer to the figure. Scenario – you just purchased a DroneX Pro quadcopter for $49.90 USD. This device weighs 0.793664 pounds (360 grams). Are you required to register this drone with the FAA Registry?

A. Yes.
B. No.

32. The equipment used to pilot an RPA that functions the same way that a traditionally piloted aircraft would and therefore must incorporate equivalent capability to control and manage a flight refers to:

A. Remotely Piloted Aircraft System (RPAS).
B. Command and Control link (C2).
C. Remote pilot station (RPS).

33. True or False. The Remotely Piloted Aircraft System (RPAS) operator is not required to have an RPAS Operator Certificate (ROC).

34. **EXTRA CREDIT** – The case study of Chapter 9 concerned Air France 447's accident which was attributed to several human errors in the cockpit. Describe at least three errors made by the crew of this aircraft.

1. Column

   ASCI 4800 Test 6 Spring 2021 (Test)

2. Points Possible

   104

3. Description

STATISTICS

Count	15
Minimum Value	74.00
Maximum Value	104.00
Range	30.00
Average	92.40
Median	92.00
Standard Deviation	7.5613
Variance	57.17333

STATUS DISTRIBUTION

Null	0
In Progress	0
Needs Grading	0
Exempt	0

GRADE DISTRIBUTION

Greater than 100	0
90 - 100	7
80 - 89	7
70 - 79	1
60 - 69	0
50 - 59	0
40 - 49	0
30 - 39	0
20 - 29	0
10 - 19	0
0 - 9	0
Less than 0	0

ASCI 4800 International Aviation TEST 6

1. Agreements between two or more airlines to cooperate on a substantial level are referred to as:

2. The first airline alliance between Pan American Airways and Pan air do Brasil was formed in which year?

A. 1982.
B. 1974.
C. 1939.

3. The first large airline alliance, between Northwest Airlines and KLM, was created when both airlines agreed to code share on a large scale in which year?

A. 1989.
B. 1992.
C. 1974.

4. Benefits for airlines doing business in an alliance include cost reduction for airlines from which of the following?

A. Sharing sales offices.
B. Sharing maintenance facilities.
C. Sharing operational facilities, e.g. catering or computer systems.
D. Sharing operational staff, e.g. ground handling personnel, at check-in and boarding desks.
E. Sharing investments and purchases, e.g. in order to negotiate extra volume discounts.
F. All of the above.

5. Which of the following is NOT a benefit for the traveler flying with an airline alliance?

A. Lower prices due to lowered operational costs for a given route.
B. More departure times to choose from on a given route.
C. Decreased number of destinations.

6. Which of the following are considered potential disadvantages for travelers flying with an airline alliance?

A. Higher prices when all competition is erased on a certain route.
B. Less frequent flights on certain routes.
C. Both of the above.

7. An international policy in which the U.S. calls for the liberalization of the rules and regulations of the international aviation industry is referred to as:

8. True or False. The primary objectives of a liberalization policy are to liberalize the rules for international aviation markets and maximize government intervention as it applies to passenger, all-cargo, and combination air transportation as well as scheduled and charter services.

9. Which of the following are advantages of Open Skies policies?

A. Vastly expanded international passenger and cargo flights to and from the United States.
B. Promoting increased travel and trade.
C. Enhancing productivity and spurring high-quality job opportunities and economic growth.
D. All of the above.

10. An Open Skies agreement signed by the U.S. with New Zealand, Singapore, Brunei, and Chile, later joined by Samoa, Tonga, and Mongolia is referred to as the:

A. 2007 Air Transport Agreement.
B. WOW Alliance.
C. 2001 Multilateral Agreement on the Liberalization of International Air Transportation (MALIAT).

11. True or False. In the ICAO Working Paper on ANTITRUST IMMUNITY FOR AIRLINE ALLIANCES, it states that in the case of merger-like integration, since the violation of competition laws is more likely, whether each State grants antitrust immunity to such type of airline alliances is usually a point of discussion.

12. In the United States, which of the following has the sole authority to grant antitrust immunity to airline alliances?

A. The FAA.
B. The Department of Transportation.
C. The Department of Homeland Security.

13. Have the ICAO States established uniform international standards for antitrust immunity for airline alliances?

A. Yes.
B. No.
C. The standards are due to be set in 2020.

14. There are currently three major airline alliances across the globe. Which of the following is not one of these three?

A. Oneworld.
B. Star Alliance.
C. Regional Airline Alliance.
D. Skyteam.

15. True or False. As a trade association the International Air Transport Association (IATA) mission is to represent, lead, and serve the airline industry.

16. What does the IATA attempt to promote for the customers of international aviation?

A. The highest possible levels of customer service.
B. Safe, reliable, secure and economical air services.
C. Safe, reliable and secure transportation regardless of its cost.

17. What is the mission of the IATA's Simplifying the Business (StB) program?

A. Improve the customer experience.
B. Reduce industry costs.
C. Both of the above.
D. Neither of the above.

18. Which of the following are benefits of IATA Safety Audits for the airline industry?

A. Internationally recognized and accepted audit programs.
B. Continuous upgrading of standards to ensure that industry best practices are being used.
C. Auditors formally trained and qualified to IATA requirements.
D. All of the above.

19. Which of the following does IATA use to implement a risk-based passenger security process that will enhance security and passenger facilitation?

A. Cyber Security.
B. Passenger Data.
C. Smart Security.
D. All of the above.

20. What is the purpose of the IATA Operational Safety Audit (IOSA) Program Manual (IPM)?

A. To provide the standards used in the IOSA audit to the airlines when preparing for the IOSA.
B. To be used to monitor the quality of the IOSA audit process.
C. To provide the complete body of standards that govern all aspects of the IATA Operational Safety Audit (IOSA) Program, available in a single source, ensuring that each audit is conducted in a consistent manner

21. What is the purpose of the IATA's IOSA Quality Assurance (QA) Program?

A. To define the lines of managerial authority and responsibility.
B. To monitor, assess and measure the performance in all areas of the IOSA program.
C. To implement periodic surveys of customer expectations.

22. What is the purpose of the IOSA Standards Manual (ISM)?

A. To provide the operational standards, guidance material and support information to be used by the airlines when preparing for the IATA Operational Safety Audit (IOSA).
B. To specify the complete list of information that is found in an IOSA Audit Report (AR).
C. To provide information about the Auditing Organization which will conduct an IOSA audit of an airline.

23. What is used as the primary source of the IOSA Standards and Recommended Practices (ISARPs)?

A. The ICAO's Standards and Recommended Practices (SARPS).
B. The FAA's International Aviation Safety Assessment Program (IASA).
C. The European Community's Safety Assessment of Foreign Aircraft (EC-SAFA).

24. What is the Auditor charged with assessing the operator against during an IOSA?

A. The information in the IOSA Program Manual (IPM.)
B. The information in the IOSA Standards Manual (ISM.)
C. The information in the IOSA Auditor's Inspection Handbook (IAIH.)

25. An IOSA Standard will always contain the word

A. Should.
B. Shall.
C. If.

26. EXTRA CREDIT - List two reasons why certain airlines might be willing to enter into an alliance or joint venture with other airlines.

1. Column

   ASCI 4800 Final Exam Spring 2021 (Test)

2. Points Possible

   100

3. Description

STATISTICS

Count	9
Minimum Value	87.50
Maximum Value	95.00
Range	7.50
Average	92.22222
Median	92.50
Standard Deviation	2.41363
Variance	5.82561

STATUS DISTRIBUTION

Null	0
In Progress	0
Needs Grading	0
Exempt	0

GRADE DISTRIBUTION

Greater than 100	0
90 - 100	7
80 - 89	2
70 - 79	0
60 - 69	0
50 - 59	0
40 - 49	0
30 - 39	0
20 - 29	0
10 - 19	0
0 - 9	0
Less than 0	0

ASCI 4800 International Aviation – FINAL EXAM

1. The FAA's continuing mission is to:

A. Strive to reach the next level of safety, efficiency, environmental responsibility, and global leadership.
B. Provide the safest, most efficient aerospace system in the world.
C. Perform our duties honestly, with moral soundness, and with the highest level of ethics.

2. Which of the following are among the FAA's major roles and responsibilities?

A. Regulating civil aviation to promote safety.
B. Encouraging and developing civil aeronautics, including new aviation technology.
C. Developing and operating a system of air traffic control and navigation for both civil and military aircraft.
D. Researching and developing the National Airspace System and civil aeronautics.
E. Developing and carrying out programs to control aircraft noise and other environmental effects of civil aviation.
F. Regulating U.S. commercial space transportation.
G. All of the above.

3. Issue and enforce regulations and minimum standards covering manufacturing, operating, and maintaining aircraft, along with certifying airmen and airports that serve air carriers is which of the FAA's operating duties?

A. Airspace and air traffic management.
B. Safety regulation.
C. Commercial space regulation.

4. Building and installing visual and electronic aids to air navigation, maintaining, operating, and assuring the quality of these facilities while sustaining other systems to support air navigation and air traffic control is which of the FAA's operating duties?
A. Airspace and air traffic management.
B. Research, engineering, and development.
C. Air navigation facilities.

5. The FAA's implementation of NextGen technologies and procedures on the ground and in the airspace surrounding our nation's airports, at air traffic control facilities, and in the cockpit will:
A. Reduce delays.
B. Strengthen the economy.
C. Contribute to a cleaner environment.
D. All of the above.

6. Which of the following FAA NextGen programs will make use of GPS technology to determine and share precise aircraft location information, and streams additional flight information to the cockpits of properly equipped aircraft?

A. Automatic Dependent Surveillance-Broadcast (ADS-B).
B. Collaborative Air Traffic Management Technologies (CATMT).
C. System Wide Information Management (SWIM).

7. Which of the following FAA NextGen programs is the network structure that will carry NextGen digital information and will enable cost-effective, real-time data exchange and sharing among users of the National Airspace System?

A. Collaborative Air Traffic Management Technologies (CATMT).
B. System Wide Information Management (SWIM).
C. Data Communications (Data Comm).

8. Which of the following FAA Next Gen programs will enable controllers to send digital instructions and clearances to pilots?

A. Collaborative Air Traffic Management Technologies (CATMT).
B. Automatic Dependent Surveillance-Broadcast (ADS-B).
C. Data Communications (Data Comm).

9. Which of the following FAA international programs has the purpose of advancing international cooperation in the research, development, and acquisition of aviation system and technologies that enhance aviation safety with aviation professionals around the globe?

A. Aviation Cooperation Program.
B. International Visitors Program.
C. Technical Assistance Program.

10. Which of the following FAA programs is designed as a public-private partnership to consolidate U.S. technical cooperation to promote aviation safety and efficiency in a collaborative manner with aviation interests in foreign countries?

A. Aviation Cooperation Program.
B. International Visitors Program.
C. Technical Assistance Program.

11. Which of the following FAA programs is used to determine whether another country's oversight of its air carriers that operate, or seek to operate, into the U.S., or codeshare with a U.S. air carrier, complies with safety standards established by the International Civil Aviation Organization (ICAO)?

A. Technical Assistance Program.
B. Aviation Cooperation Program.
C. International Aviation Safety Assessment (IASA) Program.

12. The critical elements of an International Aviation Safety Assessment include which of the following?

A. Primary aviation legislation.
B. Specific operating regulations.
C. State civil aviation system and safety oversight functions.
D. Technical personnel qualification and training.
E. Technical guidance, tools, and the provision of safety critical information.
F. Licensing, certification, authorization, and approval obligations.
G. Surveillance obligations.
H. Resolution of safety concerns.
I. All of the above.

13. A country which satisfactorily meets the IASA requirements is categorized as:

A. Category 1.
B. Category 2.

14. Carriers from Category 2 countries that operate into the U.S. and/or codeshare with U.S. air carriers:

A. Have such services limited to levels that existed at the time of the assessment.
B. Are allowed to initiate such services.
C. Both of the above.

15. Within the U.S. Department of Transportation, the Office of Aviation and International Affairs includes which of the following principal jurisdictions?

A. Promote domestic and international aviation.
B. Promote the deregulation the international airline industry.
C. Protect U.S. interests by promoting trade barriers in the international airline industry.

16. Functions of the Office of Aviation and International Affairs include which of the following?

A. Provide Departmental leadership for and develops, coordinates, and carries out public policy related to the airline industry.
B. Work with other federal agencies on initiatives related to aviation and international transportation.
C. Formulate, coordinate, and carry out departmental international civil aviation transportation policy, and works with the Department of State in negotiating bilateral and multilateral international aviation matters.
D. Administer the laws and regulations governing U. S. and foreign carrier economic authority to engage in air transportation.
E. All of the above.

17. Which of the following FAA offices develops policies, goals and priorities, forecasts future aviation technology and demand and analyzes the economic impact of regulations?

A. Office of Aviation Policy and Plans.
B. Office of International Affairs.
C. Office of Systems and Policy Development.

18. In the EU, the basis of the initial approval and continuing oversight of all undertakings engaged in aviation activities in the internal market is referred to as the:

A. European aviation safety policy.
B. Common safety rules.
C. European Union Code of Airworthiness Regulations.

19. Which of the following is an intergovernmental organization made up of EU Member States, committed to building, together with its partners, a Single European Sky?

A. Single European Sky ATM Research (SESAR).
B. EUROCONTROL.
C. European Commission (EC).

20. Which of the following EUROCONTROL areas of expertise has the purpose to develop an improved route network over Europe's busy skies, so that flights can go to their destination more directly, saving time, fuel, and money?

A. Air Traffic Flow and Capacity Management.
B. Aeronautical Information Management.
C. Airspace Management and Organization.

21. Which of the following EUROCONTROL areas of expertise analyzes various elements which could influence human ability to complete tasks successfully, with a main goal of aligning organizational objectives with staff needs to build an effective, efficient, and safe ATM system?

A. Air Traffic Flow and Capacity Management.
B. Statistics and Forecasts.
C. Human Performance in ATM.

22. Which of the following EUROCONTROL areas of expertise uses safety management activities to support pan-European ANSPs in their efforts to keep ATM-induced incidents to a minimum, while ensuring that safety enhancements are in line with European regulations?

A. Safety.
B. Statistics and Forecasts.
C. Communication, Navigation and Surveillance.

23. Which of the following is not part of the EU Single European Sky (SES) high level goals?

A. A 27% increase in Europe's airspace capacity.
B. A 40% reduction in accident risk per flight hour.
C. A 2.8% increase per flight in environment impact.

24. Which of the following began in 1970 and was an associated body of representing the civil aviation regulatory authorities of a number of European States who had agreed to co-operate in developing and implementing common safety regulatory standards and procedures?

A. The European Civil Aviation Conference (ECAC).
B. The Joint Aviation Authorities (JAA).
C. The European Aviation Safety Agency.

25. In which of the following ways does EASA cooperate internationally?

A. Multilateral cooperation.
B. Bilateral cooperation.
C. Technical cooperation.
D. All of the above.

STUDENT PRESENTATIONS

1. Column

   Presentation ()

2. Points Possible

   30

3. Description

STATISTICS

Count	15
Minimum Value	25.70
Maximum Value	34.00
Range	8.30
Average	30.11999
Median	30.70
Standard Deviation	2.89648
Variance	8.3896

STATUS DISTRIBUTION

Null	0
In Progress	0
Needs Grading	0
Exempt	0

GRADE DISTRIBUTION

Greater than 100	8
90 - 100	6
80 - 89	1
70 - 79	0
60 - 69	0
50 - 59	0
40 - 49	0
30 - 39	0
20 - 29	0
10 - 19	0
0 - 9	0
Less than 0	0

LANGUAGE BARRIERS IN INTERNATIONAL AVIATION

BACKGROUND

- For the past 70 years, ICAO has identified risk regarding linguistics, analyzed these risk, and tried their best to mitigate them
- Throughout aviation history, miscommunication is cited as one of the leading causes for aviation incidents and accidents
- In 1951 ICAO recommended English to be the universal language of aviation and it has been widely accepted ever since
- In 2003, ICAOs recommendation became a requirement
  - Aviation professionals must demonstrate a defined level of English proficiency

BACKGROUND CONT.

- The Appendix and Attachments to Annex 1 of the Convention on International Civil Aviation:
  - Defines the language skills that must be demonstrated and assessed for a pilot's controller's license
  - Gives a language proficiency scale to judge these skills
- The minimum level required is a level 4 proficiency called Operational Level
  - This level is required for pilots and controllers involved in international operations

ICAO LANGUAGE PROFICIENCY RATING SCALE

Pre-operational 3	Pronunciation, stress, rhythm, and intonation are influenced by the first language or regional variation and frequently interfere with ease of understanding.	Basic grammatical structures and sentence patterns associated with predictable situations are not always well controlled. Errors frequently interfere with meaning.	Vocabulary range and accuracy are often sufficient to communicate on common, concrete, or work-related topics, but range is limited and the word choice often inappropriate. Is often unable to paraphrase successfully when lacking vocabulary.	Produces stretches of language, but phrasing and pausing are often inappropriate. Hesitations or slowness in language processing may prevent effective communication. Fillers are sometimes distracting.	Comprehension is often accurate on common, concrete, and work-related topics when the accent or variety used is sufficiently intelligible for an international community of users. May fail to understand a linguistic or situational complication or an unexpected turn of events.	Responses are sometimes immediate, appropriate, and informative. Can initiate and maintain exchanges with reasonable ease on familiar topics and in predictable situations. Generally inadequate when dealing with an unexpected turn of events.
Elementary 2	Pronunciation, stress, rhythm, and intonation are heavily influenced by the first language or regional variation and usually interfere with ease of understanding.	Shows only limited control of a few simple memorized grammatical structures and sentence patterns.	Limited vocabulary range consisting only of isolated words and memorized phrases.	Can produce very short, isolated, memorized utterances with frequent pausing and a distracting use of fillers to search for expressions and to articulate less familiar words.	Comprehension is limited to isolated, memorized phrases when they are carefully and slowly articulated.	Response time is slow and often inappropriate. Interaction is limited to simple routine exchanges.
Pre-elementary 1	Performs at a level below the Elementary level.	Performs at a level below the Elementary level.	Performs at a level below the Elementary level.	Performs at a level below the Elementary level.	Performs at a level below the Elementary level.	Performs at a level below the Elementary level.

- Level 1: Pre-elementary
  - Performs below the standards of level 2
- Level 2: Elementary
  - Shows limited to basic English skills
- Pre-operational
  - Shows basic English skills
  - Almost operational

LEVEL	PRONUNCIATION *Assumes a dialect and/or accent intelligible to the aeronautical community.*	STRUCTURE *Relevant grammatical structures and sentence patterns are determined by language functions appropriate to the task.*	VOCABULARY	FLUENCY	COMPREHENSION	INTERACTIONS
Expert 6	Pronunciation, stress, rhythm, and intonation, though possibly influenced by the first language or regional variation, almost never interfere with ease of understanding.	Both basic and complex grammatical structures and sentence patterns are consistently well controlled.	Vocabulary range and accuracy are sufficient to communicate effectively on a wide variety of familiar and unfamiliar topics. Vocabulary is idiomatic, nuanced, and sensitive to register.	Able to speak at length with a natural, effortless flow. Varies speech flow for stylistic effect, e.g. to emphasize a point. Uses appropriate discourse markers and connectors spontaneously.	Comprehension is consistently accurate in nearly all contexts and includes comprehension of linguistic and cultural subtleties.	Interacts with ease in nearly all situations. Is sensitive to verbal and non-verbal cues and responds to them appropriately.
Extended 5	Pronunciation, stress, rhythm, and intonation, though influenced by the first language or regional variation, rarely interfere with ease of understanding.	Basic grammatical structures and sentence patterns are consistently well controlled. Complex structures are attempted but with errors which sometimes interfere with meaning.	Vocabulary range and accuracy are sufficient to communicate effectively on common, concrete, and work-related topics. Paraphases consistently and successfully. Vocabulary is sometimes idiomatic.	Able to speak at length with relative ease on familiar topics but may not vary speech flow as a stylistic device. Can make use of appropriate discourse markers or connectors.	Comprehension is accurate on common, concrete, and work-related topics and mostly accurate when the speaker is confronted with a linguistic or situational complication or an unexpected turn of events. Is able to comprehend a range of speech varieties (dialect and/or accent) or registers.	Responses are immediate, appropriate, and informative. Manages the speaker/listener relationship effectively.
Operational 4	Pronunciation, stress, rhythm, and intonation are influenced by the first language or regional variation but only sometimes interfere with ease of understanding.	Basic grammatical structures and sentence patterns are used creatively and are usually well controlled. Errors may occur, particularly in unusual or unexpected circumstances, but rarely interfere with meaning.	Vocabulary range and accuracy are usually sufficient to communicate effectively on common, concrete, and work-related topics. Can often paraphrase successfully when lacking vocabulary in unusual or unexpected circumstances.	Produces stretches of language at an appropriate tempo. There may be occassional loss of fluency on transition from rehearsed or formulaic speech to spontaneous interaction, but this does not prevent effective communication. Can make limited use of discourse markers or	Comprehension is mostly accurate on common, concrete, and work-related topics when the accent or variety used is sufficiently intelligible for an international community of users. When the speaker is confronted with a linguistic or situational complication or an unexpected turn of events, comprehension	Responses are usually immediate, appropriate, and informative. Initiates and maintains exchanges even when dealing with an unexpected turn of events. Deals adequately with apparent misunderstandings by checking, confirming, or clarifying.

ICAO LANGUAGE PROFICIENCY RATING SCALE CONT.

- Level 4: Operational
  - Basics needed for pilots or controllers
- Level 5: Extended
  - Better than operational
  - Starts to seem more natural
- Level 6: Expert
  - Highest level
  - Should feel natural to the speaker
- A level 6 foreign speaker may be less proficient than even the most native English speaker

BASIC EXPECTATIONS

- Pilots required to use the radio, should not exercise the privileges of their license and rating unless they have a language proficiency endorsement on that license
  - In English or the language required for that flight
- The applicant for the language proficiency endorsement must demonstrate at least an operational level of proficiency
- Reevaluation depends on proficiency level
  - Four years for operational (level 6)
  - Six years for extended (level 5)
  - None for native or expert level non-native (level 6)

OPERATIONAL LEVEL OF LANGUAGE PROFICIENCY

- At the operational level, the applicant shall demonstrate the ability to:
  - Communicate effectively in voice-only and in face-to-face situations
  - Communicate on common and work-related topics with accuracy and clarity
  - Use appropriate communicative strategies to exchange messages and to recognize and resolve misunderstandings in a general or work-related context
  - Handle successfully the linguistic challenges presented by a complication or unexpected turn of events which occurs within the context of a routine work situation or communicative task with which they are otherwise familiar
  - Use a dialect or accent which is intelligible to the aeronautical community

INSTRUMENT RATING

- Holders of an instrument rating, in addition to abilities listed in the past two slides, must also be able to demonstrate their ability to use the English language at a level that allows them to:
  - Understand all the information relevant to the accomplishment of all phases of a flight, including flight preparation
  - Use radiotelephony in all phases of flight, including emergency situations
  - Communicate with other crew members during all phases of flight, including flight preparation.

INTERNATIONAL STANDARDS

- The current requirements for ELP license endorsement of operational personnel primarily are detailed in ICAO Annex 1 — Personnel Licensing
- Annex 1, 1.2.9, Language Proficiency (July 2018)
- As of November 3rd, 2022:
  - Pilots, ATC, and aeronautical station operators should be able to speak and understand the language which the radio communication occurs
    - This may be English (for international) or their native language for domestic
  - Pilots, ATC, and aeronautical station operators who demonstrate a proficiency below level 6 (expert) must be evaluated at intervals according to their personal proficiency level

REASSESSMENT PROCEDURES

- ICAO requires that language skills of pilots and controllers rated at:
  - Level 4 are reassessed every three years
  - Level 5 are reassessed every six years
  - Level 6 has no reassessment if skills do not diminish
- The main benefits of high international standards of aviation English is that:
  - Communications between aircraft crew and controllers are fully understood
    - Particularly when non-standard words and phrases are used
  - Improved language skills could help increase the situational awareness of flight crews in relation to other aircraft in the air and on the ground

COMMUNICATION

- The use of language for verbal communications adds the dimension of pronunciation within any language because of regional differences in speech dialect
  - May not be their first language
  - May have accents, talk to fast or slow, or use slang verbiage
- Use of Standard Aviation English phraseology helps reduce ambiguity in aircraft/ATC communication and supports a common understanding among speakers of both:
  - different native languages
  - the same native language, but who use, pronounce or understand words differently
- Difficulties in plain language (nonstandard) communications between ATC and Flight Crew have caused serious incidents and accidents or made response to circumstances much more difficult

AVIATION/PILOT ALPHABET

A = **Alpha** (al fah)
B = **Bravo** (brah voh)
C = **Charlie** (char lee)
D = **Delta** (del tah)
E = **Echo** (eck oh)
F = **Foxtrot** (foks trot)
G = **Golf** (golf)
H = **Hotel** (ho tell)
I = **India** (in dee ah)
J = **Juliett** (joe lee ett)
K = **Kilo** (key loh)
L = **Lima** (lee mah)
M = **Mike** (mike)
N = **November** (no vem ber)
O = **Oscar** (oss cah)
P = **Papa** (pah pah)
Q = **Quebec** (qwa beck)
R = **Romeo** (row me oh)
S = **Sierra** (see air rah)
T = **Tango** (tang go)
U = **Uniform** (you nee form)
V = **Victor** (vik tor)
W = **Whiskey** (wis key)
X = **X-ray** (ecks ray)
Y = **Yankee** (yang kee)
Z = **Zulu** (zoo loo)

STANDARD PHRASEOLOGY

- Standard phraseology reduces the risk that a message will be misunderstood and aids the read-back/hear-back process so that any error is quickly detected
- Standard phraseology is important, because it enables us to communicate quickly and effectively despite differences in language
- All radio talk uses standard phraseology
  - Every portion of a flights phraseology may be a little different from the other
- A good example of standard phraseology is the phonetic alphabet
  - Where every letter has an associated word

NON-STANDARD PHRASEOLOGY

- Non-standard phraseology is not recommended for pilots of different dialects or different first languages
  - It has been the cited as the root cause to many accidents throughout history
- Non-standard phraseology is simply communication that does not follow a specific standard format (general conversation)
- If using some non-standard phraseology, there should still be a good balance of standard phraseology occurring
  - Non-standard phraseology should only occur between people of a similar dialect AFTER standard phraseology has already been established

ACCIDENT: BRIEF OVERLOOK TENERIFE CANARY ISLANDS SPAIN 1977

- On 27 March 1977, a KLM Boeing 747 began their low visibility take-off at Tenerife without a take-off clearance
- A collision with a Pan AM Boeing 747 back taxing the same runway occurred. Both aircraft were destroyed by the impact and 583 people died
- The Investigation recommendations emphasized <u>the importance of standard phraseology in all normal radio communications</u> and avoidance of the phrase "take-off" in ATC Departure Clearances

REFERENCES

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- https://www.skybrary.aero/index.php/Work_in_progress:English_Language_Proficiency_Requirements
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- https://www.skybrary.aero/index.php/Standard_Phraseology
- https://www.skybrary.aero/index.php/Non-Standard_Phraseology
- https://www.translatemedia.com/us/blog-usa/english-considered-language-skies/#:~:text=At%20a%201944%20convention%20in,radio%20and%20between%20international%20crews.

STUDENT DISCUSSION BOARDS

Name:

Week 1

Discussion Board Grading Rubric (20 Points)

Category	Poor (1)	Fair (2)	Good (3)	Excellent (4)
Promptness/ Initiative **/4**	Fails to contribute to message board discussions.	Contributes to message board discussions only once per week and only one time per thread.	Contributes to message board discussions at least once per week and at least two times per thread.	Contributes to message board discussions three or more times per week and at least three times per thread.
Style and Grammar **/4**	Fails to demonstrate appropriate spelling and grammar or engages in inappropriate language or inappropriate discussions.	Demonstrates appropriate spelling and grammar consistent with personal emails, social media or other similar correspondence.	Demonstrates appropriate spelling and grammar consistent with business emails and other similar correspondence.	Demonstrates appropriate spelling and grammar consistent with publications and other similar formal correspondence.
Relevance **/4**	Fails to address the posted question or follow-up discussion.	Presents facts, evidence to counter arguments to posted questions or follow-up discussion in a few postings.	Presents facts, evidence to counter arguments to posted questions or follow-up discussion in several postings.	Presents facts, evidence to counter arguments to posted questions or follow-up discussion in a majority of postings.
Stimulation **/4**	Fails to address the posted question.	Adequately addresses the posted question (and any follow-up questions)	Adequately addresses the posted question and contributes to further discussion.	Adequately addresses the posted question and stimulates further discussion.
Synthesis **/4**	Fails to synthesize any key concepts from the readings or previous posts within the posting.	Synthesizes at least one key concept from the readings or previous posts within the posting.	Synthesizes at least two key concepts from the readings or previous posts within the posting.	Synthesizes at least three key concepts from the readings or previous posts within the posting.
Discussion Board Assignment Total Points: /20				
Discussion Board evaluations will utilize the following grading rubric. Students will be evaluated based on their general contributions to class (discussion board) discussions and respect for other members of the class with the course discussions. Students will be evaluated on their knowledge and understanding of key course concepts based on the quality of their discussion board contributions. In order to attain a satisfactory course score, students are strongly encouraged to engage in discussion board activity within each thread on at least three (3) different occasions per thread.				

1. Column

   Discussion Board Wk 2 ()

2. Points Possible

   20

3. Description

STATISTICS

Count	15
Minimum Value	0.00
Maximum Value	19.00
Range	19.00
Average	12.06666
Median	13.00
Standard Deviation	6.91343
Variance	47.79555

STATUS DISTRIBUTION

Null	0
In Progress	0
Needs Grading	0
Exempt	0

GRADE DISTRIBUTION

Greater than 100	0
90 - 100	7
80 - 89	0
70 - 79	0
60 - 69	1
50 - 59	3
40 - 49	1
30 - 39	0
20 - 29	0
10 - 19	0
0 - 9	3
Less than 0	0

Name: [redacted]

Week 2

Discussion Board Grading Rubric (20 Points)

Category	Poor (1)	Fair (2)	Good (3)	Excellent (4)
Promptness/ Initiative **3/4**	Fails to contribute to message board discussions.	Contributes to message board discussions only once per week and only one time per thread.	Contributes to message board discussions at least once per week and at least two times per thread.	Contributes to message board discussions three or more times per week and at least three times per thread.
Style and Grammar **4/4**	Fails to demonstrate appropriate spelling and grammar or engages in inappropriate language or inappropriate discussions.	Demonstrates appropriate spelling and grammar consistent with personal emails, social media or other similar correspondence.	Demonstrates appropriate spelling and grammar consistent with business emails and other similar correspondence.	Demonstrates appropriate spelling and grammar consistent with publications and other similar formal correspondence.
Relevance **4/4**	Fails to address the posted question or follow-up discussion.	Presents facts, evidence to counter arguments to posted questions or follow-up discussion in a few postings.	Presents facts, evidence to counter arguments to posted questions or follow-up discussion in several postings.	Presents facts, evidence to counter arguments to posted questions or follow-up discussion in a majority of postings.
Stimulation **4/4**	Fails to address the posted question.	Adequately addresses the posted question (and any follow-up questions)	Adequately addresses the posted question and contributes to further discussion.	Adequately addresses the posted question and stimulates further discussion.
Synthesis **3/4**	Fails to synthesize any key concepts from the readings or previous posts within the posting.	Synthesizes at least one key concept from the readings or previous posts within the posting.	Synthesizes at least two key concepts from the readings or previous posts within the posting.	Synthesizes at least three key concepts from the readings or previous posts within the posting.
Discussion Board Assignment Total Points: 18/20				
Discussion Board evaluations will utilize the following grading rubric. Students will be evaluated based on their general contributions to class (discussion board) discussions and respect for other members of the class with the course discussions. Students will be evaluated on their knowledge and understanding of key course concepts based on the quality of their discussion board contributions. In order to attain a satisfactory course score, students are strongly encouraged to engage in discussion board activity within each thread on at least three (3) different occasions per thread.				

1. Column

   Discussion Board Wk 3 ()
2. Points Possible

   20
3. Description

STATISTICS

Count	15
Minimum Value	0.00
Maximum Value	20.00
Range	20.00
Average	15.20
Median	18.00
Standard Deviation	5.78734
Variance	33.49333

STATUS DISTRIBUTION

Null	0
In Progress	0
Needs Grading	0
Exempt	0

GRADE DISTRIBUTION

Greater than 100	0
90 - 100	9
80 - 89	0
70 - 79	0
60 - 69	1
50 - 59	3
40 - 49	1
30 - 39	0
20 - 29	0
10 - 19	0
0 - 9	1
Less than 0	0

Name: [redacted]

Week 3

Discussion Board Grading Rubric (20 Points)

Category	Poor (1)	Fair (2)	Good (3)	Excellent (4)
Promptness/ Initiative **2/4**	Fails to contribute to message board discussions.	Contributes to message board discussions only once per week and only one time per thread.	Contributes to message board discussions at least once per week and at least two times per thread.	Contributes to message board discussions three or more times per week and at least three times per thread.
Style and Grammar **3/4**	Fails to demonstrate appropriate spelling and grammar or engages in inappropriate language or inappropriate discussions.	Demonstrates appropriate spelling and grammar consistent with personal emails, social media or other similar correspondence.	Demonstrates appropriate spelling and grammar consistent with business emails and other similar correspondence.	Demonstrates appropriate spelling and grammar consistent with publications and other similar formal correspondence.
Relevance **2/4**	Fails to address the posted question or follow-up discussion.	Presents facts, evidence to counter arguments to posted questions or follow-up discussion in a few postings.	Presents facts, evidence to counter arguments to posted questions or follow-up discussion in several postings.	Presents facts, evidence to counter arguments to posted questions or follow-up discussion in a majority of postings.
Stimulation **2/4**	Fails to address the posted question.	Adequately addresses the posted question (and any follow-up questions)	Adequately addresses the posted question and contributes to further discussion.	Adequately addresses the posted question and stimulates further discussion.
Synthesis **2/4**	Fails to synthesize any key concepts from the readings or previous posts within the posting.	Synthesizes at least one key concept from the readings or previous posts within the posting.	Synthesizes at least two key concepts from the readings or previous posts within the posting.	Synthesizes at least three key concepts from the readings or previous posts within the posting.

Discussion Board Assignment Total Points: 11/20

Discussion Board evaluations will utilize the following grading rubric. Students will be evaluated based on their general contributions to class (discussion board) discussions and respect for other members of the class with the course discussions. Students will be evaluated on their knowledge and understanding of key course concepts based on the quality of their discussion board contributions. In order to attain a satisfactory course score, students are strongly encouraged to engage in discussion board activity within each thread on at least three (3) different occasions per thread.

1. Column

   Discussion Board Wk 4 ()
2. Points Possible

   20
3. Description

STATISTICS

Count	15
Minimum Value	0.00
Maximum Value	20.00
Range	20.00
Average	16.86666
Median	20.00
Standard Deviation	5.71392
Variance	32.64888

STATUS DISTRIBUTION

Null	0
In Progress	0
Needs Grading	0
Exempt	0

GRADE DISTRIBUTION

Greater than 100	0
90 - 100	12
80 - 89	0
70 - 79	0
60 - 69	0
50 - 59	1
40 - 49	1
30 - 39	0
20 - 29	0
10 - 19	0
0 - 9	1
Less than 0	0

Name[redacted]

Week 4

Discussion Board Grading Rubric (20 Points)

Category	Poor (1)	Fair (2)	Good (3)	Excellent (4)
Promptness/ Initiative **4/4**	Fails to contribute to message board discussions.	Contributes to message board discussions only once per week and only one time per thread.	Contributes to message board discussions at least once per week and at least two times per thread.	Contributes to message board discussions three or more times per week and at least three times per thread.
Style and Grammar **4/4**	Fails to demonstrate appropriate spelling and grammar or engages in inappropriate language or inappropriate discussions.	Demonstrates appropriate spelling and grammar consistent with personal emails, social media or other similar correspondence.	Demonstrates appropriate spelling and grammar consistent with business emails and other similar correspondence.	Demonstrates appropriate spelling and grammar consistent with publications and other similar formal correspondence.
Relevance **4/4**	Fails to address the posted question or follow-up discussion.	Presents facts, evidence to counter arguments to posted questions or follow-up discussion in a few postings.	Presents facts, evidence to counter arguments to posted questions or follow-up discussion in several postings.	Presents facts, evidence to counter arguments to posted questions or follow-up discussion in a majority of postings.
Stimulation **4/4**	Fails to address the posted question.	Adequately addresses the posted question (and any follow-up questions)	Adequately addresses the posted question and contributes to further discussion.	Adequately addresses the posted question and stimulates further discussion.
Synthesis **4/4**	Fails to synthesize any key concepts from the readings or previous posts within the posting.	Synthesizes at least one key concept from the readings or previous posts within the posting.	Synthesizes at least two key concepts from the readings or previous posts within the posting.	Synthesizes at least three key concepts from the readings or previous posts within the posting.
Discussion Board Assignment Total Points: 20/20				
Discussion Board evaluations will utilize the following grading rubric. Students will be evaluated based on their general contributions to class (discussion board) discussions and respect for other members of the class with the course discussions. Students will be evaluated on their knowledge and understanding of key course concepts based on the quality of their discussion board contributions. In order to attain a satisfactory course score, students are strongly encouraged to engage in discussion board activity within each thread on at least three (3) different occasions per thread.				

1. Column

   Discussion Board Wk 5 ()

2. Points Possible

   20

3. Description

STATISTICS

Count	15
Minimum Value	0.00
Maximum Value	20.00
Range	20.00
Average	16.86666
Median	20.00
Standard Deviation	5.46341
Variance	29.84888

STATUS DISTRIBUTION

Null	0
In Progress	0
Needs Grading	0
Exempt	0

GRADE DISTRIBUTION

Greater than 100	0
90 - 100	11
80 - 89	0
70 - 79	1
60 - 69	0
50 - 59	2
40 - 49	0
30 - 39	0
20 - 29	0
10 - 19	0
0 - 9	1
Less than 0	0

Name: [redacted]

Week 5

Discussion Board Grading Rubric (20 Points)

Category	Poor (1)	Fair (2)	Good (3)	Excellent (4)
Promptness/ Initiative **4/4**	Fails to contribute to message board discussions.	Contributes to message board discussions only once per week and only one time per thread.	Contributes to message board discussions at least once per week and at least two times per thread.	Contributes to message board discussions three or more times per week and at least three times per thread.
Style and Grammar **4/4**	Fails to demonstrate appropriate spelling and grammar or engages in inappropriate language or inappropriate discussions.	Demonstrates appropriate spelling and grammar consistent with personal emails, social media or other similar correspondence.	Demonstrates appropriate spelling and grammar consistent with business emails and other similar correspondence.	Demonstrates appropriate spelling and grammar consistent with publications and other similar formal correspondence.
Relevance **4/4**	Fails to address the posted question or follow-up discussion.	Presents facts, evidence to counter arguments to posted questions or follow-up discussion in a few postings.	Presents facts, evidence to counter arguments to posted questions or follow-up discussion in several postings.	Presents facts, evidence to counter arguments to posted questions or follow-up discussion in a majority of postings.
Stimulation **4/4**	Fails to address the posted question.	Adequately addresses the posted question (and any follow-up questions)	Adequately addresses the posted question and contributes to further discussion.	Adequately addresses the posted question and stimulates further discussion.
Synthesis **4/4**	Fails to synthesize any key concepts from the readings or previous posts within the posting.	Synthesizes at least one key concept from the readings or previous posts within the posting.	Synthesizes at least two key concepts from the readings or previous posts within the posting.	Synthesizes at least three key concepts from the readings or previous posts within the posting.
Discussion Board Assignment Total Points: 20/20				
Discussion Board evaluations will utilize the following grading rubric. Students will be evaluated based on their general contributions to class (discussion board) discussions and respect for other members of the class with the course discussions. Students will be evaluated on their knowledge and understanding of key course concepts based on the quality of their discussion board contributions. In order to attain a satisfactory course score, students are strongly encouraged to engage in discussion board activity within each thread on at least three (3) different occasions per thread.				

1. Column

   Discussion Board Wk 6 ()

2. Points Possible

   20

3. Description

STATISTICS

Count	15
Minimum Value	8.00
Maximum Value	20.00
Range	12.00
Average	17.86666
Median	20.00
Standard Deviation	3.48074
Variance	12.11555

STATUS DISTRIBUTION

Null	0
In Progress	0
Needs Grading	0
Exempt	0

GRADE DISTRIBUTION

Greater than 100	0
90 - 100	12
80 - 89	1
70 - 79	0
60 - 69	0
50 - 59	1
40 - 49	1
30 - 39	0
20 - 29	0
10 - 19	0
0 - 9	0
Less than 0	0

Name: [redacted]

Week 6

Discussion Board Grading Rubric (20 Points)

Category	Poor (1)	Fair (2)	Good (3)	Excellent (4)
Promptness/ Initiative **4/4**	Fails to contribute to message board discussions.	Contributes to message board discussions only once per week and only one time per thread.	Contributes to message board discussions at least once per week and at least two times per thread.	Contributes to message board discussions three or more times per week and at least three times per thread.
Style and Grammar **4/4**	Fails to demonstrate appropriate spelling and grammar or engages in inappropriate language or inappropriate discussions.	Demonstrates appropriate spelling and grammar consistent with personal emails, social media or other similar correspondence.	Demonstrates appropriate spelling and grammar consistent with business emails and other similar correspondence.	Demonstrates appropriate spelling and grammar consistent with publications and other similar formal correspondence.
Relevance **4/4**	Fails to address the posted question or follow-up discussion.	Presents facts, evidence to counter arguments to posted questions or follow-up discussion in a few postings.	Presents facts, evidence to counter arguments to posted questions or follow-up discussion in several postings.	Presents facts, evidence to counter arguments to posted questions or follow-up discussion in a majority of postings.
Stimulation **4/4**	Fails to address the posted question.	Adequately addresses the posted question (and any follow-up questions)	Adequately addresses the posted question and contributes to further discussion.	Adequately addresses the posted question and stimulates further discussion.
Synthesis **4/4**	Fails to synthesize any key concepts from the readings or previous posts within the posting.	Synthesizes at least one key concept from the readings or previous posts within the posting.	Synthesizes at least two key concepts from the readings or previous posts within the posting.	Synthesizes at least three key concepts from the readings or previous posts within the posting.

Discussion Board Assignment Total Points: 20/20

Discussion Board evaluations will utilize the following grading rubric. Students will be evaluated based on their general contributions to class (discussion board) discussions and respect for other members of the class with the course discussions. Students will be evaluated on their knowledge and understanding of key course concepts based on the quality of their discussion board contributions. In order to attain a satisfactory course score, students are strongly encouraged to engage in discussion board activity within each thread on at least three (3) different occasions per thread.

1. Column

   Discussion Board Wk 8 ()
2. Points Possible

   20
3. Description

STATISTICS

Count	15
Minimum Value	0.00
Maximum Value	20.00
Range	20.00
Average	17.20
Median	20.00
Standard Deviation	5.45527
Variance	29.76

STATUS DISTRIBUTION

Null	0
In Progress	0
Needs Grading	0
Exempt	0

GRADE DISTRIBUTION

Greater than 100	0
90 - 100	13
80 - 89	0
70 - 79	0
60 - 69	0
50 - 59	0
40 - 49	1
30 - 39	0
20 - 29	0
10 - 19	0
0 - 9	1
Less than 0	0

Name: [redacted]

Week 8

Discussion Board Grading Rubric (20 Points)

Category	Poor (1)	Fair (2)	Good (3)	Excellent (4)
Promptness/ Initiative **4/4**	Fails to contribute to message board discussions.	Contributes to message board discussions only once per week and only one time per thread.	Contributes to message board discussions at least once per week and at least two times per thread.	Contributes to message board discussions three or more times per week and at least three times per thread.
Style and Grammar **4/4**	Fails to demonstrate appropriate spelling and grammar or engages in inappropriate language or inappropriate discussions.	Demonstrates appropriate spelling and grammar consistent with personal emails, social media or other similar correspondence.	Demonstrates appropriate spelling and grammar consistent with business emails and other similar correspondence.	Demonstrates appropriate spelling and grammar consistent with publications and other similar formal correspondence.
Relevance **4/4**	Fails to address the posted question or follow-up discussion.	Presents facts, evidence to counter arguments to posted questions or follow-up discussion in a few postings.	Presents facts, evidence to counter arguments to posted questions or follow-up discussion in several postings.	Presents facts, evidence to counter arguments to posted questions or follow-up discussion in a majority of postings.
Stimulation **4/4**	Fails to address the posted question.	Adequately addresses the posted question (and any follow-up questions)	Adequately addresses the posted question and contributes to further discussion.	Adequately addresses the posted question and stimulates further discussion.
Synthesis **4/4**	Fails to synthesize any key concepts from the readings or previous posts within the posting.	Synthesizes at least one key concept from the readings or previous posts within the posting.	Synthesizes at least two key concepts from the readings or previous posts within the posting.	Synthesizes at least three key concepts from the readings or previous posts within the posting.
Discussion Board Assignment Total Points: 20 /20				
Discussion Board evaluations will utilize the following grading rubric. Students will be evaluated based on their general contributions to class (discussion board) discussions and respect for other members of the class with the course discussions. Students will be evaluated on their knowledge and understanding of key course concepts based on the quality of their discussion board contributions. In order to attain a satisfactory course score, students are strongly encouraged to engage in discussion board activity within each thread on at least three (3) different occasions per thread.				

1. Column

   Discussion Board Wk 9 ()
2. Points Possible

   20
3. Description

STATISTICS

Count	15
Minimum Value	11.00
Maximum Value	20.00
Range	9.00
Average	18.26666
Median	18.00
Standard Deviation	2.37954
Variance	5.66222

STATUS DISTRIBUTION

Null	0
In Progress	0
Needs Grading	0
Exempt	0

GRADE DISTRIBUTION

Greater than 100	0
90 - 100	13
80 - 89	0
70 - 79	1
60 - 69	0
50 - 59	1
40 - 49	0
30 - 39	0
20 - 29	0
10 - 19	0
0 - 9	0
Less than 0	0

Name: [redacted]

Week 9

Discussion Board Grading Rubric (20 Points)

Category	Poor (1)	Fair (2)	Good (3)	Excellent (4)
Promptness/ Initiative **4/4**	Fails to contribute to message board discussions.	Contributes to message board discussions only once per week and only one time per thread.	Contributes to message board discussions at least once per week and at least two times per thread.	Contributes to message board discussions three or more times per week and at least three times per thread.
Style and Grammar **4/4**	Fails to demonstrate appropriate spelling and grammar or engages in inappropriate language or inappropriate discussions.	Demonstrates appropriate spelling and grammar consistent with personal emails, social media or other similar correspondence.	Demonstrates appropriate spelling and grammar consistent with business emails and other similar correspondence.	Demonstrates appropriate spelling and grammar consistent with publications and other similar formal correspondence.
Relevance **4/4**	Fails to address the posted question or follow-up discussion.	Presents facts, evidence to counter arguments to posted questions or follow-up discussion in a few postings.	Presents facts, evidence to counter arguments to posted questions or follow-up discussion in several postings.	Presents facts, evidence to counter arguments to posted questions or follow-up discussion in a majority of postings.
Stimulation **4/4**	Fails to address the posted question.	Adequately addresses the posted question (and any follow-up questions)	Adequately addresses the posted question and contributes to further discussion.	Adequately addresses the posted question and stimulates further discussion.
Synthesis **4/4**	Fails to synthesize any key concepts from the readings or previous posts within the posting.	Synthesizes at least one key concept from the readings or previous posts within the posting.	Synthesizes at least two key concepts from the readings or previous posts within the posting.	Synthesizes at least three key concepts from the readings or previous posts within the posting.
Discussion Board Assignment Total Points: 20/20				
Discussion Board evaluations will utilize the following grading rubric. Students will be evaluated based on their general contributions to class (discussion board) discussions and respect for other members of the class with the course discussions. Students will be evaluated on their knowledge and understanding of key course concepts based on the quality of their discussion board contributions. In order to attain a satisfactory course score, students are strongly encouraged to engage in discussion board activity within each thread on at least three (3) different occasions per thread.				

1. Column

   Discussion Board Wk 10 ()
2. Points Possible

   20
3. Description

STATISTICS

Count	15
Minimum Value	0.00
Maximum Value	20.00
Range	20.00
Average	16.46666
Median	18.00
Standard Deviation	5.54817
Variance	30.78222

STATUS DISTRIBUTION

Null	0
In Progress	0
Needs Grading	0
Exempt	0

GRADE DISTRIBUTION

Greater than 100	0
90 - 100	12
80 - 89	0
70 - 79	0
60 - 69	0
50 - 59	1
40 - 49	1
30 - 39	0
20 - 29	0
10 - 19	0
0 - 9	1
Less than 0	0

Name: [redacted]

Week 10

Discussion Board Grading Rubric (20 Points)

Category	Poor (1)	Fair (2)	Good (3)	Excellent (4)
Promptness/ Initiative **2/4**	Fails to contribute to message board discussions.	Contributes to message board discussions only once per week and only one time per thread.	Contributes to message board discussions at least once per week and at least two times per thread.	Contributes to message board discussions three or more times per week and at least three times per thread.
Style and Grammar **3/4**	Fails to demonstrate appropriate spelling and grammar or engages in inappropriate language or inappropriate discussions.	Demonstrates appropriate spelling and grammar consistent with personal emails, social media or other similar correspondence.	Demonstrates appropriate spelling and grammar consistent with business emails and other similar correspondence.	Demonstrates appropriate spelling and grammar consistent with publications and other similar formal correspondence.
Relevance **2/4**	Fails to address the posted question or follow-up discussion.	Presents facts, evidence to counter arguments to posted questions or follow-up discussion in a few postings.	Presents facts, evidence to counter arguments to posted questions or follow-up discussion in several postings.	Presents facts, evidence to counter arguments to posted questions or follow-up discussion in a majority of postings.
Stimulation **2/4**	Fails to address the posted question.	Adequately addresses the posted question (and any follow-up questions)	Adequately addresses the posted question and contributes to further discussion.	Adequately addresses the posted question and stimulates further discussion.
Synthesis **2/4**	Fails to synthesize any key concepts from the readings or previous posts within the posting.	Synthesizes at least one key concept from the readings or previous posts within the posting.	Synthesizes at least two key concepts from the readings or previous posts within the posting.	Synthesizes at least three key concepts from the readings or previous posts within the posting.
Discussion Board Assignment Total Points: 11/20				
Discussion Board evaluations will utilize the following grading rubric. Students will be evaluated based on their general contributions to class (discussion board) discussions and respect for other members of the class with the course discussions. Students will be evaluated on their knowledge and understanding of key course concepts based on the quality of their discussion board contributions. In order to attain a satisfactory course score, students are strongly encouraged to engage in discussion board activity within each thread on at least three (3) different occasions per thread.				

1. Column

   Discussion Board Wk 11 ()

2. Points Possible

   20

3. Description

STATISTICS

Count	15
Minimum Value	0.00
Maximum Value	20.00
Range	20.00
Average	16.33333
Median	18.00
Standard Deviation	5.22387
Variance	27.28888

STATUS DISTRIBUTION

Null	0
In Progress	0
Needs Grading	0
Exempt	0

GRADE DISTRIBUTION

Greater than 100	0
90 - 100	11
80 - 89	0
70 - 79	1
60 - 69	0
50 - 59	2
40 - 49	0
30 - 39	0
20 - 29	0
10 - 19	0
0 - 9	1
Less than 0	

Name: [redacted]

Week 11

Discussion Board Grading Rubric (20 Points)

Category	Poor (1)	Fair (2)	Good (3)	Excellent (4)
Promptness/ Initiative **3/4**	Fails to contribute to message board discussions.	Contributes to message board discussions only once per week and only one time per thread.	Contributes to message board discussions at least once per week and at least two times per thread.	Contributes to message board discussions three or more times per week and at least three times per thread.
Style and Grammar **4/4**	Fails to demonstrate appropriate spelling and grammar or engages in inappropriate language or inappropriate discussions.	Demonstrates appropriate spelling and grammar consistent with personal emails, social media or other similar correspondence.	Demonstrates appropriate spelling and grammar consistent with business emails and other similar correspondence.	Demonstrates appropriate spelling and grammar consistent with publications and other similar formal correspondence.
Relevance **4/4**	Fails to address the posted question or follow-up discussion.	Presents facts, evidence to counter arguments to posted questions or follow-up discussion in a few postings.	Presents facts, evidence to counter arguments to posted questions or follow-up discussion in several postings.	Presents facts, evidence to counter arguments to posted questions or follow-up discussion in a majority of postings.
Stimulation **4/4**	Fails to address the posted question.	Adequately addresses the posted question (and any follow-up questions)	Adequately addresses the posted question and contributes to further discussion.	Adequately addresses the posted question and stimulates further discussion.
Synthesis **3/4**	Fails to synthesize any key concepts from the readings or previous posts within the posting.	Synthesizes at least one key concept from the readings or previous posts within the posting.	Synthesizes at least two key concepts from the readings or previous posts within the posting.	Synthesizes at least three key concepts from the readings or previous posts within the posting.
Discussion Board Assignment Total Points: 18/20				
Discussion Board evaluations will utilize the following grading rubric. Students will be evaluated based on their general contributions to class (discussion board) discussions and respect for other members of the class with the course discussions. Students will be evaluated on their knowledge and understanding of key course concepts based on the quality of their discussion board contributions. In order to attain a satisfactory course score, students are strongly encouraged to engage in discussion board activity within each thread on at least three (3) different occasions per thread.				

1. Column

   Discussion Board Wk 13 ()

2. Points Possible

   20

3. Description

STATISTICS

Count	15
Minimum Value	8.00
Maximum Value	20.00
Range	12.00
Average	17.60
Median	18.00
Standard Deviation	3.87814
Variance	15.03999

STATUS DISTRIBUTION

Null	0
In Progress	0
Needs Grading	0
Exempt	0

GRADE DISTRIBUTION

Greater than 100	0
90 - 100	13
80 - 89	0
70 - 79	0
60 - 69	0
50 - 59	0
40 - 49	2
30 - 39	0
20 - 29	0
10 - 19	0
0 - 9	0
Less than 0	0

Name: [redacted]

Week 13

Discussion Board Grading Rubric (20 Points)

Category	Poor (1)	Fair (2)	Good (3)	Excellent (4)
Promptness/ Initiative **3/4**	Fails to contribute to message board discussions.	Contributes to message board discussions only once per week and only one time per thread.	Contributes to message board discussions at least once per week and at least two times per thread.	Contributes to message board discussions three or more times per week and at least three times per thread.
Style and Grammar **4/4**	Fails to demonstrate appropriate spelling and grammar or engages in inappropriate language or inappropriate discussions.	Demonstrates appropriate spelling and grammar consistent with personal emails, social media or other similar correspondence.	Demonstrates appropriate spelling and grammar consistent with business emails and other similar correspondence.	Demonstrates appropriate spelling and grammar consistent with publications and other similar formal correspondence.
Relevance **4/4**	Fails to address the posted question or follow-up discussion.	Presents facts, evidence to counter arguments to posted questions or follow-up discussion in a few postings.	Presents facts, evidence to counter arguments to posted questions or follow-up discussion in several postings.	Presents facts, evidence to counter arguments to posted questions or follow-up discussion in a majority of postings.
Stimulation **4/4**	Fails to address the posted question.	Adequately addresses the posted question (and any follow-up questions)	Adequately addresses the posted question and contributes to further discussion.	Adequately addresses the posted question and stimulates further discussion.
Synthesis **3/4**	Fails to synthesize any key concepts from the readings or previous posts within the posting.	Synthesizes at least one key concept from the readings or previous posts within the posting.	Synthesizes at least two key concepts from the readings or previous posts within the posting.	Synthesizes at least three key concepts from the readings or previous posts within the posting.

Discussion Board Assignment Total Points: 18/20

Discussion Board evaluations will utilize the following grading rubric. Students will be evaluated based on their general contributions to class (discussion board) discussions and respect for other members of the class with the course discussions. Students will be evaluated on their knowledge and understanding of key course concepts based on the quality of their discussion board contributions. In order to attain a satisfactory course score, students are strongly encouraged to engage in discussion board activity within each thread on at least three (3) different occasions per thread.

1. Discussion Board Wk 14 ()
2. Points Possible

   20
3. Description

STATISTICS

Count	15
Minimum Value	0.00
Maximum Value	20.00
Range	20.00
Average	16.93333
Median	20.00
Standard Deviation	6.68796
Variance	44.72888

STATUS DISTRIBUTION

Null	0
In Progress	0
Needs Grading	0
Exempt	0

GRADE DISTRIBUTION

Greater than 100	0
90 - 100	13
80 - 89	0
70 - 79	0
60 - 69	0
50 - 59	0
40 - 49	0
30 - 39	0
20 - 29	0
10 - 19	0
0 - 9	2
Less than 0	0

Name: [redacted]

Week 14

Discussion Board Grading Rubric (20 Points)

Category	Poor (1)	Fair (2)	Good (3)	Excellent (4)
Promptness/ Initiative **4/4**	Fails to contribute to message board discussions.	Contributes to message board discussions only once per week and only one time per thread.	Contributes to message board discussions at least once per week and at least two times per thread.	Contributes to message board discussions three or more times per week and at least three times per thread.
Style and Grammar **4/4**	Fails to demonstrate appropriate spelling and grammar or engages in inappropriate language or inappropriate discussions.	Demonstrates appropriate spelling and grammar consistent with personal emails, social media or other similar correspondence.	Demonstrates appropriate spelling and grammar consistent with business emails and other similar correspondence.	Demonstrates appropriate spelling and grammar consistent with publications and other similar formal correspondence.
Relevance **4/4**	Fails to address the posted question or follow-up discussion.	Presents facts, evidence to counter arguments to posted questions or follow-up discussion in a few postings.	Presents facts, evidence to counter arguments to posted questions or follow-up discussion in several postings.	Presents facts, evidence to counter arguments to posted questions or follow-up discussion in a majority of postings.
Stimulation **4/4**	Fails to address the posted question.	Adequately addresses the posted question (and any follow-up questions)	Adequately addresses the posted question and contributes to further discussion.	Adequately addresses the posted question and stimulates further discussion.
Synthesis **4/4**	Fails to synthesize any key concepts from the readings or previous posts within the posting.	Synthesizes at least one key concept from the readings or previous posts within the posting.	Synthesizes at least two key concepts from the readings or previous posts within the posting.	Synthesizes at least three key concepts from the readings or previous posts within the posting.
Discussion Board Assignment Total Points: 20/20				
Discussion Board evaluations will utilize the following grading rubric. Students will be evaluated based on their general contributions to class (discussion board) discussions and respect for other members of the class with the course discussions. Students will be evaluated on their knowledge and understanding of key course concepts based on the quality of their discussion board contributions. In order to attain a satisfactory course score, students are strongly encouraged to engage in discussion board activity within each thread on at least three (3) different occasions per thread.				

Course Assessment Form

Course: ASCI 4900 Senior Seminar
Semester Taught: Spring 2021
Number of Students in Course: 18

Student Learning Outcome Assessed	Assessment Results: (Indicate what % of class achieved a minimum 70%)	Benchmark achieved? (Benchmark: 80% of students will score a minimum of 70% = "C")
A. Apply mathematics, science, and applied sciences to aviation-related disciplines.	1) Mid-Term - **94.5%** 2) Final Exam - **89%** 3) Assignment Submission (12 Weeks) - **94.5%**	Yes
B. Analyze and interpret data.	1) Discussion – 1 (12 Weeks) – **94.5%** 2) Mid-Term - **94.5%** 3) Final Exam - **89%** 4) Assignment Submission - **94.5%**	Yes
D. Make professional and ethical decisions.	1) Discussion – 1 (12 Weeks) - **94.5%** 2) Mid-Term - **94.5%** 3) Final Exam - **89%** 4) Assignment Submission - **94.5%**	Yes
G. Assess contemporary issues.	1) Discussion – 2 (12 Weeks) – **94.5%** 2) Mid-Term - **94.5%** 3) Final Exam - **89%**	Yes

Course Assessment (Intended Use of Results)
The following will be used for recommendations to improve the quality of course delivery based on assessment results. These recommendations may include prerequisite change; changing course outline and adding more topics; adding a third assessment; changing the course sequence, etc.

**Attach description of assignment used for assessment and samples of student work.*

Assignments Used for Assessments

Midterm Questions (250 Marks)

Due: 3/21/2021 (11.59 PM CST)

(Note: References must be included for each question. APA format is not required)

1) **Aviation Professional (50 Marks) (Min 300-500 words)**

   Aviation is a dynamic industry that requires qualifications, skills, and responsibilities to become professionals in the field. As an aviation professional, you need certain traits, abilities, and ethics to get the job done as scheduled.

   - Define what is professionalism in aviation to you?
   - Why do you think professionalism is required and important in aviation?
   - Explain certain traits, abilities, skills, responsibilities, and ethics that individuals in aviation should maintain, learn, and implement to become professionals.

2) **International Aviation (50 Marks) (Min 300-500 words)**

   Aviation is a global industry that connects countries through the air. International air transportation requires standards and regulations to ensure safe navigation, which is planned and developed by ICAO internationally and FAA nationally.

   - Define when and why ICAO was established and explain in detail the five strategic objectives of ICAO?
   - Explain how the FAA engages internationally to increase global safety standards and enhance aviation safety and efficiency.

3) **Aviation & Airport Security (50 Marks) (Min 300-500 words)**

   Aviation is a high security demanded industry where one small threat could lead to massive disasters. As a professional in the aviation field, you need to understand the importance of security.

   Read the following "National Strategy for Aviation Security of USA (NSAS)" document of the year 2018 and answer the following questions. Link to the document (**https://www.infragard-la.org/wp-content/uploads/2019/03/National-Strategy-for-Aviation-Security-of-the-USA-Dec-2018.pdf**)

- What are the six threats outlined in the NSAS to the US Aviation Ecosystem?
- What are the three categories of emerging disruptive technology/risk outlined in NSAS?
- What are the four strategic objectives outlined in NSAS?
- What are the five strategic actions mentioned in NSAS to achieve the strategic objectives?

4) **Diversity in Aviation (50 Marks) (Min 300-500 words)**

   Aviation is a very less diversified industry compared to other industries. In 2017, there were 92.9% White, 3.28% Black, 1.85% Asian, and 1.97% Other races aircraft pilots and flight engineers in the USA. Many aviation organizations and FAA had implemented programs to increase diversity in aviation.

   - In your perspective, why do you think it is important to increase diversity in aviation?
   - Mention specific programs implemented by US aviation organizations to increase diversity?
   - Provide your suggestions and thoughts to increase diversity in aviation.

5) **Aviation Safety and Human Factors (50 Marks) (Min 300-500 words)**

   Aviation is a risk-prone industry where safety is paramount. Regardless of any position in the aviation field, every individual in aviation needs to understand the importance of safety.

   - Define and explain in detail about different programs and initiatives implemented and established by the FAA related to aviation/aircraft/airport safety. (Hint: Go to FAA website and search for "Programs and Initiatives")
   - Which program or initiative is related to the job that you wish to pursue after graduation, and how is that program or initiative related and useful to your dream job?

Final Exam Questions

Due: 5/17/2021 (11.59 PM CST)

(Note: References must be included as appropriate)

6) **Sustainability in Aviation (40 Marks)**

- What are the roles and responsibilities of aviation stakeholders (government institutions, airlines, aircraft manufacturing companies, fuel producers, and aviation fuel distributers) in promoting Sustainable Aviation Fuels? **(150 Words)**

  (**Hint:** Refer to Sustainable Aviation Fuels Guide of ICAO)

- Read the article "*Business Aviation and Sustainability: An Industry with a Good Story to Tell"* and provide your summary. **(150 words)**

  Link to Article: https://www.icao.int/environmental-protection/Documents/EnvironmentalReports/2019/ENVReport2019_pg177-181.pdf

7) **Aviation Environmental Issues (40 Marks)**

- Define FAA CLEEN and CLEEN II programs? Explain the developments of different manufacturing companies involved in CLEEN? **(150 words)**

  (**Hint:** Refer United States Aviation Greenhouse Gas Emissions Reduction Plan)

- Provide different electric and hybrid-electric aircraft projects in United States. Describe the details and technical specifications of each project like category, MTOW, range, seat capacity, speed, payload, entry in service, etc.

  (**Hint:** Refer to Electric and Hybrid Aircraft Platform for Innovation (E-HAPI))

8) **Aircraft Maintenance and Importance (40 Marks)**

Watch the videos and provide your insights about each video in 75 words

- https://youtu.be/abVTKt2Db_0 **(50 words)**

  (**Title:** Dealing with Challenges in the Aircraft Maintenance Business – AIN)

- https://youtu.be/0OEt6SkdA4M **(50 words)**

(**Title:** You Can't Fly Without Us - The World of Aviation Maintenance)

- https://youtu.be/xmiGL-1qvuE **(50 words)**

  (**Title:** Federal Aviation Administration on Aviation Maintenance)

- https://youtu.be/gMcH2-icZKA **(50 words)**

  (**Title:** Aviation Maintenance Shortage)

- https://youtu.be/fsTshp6zZys **(50 words)**

  (**Title:** US Airlines' Outsourcing of Aircraft Maintenance)

9) Aircraft Accident Investigation (40 Marks)

*Read the **Case Study -1** document attached in the blackboard in final exam folder and complete the **worksheet** which is at the end of the document and post your answers here.*

CHAIN OF EVENTS

1)

2)

3)

4)

5)

6)

7)

8)

SAFETY NETS

1)

2)

3)

4)

5)

6)

7)

8)

10) **Careers in Aviation and Aviation Management (40 Marks)**

- What is the job or career that you wish to pursue after graduation or in the future? Describe the importance of that job in aviation. **(150 words)**
- What are the roles and responsibilities of the job that you want to pursue?
- Why do you want to pursue that job? Provide any statistics related to the job like salary, number of job available in the USA, racial diversification, etc. (Provide references) **(150 words)**
- Research and provide five best job searching (posting) websites for aviation jobs?

11) **Reflection about the Course (50 Marks)**

- What did you learn from this course? Did this course content reach your expectations? **(150 words)**
- What did you like and dislike in the course? Is there anything that you want to change in the course? **(150 words)**
- What are your suggestions for the instructor to improve the content of the course? **(150 words)**

Assignment Week – 2 (Question)

1) Watch the video (Case Study 1: Crossed Wires)

https://www.youtube.com/watch?v=566P25kin2g&list=PLjm7k4QRw7_sS1o7hWroEh4tmi27kliVW&index=2&ab_channel=CASABriefing

2) Open the links provided below. The links include the personal and organizational professionalism traits that should be practiced and implemented by individuals in aviation industry according to National Business Aviation Association (NBAA).

https://nbaa.org/aircraft-operations/safety/professionalism-in-business-aviation/personal-professionalism/

https://nbaa.org/aircraft-operations/safety/professionalism-in-business-aviation/organizational-professionalism/

Task: From the links provided, identify atleast five personal or organizational professional traits not practiced by the characters in the video. Also, explain the situation/scenario to justify the trait.

List of Characters:

Man 1: Roy (Mechanic 1)

Man 2: No Name (Assistant 1)

Man 3: Harry (Manager)

Man 4: Bruce (Customer)

Women 1: Leanne (accountant/auditor)

Man 5: Jonny (Mechanic 2)

Man 6: Jase (Assistant 2)

Example:

1) Maturity: Man 2 (Assistant 1) does not show qualities of responsible adult. He is not paying attention to Roy (Mechanic 1). He is texting on the phone and wearing earphones while at work.

Upload the pdf or word file in the assignment submit

Assignment Week – 3 (Question)

Aviation Ambassador (25 Points)

Upload a Power Point Presentation (PPT) of minimum five slides (excluding title and end slides) based on the criteria below. Use pictures and tables as appropriate.

Assume you are an aviation ambassador representing a country at an international conference. Hence, in the PPT you are required to discuss the pros and cons of aviation aspects of your country.

- If you are an US citizen then select a country other than USA.
- If you are an international student then select a country other than USA and the country you came from.
- If you are in the US military working in another country then select a country other than USA and the country that you are working.

Prepare a PPT about your country based on the questions below. The questions in red color are required by every student to be answered in their PPT. The remaining are suggestions but not limited ideas for PPT.

- Which organization regulates and controls the aviation aspects in your country.
- How many airports, airlines, aviation organizations, aerospace manufacturing companies etc. are there in your country.
- Do you think the aviation field in your country is very well developed, or do you think there is a need for development? If so, what should be developed and what do you suggest.
- Describe the aviation emphasis in the military of your country.
- Compared to the USA, where does your country stand in aviation aspects overall?
- Is there any critical information or an incident that happened in your country that should be remembered or caused a change to the aviation perspective like 9/11 in the USA?
- How many aircraft accidents happened in your country, and what is the most common cause of those accidents?
- How many flight trainings schools, clubs etc. are there in your country? How much does it cost to become a pilot? How much do pilots earn in your country?
- What is the history of aviation in your country?
- Describe the aviation security and safety aspects of your country. Is there an organization that handles the security in your country? If yes, what are the measures implemented by that organization to attain security? If no, why there is no organization in your country and how security is provided to passengers at airports and in aircrafts?

Assignment Week – 4 (Question)

Group – 1
https://www.youtube.com/watch?v=qu5FdrsGZoA&ab_channel=CNN
https://www.youtube.com/watch?v=hWDolIZeDyE&ab_channel=CBSN
https://www.youtube.com/watch?v=StXLEsaqx8E&ab_channel=TRUEfoe
https://www.youtube.com/watch?v=cHRdaXfWTc8&ab_channel=Denver7%E2%80%93TheDenverChannel
https://www.youtube.com/watch?v=Iwysq6TrnWQ&ab_channel=HLN
https://www.youtube.com/watch?v=LuPEcLAUOE0&ab_channel=WCVBChannel5Boston
https://www.youtube.com/watch?v=WlFjPRr88G8&ab_channel=ABCActionNews
https://www.youtube.com/watch?v=ziyW73g25kY&ab_channel=Denver7%E2%80%93TheDenverChannel

Group – 2
https://www.youtube.com/watch?v=s8qhLMY88vE&ab_channel=CBSDFW
https://www.youtube.com/watch?v=ddAZA-l64-0&ab_channel=WXYZ-TVDetroit%7CChannel7
https://www.youtube.com/watch?v=i-9R8Zg5nQ0&ab_channel=CNN
https://www.youtube.com/watch?v=5yKeufLazdc&ab_channel=FoxBusiness
https://www.youtube.com/watch?v=SRCj9BiwYwQ&ab_channel=CBSDFW
https://www.youtube.com/watch?v=MpbJ1fhwBdE&ab_channel=FOX9Minneapolis-St.Paul
https://www.youtube.com/watch?v=0AgvjeLD8L4&ab_channel=FoxNews
https://www.youtube.com/watch?v=ft-uegedSaY&ab_channel=RTAmerica
https://www.youtube.com/watch?v=4e6GW6fRX_E&ab_channel=NBCNews
https://www.youtube.com/watch?v=Y_JqoonBgwQ&ab_channel=RTAmerica

Watch the videos in Group – 1 and answer the question below in one or two paragraphs.
Did TSA employees cross the line or are they just doing their job? What do you think about the pat-down procedures? Are they important? If yes, why? If no, why? Did pat-down procedures become a cliché (losing the actual meaning)? Do you support the TSA employees or the passengers in the videos? Who should be enlightened: is it the passengers or the TSA employees? How and Why?

Watch the videos in Group – 2 and answer the question below in one or two paragraphs.
Is TSA following its mission? Are the TSA employees doing their duty effectively? Is TSA failing? Do you think TSA should be replaced? Do you support privatizing airport security? What are the advantages and disadvantages of privatizing airport security in your opinion? Is TSA maintaining or implementing required security measures to attain security? If not, do you have any suggestions for TSA on how to attain more security?

Assignment Week – 5 (Question)

In US, approximately 93% of pilots are White. Also, approximately only 6% of the pilots are Women. Aviation industry lacks diversity. Furthermore, Boeing estimates that by 2038, United States will be in a need of nearly 581,000 new personnel including pilots, cabin crew, and technicians in commercial, business, and general aviation.

Your task this week is to identify, brainstorm, or develop five ideas to increase the diversity in the aviation industry. Write the five ideas and upload a word or pdf file.

Example: 1) Idea 1: Implementing aviation outreach programs in minority neighborhoods to youth to create awareness about aviation.

2) Idea 2

3) Idea 3

4) Idea 4

5) Idea 5

Sample of Students Work

Discussion – 1 & 2 (Submissions)

1) International aviation plays a role in each country's economic which is been influenced by the pandemic we are dealing with. This article illustrates how airports are affected by the pandemic and how it decreases the amount of people arriving on each airport. Many countries have shut off their airports which gives a significant reduce of the amount of people travelling or willing to travel. However, after few months a positive increase on the number of travellers has been seen but it is not enough to compensate the losses that many airline and industries have delt with. Moreover, many airlines have been forced to reduce their capacity in-flight to control over the spread of COVID-19 which also influences the airlines and its revenue. "The Covid-19 pandemic with a sudden loss of traffic and revenue resulted in an existential threat to airports and the aviation industry. Given the enormous negative impact of the COVID-19 virus on the airport business, it will take a long time for the situation to return to normal. It is expected that the economic crisis following the pandemic will lead to a lower demand for air transportation"(Štimac, 2021, 140). COVID-19 has influenced airport design all over the world. Many countries are willing to change or rebuild their airport and be to face any other influencers such as COVID-19 to avoid having the same loss again. Finally, COVID-19 has impacted all international aviation industries over the world to put and require more health secured places to have travellers to establish their own health safety.
   Štimac, I., Pivac, J., Bračić, M., & Drljača, M. (2021). The Impact of Covid-19 Pandemic on the Future Airport Passenger Terminals Design. International Journal for Traffic & Transport Engineering, 11(1), 129–142. https://doi.org/10.7708/ijtte.2021.11(1).08
   https://eds.b.ebscohost.com/eds/pdfviewer/pdfviewer?vid=22&sid=afe27b85-e48e-44b5-bcdb-e946b38d08fb%40sessionmgr103

2) I wanted to address something that is not Covid related but still something that is impacting the aviation industry. In the new article I found it explains how over the past few years the rate in which animals have been getting hit by planes have been increasing. The article then goes to disclose there is about a 68% increase of animal plane impacts annually. The animals would often get hit during the landing phase of the flight with the common animal changing per country. The most common animals to be hit by region are bats and deer in the United States, Bats in Australia, and rabbits and dog like carnivores in Canada, Germany, and the United Kingdom. The damages from the animal impacts cost the United States over $103 Million in repairs alone. There have even been reports from countries that animals such as giraffes have been hit by planes as well. Due to the implications of these animal impacts people are calling for a new plan to deal with strike mitigation. Website: https://www.sciencedaily.com/releases/2021/02/210203090518.html

3) Website: https://www.aerotime.aero/27384-saudia-to-order-70-new-aircraft-from-boeing-and-airbus

   Summary: One of the greatest news I have heard recently is that one of the air carriers that are based in Saudi Arabia is trying to expand its fleet. Saudia Airlines have been trying to expand its fleet for a previous couple of years. However, now is the time that Saudia airlines have ordered approximately 70 of the Airbus 321neo, Boeing 787, and 777 aircraft. Saudia is a known air carrier back in my hometown. Also, Saudia airlines have been improving from a year to another. The vision that this carrier has been following was planned before, and now is the time they work for it. So, Saudia has been known to get some awards internationally such as the most improved airlines internationally. The air carrier overall is a great one and it's following its mission and its goal. Therefore, if the airline needs to improve and gets better, then it has it follow the company's goals that are placed for the short-term, and the long-term too!

4) Sustainability is really important in the aviation field and I will summarize an article that talks about this. The article “The Impact of Fuel Increase and Currency Exchange Depreciation on Indonesia Aviation Industry Sustainability” talks about how the fuel has impact in the aviation industry regarding its price if it increases or decreases. There was a big population growth in Indonesia after the 1998 and in the 2012, there was a big economic growth too, so the aviation industry had to develop accordingly. That was noticed when new small airlines were seen more than usual such as AW Air, Jatayu Air, Lion Air, Sriwijaya Air, Adam Air, Water Aerfata Papua. These new airlines made the Indonesian aviation industry to be too competitive. Through the article, a research and analysis were done to know the rate of expansion in Indonesia. Researchers explored and found that some airlines who had perfect strategies planned before could survive form that fuel price increase. The fuel price was increasing every two weeks which make quite hard for airlines who are not strategic planned to catch up and still survive. The currency exchange was also a major problem because the fuel price isn’t valued by rupiah, which is the Indonesian currency, so it’s so hard to catch up when we compare the rupiah to the dollar or pound. “With the weakening of the rupiah against the British Pound, the condition made the airline industry very upset” (Simarmata et al., 2021). These airlines who survived the price increase have done things that are related to fuel conservation policy such as applying Cost Index, focusing on flight technic and maintenance and other things.

References

Simarmata, J., N, C. A., & Rizaldy, W. (2014). The Impact of Fuel Increase and Currency Exchange Depreciation on Indonesia Aviation Industry Sustainability. 199-208. Retrieved March 31, 2021, from file:///Users/user/Downloads/18-26-1-PB.pdf

5) The Air Force has deployed several of its aircrafts to Poland for an agile combat exercise. While US officials have said the exercise was planned months in advance, the exercise was initiated right after Russia executed a large buildup on the Ukraine border. F-15s from RAF Lakenheath, England, F-16s from Spangdahlem AB, Germany, and C-130s from Ramstein AB, Germany, arrived in Poland Monday for the exercise and will remain after the event to train with the Polish air force. US Air Forces Europe-Air Forces Africa commander, General Jeffrey Harrigan, stated this is an opportunity for both forces to hone their combat skills, build strong bonds, and learn to operate seamlessly as a joint force. The exercise is said to be a routine event and not a reaction to Russia’s recent activity. According to Pentagon spokesman John Kirby, Russia has deployed more than 10,000 troops to the Ukraine border, which was much larger than in 2014 when Russia invaded Crimea. Officials foresee Russia invading Ukraine as a low-to-medium risk. https://www.airforcemag.com/f-15s-f-16s-c-130s-deploy-for-exercise-in-poland/

Midterm Questions (250 Marks)

Due: 3/21/2021 (11.59 PM CST)

(Note: References must be included for each question. APA format is not required)

1) **Aviation Professional (50 Marks) (Min 300-500 words)**

Aviation is a dynamic industry that requires qualifications, skills, and responsibilities to become professionals in the field. As an aviation professional, you need certain traits, abilities, and ethics to get the job done as scheduled.

- Define what is professionalism in aviation to you?
- Why do you think professionalism is required and important in aviation?
- Explain certain traits, abilities, skills, responsibilities, and ethics that individuals in aviation should maintain, learn, and implement to become professionals.

Professionalism in aviation personally means learning the skills and responsibility needed for the job in your career. It takes years of learning and experiences to become a professional and acquire the skills necessary, but most important is being responsible. Professionalism is required and important in aviation because we are dealing with millions of lives every day. Everyone who works in the aviation industry plays a critical role in maintaining the safety of passengers and our infrastructure. According to the NBAA, "the Safety Committee has identified three main reasons professionalism should be a top safety focus area for business aviation first, professionalism can have an immediate and positive impact on aviation safety, professionalism can also elevate business aviation's reputation now and into the future, and professionalism can shift the industry's focus beyond surviving to leading and thriving." Developing professional skills and traits in aviation are highly important because lacking some skills can make the difference between life-or-death situations. Some of the traits individuals should maintain in aviation are communication skills, ethical skills, teamwork, time management, and flexibility. Communication is key in aviation and used effectively to maintain a safe environment. Poor communication has also been one of the main causes in many accidents like the Tenerife crash. Ethical skills will attract investors and passengers by creating a sense of professional core values. Ethics within aviation can create a professional environment and improve performance. Professionalism requires teamwork to ensure that while flying or being a manager, we work together to promote safety but also taking responsibility for our individual and group actions. Time management skills makes an individual a professional. An airline's reputation is based on on-time performances and any delays can cause the company thousands of dollars. Last but not least, flexibility is important as the aviation industry changes we need to adapt and deal with change and uncertainty. Anything can happen in aviation whether it is political, accidents, weather, or unruly passengers, employees need to be flexible and professional when dealing with these situations. Overall, professionalism is a must when working in the airline industry. We are transporting passengers, goods, and services all around the world and over the years we have seen how professionalism can shape an airline industry. Maintaining professionalism will save lives and create a safe environment for passengers, employees, and investors.

Resources:

https://nbaa.org/aircraft-operations/safety/professionalism-in-business-aviation/what-does-professionalism-mean-to-me/

2) **International Aviation (50 Marks) (Min 300-500 words)**

Aviation is a global industry that connects countries through the air. International air transportation requires standards and regulations to ensure safe navigation, which is planned and developed by ICAO internationally and FAA nationally.

- Define when and why ICAO was established and explain in detail the five strategic objectives of ICAO?
- Explain how the FAA engages internationally to increase global safety standards and enhance aviation safety and efficiency.

The international civil aviation organization was established on April 4th, 1947 and its headquarters are in Montreal, Canada. ICAO was established to "create and promote safety and efficient development of civil aviation" (ICAO). ICAO creates and regulates aviation safety, security efficiency, and environmental protection. The five strategic objectives of ICAO are safety, air navigation capacity and efficiency, security and facilitation, economic development of air transport, and environmental protection. ICAO enhances the safety in aviation all around the globe by focusing on the state's regulatory oversight capabilities. They created the global aviation safety plan (GASP) which its purpose is to "continually reduce fatalities and the risk of fatalities by guiding the development of a harmonized aviation safety strategy, regional aviation safety strategy, and national safety plans" (ICAO). The second objective is air navigation capacity and efficiency. ICAO wants to "increase the capacity and improve efficiency of the global civil aviation system" (ICAO). They focus on upgrading air navigations and infrastructure by developing new procedures and optimizing their systems. The third objective is security and facilitation. ICAO recommends measures and enhance the global civil security by requiring countries to address prevention of terrorist attacks, cybersecurity, border controls, aircraft and cargo security, and any new threats that emerge. The fourth objective is economic development of air transport. ICAO implements economic policies and supporting activities to develop an economically viable civil aviation system. Air transportation is important for the overall economy as it promotes trade and economic growth of nations. The last objective is environmental protection. ICAO promotes activities that try to minimize the adverse effects of aviation activity. They partner with the United Nations to implement protection policies and practices.

The FAA engages internationally to increase global safety standards and enhance aviation safety and efficiency by "assessing whether foreign civil aviation authority complies with international aviation standards" (FAA). The FAA is in charge of inspecting the infrastructure of air traffic around the world. They also promote the growth of aviation as it helps with the economic growth of the United States and other nations. The FAA works closely with ICAO to collaborate in various innovation projects that will modernize the airspace and ensure the safety of passengers. In addition, the FAA is responsible of assessing whether the air carriers that operate into the United States comply with the safety standards established by ICAO. They have a program called the international aviation safety assessment. ICAO promotes safety around the world in the aviation industry and the FAA continues to work closely with ICAO to implement safety measures in the United States and around the globe.

References:

https://www.icao.int/secretariat/TechnicalCooperation/Pages/history.aspx

https://www.icao.int/about-icao/Council/Pages/Strategic-Objectives.aspx

https://www.icao.int/safety/GASP/Pages/Home.aspx

https://www.faa.gov/news/fact_sheets/news_story.cfm?newsId=22694

3) **Aviation & Airport Security (50 Marks) (Min 300-500 words)**

Aviation is a high security demanded industry where one small threat could lead to massive disasters. As a professional in the aviation field, you need to understand the importance of security.

Read the following "National Strategy for Aviation Security of USA (NSAS)" document of the year 2018 and answer the following questions. Link to the document (**https://www.infragard-la.org/wp-content/uploads/2019/03/National-Strategy-for-Aviation-Security-of-the-USA-Dec-2018.pdf**)

- What are the six threats outlined in the NSAS to the US Aviation Ecosystem?
- What are the three categories of emerging disruptive technology/risk outlined in NSAS?
- What are the four strategic objectives outlined in NSAS?
- What are the five strategic actions mentioned in NSAS to achieve the strategic objectives?

The six threats outline in the NSAS to the United States Aviation Ecosystem are terrorist, hostile nation states, criminals, insiders, foreign intelligence activities, and the spread of infectious diseases via air travel. Terrorists have shown their clear intent and capabilities to harm the United States and its global interest doing so using aviation as one of their targets. Another threat for the US are hostile nation states that can cause international threats or unintentional consequences. The next threat are criminal organizations that try to smuggle weapons and drugs through our borders. Insiders can also pose particular threats because of their proximity and knowledge of our aviation system. Foreign intelligence activities are a threat as other nations try to develop insights of our aviation ecosystems. Lastly, the spread of infectious diseases can occur very fast through air travel like H1N1 and Covid-19.

The three categories of emerging disruptive technology are cyber connectivity, increase reliance on radio frequency, and proliferation of unmanned aircraft systems. Our aviation industry is always enhancing its systems but that increases cyber-attacks and threats. The increase of reliance on radio frequency also can become vulnerable to purposeful interference. Lastly, the growth of unmanned aircraft around the globe is concerning as people can use drones for irresponsible or malicious operations.

The four strategic objectives are to protect the US and its global interest, maximize aviation ecosystem security, enhance resilience and mitigate damage, and effectively engage in international, domestic, and private sector partners. The US and its global interests must be protected at all times through detection, deterrence, and prevention of terrorist or criminal acts. Maximizing aviation ecosystem security demands an extremely high standard of security but will keep a balance on the economic impact. Enhancing resilience and mitigating damage will expedite recovery from an attack and stabilize any infrastructural damages. Lastly, ensuring the safety and security of the aviation ecosystem will require engagement internationally, domestically, and within the private sector for prosperity.

The five strategic actions to achieve objectives are maximizing domain awareness, anticipate threats and assess vulnerabilities, strengthen aviation security, ensure continuity, and enhance international cooperation. Maximizing domain awareness is critical to deterring and preventing terrorist attacks and protecting the US. Anticipating any threats will allow us to better have an idea on how to assess any situation that can occur. The US will generate a unified response to threats. Strengthening our aviation security will create a resilience against expected and unexpected risks. The insurance of continuity is important to maintain vital commerce and defense readiness in the aftermath of a physical or cyber-attack. Lastly, enhancing international cooperation will improve the global aviation security equal with or exceeding US standards.

Resources

https://www.infragard-la.org/wp-content/uploads/2019/03/National-Strategy-for-Aviation-Security-of-the-USA-Dec-2018.pdf

4) **Diversity in Aviation (50 Marks) (Min 300-500 words)**

Aviation is a very less diversified industry compared to other industries. In 2017, there were 92.9% White, 3.28% Black, 1.85% Asian, and 1.97% Other races aircraft pilots and flight engineers in the USA. Many aviation organizations and FAA had implemented programs to increase diversity in aviation.

- In your perspective, why do you think it is important to increase diversity in aviation?
- Mention specific programs implemented by US aviation organizations to increase diversity?
- Provide your suggestions and thoughts to increase diversity in aviation.

Increasing diversity is important in every industry. The aviation industry has predominantly been male and white dominated but over the years diversity has emerged in the industry. Many programs have helped minorities become pilots and aviation enthusiast. Increasing diversity has many positive outcomes to any industry as it creates a variety of perspectives. These new perspectives that come from a variety of cultures and backgrounds have shown to increase creativity and innovations. According to the article Talent Fly, "companies with higher workplace diversity solve problems faster… [leading] to better decision-making results." Increasing diversity also leads to higher profits as companies make better decisions and have higher employee engagement. In aviation, we are working with people from all over the world and being part of these experiences will help us, aviators, learn from many cultural and experience backgrounds. This is important because in the cockpit we are communicating with our fellow co pilots, flight attendants, and air traffic controllers who can all be from different parts of the world, different gender, or have a different religious background than you. Over the years, many universities and organizations have increased programs that aim to help minority students and women pilots achieve their dream of flying or working in the aviation industry. Programs such as women in aviation, Latino pilot association, and African Americans in aviation are just some of the programs that are helping minorities become pilots through guidance, financial help, and mentors. There are other programs that are aiming at high school students to begin an interest in aviation. Saint Louis University Parks College brings high school girls to experience what it is like to become a pilot. Their annual event brings girls from the Saint Louis area to encourage them in pursuing an aviation education. Personally, I think that to bring diversity into any industry we need to examine what are the challenges and difficulties minority students are having that does not allow them to pursue their desirable career. Some things that the aviation industry can provide are inclusive benefits, mentoring programs, and raise awareness. Many minority students cannot attend school because of a lack of sufficient funds or endure personal family challenges. If companies were to offer help in these matters, we could see a rise in minority applicants and diversity in the workplace. Introducing mentoring programs can also help students smoothly transition into the workplace and feel comfortable. The most important thing is to raise awareness within the aviation industry to ensure that recruiters and managers know we need to increase diversity and all the benefits it comes with. Making this topic a regular conversation will foster a positive inclusion.

Resources:

https://www.talentlyft.com/en/blog/article/244/top-10-benefits-of-diversity-in-the-workplace

5) **Aviation Safety and Human Factors (50 Marks) (Min 300-500 words)**

Aviation is a risk-prone industry where safety is paramount. Regardless of any position in the aviation field, every individual in aviation needs to understand the importance of safety.

- Define and explain in detail about different programs and initiatives implemented and established by the FAA related to aviation/aircraft/airport safety. (Hint: Go to FAA website and search for "Programs and Initiatives")
- Which program or initiative is related to the job that you wish to pursue after graduation, and how is that program or initiative related and useful to your dream job?

The FAA establishes many programs and initiatives as part of their job is to promote the safety of aviation, aircrafts, and airports. Some of these programs and initiatives include FAA guidance, Super Bowl procedures, NextGen weather, noise research and programs, and aviation and airport safety. The FAA guidance includes materials such as advisory circulars, orders and notices, handbooks and manuals, and much more. Advisory circulars "provide a single, uniform, agency-wide system to deliver advisory material to FAA customers and the aviation community." Orders and notices are mainly for FAA personnel, but the aviation community can also access them if they are interested. All handbooks and manuals are published and updated "periodically to reflect new FAA regulations and technical developments." Everything the FAA publishes is on the guidance sections. Another program is the Super Bowl procedures. The FAA plays a huge role during this time to manage air traffic and security provisions. They provide information for people planning to attend the large event and for airlines and private pilots. Currently, our aviation industry is transitioning to the NextGen systems and the FAA is developing various weather components and research programs. New state of the art technology is bringing more information on weather and modernizing services for pilots and crew. Another interesting program is the noise research. The FAA “has a robust research program to understand and ease the impacts of aviation noise on communities.” Their programs include aviation environmental design tools, airport cooperative research program, and continuous lower emissions energy and noise program. These programs continuous give us information on how we can lower noise pollution in our communities that surround airports. The program closely related to what I want to pursue after graduation is aviation safety. This is a broad topic, but I would like to focus more on cabin safety. We all know that the FAA has regulations on cabin safety, but I believe that we are not doing our best to keep our cabin safe. Over the years, we have seen unruly passengers get on aircrafts and passengers not complying with the rules or regulations. This has sometimes forced airliners to conduct an emergency landing to address the issue, costing thousands of dollars. This program will be useful to learn as I grow my career because it is an issue that can put the rest of the passengers at risk or in danger. It only takes one passenger to put a flight in danger and/or costing the airline millions of dollars in damages.

Resources:

https://www.faa.gov

Senior Seminar Midterm Questions

1. According to the NBAA "Professionalism in aviation is the pursuit of excellence through discipline, ethical behavior and continuous improvement." To me, professionalism is an adherence to a set of standards specific to one's career field. Every career field has its own standards. There are professional athletes that must have work ethic and skills, but do not necessarily need the character or morals that other careers may require. Aviation is a dangerous environment where people's lives are on the line. That is why I think that the criteria for aviation professionals must meet to be considered real "professionals" in the field is so extensive. Professionalism is required in aviation because people's lives are at stake and it is important that those tasked with leading our industry act accordingly. If aviation professionals were to act immature, it would not only look bad on those who were trying to uphold the standards, it would also be detrimental to safety. That is why skill is not the only requirement for aviation professionals. Aviation professionals also must be mature, have strong character, maintain integrity, and be dependable all in addition to being skilled in their field. In order to become a "professional," one must first and foremost be an expert in their field. Whether that be flying, maintenance, or some other job such as dispatch. In addition to becoming skilled in one's specific field, it is important to gain knowledge on the other fields so that one can be adaptable in any situation and so one can begin to understand the big picture and know how other people's roles fit in with theirs. For example, a mechanic might want to take some flying lessons in order to better understand what the pilot's who fly the aircraft they work on are dealing with while in the air. It will also help the mechanic to see things from the pilot's point of view. It also works the other way around, the pilots should become more knowledgeable on maintenance procedures so that they can see things from the maintenance technician's perspective.
   https://nbaa.org/aircraft-operations/safety/professionalism-in-business-aviation/

2. ICAO, the International Civil Aviation Organization, is a agency of the United Nations that is tasked with adopting standards and recommended practices for member states. ICAO was founded with the signing of the Chicago Convention in 1944. At the time, 54 nations had signed onto the convention. They signed onto this to put the foundation down for standardized practices and procedures and to develop international aviation safely and so that international aviation would be founded "on the basis of equality of opportunity and operated soundly and economically."

The five strategic objectives of ICAO are improving aviation safety, air navigation capacity and efficiency, security and facilitation, economic development, and environmental protection. Aviation safety is basically standards put in place to make sure that each country is running its aviation system in a safe manner so to protect human life. Air navigation capacity and efficiency is about allowing each country's aviation system to operate to its best potential by creating air traffic control systems that are effective and efficient. For an aviation system to function, it must be secure from nefarious behavior, which is why ICAO has made security a priority. Air transportation is important for a country's economic development because it can facilitate the country's industries by bringing in workers, supplies, and even tourists. Environmental protection is a fairly new focus of the aviation industry. The industry has come to realize how damaging the burning of fossil fuels actually is to the environment and has begun to do things to reduce the carbon footprint. The FAA's office of international affairs is the office that focuses on international outreach. In order to promote safety, they work with other US agencies, foreign civil aviation authorities, international organizations, and other international stakeholders to ensure common standards, prioritization of technical assistance, and proper training.

https://www.faa.gov/news/fact_sheets/news_story.cfm?newsId=22694

https://www.icao.int/about-icao/History/Pages/default.aspx

https://www.icao.int/secretariat/TechnicalCooperation/Pages/Objectives_EN.aspx

3. The six threats outlined by the National Strategy for Aviation Security are terrorists, hostile nation states, criminals, insiders, infectious disease spread, and foreign intelligence activities. In hindsight, the most important one of those was obviously infectious disease spread. This document is from December, 2018 so it is interesting to see that they had that as one of the threats considering not many people were thinking about a possible global pandemic at the time of this document's writing. The three categories of emerging technologies that are considered a risk to aviation are cyber connections that could be open to cyber attack, increased reliance on the radio frequency (RF) spectrum that could open the system up to intentional interference, and the increasing use of unmanned aerial systems (UAS) that can be disruptive to the air navigation system and dangerous to manned aircraft that do not see them. Out of those, I believe that the proliferation of UAS is going to affect the air transport system the most. Evidence of this is the drone incident at London Gatwick airport in 2018 where the entire airport was shut down due to drone activity. The four strategic objectives outlined by this document are to "Protect the United States and its Global Interests in the Aviation Ecosystem," to Maximize Aviation Ecosystem Security while Maintaining Aviation Safety and Balancing United States Economic Impact," to "Enhance Resilience, Mitigate Damage, and Expedite Recovery," and to

"Effectively Engage International, Domestic, and Private Sector Partners." Out of those, the one I think is the most important is to maximize security while balancing economic impact. All of the restrictions placed on aviation have a huge impact on the airlines and other aviation entities that is often overlooked by legislators and government agencies. The five strategic actions mentioned are maximizing domain awareness, anticipating threats and assess vulnerabilities to and from the aviation ecosystem, strengthening layered aviation security, ensuring continuity and promoting resilience of the aviation domain, and enhancing international cooperation.
https://www.infragard-la.org/wp-content/uploads/2019/03/National-Strategy-for-Aviation-Security-of-the-USA-Dec-2018.pdf

4. Diversity can be beneficial to an organization because it can bring about many different perspectives and many different opinions on issues that can add to the collective experience of the company. Also, having a workforce that is representative of the society that that workforce lives in can help with human resources issues such as hiring as well as turnover. Some people who see themselves represented in a specific group are going to be more likely to want to join that group. For example, a little girl who meets a female pilot may be more inclined to want to become a pilot because that female pilot became her role model. Also, people who have things in common with other workers in their organization are less likely to feel alienated and more likely to stay at that organization. Some specific programs that I have found that have the purpose of increasing workforce diversity in aviation are FEAM's diversity programs. FEAM is an aviation engineering and maintenance organization that is creating programs diversity, equity, and inclusion (DEI) programs to increase diversity in their workforce and in aviation as a whole. Some of the things that they have done are offering yearly scholarships to historically black colleges such as Florida Meriam University, supporting the Greater Miami Aviation Association which in turn brings a lot of Latino involvement into aviation, and supporting Women in Aviation International and their goals of increasing female representation in aviation. Some things that I can recommend to increase diversity in aviation are mentorship programs and changing of hiring practices. As I said earlier, if someone has a mentor that they can identify with, they will be more likely to want to join that field . Changing hiring and promoting practices to be "colorblind" or "genderblind" could remove any sorts of biases that happened when businesses seek to hire and promote people.
https://aviationweek.com/mro/fast-5-feam-pursues-technology-workforce-diversity-initiatives

5. The Next Generation Air Transportation System (NextGen) is an FAA program to modernize the United State's airspace system to allow for safer, more efficient, and more predictable flying. This is a very welcome change in the aviation community as our former air traffic management system was very dated and sometimes even working with analog technology. This program has been slowly being implemented over the last several years and will still be gradually implemented to 2025 and beyond. NextGen is focusing on three main areas of our airspace system: communication, navigation, and surveillance. Some areas that are seeing changes are: routing systems, GPS tracking systems, weather surveillance, and radar systems. Some examples of changes being made in our airspace system as a result of NextGen are: mandatory ADS-B on all aircraft, Expanded Low Visibility Operations (ELVO) through infrastructure to reduce ceiling and visibility minimums, and a Traffic Flow Management System (TFMS) which can predict traffic volume gaps and surges to increase efficiency in routing. This will significantly impact myself and all other newcomers to the aviation industry because it is currently being put into place. Whether I decide I want to go the Air Traffic Control route or pilot route, it will significantly impact me. As an air traffic controller, NextGen would significantly increase my capacity to deal with scenarios because the new Nextgen traffic management systems takes some workload off of the controller and also increases their situational awareness through new displays as well as better data visualization. As a pilot, NextGen will help by giving the best routing and times for flights making on-time departures and arrivals more common. According to the FAA, NextGen is about halfway done. This means that as I enter into the aviation sector, depending on my job, I may play a role in some of the implementation of this new Airspace Management System in the form of working with or testing new technologies or installing new infrastructure.

https://www.faa.gov/nextgen/what_is_nextgen/

Final Exam Questions

Due: 5/17/2021 (11.59 PM CST)

(Note: References must be included as appropriate)

6) <u>Sustainability in Aviation (40 Marks)</u>

- What are the roles and responsibilities of aviation stakeholders (government institutions, airlines, aircraft manufacturing companies, fuel producers, and aviation fuel distributers) in promoting Sustainable Aviation Fuels? **(150 Words)**

  (**Hint:** Refer to Sustainable Aviation Fuels Guide of ICAO)

Government institutions, airlines, aircraft manufacturing companies, fuel producers, and aviation fuel distributers all have a role in promoting Sustainable Aviation Fuels (SAF); as do consumers. Governments are situated to implement public policy, specifically "with regard to environment and fuel quality specification," in order to encourage stakeholder's participation in developing and using SAF. (Sustainable Aviation Fuels Guide, 2018, p. 12) Airlines can help promote SAF by making a commitment to use more of it, despite the cost. More use of SAF by airlines encourages more research and drives production, which in the long run should work to lower the price of SAF, all while having a positive impact on the environment. Aircraft manufacturers can have an impact by making sure that "their systems and parts, such as engines and the fuel delivery system…[are] reliable and with good performance across all expected operational conditions." (Sustainable Aviation Fuels Guide, 2018, p. 14) Fuel producers have a role in getting past the "initial learning stage" and work towards "progressive costs reduction" much like prior innovative fuel blends. (Sustainable Aviation Fuels Guide, 2018, p. 15) Finally, fuel distributors have a responsibility to be familiar with the "regulations and procedures required by the aviation fuel market." (Sustainable Aviation Fuels Guide, 2018, p. 15)

Reference: ICAO, Sustainable Aviation Fuels Guide (2018).

- Read the article "*Business Aviation and Sustainability: An Industry with a Good Story to Tell*" and provide your summary. **(150 words)**

  Link to Article: https://www.icao.int/environmental-protection/Documents/EnvironmentalReports/2019/ENVReport2019_pg177-181.pdf

The article, "Business Aviation and Sustainability: An Industry with a Good Story to Tell" explains that "business aviation has long been on the forefront of technological innovation." Many of these innovations, including winglets and state-of-the-art avionics, were first realized in the business aviation sector before being widely adopted across the aviation industry. Business aviation is always "seek[ing] ways for flying more efficiently" – not so much for the impact on the environment, but as a way towards financial sustainability. This innovative mentality is carrying over to the field of carbon-emissions reduction. As an industry, business aviation, under the leadership of the International Business Aviation Council (IBAC) and the General Aviation Manufacturer's Association (GAMA), made a commitment to "a 2% improvement in fuel efficiency per year from 2010 until 2020, with carbon-neutral growth from 2020 onwards and a 50% reduction in carbon emissions by 2050…" When way the IBAC sees a path forward in this area is the use of Sustainable Aviation Fuels (SAF). The IBAC is working to encourage governments to work on policies that will encourage the research, development, and distribution of SAF.

Reference: Business Aviation and Sustainability: An Industry With a Good Story to Tell By International Business Aviation Council (IBAC) on behalf of the Business Aviation SAF Coalition

7) **Aviation Environmental Issues (40 Marks)**

- Define FAA CLEEN and CLEEN II programs? Explain the developments of different manufacturing companies involved in CLEEN? **(150 words)**

  (**Hint:** Refer United States Aviation Greenhouse Gas Emissions Reduction Plan)

CLEEN is the Continuous Lower Energy, Emissions, and Noise program that was launched by the FAA in 2010. CLEEN II is a five-year follow-on program that will cover 2015 through 2020. It is "a collaborative partnership with five aviation manufacturers to develop technologies the will reduce noise, emissions, and fuel burn; to enable alternative jet fuel use; and to expedite integration of these technologies into current and future aircraft./" Boeing is working on Adaptive Trailing-Edge technology that will improve wing "aerodynamic efficiency and decrease noise during approach," and a Ceramic Matrix Composite acoustic nozzle that will withstand higher temperatures to reduce fuel consumption. Honeywell is working on "new coatings, an impeller that can withstand higher temperature, advanced low leakage air seals, and improved turbine colling" that will enable engines to run hotter to increase cycle thermal efficiency. Pratt & Whitney is working on turbofan technologies that will reduce "aircraft noise and fuel consumption through increase engine efficiency." Lastly, Rolls-Royce in working on the Dual-Wall Turbine Airfoil and a Ceramic Matrix Composite Blade Track to reduce fuel consumption.

Reference: The United States Aviation Greenhouse Gas Emissions Reduction Plan. (2015).

- Provide different electric and hybrid-electric aircraft projects in United States. Describe the details and technical specifications of each project like category, MTOW, range, seat capacity, speed, payload, entry in service, etc.

  (**Hint:** Refer to Electric and Hybrid Aircraft Platform for Innovation (E-HAPI))

Project	Type	Category	MTOW (kg)	Pax	Target Entry in Service	Cruise Altitude (ft)	Cruise Speed (kts)	Payload (kg)	Range (km)	Engine Power (kW)

Uber Elevate	Electric	VTOL	n/a	4	2023	1-2,000	130	498.96	97	n/a
Kitty Hawk Cora	Electric	VTOL	n/a	2	2022	Up to 3,000	95	n/a	100	n/a
Airbus City Airbus	Electric	VTOL	2199.2	4	2023	n/a	59	n/a	96	8*100
Boeing Sugar VOLT	Hybrid-electric	Large Commercial Aircraft	n/a	135	2030-2050	n/a	n/a	n/a	6482	n/a
DigiSky SkySpark	Electric	General Aviation/Recreational Aircraft	n/a	1	n/a	n/a	162	n/a	500	65

8) Aircraft Maintenance and Importance (40 Marks)

Watch the videos and provide your insights about each video in 75 words

- https://youtu.be/abVTKt2Db_0 **(50 words)**

  (**Title:** Dealing with Challenges in the Aircraft Maintenance Business – AIN)

Maintenance is the biggest cost to the operation of business aircraft. Aircraft owners and operators are cost-conscious all in the face of rising maintenance costs. Costs are rising for a variety of reasons: There is a skilled labor shortage in the industry that is driving wages up to attract more technicians which drives labor rates up; and the labor shortage isn't just felt in the maintenance field, but also in the parts manufacturing as well. Paying attention to the location of the maintenance provider to cut down on ferry flights, researching a provider's average aircraft maintenance time to minimize the time your aircraft is out of service, and the overall costs are all things an aircraft owner/operator can do to help save on maintenance expense. Owners and operators should also pay close attention to whether the provider has experience on the specific make and model. This serves to provide better maintenance at better quality that effectively lowers costs.

- https://youtu.be/0OEt6SkdA4M **(50 words)**

  (**Title:** You Can't Fly Without Us - The World of Aviation Maintenance)

Aviation connects 3 million people a day and is vital in the connection of cultures and integral to commerce, all of this relies on maintenance professionals. Few understand the intricacies of aviation maintenance and the effect that it has to safety, reliability, comfort, and operational performance of their flying experience. A vast network of 4,700 certificated repair facilities worldwide, with a workforce of nearly 500,000 people exist to support the needs of the aviation industry. Most oof this work takes place in specialized independent facilities that work on the individual components of an aircraft versus the entire aircraft itself. Specialists in difference areas work on complex and high-tech gear in ways that reduce maintenance and provide a high level of quality within these independent facilities rather than at airline specific facilities.

- https://youtu.be/xmiGL-1qvuE **(50 words)**

  (**Title:** Federal Aviation Administration on Aviation Maintenance)

The FAA is engaged in finding ways to combat the lack of awareness of aviation as a career path. Many young people aren't aware of the career paths that are available straight out of high school and almost directly to the workforce. The FAA has a goal to provide outreach to the younger generation to connect students with opportunities to enter the aviation workforce. With the employment opportunities expected to grow, it's always a good time to explore career opportunities in aviation.

- https://youtu.be/gMcH2-icZKA **(50 words)**

  (**Title:** Aviation Maintenance Shortage)

The global aviation industry earns 1.3 trillion dollars and is responsible for 10 million jobs. These facts make it an economic powerhouse and the demand in the aviation industry is only looking to increase and grow. Aircraft manufacturers and airlines are all looking for qualified and skilled technicians to fill their growing ranks to meet high demand and replace retiring technicians.

- https://youtu.be/fsTshp6zZys **(50 words)**

  (**Title:** US Airlines' Outsourcing of Aircraft Maintenance)

This video explored the trend of airlines abdicating their historic responsibility of fixing and maintaining their own aircraft. Prior to airline de-regulation, airlines were required to provide passengers a properly trained flight crew in an airworthy aircraft that was maintain by the arilne itself. Since de-regulation, airlines have begun to transfer their maintenance costs to outsourced maintenance repair stations that the FAA is not well positioned to monitor. An Office of the Inspector General report found that FAA oversight did not ensure the work completed at repair stations met FAA standards and that the FAA lacks rigor to identify deficiencies or verify they have been addressed. The video concluded that the perception of air maintenance as a cost to be avoided rather than a legal and moral obligation is an industry wide problem and encouraged aviation industry personnel to education themselves and speak out against being asked to turn a blind eye to airworthiness threats.

9) Aircraft Accident Investigation (40 Marks)

*Read the **Case Study -1** document attached in the blackboard in final exam folder and complete the **worksheet** which is at the end of the document and post your answers here.*

CHAIN OF EVENTS

9) "A" checks were performed 32.5 hours early and found that tires 1 and 4 were low on air pressure.

10) A 4-hour maintenance stop found that 5 tires needed to be changed. The aircraft was called back into service with the replacement tires loaded for later replacement. The tires were never replaced.

11) The crew was out until 2300 for a 0300 wake up call.

12) Pre-flight inspection revealed low tire pressure / tires were never inflated because the nitro tanks at the field were empty.

13) During the take-off roll, the front tires and wheels failed.

14) The landing gear was retracted into the undercarriage while still on fire.

15) Subsequent fire in the wheel well caused loss of pressurization, loss of hydraulics, structural damage, and loss of control.

16) The aircraft dived and rolled to crash.

SAFETY NETS

9) Maintenance schedules

10) Use of checklists

11) Proper maintenance records

12) Journey Log documentation

13) Maintenance records preservation

14) ATC communication

15) Cockpit Resource Management

16) Crew rest

10) **Careers in Aviation and Aviation Management (40 Marks)**

- What is the job or career that you wish to pursue after graduation or in the future? Describe the importance of that job in aviation. **(150 words)**
- What are the roles and responsibilities of the job that you want to pursue?

The job I look forward to pursing is that of the airline manager. Airline mangers oversee every aspect of airline operation and the coordination between the different departments and sections of an airline. They work with other entities such as airports and regulatory agencies and work to recruit and retain staff for the various part of the airline business. With airline mangers being involved in so much, their success is vital to the success of the overall business. Good managers bring in good long-term strategies that translate to success. So often, businesses, and airlines are not exception, fall prey to short-term thinking in order to enhance their bottom line. The irony is that short-term thinking ends up being terrible for the long-term bottom line. Airlines need good managers that understand these principles in order to continue provide employment to those that rely on them for their livelihoods, and to continue to provide a safe service that the traveling public relies ono the airlines to provide as well.

- Why do you want to pursue that job? Provide any statistics related to the job like salary, number of job available in the USA, racial diversification, etc. (Provide references) **(150 words)**

Aviation has been a love of mine since my earliest recollections. Through various life decisions, the job of a pilot has eluded me and now that I am 41 years old with a family to support, the education and commitment to flight training is not one I can afford. I have found that I can still be involved in the aviation community by working as an airline manager. This position fits it nicely with my experience as a leader within the US Navy for the majority of my career. I enjoy being in supervisory and management positions, and the leadership role is one I have found I am good at. With a salary range of $117,198 on the low end, $261,538 on the high end, with a median of $174,264, this job would be able to provide a lifestyle that will support my family and other endeavors – possibly even recreational flying! (salary.com) The Bureau of Labor Statistics doesn't have a job outlook specific to aviation managers, but managers can expect a 6% growth rate. The rate is not that high and airlines can be more volatile than other sectors, but I am confident that my 20 years of experience in the Navy and my proven record of leadership, I will be able to find a job in the industry that I enjoy so much.

- Research and provide five best job searching (posting) websites for aviation jobs?

1. Indeed.com
2. Linkedin.com
3. Ziprecruiter.com
4. Airline specific websites (American/Delta/United…)
5. Aircraft manufacturer specific websites (Boeing/Lockheed…)

11) **Reflection about the Course (50 Marks)**

- What did you learn from this course? Did this course content reach your expectations? **(150 words)**

I learned that I need to keep up to date with what is going on in the aviation industry. Having been removed from the private sector after 17 years in the Navy (3 left to go!) I am not abreast of the latest happenings and changes of the industry. Reading weekly news and researching specific topics has helped to focus me on certain publications and websites that I will continue to use after this course.

While the course content seemed more self-drive, that wasn't a bad thing. Being able to explore your interests week by week on a broad range of topics helped to keep me motivated. That being said, this course met my expectations. I think more courses could benefit from a free-range type of topic based but individually tailored approach.

It was also good to read up on others' interests. Even though a specific topic would be assigned, how the student chose to take that to do their research varied from student to student and you really could get the "cliff notes" of what was going on in the industry from reading everyone's posts.

- What did you like and dislike in the course? Is there anything that you want to change in the course? **(150 words)**

Again, I liked that the course was self-directed. Even though specific topics would be assigned for discussion, the student was free to explore that topic into areas that interested them. I found the requirement to explore a current event within the aviation industry extremely valuable in creating a habit that would benefit students as they prepare to enter the workforce – they will be better informed and up to date.

I am not a fan of minimum word requirements. I feel a student is better served to find ways to say and express things as succinctly as possible. Having been in the Navy for 17 years, I have learned that people value their time. Learning how to get a point across, whether in conversation, email, or memo, in the most efficient way possible is appreciated by many people. A better rubric would be to evaluate whether a student can display comprehension of a topic appropriately rather than extensively.

- What are your suggestions for the instructor to improve the content of the course? **(150 words)**

I think this course went really well. I don't have many suggestions for the instructor other than what was written above about minimum word requirements! I understand the need for there to be some sort of measurement tool. I don't have the education or experience to know what that tool might be if not a minimum word requirement that wouldn't require extensive effort on the instructor's part to engage with students on a deeper level. As I wrote above, the evaluation should be on displaying appropriate comprehension rather than extensively being able to regurgitate it. But that begs the question on how do you define appropriate comprehension? It really is just easier to have a minimum word count. If a student can write a minimum number of words on a topic, it probably means that they spent an extensive amount of time researching and writing. But this was a great course overall.

Senior Seminar Final

17May2021

1) **<u>Sustainability in Aviation (40 Marks)</u>**

- What are the roles and responsibilities of aviation stakeholders (government institutions, airlines, aircraft manufacturing companies, fuel producers, and aviation fuel distributers) in promoting Sustainable Aviation Fuels? **(150 Words)**

  Aviation stakeholders need to be able to be active in the development and distribution of Sustainable Aviation Fuels. These Share holders fall into a couple major categories. One such category is Government institutions, who need to be able to advance the cause of Sustainable Aviation fuel by creating a legislative environment where sustainable Aviation Fuels are more attractive than the alternative. Another Category is the Airlines, who need to invest more into Sustainable fuels and make conscious purchasing decisions to improve the amount of Sustainable fuel that they utilize. Fuel Producers need to improve the Sustainable Aviation fuel infrastructure to meet the demand of an ever growing industry, as at this current time only one facility is producing SAF at production levels. The final group aviation fuel distributers need to be able to be able to provide an incentive to customers to purchase SAF as well as have the knowledge and understanding to navigate the regulatory markets for SAF.

- Read the article "*Business Aviation and Sustainability: An Industry with a Good Story to Tell"* and provide your summary. **(150 words)**

  Link to Article: https://www.icao.int/environmental-protection/Documents/EnvironmentalReports/2019/ENVReport2019_pg177-181.pdf

  Business Aviation and Sustainability is an article that focuses on the changes that have been going in in the business aviation world in the past decade. Business aviation has had a significant commitment to the goal of sustainability within its ranks, which is impressive given its global reach. These commitments include carbon neutral growth in the years after 2020 and Saw a total of 20% increase in fuel efficiency in the decade of the 2010s. A key step in that decrease in emissions was the increase in use of Sustainable Fuels, which are blended with Jet A at a 50 % rate per industry standard. In addition to the material changes in the past decade the European Business Aviation Convention & Exhibition saw the participants commit to raising awareness for SAF and the incentives to participate in a sustainable future for the industry. Most interestingly, the process of being a licensed business aviation organization is being tied to being a sustainable business.

2) **Aviation Environmental Issues (40 Marks)**

- Define FAA CLEEN and CLEEN II programs? Explain the developments of different manufacturing companies involved in CLEEN? **(150 words)**

  (**Hint:** Refer United States Aviation Greenhouse Gas Emissions Reduction Plan)

The Continuous Lower Energy, Emissions, and Noise (CLEEN) Program is a program implemented by the FAA in an attempt to curb emissions of all types within the United States from the aviation industry. Five aviation manufacturers, Boeing, General Electric, Honeywell, Pratt & Whitney, and Rolls Royce have partnered with the FAA to develop new technological solutions to meet the goals of the CLEEN Program. Boeing is Developing a Adaptive Trailing edge wing and Ceramic Matrix Composite Engine Nozzle to both increase aerodynamic efficiency and reduce noise. General Electric's contribution is the open rotor design, which is includes counter rotating turbine blades to increase efficiency. Honeywell is developing new materials which can withstand greater loads than the industry equivalent which improve efficiency and reduce engine weight. Pratt & Whitney are developing Ultra high Bypass engines with diameters equivalent to early jetliner bodies which offer increased power over previous generations of aircraft. Rolls Royce are developing a twin set of technologies, the Dual Wall airfoil and the CMC Blade track, which can operate at much higher temps and greater efficiency than the current industry standard.

- Provide different electric and hybrid-electric aircraft projects in United States. Describe the details and technical specifications of each project like category, MTOW, range, seat capacity, speed, payload, entry in service, etc.

  (**Hint:** Refer to Electric and Hybrid Aircraft Platform for Innovation (E-HAPI))

There are a fair number of electric and hybrid aircraft projects currently being developed here in the states. One Such aircraft is the Airspeeder Mk 4, which is attempting to be the next big thing in aircraft racing. Essentially a super quadcopter capable of carrying a single pilot, the Airspeeder Mk 4 is capable of a maximum take off weight of 400 kgs and has a planned entry into service later this year. Since its stated goal is to begin a new era of racing, the Airspeeder is capable of a speed of 86 knots with a starting engine power of 400 Kilowatts. Another project just starting here is the Archer, a vehicle which is targeting itself to be the first urban electric craft. It is only capable of 2 passenger operations and is slated for entry into the market in 2024. It does have a superior speed to the Airspeeder, capable of 130 knots, but its range on its limited battery is only 96 kilometers. Hopefully wherever the passengers are taking it has a place where they can plug it in to get some juice as they go about their day.

3) Aircraft Maintenance and Importance (40 Marks)

Watch the videos and provide your insights about each video in 50 words

- https://youtu.be/abVTKt2Db_0 **(50 words)**

  (**Title:** Dealing with Challenges in the Aircraft Maintenance Business – AIN)

  Maintenance is a generally underrepresented aspect of Aviation, despite the fact that it is as critical to successful aviation operation as anything else. With a shortage of skilled workers, and the expense of small specialty parts for small specialty planes increase, properly maintaining aircraft is going through the roof. All I can say is that it is a great time to be a Business Aviation mechanic as the amount that will be spent on you will be amazing.

- https://youtu.be/0OEt6SkdA4M **(50 words)**

  (**Title:** You Can't Fly Without Us - The World of Aviation Maintenance)

  Aviation mechanics seem to have a good outlook on life, as they are highly skilled and highly specialized to provide the best service to their customers. What's interesting to me is that due to the significance of maintenance, high specialization is key to get the best results, but that specialization increases costs.

- https://youtu.be/xmiGL-1qvuE **(50 words)**

  (**Title:** Federal Aviation Administration on Aviation Maintenance)

  This Video from 2013 is interesting to view 8 years later. 2013 was a great time to get into the industry as the Aviation industry was just coming out of the 2008 economic slump. The FAA as a regulatory body had to step down and spend some of their effort to try and get more people into industry.

- https://youtu.be/gMcH2-icZKA **(50 words)**

  (**Title:** Aviation Maintenance Shortage)

  Its very interesting to see this video from 2017 in comparison to the one from just 4 years earlier. There is always the challenges of supply and demand, and one way to stop the shortage that should be considered is raising wages. 4 years after this video its interesting to see how things have turned out.

- https://youtu.be/fsTshp6zZys **(50 words)**

  (**Title:** US Airlines' Outsourcing of Aircraft Maintenance)

Outsourcing has always been a phenomenon in large businesses. It is simply cheaper to use outside maintenance providers than to do it all in house. The only way to stop it is to legislate rule that prevent airlines from doing so, as otherwise the momentum of business will continue is race to the bottom.

4) Aircraft Accident Investigation (40 Marks)

*Read the **Case Study -1** document attached in the blackboard in final exam folder and complete the **worksheet** which is at the end of the document and post your answers here.*

CHAIN OF EVENTS

1) **Aircraft Arrives at Jeddah**
2) **Mechanic Notices That several Tires have low pressure**
3) **Jeddah Airport cannot fill tires.**
4) **Mechanic is told to disregard the Low pressure**
5) **Pilots Continue with flight despite low tire pressure**
6) **Tires deflate on Takeoff leading to them igniting**
7) **Ignited Tires are retracted into the aircraft**
8) **Fire from the Tires spreads through the aircraft severing critical flight controls**

SAFETY NETS

1) **Checklists**
2) **Nitrogen supplies fully stocked**
3) **Following Procedure**
4) **Being assertive when dealing with superiors in regard to safety**
5) **Awareness of the situation**
6) **Proper fire alert systems**
7) **Working as a team in a crisis**
8) **Avoiding complacency when dealing with maintenance.**

5) **Careers in Aviation and Aviation Management (40 Marks)**

- What is the job or career that you wish to pursue after graduation or in the future? Describe the importance of that job in aviation. **(150 words)**

The job that I wish to pursue after graduation is that of an Officer in the United States Army. I could wax poetic about how the military is critical in supporting the aviation industry by providing for the security of the nation which they operate from, but instead I would like to discuss the role of the Officer in US Army Aviation. The Officer Corps is in a strange place in Aviation. Officers do fly aircraft on the regular, in both rotary wing and fixed wing platforms, but mostly that job is in the hands of the Warrant Officers, who sit just below officers in the Army's hierarchy. The Primary role of the Officer is instead to lead soldiers. As an Officer, you would be responsible for managing the unit, which covers both crew training and equipment readiness, as well as ensuring that the mission is completed to the best of your capability, as the officer in charge is responsible for everything the Unit does and Fails to do.

- What are the roles and responsibilities of the job that you want to pursue?

The Responsibilities that drew me to the job of an officer is the fact that I will be the leader and can use my skills to the best of my ability to as well as work with one of the premier organizations in the world.

- Why do you want to pursue that job? Provide any statistics related to the job like salary, number of job available in the USA, racial diversification, etc. (Provide references) **(150 words)**

I have wanted to be an Officer for as long as I have been thinking about my future, as both of my parents served in the Army before me, and I was along for the ride for most of my childhood. It also offers a pretty unique opportunity to stamp ones name on the book of history if the stars align. To become an Officer, you have to go through a rather rigorous selection process which determines your physical and mental readiness to become a leader of soldiers, and even then there are only around 8,700 slots for brand new 2nd Lieutenants per year. If pay is a motivator for the first year or so a 2nd Lieutenant only makes \$3,287.10 a month, but time in service can increase that to \$4,136.40 a month. The Army is a cross section of the nation as a whole, and the ethnic make up of the army reflects this for those who are concerned.

- Research and provide five best job searching (posting) websites for aviation jobs?

US Army Aviation Branch – Go Army.com

https://www.goarmy.com/careers-and-jobs/career-match/aviation/managing-piloting-aircraft/15a-aviation-officer.html

Federal Pay Website – 2nd Lieutenant https://www.federalpay.org/military/army/second-lieutenant#:~:text=Starting%20pay%20for%20a%20Second,a%20more%20detailed%20salary%20estimate.

US Army National Guard

https://www.nationalguard.com/

Go Army ROTC

https://www.goarmy.com/rotc.html

Gateway Army ROTC

https://rotc.wustl.edu/

6) **Reflection about the Course (50 Marks)**

- What did you learn from this course? Did this course content reach your expectations? **(150 words)**

This course met my expectations for what was possible given the setting we find ourselves in the year of our lord 2021. It was interesting to see what was going on in the aviation world from week to week, which due to my occupation and future career is generally not a sphere I keep a solid track on day to day. I found that I generally could keep track of what was going on with the knowledge I had gained in previous classes, and the information we were discussing in class was relevant to the current industry. One interesting tidbit I learned during our weekly news discussions was that the air force had successfully launched a drone from a drone, which is a fascinating indication of were that particular sector of the industry is heading. Hopefully we as a society and a state can keep up legislatively with the pace of UAV development.

- What did you like and dislike in the course? Is there anything that you want to change in the course? **(150 words)**

My enjoyment of the course was somewhat limited by the world situation. I am a person who tends to thrive in an organized social environment like the classroom which was impossible this semester. If I could snap my fingers and change that, I would have definitely preferred an actual classroom experience to the online equivalent. The other major complaints I have are directly related to the fact that it was an online only experience. Complaints like the fact that what little interaction between peers we had was commenting on each other's news articles, and the somewhat arbitrary word counts for assignments. I understand that those are inevitable and no one really enjoys this style of learning, but I would like for future classes to not have to deal with it. What I did like though is that this class gave me a reason to get out of my comfort zone and look into things that I generally would have ignored in any other circumstance.

- What are your suggestions for the instructor to improve the content of the course? **(150 words)**

For Future iterations of this class, I recommend a in person version, at least for the students who would want to show up. I had one class that offered that style here at slu this semester and I enjoyed that style classes more than I was expecting to. Even the students who took that class online were able to participate and contribute to the learning environment. Hopefully though future classes wont have to deal with the nonsense that is the COVID-19 Pandemic. As for the Content of the course I do not have the base of knowledge to argue for anything else. I will be stepping into the Roll of a Armor Branch Officer once I leave SLU, which is probably unique amongst the Students taking this class, so applying the information gained in this class will be an exercise in creative thinking, but I believe that one needs to make the most of what life (or in this case the Army) deals you.

ASCI 4900

14 February 2021

Assignment Week 2

1. Johnny (Mechanic 2), Jase (Assistant 2): Johnny doesn't have good communication with Jase, because once Jase asked about the Manual, Johnny said there is no need for it it's very easy to do.
2. Bruce (Customer), Harry (Manager): Bruce didn't show the qualities of Etiquette once he spoke to Harry, because he was yelling and wanting the aircraft to be finished as soon as possible
3. Harry (Manager), All workers: Harry didn't enforce a management safety system that ensures everybody follows that ensures safety to all aircraft that have been fixed.
4. Johnny (Mechanic 2), Jase (Assistant 2): Johnny didn't act as a team player, because once the work has started, he only went to the bathroom and slept there.
5. Harry (Manager), Bruce (Customer): Harry Didn't show honesty in which it's related to ethics. So, he lied about the aircraft being nearly done which wasn't true in this case, and the maintenance team were working on it all night.

2/8/2021
Assignment 1
Aviation Professionals

- Personal Performance:
  - Man 1 dropped the wire twice throughout the video. He seems sad or is thinking about other things rather than his job. Man 1 is not performing his tasks the best way. He seems to keep thinking about having the day off since it is his daughter's graduation.

- Personal Responsibility:
  - Man 3 does not remember things like an employee’s day off and is pressuring man 1 to finish the job early and not do overtime. The manager is not organized and therefore does not honor the employee’s evening off for his daughter’s graduation. He is also pressuring the mechanic to not do overtime. Maybe if he had an adequate staff his employees would not do overtime.

- Business Performance:
  - Man 3 lied to man 4 saying the aircraft will be finished tomorrow and promised that it will be all fixed up by the morning. The manager called the customer and promised him that his aircraft would be ready by the morning while his employees gave him a “no it won't” face. This is an issue because it is better to take longer at doing something and doing it right than cutting time and losing lives. This affects the business performance of the company because they are not doing their jobs in accordance with legal standards and practices.

- Personal Responsibility / Business Management:
  - Man 3’s office is a mess. His whiteboards all over the place. He can't even find his notes nor the BAS statements his assistant mentioned. This is a personal responsibility issue and a business management issue. The manager is not responsible for his notes and organization and can lead to confusion and miscommunication.

- Personal Respect:
  - Women 1 was explaining things and seems like she does all the work and was complaining. Man 3 did not seem to have been listening to her. There was no personal respect to the assistant from the manager. This can lead bad relationships in the company.

- Personal Maturity:
  - Man 5 tells the day shift that man 6 was late. But man 6 states he was not late. Being late often is an issue. Be honest and mature and try not to be late. Maturity is big in the real world.

- Business Culture:

    - During the night shift, man 5 and man 6 worked without proper lights. Maybe this was to save energy? The lamps they use did not work well and they could barely see. This can lie between business culture but also business performance. The night shift mechanics were unable to have proper lighting and tools to do their job. That can lead to catastrophic events.

- Personal Responsibility:
    - Man 5 goes to the bathroom and falls asleep. Fatigue. Falling asleep in the bathroom seems like there is a huge problem with fatigue. The employee is responsible for falling asleep, but the company can also be responsible based on how much mechanics are paid, hours they get to rest, etc.

- Personal Performance:
    - Man 5 does a primary inspection but skips to do a duplicate inspection. Puts a sticky note for the morning mechanics but that fails to remind them since the sticky note falls. This is highly risky, and all inspections must be done before the aircraft is delivered back to the customer. Personal performance was poor in this scenario as the mechanic must complete all primary and secondary inspections to avoid something going wrong.

- Business Management / Resiliency / Performance Standards / Accountability:
    - Man 3 had rushed the whole maintenance process and led to a malfunction of the aircraft. Overall, the manager lacked many things, but the most important were business management, resiliency, performance standards, and accountability. The manager needs to educate itself and learn how to properly manage a maintenance company to excel in his business. The customer could have gotten into a serious accident that could have cost him his life.

Assignment 4

ASCI 4900

Group 1:

Yes, they did cross the line because they should accommodate a different procedure due to the circumstances of the case. Pat down procedures aren't that necessary due to the high tech used to screen all the passengers. Sometimes they are important because sometimes the technology can fail during the screening, so the pat-down procedure is vital. Yes, because the pat down can be a frustrating experiment to people, and the TSA target some people to force the pat down procedure. It is very hard to blame both parties because the TSA follows certain elements that ensure safety and security in airports, but as I said above, they should make more accommodations to certain health conditions. TSA should be more enlightened because more people are coming forward due to the aspect and the measures that they take to ensure safety. TSA needs to have more training that has similar scenarios to all these incidents.

Group 2:

The TSA is doing their best in honoring its mission to the public, but it is hard to maintain all of these high levels in airports. Because the TSA employees get overwhelmed by the number of people that travel daily, which leads to more problems. TSA is certainly getting more bad reputation due to the number of passengers and activities that they use. No TSA shouldn't be replaced, because it is a government agency. No, I don't think that privatizing government agencies is something that will lead to development. One of the advantages of privatizing is if one of the employees didn't manage to perform well enough for the job his or her termination process will be easy due to the contract that they sign. Even if the airport security sector was privatized, it will not ensure faster-waiting lines because the aim of privatizing airport security is to cut costs. Yes, the TSA always attains more measures to ensure safety.

Assignment 5

ASCI 4900

1) Creating a program where girl scout groups can visit general aviation companies to get a first hand look at some of the jobs in the aviation industry.
2) Implementing a mentor program for young girls and minorities interested in aviation, teaming them up with experienced industry professionals; ideally with a similar background as the mentee.
3) Offering sponsored airport field trips to schools in minority neighborhoods for a first hand look at aviation and a hands on experience getting onboard an aircraft.
4) Creating a summer internship program at an airport, airline or general aviation company for high school students specifically targeted towards girls and minorities.
5) Having big airlines like Delta offer limited scholarship programs for girls and minorities towards a degree in Aeronautics or flight training with the guarantee of a job in their company upon graduation.

Course Assessment Form

Course: FSCI 1150 Flight 1
Semester Taught: Spring 2021
Number of Students in Course: 22

Student Learning Outcome Assessed	Assessment Results: (Percentage of student written exams and stage checks passed on first attempt)	Benchmark achieved? (Benchmark: 70% of student written exams and stage checks passed on first attempt)
H. Use the techniques, skills, and modern technology necessary for professional practice.	Stage Check Pass Rate: 61% Written Pass Rate: 95%	No
J. Apply pertinent knowledge in identifying and solving problems.	Stage Check Pass Rate: 61% Written Pass Rate: 95%	No

Description of Assessment: The student assessment consists of multiple-choice module written exams as well as stage check practical exams. Written exams require a minimum score of 70% in order to pass. Each stage check consists of an oral portion and a flight portion, and satisfactory or unsatisfactory performance is determined in accordance with the Module Completion Standards and/or the appropriate Airmen Certification Standards (ACS)/Practical Test Standards (PTS). Attached are the module completion standards included in the approved Training Course Outline. This document describes the expectations and assessment standards for stage check oral and flight checks. Also attached is a sample of a student's completed module written exam.

Recommendations: Student weaknesses in engine failures and landings were identified in stage check flights resulting in a decrease in pass rates. These deficiencies will be discussed and addressed over the summer during instructor training sessions prior to the start of the Fall 2021 semester. Additional emphasis will be placed on these tasks during new-hire instructor standardizations. If the deficiencies continue, revisions to the course content will be considered.

Module 2

Solo Flight Operations

Prerequisites: Prior to beginning this module the student must possess a valid Student Pilot Certificate.

Objective: To prepare students for safe solo flight operations in the local practice area.

Completion Standards:

- The student must meet the following minimum training time requirements during this module:

DUAL		SOLO	OTHER		
Local	Inst. Ref.	Local	ATD	Pre/ Post	Ground
15.3	1.5	0.4	1.3	4.4	11.0

- Prior to completion of the module, students must pass a pre-solo written exam and stage check to evaluate their understanding of:
  1) All knowledge areas included in Module 1.
  2) Basic flight instrument function, operation, limitations, and potential errors.
  3) Factors affecting performance of the aircraft, including aircraft loading, atmospheric conditions, and density altitude.
  4) Use of all performance charts, tables, and data to determine takeoff and landing, climb, and cruise performance.
  5) Computing weight and balance for a given scenario and the effects of exceeding weight and balance limits.
  6) Airspace rules and procedures, including types of airspace, VFR weather minimums, chart symbology, operating rules, pilot certification requirements, and airplane equipment requirements.
  7) Applicable sections of parts 61 and 91 of this chapter, including student pilot privileges and limitations, airmen document requirements, medical certificate class and duration, and applicable general operating rules.
- Prior to completion of the module, students must pass a stage check to evaluate their ability to:

1) Perform all tasks included in Module 1.
2) Liftoff at the recommended airspeed -0/+10 knots, climb at the recommended airspeed +/- 10 knots, and maintain directional control and proper wind correction throughout takeoff and climb while completing appropriate checklists.
3) Perform straight and level flight, turns, climbs, descents, steep turns, slow flight, stalls, and ground reference maneuvers in accordance with published procedures while maintaining altitude +/- 200 feet, airspeed +/- 20 knots, and heading +/- 20 degrees.
4) Navigate by reference to landmarks to any point within the practice area using aeronautical charts.
5) Communicate with other traffic in the practice area, make appropriate position reports, and ensure proper aircraft separation is maintained.
6) Control the aircraft solely by reference to instruments in straight and level flight, constant airspeed climbs and descents, and turns to headings while maintaining altitude +/- 250 feet, heading +/-25 degrees, and airspeed +/- 15 knots. Recognize unusual attitudes solely by reference to instruments and perform the correct flight control application to resolve unusual pitch and bank attitudes.
7) Analyze and take appropriate action during simulated equipment malfunctions and emergencies by completing the appropriate checklist or procedure. Perform a simulated emergency approach and landing, maintain the best glide airspeed +/- 15 knots, select a suitable landing area, plan a flight pattern to the landing area that would allow for a safe landing, and complete the appropriate checklist.
8) Comply with proper traffic pattern procedures, maintain proper spacing from other aircraft, correct for wind drift, and maintain orientation with the runway while maintaining traffic pattern altitude +/- 150 feet and appropriate airspeed +/- 15 knots.
9) Perform normal and crosswind landings and forward slips to a landing without assistance. Establish the recommended approach and landing configuration

while maintaining airspeed +/-10 knots, maintain a stabilized approach, touchdown smoothly at a speed that provides little or no aerodynamic lift, and maintain crosswind correction and directional control throughout the approach and landing.

10) Perform short and soft field takeoffs and landings with instructor assistance.

11) Conduct a go-around as necessary. Make a timely decision to discontinue the approach to landing, retract the flaps, and transition to climb pitch attitude for the appropriate airspeed +/- 10 knots.

Notes:

- Lessons may be completed out of sequence as necessary to meet academic goals set by the instructor.
- Multiple instructional periods may be required to meet lesson requirements.

Grade Test: Module 2 Exam (Pre-Solo Written)

Assign a grade and feedback for the current test attempt. Expand the ***Test Information*** *section to clear the student's attempt or edit the test.* *More Help*

Jump to... Show User Names

Viewing 4 of 4 gradable items

Student 4 (Hide User Names is enabled)

Test Information

QUESTION 1: MULTIPLE CHOICE 0 **out of 1 points**

What documents must be in a student pilot's personal possession during local solo flight operations?

Given Answer: All of the above

Correct Answer: Student Pilot Certificate

QUESTION 2: MULTIPLE CHOICE 1 **out of 1 points**

What is the fuel reserve requirement for solo flight in Parks College Aircraft?

Given Answer: One hour

Correct Answer: One hour

QUESTION 3: MULTIPLE CHOICE 1 **out of 1 points**

Given Answer: 90 days

Correct Answer: 90 days

QUESTION 4: MULTIPLE CHOICE

1 out of 1 points

Which class(es) of airspace require student pilots to acquire additional training and endorsements prior to entry?

Given Answer: Class B

Correct Answer: Class B

QUESTION 5: TRUE/FALSE

1 out of 1 points

Student pilots may fly with less than 3 miles visibility as long as they are in Class G airspace.

Given Answer: False

Correct Answer: False

QUESTION 6: TRUE/FALSE

1 out of 1 points

A student pilot cannot fly at night unless they have received additional training and an endorsement for night solo operations.

Given Answer: True

Correct Answer: True

QUESTION 7: TRUE/FALSE

0 out of 1 points

A student pilot may land at any airport as long as it is within 25 NM of KCPS without any additional logbook endorsements.

Given Answer: True

Correct Answer: False

QUESTION 8: TRUE/FALSE

1 out of 1 points

Student pilots must receive a logbook endorsement for each solo cross-country flight to any airport that is more than 50 NM from the departure airport.

QUESTION 9: MULTIPLE CHOICE

1 out of 1 points

A person may not act as a crewmember of a civil aircraft if alcoholic beverages have been consumed by that person within how many hours?

Given Answer: 8 hours

Correct Answer: 8 hours

QUESTION 10: MULTIPLE CHOICE

1 out of 1 points

Which documents are required to be onboard an aircraft when it is being operated within the U.S.?

Given Answer: Airworthiness Certificate, Registration Certificate, POH/AFM, Weight & Balance

Correct Answer: Airworthiness Certificate, Registration Certificate, POH/AFM, Weight & Balance

QUESTION 11: MULTIPLE CHOICE

1 out of 1 points

Which inspections are required for Parks College aircraft when being used for flight training?

Given Answer: Annual Inspection, 100 Hour Inspection, Transponder Inspection, ELT Inspection

Correct Answer: Annual Inspection, 100 Hour Inspection, Transponder Inspection, ELT Inspection

QUESTION 12: MULTIPLE CHOICE

1 out of 1 points

Who is responsible for determining the airworthiness of the aircraft?

Given Answer: Pilot in Command

Correct Answer: Pilot in Command

QUESTION 13: MULTIPLE CHOICE 1 out of 1 points

Which is true regarding the the Diamond DA-20 Information Manual and the POH/AFM found in the aircraft?

Given Answer: The POH/AFM is the only official document and must be onboard the aircraft.

Correct Answer: The POH/AFM is the only official document and must be onboard the aircraft.

QUESTION 14: TRUE/FALSE 1 out of 1 points

Compliance with airworthiness directives (AD's) is not legally mandatory, but it is stronly recommended by the aircraft manufacturer.

Given Answer: False

Correct Answer: False

QUESTION 15: MULTIPLE CHOICE 1 out of 1 points

What class of airspace extends from the surface upward over KCPS?

Given Answer: Class D

Correct Answer: Class D

QUESTION 16: MULTIPLE CHOICE 1 out of 1 points

What communication requirements must be met prior to entering Class D airspace?

Given Answer: Two-way communications must be established.

Correct Answer: Two-way communications must be established.

QUESTION 17: MULTIPLE CHOICE 1 out of 1 points

To operate VFR in the traffic pattern at KCPS, what minimum visibility is required?

QUESTION 18: MULTIPLE CHOICE 0 out of 1 points

Which of the following is true regarding transponder operations at KCPS?

Given Answer: A transponder is required because all Class D airports require a Mode C Transponder.

Correct Answer: A transponder is only required because KCPS is located within the Mode C veil of the KSTL Class B airspace.

QUESTION 19: MULTIPLE CHOICE 1 out of 1 points

What is the minimum VFR visibility for operating in Class E airspace below 10,000 MSL?

Given Answer: 3 statute miles visibility

Correct Answer: 3 statute miles visibility

QUESTION 20: MULTIPLE CHOICE 1 out of 1 points

In the local practice areas, where is Class G airspace typically located?

Given Answer: From the surface up to either 700 or 1200 AGL

Correct Answer: From the surface up to either 700 or 1200 AGL

QUESTION 21: MULTIPLE CHOICE 1 out of 1 points

When you arrive at the airport for a flight lesson during daylight hours, you notice the airport's rotating beacon is on. What does this indicate?

Given Answer: The observed ceiling is less than 1,000 feet AGL and/or the visibility is less than 3 SM.

Correct Answer: The observed ceiling is less than 1,000 feet AGL and/or the visibility is less than 3 SM.

QUESTION 22: MULTIPLE CHOICE

1 out of 1 points

What is the make and model of the engine in the DA20?

Given Answer: Continental IO-240-B

Correct Answer: Continental IO-240-B

QUESTION 23: MULTIPLE CHOICE

1 out of 1 points

What is the horsepower rating and maximum allowed RPM of the engine in the DA20?

Given Answer: 125 BHP @ 2800 RPM

Correct Answer: 125 BHP @ 2800 RPM

QUESTION 24: MULTIPLE CHOICE

1 out of 1 points

What are the minimum and maximum oil levels for the DA20?

Given Answer: 4 and 6

Correct Answer: 4 and 6

QUESTION 25: MULTIPLE CHOICE

0 out of 1 points

A loss of engine oil pressure will most likely be accompanied by which of the following?

Given Answer: High exhaust gas temperature

Correct Answer: High oil temperature

QUESTION 26: MULTIPLE CHOICE

1 out of 1 points

When should the fuel pump be turned on during a flight?

Given Answer: All of the above

Correct Answer: All of the above

QUESTION 27: MULTIPLE CHOICE

1 out of 1 points

Which of the following best describes the proper mixture leaning procedures during cruise flight?

Given Answer: Lean mixture until peak EGT is reached, then enrichen until EGT decreases 25 degrees

Correct Answer: Lean mixture until peak EGT is reached, then enrichen until EGT decreases 25 degrees

QUESTION 28: MULTIPLE CHOICE

1 out of 1 points

What indications on the voltmeter and ammeter would be expected during flight with all systems operating normally?

Given Answer: 14 volts; ammeter at zero

Correct Answer: 14 volts; ammeter at zero

QUESTION 29: MULTIPLE CHOICE

1 out of 1 points

What would be the indications on both the voltmeter and ammeter in the event of a generator failure?

Given Answer: 12 volts or less; ammeter showing below zero

Correct Answer: 12 volts or less; ammeter showing below zero

QUESTION 30: MULTIPLE CHOICE

1 out of 1 points

According to the DA20 Informaion Manual, in the event of an alternator failure, how long can you expect a fully charged battery to continue providing electrical power to the aircraft?

Given Answer: 30 minutes

Correct Answer: 30 minutes

QUESTION 31: MULTIPLE CHOICE

1 out of 1 points

Given Answer: All of the above

Correct Answer: All of the above

QUESTION 32: TRUE/FALSE

1 out of 1 points

As the PIC during a solo flight, if an emergency exists, FAR 91.3 permits you to deviate from the regulations to the extent required to meet that emergency.

Given Answer: True

Correct Answer: True

QUESTION 33: MULTIPLE CHOICE

1 out of 1 points

How does your approach speed differ when conducting a zero (Cruise) flap landing when compared to a normal or short field landing?

Given Answer: Zero Flap landings are conducted with an extra 10 knots of airspeed.

Correct Answer: Zero Flap landings are conducted with an extra 10 knots of airspeed.

QUESTION 34: MULTIPLE CHOICE

1 out of 1 points

Which of the following *best* describe the checklist for “Engine Failure in Flight”?

Given Answer: Airspeed 73 KIAS, Fuel Pump On, Alternate Air Open, Mixture Rich

Correct Answer: Airspeed 73 KIAS, Fuel Pump On, Alternate Air Open, Mixture Rich

QUESTION 35: MULTIPLE CHOICE

1 out of 1 points

Which of the following is the best course of action in the event of an engine fire in flight?

Given Answer: Close the fuel shutoff valve and prepare for an emergency

Answer: Close the fuel shutoff valve and prepare for an emergency landing

QUESTION 36: MULTIPLE CHOICE

1 out of 1 points

Which of the following best describes the correct initial steps after a communication failure is suspected?

Given Answer: Verify the correct frequency is tuned in and the volume control is set properly.

Correct Answer: Verify the correct frequency is tuned in and the volume control is set properly.

QUESTION 37: MULTIPLE CHOICE

1 out of 1 points

You have experienced a complete failure of the aircraft electrical system. What light gun signal indicates that you are "cleared to land" at KCPS?

Given Answer: Steady Green

Correct Answer: Steady Green

QUESTION 38: MULTIPLE CHOICE

0 out of 1 points

You have experienced a complete failure of the aircraft electrical system. You are receiving light gun signals from the tower. What light gun signal will be used to communicate "Airport Unsafe – Do not Land"?

Given Answer: Steady Red

Correct Answer: Flashing Red

QUESTION 39: MULTIPLE CHOICE

0 out of 1 points

During Taxi operations, what is the correct position for the flight controls if the wind is a quartering tailwind from the left?

Given Answer: Elevator Down, Ailerons Left

Correct Answer: Elevator Down, Ailerons Right

QUESTION 40: MULTIPLE CHOICE

1 out of 1 points

The Static system is connected to which flight instrument(s)?

Given Answer: All of the above

Correct Answer: All of the above

QUESTION 41: MULTIPLE CHOICE

1 out of 1 points

The Pitot system is connected to which flight instrument(s)?

Given Answer: Airspeed Indicator

Correct Answer: Airspeed Indicator

QUESTION 42: MULTIPLE CHOICE

0 out of 1 points

The aircraft vacuum pump is responsible for which of the following?

Given Answer: Recirculating air around the engine for cooling purposes

Correct Answer: Spinning the gyroscopes inside certain flight instruments

QUESTION 43: MULTIPLE CHOICE

1 out of 1 points

At what range of altitudes should ground reference maneuvers be conducted?

Given Answer: 600 – 1000 AGL

Correct Answer: 600 – 1000 AGL

QUESTION 44: MULTIPLE CHOICE

1 out of 1 points

According to FAR 91.119, except when necessary for takeoff or landing, what is the minimum safe altitude when over a congested area?

Given Answer: 1,000 feet above the highest obstacle within a horizontal radius of 2,000 feet of the aircraft

Correct Answer: 1,000 feet above the highest obstacle within a horizontal radius of

QUESTION 45: MULTIPLE CHOICE

1 out of 1 points

According to FAR 91.119, except when necessary for takeoff or landing, what is the minimum safe altitude when over land in other than congested areas?

Given Answer: 500 feet AGL

Correct Answer: 500 feet AGL

QUESTION 46: MULTIPLE CHOICE

1 out of 1 points

Maneuvers such as Stalls and Slow Flight should be completed no lower than what altitude?

Given Answer: 1,500 feet AGL

Correct Answer: 1,500 feet AGL

QUESTION 47: MULTIPLE CHOICE

0 out of 1 points

When practicing emergency descent or emergency approach and landing when away from an airport, the maneuver should be terminated no lower than what altitude?

Given Answer: 1,000 feet AGL

Correct Answer: 500 feet AGL

QUESTION 48: MULTIPLE CHOICE

1 out of 1 points

How should ground reference maneuvers be entered with reference to the wind?

Given Answer: Downwind

Correct Answer: Downwind

QUESTION 49: MULTIPLE CHOICE

0 out of 1 points

At what range of altitudes can wind shear occur?

Given Answer: Only within approximately 500 feet of the surface

Correct Answer: At all altitudes, in all directions

QUESTION 50: TRUE/FALSE

0 out of 1 points

Overbanking tendency is primarily a result of torque and p-factor.

Given Answer: True

Correct Answer: False

QUESTION 51: MULTIPLE CHOICE

1 out of 1 points

Why should rudder be applied during turn entry?

Given Answer: To overcome adverse yaw

Correct Answer: To overcome adverse yaw

QUESTION 52: MULTIPLE CHOICE

1 out of 1 points

What conditions would most likely result in a stall developing into a spin?

Given Answer: Practicing stalls without maintaining rudder coordination

Correct Answer: Practicing stalls without maintaining rudder coordination

QUESTION 53: MULTIPLE CHOICE

1 out of 1 points

What are the proper steps to recover from an inadvertent spin?

Given Answer: Power-idle, Ailerons-neutral, Rudder-opposite direction of turn, Elevator-forward, Smoothly recover from the dive

Correct Answer: Power-idle, Ailerons-neutral, Rudder-opposite direction of turn, Elevator-forward, Smoothly recover from the dive

QUESTION 54: MULTIPLE CHOICE

1 out of 1 points

To avoid wake turbulence when departing behind a large jet aircraft that just landed, where should you plan to lift off?

Given Answer: After the point where the jet touched down

Correct Answer: After the point where the jet touched down

QUESTION 55: MULTIPLE CHOICE

1 out of 1 points

To avoid wake turbulence when landing behind a large jet aircraft that just landed, how should you plan approach path and touchdown point?

Given Answer: Fly above the jet's path and plan to touch down beyond the jet's touchdown point.

Correct Answer: Fly above the jet's path and plan to touch down beyond the jet's touchdown point.

QUESTION 56: MULTIPLE CHOICE

0 out of 1 points

What is the primary purpose of a forward slip to a landing?

Given Answer: Correct for a crosswind during approach and landing

Correct Answer: Dissipate excessive altitude without increasing airspeed

QUESTION 57: MULTIPLE CHOICE

0 out of 1 points

Compared to a forward CG, an aft CG will have which of the following effects on an airplane?

Given Answer: All of the above

Correct Answer: Reduced stability

QUESTION 58: TRUE/FALSE

1 out of 1 points

A low density altitude is desirable from a performance standpoint.

Given Answer: True

Correct Answer: True

QUESTION 59: MULTIPLE CHOICE

0 out of 1 points

Assume that the surface temperature is warmer than standard and the altimeter setting is 29.92 inHg. Which of the following is a *possible* density altitude (at the surface) under these conditions?

QUESTION 60: MULTIPLE CHOICE

0 out of 1 points

Which of the following weather products should be consulted to determine whether turbulence is expected aloft?

Given Answer: Any of the above

Correct Answer: Airmet

QUESTION 61: MULTIPLE CHOICE

1 out of 1 points

What is the most common location for Temporary Flight Restrictions (TFR's) in the local area?

Given Answer: Over professional sports stadiums during games

Correct Answer: Over professional sports stadiums during games

QUESTION 62: MULTIPLE CHOICE

1 out of 1 points

How is important airport information, such as runway or taxiway closures, communicated to pilots?

Given Answer: Notices to Airmen (Notams)

Correct Answer: Notices to Airmen (Notams)

QUESTION 63: FILL IN THE BLANK

1 out of 1 points

For the following questions on airspeeds, please ensure your answer includes NUMBERS ONLY.

What airspeed (in knots) represents Vso?

Given Answer: 36

Evaluation Method	Correct Answer:	Case Sensitivity
Exact Match	36	

QUESTION 64: FILL IN THE BLANK

1 out of 1 points

Given Answer:	44	
Evaluation Method	**Correct Answer:**	**Case Sensitivity**
Exact Match	44	

QUESTION 65: FILL IN THE BLANK

1 **out of 1 points**

What airspeed (in knots) represents Vr?

Given Answer:	44	
Evaluation Method	**Correct Answer:**	**Case Sensitivity**
Exact Match	44	

QUESTION 66: FILL IN THE BLANK

1 **out of 1 points**

What airspeed (in knots) represents Vfe (T/O Flaps)?

Given Answer:	100	
Evaluation Method	**Correct Answer:**	**Case Sensitivity**
Exact Match	100	

QUESTION 67: FILL IN THE BLANK

1 **out of 1 points**

What airspeed (in knots) represents Vfe (LND flaps)?

Given Answer:	78	
Evaluation Method	**Correct Answer:**	**Case Sensitivity**
Exact Match	78	

QUESTION 68: FILL IN THE BLANK

1 **out of 1 points**

What airspeed (in knots) represents Vx (CRUISE flaps)?

Given Answer:	60	
Evaluation Method	**Correct Answer:**	**Case Sensitivity**
Exact Match	60	

QUESTION 69: FILL IN THE BLANK

0 **out of 1 points**

Evaluation Method	Correct Answer:	Case Sensitivity
Exact Match	57	

QUESTION 70: FILL IN THE BLANK

1 out of 1 points

What airspeed (in knots) represents Vy (CRUISE flaps)?

Given Answer: 75

Evaluation Method	Correct Answer:	Case Sensitivity
Exact Match	75	

QUESTION 71: FILL IN THE BLANK

1 out of 1 points

What airspeed (in knots) represents Vy (T/O flaps)?

Given Answer: 68

Evaluation Method	Correct Answer:	Case Sensitivity
Exact Match	68	

QUESTION 72: FILL IN THE BLANK

1 out of 1 points

What airspeed (in knots) represents Va?

Given Answer: 106

Evaluation Method	Correct Answer:	Case Sensitivity
Exact Match	106	

QUESTION 73: TRUE/FALSE

1 out of 1 points

Prior to conducting any flight maneuvers, it is important to ensure that the airplane is *at or above* the calculated Va speed.

Given Answer: False

Correct Answer: False

QUESTION 74: FILL IN THE BLANK

1 out of 1 points

What airspeed (in knots) represents Vno?

Exact Match	118

QUESTION 75: MULTIPLE CHOICE

1 out of 1 points

Under what circumstances can an aircraft exceed Vno during flight?

Given Answer: Only in smooth air

Correct Answer: Only in smooth air

QUESTION 76: FILL IN THE BLANK

1 out of 1 points

What airspeed (in knots) represents Vne?

Given Answer: 164

Evaluation Method	Correct Answer:	Case Sensitivity
Exact Match	164	

QUESTION 77: FILL IN THE BLANK

1 out of 1 points

What is the best glide airspeed (in knots)?

Given Answer: 73

Evaluation Method	Correct Answer:	Case Sensitivity
Exact Match	73	

QUESTION 78: FILL IN THE BLANK

1 out of 1 points

What is the maximum takeoff weight (in pounds)?

Given Answer: 1764

Evaluation Method	Correct Answer:	Case Sensitivity
Exact Match	1764	
Exact Match	1,764	

QUESTION 79: FILL IN THE BLANK

1 out of 1 points

What is the maximum ramp weight (in pounds)?

Exact Match	1770
Exact Match	1,770

QUESTION 80: FILL IN THE BLANK

1 out of 1 points

What is the maximum permissible weight in the baggage compartment (in pounds)?

Given Answer: 44

Evaluation Method	Correct Answer:	Case Sensitivity
Exact Match	44	

FEEDBACK AND NOTES FOR ATTEMPT

Feedback to Learner

Paragraph Arial 3 (12pt)

Mashups

Path: p Words:0

Grading Notes

Paragraph Arial 3 (12pt)

Mashups

Path: p Words:0

Course Assessment Form

Course: FSCI 1550 Flight 2
Semester Taught: Spring 2021
Number of Students in Course: 16

Student Learning Outcome Assessed	Assessment Results: (Percentage of student written exams and stage checks passed on first attempt)	Benchmark achieved? (Benchmark: 70% of student written exams and stage checks passed on first attempt)
H. Use the techniques, skills, and modern technology necessary for professional practice.	Stage Check Pass Rate: 91% Written Exam Pass Rate: 100%	Yes
J. Apply pertinent knowledge in identifying and solving problems.	Stage Check Pass Rate: 91% Written Exam Pass Rate: 100%	Yes

Description of Assessment: The student assessment consists of multiple-choice module written exams as well as stage check practical exams. Written exams require a minimum score of 70% in order to pass. Each stage check consists of an oral portion and a flight portion, and satisfactory or unsatisfactory performance is determined in accordance with the Module Completion Standards and/or the appropriate Airmen Certification Standards (ACS)/Practical Test Standards (PTS). Attached are the module completion standards included in the approved Training Course Outline. This document describes the expectations and assessment standards for stage check oral and flight checks. Also attached is a sample of a student's completed module written exam.

Recommendations: Continue to identify and discuss student stage check deficiencies with the instructional staff each semester. Revisions to course content and/or module completion standards will be made as needed to ensure adequate student preparation.

Module 4

Post Private Pilot Operations

Prerequisites: Prior to beginning this module the student must possess a Private Pilot Certificate with an Airplane Single-Engine Land rating, a First or Second Class Medical Certificate issued within the previous 12 calendar months and must either already hold an Instrument Airplane rating, *or* they must be concurrently enrolled in the Instrument Rating Course and the Commercial Pilot Course.

Objective: To introduce the student to the Commercial Pilot maneuvers and to gain proficiency in VFR cross-country flying, night operations, and takeoffs and landings.

Completion Standards:

- The student must meet the following minimum training time requirements during this module:

DUAL			SOLO			TOTAL	OTHER		
Local	XC Total	XC Night	Local Total	Local Night	XC	Airplane	ATD	Pre/ Post	Ground
9.0 – 12.9	4.0 – 8.6	2.0	2.5 – 6.4	2.5	0 - 4.6	24.0	4.5	6.4	11.0

- Prior to completion of the module, students must pass a written exam and stage check to evaluate their understanding of:
  1) All knowledge areas included in Modules 1 – 3.
  2) Weather products required for preflight planning, current and forecast weather for departure, enroute, and arrival phases of flight.
  3) Meteorology applicable for flights conducted in Visual Meteorological Conditions to include atmospheric composition and stability, wind, temperature, moisture, precipitation, weather system formation, air masses, fronts, clouds, turbulence, thunderstorms, microbursts, icing, and fog.
  4) GPS navigation, including equipment, regulations, authorized use of databases, and receiver autonomous integrity monitoring.

5) Aerodynamics associated with flight maneuvers, including maneuvering speed and impact of weight changes, overbanking tendencies, factors effecting stall speed, and accelerated stalls. Objectives, procedures, and standards of all commercial flight maneuvers, including lazy eights, chandelles, steep spirals, and eights on pylons.

- Prior to completion of the module, students must pass a stage check to evaluate their ability to:
  1) Demonstrate any selected tasks included in the Private Pilot Airplane Airmen Certification Standards within the established standards.
  2) Perform steep turns in accordance with the Commercial Pilot testing standards.
  3) Demonstrate a basic understanding of chandelles by performing the maneuver in accordance with published procedures, complete the rollout at the 180° point +/- 20 degrees, no more than 10 knots above stall speed.
  4) Demonstrate a basic understanding of lazy eights by performing the maneuver in accordance with published procedures, arrive at each 180° point +/- 20 degrees, at an altitude +/- 200 feet from entry altitude, at an airspeed +/- 20 knots from entry airspeed.
  5) Demonstrate a basic understanding of steep spirals by performing the maneuver in accordance with published procedures, maintain a constant radius with only minor deviations while maintaining specified airspeed +/- 20 knots, and roll out toward specified heading +/- 20 degrees.
  6) Demonstrate a basic understanding of eights on pylons by performing the maneuver in accordance with published procedures, select suitable pylons, determine the approximate pivotal altitude, enter the maneuver at the appropriate altitude and airspeed, and maintain the reference line on each pylon with only minor deviations.

7) Perform an accelerated stall in accordance with published procedures, acknowledge the cues and recover promptly at the first indication of an impending stall.

8) Perform a power-off 180° accuracy approach and touch down -200/+400 feet from the specified touchdown point.

Notes:

- Lessons may be completed out of sequence as necessary to meet academic goals set by the instructor.
- Multiple instructional periods may be required to meet lesson requirements.

GLEIM

Aviation

Allow Retake | Extend Deadline

Commercial Pilot, Quiz Module 4 Exam (AQ)

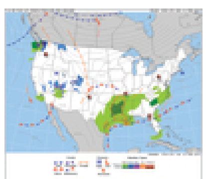
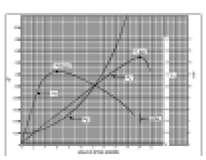
Started: Jan 22, 2021 09:34 AM

Stopped: Jan 22, 2021 10:47 AM

Grade: 92.00

Quiz Deadline: Sep 28, 2021 12:00 AM

Question	Answer
Question **What is meant by the Special METAR weather observation for KBOI?** **SPECI KBOI 091854Z 32005KT 1 1/2SM RA BR OVC007 17/16 A2990 RMK RAB12** (/gradebookutility/question.php?queID=52164)	**Incorrect (b)** Chosen: a
Question **The conditions necessary for the formation of cumulonimbus clouds are a lifting action and** (/gradebookutility/question.php?queID=52118)	**Correct** Chosen: c

Question	Answer
Question **If a temperature inversion is encountered immediately after takeoff or during an approach to a landing, a potential hazard exists due to** (/gradebookutility/question.php?queID=52153)	**Correct** Chosen: a
Question **An airplane leaving ground effect will** (/gradebookutility/question.php?queID=52006)	**Correct** Chosen: b
Question **To produce the same lift while in ground effect as when out of ground effect, the airplane requires** (/gradebookutility/question.php?queID=52007)	**Correct** Chosen: a
Question **Ice pellets encountered during flight are normally evidence that** (/gradebookutility/question.php?queID=52133)	**Correct** Chosen: c
Question **The angle of attack at which a wing stalls remains constant regardless of** (/gradebookutility/question.php?queID=51964)	**Correct** Chosen: a
Question **What type of weather is likely to occur in area 3 at 0000Z?** (/gradebookutility/question.php?queID=52197) (/gradebookutility/question.php?queID=52197)  Figure 69. (/pled/assessment/main.php?page=imageviewer&origin=gb&imgKey=69&tabs=69&asIds[]=123649)	**Correct** Chosen: a
Question **An aircraft 60 miles from a VOR station has a CDI indication of one-fifth deflection, this represents a course centerline deviation of approximately** (/gradebookutility/question.php?queID=46230)	**Correct** Chosen: b
Question **If an airplane glides at an angle of attack of 10°, how much altitude will it lose in 1 mile?** (/gradebookutility/question.php?queID=51995) (/gradebookutility/question.php?queID=51995)  Figure 3. (/pled/assessment/main.php?page=imageviewer&origin=gb&imgKey=3&tabs=3&asIds[]=123649)	**Correct** Chosen: b

<table>
<tr><th>Question</th><th>Answer</th></tr>
<tr><td>Question In small airplanes, normal recovery from spins may become difficult if the (/gradebookutility/question.php?queID=51976)</td><td>Correct
Chosen: b</td></tr>
<tr><td>Question What values are used for Winds Aloft Forecasts? (/gradebookutility/question.php?queID=52201)</td><td>Correct
Chosen: b</td></tr>
<tr><td>Question One of the main functions of flaps during the approach and landing is to (/gradebookutility/question.php?queID=51953)</td><td>Incorrect (b)
Chosen: a</td></tr>
<tr><td>Question To hold an airplane in level flight at airspeeds from very slow to very fast, a pilot must coordinate thrust and (/gradebookutility/question.php?queID=51998)</td><td>Correct
Chosen: c</td></tr>
<tr><td>Question Baggage weighing 90 pounds is placed in a normal category airplane’s baggage compartment which is placarded at 100 pounds. If this airplane is subjected to a positive load factor of 3.5 Gs, the total load of the baggage would be (/gradebookutility/question.php?queID=52038)</td><td>Correct
Chosen: b</td></tr>
<tr><td>Question The L/D ratio at a 2° angle of attack is approximately the same as the L/D ratio for a (/gradebookutility/question.php?queID=51996)
(/gradebookutility/question.php?queID=51996)

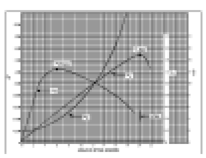



Figure 3.
(/pled/assessment/main.php?page=imageviewer&origin=gb&imgKey=3&tabs=3&asIds[]=123649)</td><td>Correct
Chosen: c</td></tr>
<tr><td>Question GIVEN:
<table>
<tr><td>Winds at 3,000 feet AGL</td><td>30 kts</td></tr>
<tr><td>Surface winds</td><td>Calm</td></tr>
</table>
While on approach for landing, under clear skies with convective turbulence a few hours after sunrise, one should (/gradebookutility/question.php?queID=52154)</td><td>Correct
Chosen: a</td></tr>
<tr><td>Question Lift on a wing is most properly defined as the (/gradebookutility/question.php?queID=51994)</td><td>Correct
Chosen: a</td></tr>
<tr><td>Question In the Northern Hemisphere, the wind is deflected to the (/gradebookutility/question.php?queID=52049)</td><td>Correct
Chosen: a</td></tr>
</table>

Question	Answer
Question **What weather phenomenon is implied within an area enclosed by small scalloped lines on a U.S. High-Level Significant Weather Prognostic Chart?** (/gradebookutility/question.php?queID=52189)	**Correct** Chosen: b
Question **Which are characteristics of a cold air mass moving over a warm surface?** (/gradebookutility/question.php?queID=52079)	**Correct** Chosen: b
Question **Which is true regarding the forces acting on an aircraft in a steady-state descent? The sum of all** (/gradebookutility/question.php?queID=51982)	**Correct** Chosen: c
Question **A rectangular wing, as compared to other wing planforms, has a tendency to stall first at the** (/gradebookutility/question.php?queID=51958)	**Correct** Chosen: b
Question **What performance is characteristic of flight at maximum lift/drag ratio in a propeller-driven airplane? Maximum** (/gradebookutility/question.php?queID=51990)	**Correct** Chosen: b
Question **When navigating using only VOR/DME based RNAV, selection of a VOR NAVAID that does not have DME service will** (/gradebookutility/question.php?queID=46236)	**Correct** Chosen: a
Question **The formation of either predominantly stratiform or predominantly cumuliform clouds is dependent upon the** (/gradebookutility/question.php?queID=52106)	**Correct** Chosen: b
Question **Convective currents are most active on warm summer afternoons when winds are** (/gradebookutility/question.php?queID=52146)	**Correct** Chosen: a
Question **Dashed lines on a Surface Analysis Chart, if depicted, indicate that the pressure gradient is** (/gradebookutility/question.php?queID=52173)	**Correct** Chosen: a
Question **Which is true with respect to a high- or low-pressure system?** (/gradebookutility/question.php?queID=52056)	**Correct** Chosen: c
Question **A strong wind shear can be expected** (/gradebookutility/question.php?queID=52066)	**Correct** Chosen: c
Question **Longitudinal stability involves the motion of the airplane controlled by its** (/gradebookutility/question.php?queID=52009)	**Correct** Chosen: b

Question	Answer
Question **An airplane will stall at the same** (/gradebookutility/question.php?queID=51969)	**Correct** Chosen: a
Question **Which situation would result in reverse sensing of a VOR receiver?** (/gradebookutility/question.php?queID=46232)	**Correct** Chosen: a
Question **The load factor for an airplane in a 60° banked turn is** (/gradebookutility/question.php?queID=52028)	**Correct** Chosen: b
Question **Some aircraft are fitted with wing spoilers to decrease** (/gradebookutility/question.php?queID=51956)	**Correct** Chosen: c
Question **What is an important characteristic of wind shear?** (/gradebookutility/question.php?queID=52150)	**Correct** Chosen: c
Question **Convective circulation patterns associated with sea breezes are caused by** (/gradebookutility/question.php?queID=52110)	**Incorrect (b)** Chosen: c
Question **What is the standard temperature at 20,000 feet?** (/gradebookutility/question.php?queID=52073)	**Correct** Chosen: c
Question **What prevents air from flowing directly from high-pressure areas to low-pressure areas?** (/gradebookutility/question.php?queID=52059)	**Correct** Chosen: a
Question **Which of the following would best indicate to the pilot that the load factor placed on the airframe has been increased?** (/gradebookutility/question.php?queID=52039)	**Incorrect (a)** Chosen: c
Question **While executing a 60° level turn, your aircraft is at a load factor of 2.0. What does this mean?** (/gradebookutility/question.php?queID=52040)	**Correct** Chosen: a
Question **Which is correct with respect to rate and radius of turn for an airplane flown in a coordinated turn at a constant altitude?** (/gradebookutility/question.php?queID=52017)	**Correct** Chosen: a
Question **What significant cloud coverage is reported by this pilot report?** KMOB UA/OV 15NW MOB 1340Z/SK OVC-TOP025/OVC045-TOP090 (/gradebookutility/question.php?queID=52167)	**Correct** Chosen: b

Question	Answer
Question **Hatching on a Constant Pressure Analysis Chart indicates** (/gradebookutility/question.php?queID=52202)	**Correct** Chosen: b
Question **While flying cross-country in the Northern Hemisphere, you experience a continuous left crosswind which is associated with a major wind system. This indicates that you** (/gradebookutility/question.php?queID=52055)	**Correct** Chosen: a
Question **Which conditions are favorable for the formation of a surface based temperature inversion?** (/gradebookutility/question.php?queID=52093)	**Correct** Chosen: a
Question **Ice pellets encountered during flight normally are evidence that** (/gradebookutility/question.php?queID=52130)	**Correct** Chosen: b
Question **In theory, if the airspeed of an airplane is doubled while in level flight, parasite drag will become** (/gradebookutility/question.php?queID=51985)	**Correct** Chosen: c
Question **What is the standard temperature at 6,500 feet?** (/gradebookutility/question.php?queID=52074)	**Correct** Chosen: b
Question **If the same angle of attack is maintained in ground effect as when out of ground effect, lift will** (/gradebookutility/question.php?queID=52008)	**Correct** Chosen: a

Course Assessment Form

Course: FSCI 1550 Flight 2 Transition
Semester Taught: Spring 2021
Number of Students in Course: 2

Student Learning Outcome Assessed	Assessment Results: (Percentage of student written exams and stage checks passed on first attempt)	Benchmark achieved? (Benchmark: 70% of student written exams and stage checks passed on first attempt)
H. Use the techniques, skills, and modern technology necessary for professional practice.	Stage Check Pass Rate: 50% Written Exam Pass Rate: 100%	Yes
J. Apply pertinent knowledge in identifying and solving problems.	Stage Check Pass Rate: 50% Written Exam Pass Rate: 100%	Yes

Description of Assessment: The student assessment consists of multiple-choice module written exams as well as stage check practical exams. Written exams require a minimum score of 70% in order to pass. Each stage check consists of an oral portion and a flight portion, and satisfactory or unsatisfactory performance is determined in accordance with the Module Completion Standards and/or the appropriate Airmen Certification Standards (ACS)/Practical Test Standards (PTS). Attached are the module completion standards included in the approved Training Course Outline. This document describes the expectations and assessment standards for stage check oral and flight checks. Also attached is a sample of a student's completed module written exam.

Recommendations: Student weaknesses in engine failures and landings were identified in stage check flights resulting in a decrease in pass rates. These deficiencies will be discussed and addressed over the summer during instructor training sessions prior to the start of the Fall 2021 semester. Additional emphasis will be placed on these tasks during new-hire instructor standardizations. If the deficiencies continue, revisions to the course content will be considered.

Module 4

Post Private Pilot Operations

Prerequisites: Prior to beginning this module the student must possess a Private Pilot Certificate with an Airplane Single-Engine Land rating, a First or Second Class Medical Certificate issued within the previous 12 calendar months and must either already hold an Instrument Airplane rating, *or* they must be concurrently enrolled in the Instrument Rating Course and the Commercial Pilot Course.

Objective: To introduce the student to the Commercial Pilot maneuvers and to gain proficiency in VFR cross-country flying, night operations, and takeoffs and landings.

Completion Standards:

- The student must meet the following minimum training time requirements during this module:

DUAL			SOLO			TOTAL	OTHER		
Local	XC Total	XC Night	Local Total	Local Night	XC	Airplane	ATD	Pre/ Post	Ground
9.0 – 12.9	4.0 – 8.6	2.0	2.5 – 6.4	2.5	0 - 4.6	24.0	4.5	6.4	11.0

- Prior to completion of the module, students must pass a written exam and stage check to evaluate their understanding of:
  1) All knowledge areas included in Modules 1 – 3.
  2) Weather products required for preflight planning, current and forecast weather for departure, enroute, and arrival phases of flight.
  3) Meteorology applicable for flights conducted in Visual Meteorological Conditions to include atmospheric composition and stability, wind, temperature, moisture, precipitation, weather system formation, air masses, fronts, clouds, turbulence, thunderstorms, microbursts, icing, and fog.
  4) GPS navigation, including equipment, regulations, authorized use of databases, and receiver autonomous integrity monitoring.

5) Aerodynamics associated with flight maneuvers, including maneuvering speed and impact of weight changes, overbanking tendencies, factors effecting stall speed, and accelerated stalls. Objectives, procedures, and standards of all commercial flight maneuvers, including lazy eights, chandelles, steep spirals, and eights on pylons.

- Prior to completion of the module, students must pass a stage check to evaluate their ability to:
  1) Demonstrate any selected tasks included in the Private Pilot Airplane Airmen Certification Standards within the established standards.
  2) Perform steep turns in accordance with the Commercial Pilot testing standards.
  3) Demonstrate a basic understanding of chandelles by performing the maneuver in accordance with published procedures, complete the rollout at the 180° point +/- 20 degrees, no more than 10 knots above stall speed.
  4) Demonstrate a basic understanding of lazy eights by performing the maneuver in accordance with published procedures, arrive at each 180° point +/- 20 degrees, at an altitude +/- 200 feet from entry altitude, at an airspeed +/- 20 knots from entry airspeed.
  5) Demonstrate a basic understanding of steep spirals by performing the maneuver in accordance with published procedures, maintain a constant radius with only minor deviations while maintaining specified airspeed +/- 20 knots, and roll out toward specified heading +/- 20 degrees.
  6) Demonstrate a basic understanding of eights on pylons by performing the maneuver in accordance with published procedures, select suitable pylons, determine the approximate pivotal altitude, enter the maneuver at the appropriate altitude and airspeed, and maintain the reference line on each pylon with only minor deviations.

7) Perform an accelerated stall in accordance with published procedures, acknowledge the cues and recover promptly at the first indication of an impending stall.

8) Perform a power-off 180° accuracy approach and touch down -200/+400 feet from the specified touchdown point.

Notes:

- Lessons may be completed out of sequence as necessary to meet academic goals set by the instructor.
- Multiple instructional periods may be required to meet lesson requirements.

GLEIM

Aviation

Commercial Pilot, Quiz Module 4 Exam (AQ)

Started: Mar 19, 2021 02:26 PM

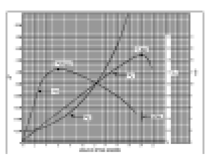
Stopped: Mar 19, 2021 02:50 PM

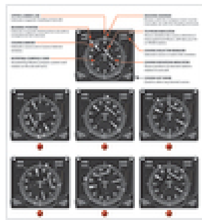
Grade: 96.00

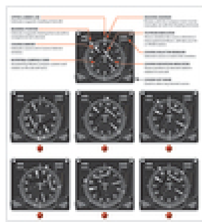
Quiz Deadline: Sep 28, 2021 12:00 AM

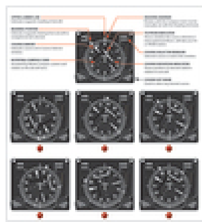
Question	Answer
Question **In small airplanes, normal recovery from spins may become difficult if the** (/gradebookutility/question.php?queID=51976)	**Cor** Cho b
Question **Moisture is added to a parcel of air by** (/gradebookutility/question.php?queID=52048)	**Cor** Cho c

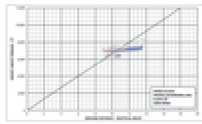
Question	Answer
Question **To increase the rate of turn and at the same time decrease the radius, a pilot should** (/gradebookutility/question.php?queID=52018)	**Cor** Cho c
Question **What performance is characteristic of flight at maximum lift/drag ratio in a propeller-driven airplane? Maximum** (/gradebookutility/question.php?queID=51990)	**Cor** Cho b
Question **On a Surface Analysis Chart, the solid lines that depict sea level pressure patterns are called** (/gradebookutility/question.php?queID=52172)	**Cor** Cho a
Question **When flying into a low-pressure area in the Northern Hemisphere, the wind direction and velocity will be from the** (/gradebookutility/question.php?queID=52058)	**Cor** Cho b
Question **Which is true regarding the force of lift in steady, unaccelerated flight?** (/gradebookutility/question.php?queID=51989)	**Cor** Cho b
Question **What feature is normally associated with the cumulus stage of a thunderstorm?** (/gradebookutility/question.php?queID=52116)	**Cor** Cho b
Question **Which button/feature provides information on the closest airport at any given time?** (/gradebookutility/question.php?queID=46251)	**Cor** Cho b
Question **Longitudinal dynamic instability in an airplane can be identified by** (/gradebookutility/question.php?queID=52010)	**Cor** Cho b
Question **One of the most dangerous features of mountain waves is the turbulent areas in and** (/gradebookutility/question.php?queID=52143)	**Cor** Cho a
Question **Which is true regarding the development of convective circulation?** (/gradebookutility/question.php?queID=52108)	**Cor** Cho a

Question	Answer
Question **Ice pellets encountered during flight normally are evidence that** (/gradebookutility/question.php?queID=52130)	**Cor** Cho b
Question **Which is a characteristic typical of a stable air mass?** (/gradebookutility/question.php?queID=52102)	**Cor** Cho c
Question **If an aircraft with a gross weight of 2,000 pounds was subjected to a 60° constant-altitude bank, the total load would be** (/gradebookutility/question.php?queID=52030)	**Cor** Cho b
Question **On initial climbout after takeoff and with the autopilot engaged, you encounter icing conditions. In this situation you can expect** (/gradebookutility/question.php?queID=52136)	**Cor** Cho a
Question **The ratio between the total airload imposed on the wing and the gross weight of an aircraft in flight is known as** (/gradebookutility/question.php?queID=52024)	**Cor** Cho a
Question **The stalling speed of an airplane is most affected by** (/gradebookutility/question.php?queID=51974)	**Cor** Cho c
Question **How much altitude will this airplane lose in 3 statute miles of gliding at an angle of attack of 8°?** (/gradebookutility/question.php?queID=51997) (/gradebookutility/question.php?queID=51997)  Figure 3. (/pled/assessment/main.php?page=imageviewer&origin=gb&imgKey=3&tabs=3&asIds[]=123649)	**Cor** Cho c
Question **In the following METAR/TAF for HOU, what is the ceiling and visibility forecast on the 7th day of the month at 0600Z?** **KHOU 061734Z 0618/0718 16014G22KT P6SM VCSH BKN018 BKN035** **FM070100 17010KT P6SM BKN015 OVC025** **FM070500 17008KT 4SM BR SCT008 OVC012** **FM071000 18005KT 3SM BR OVC007** **FM071500 23008KT 5SM BR VCSH SCT008 OVC015** (/gradebookutility/question.php?queID=52180)	**Cor** Cho c

Question	Answer
Question **Ice pellets encountered during flight are normally evidence that** (/gradebookutility/question.php?queID=52133)	**Cor** Cho c
Question **Which illustration indicates that the airplane is crossing the 030 radial?** (/gradebookutility/question.php?queID=46241) (/gradebookutility/question.php?queID=46241)  Figure 17. (/pled/assessment/main.php?page=imageviewer&origin=gb&imgKey=17_color&tabs=17_color&asIds[]=123649)	**Cor** Cho b
Question **Every physical process of weather is accompanied by or is the result of** (/gradebookutility/question.php?queID=52047)	**Cor** Cho a
Question **In the Northern Hemisphere, the wind is deflected to the** (/gradebookutility/question.php?queID=52049)	**Cor** Cho a
Question **When navigating using only VOR/DME based RNAV, selection of a VOR NAVAID that does not have DME service will** (/gradebookutility/question.php?queID=46236)	**Cor** Cho a
Question **While maintaining a constant angle of bank and altitude in a coordinated turn, an increase in airspeed will** (/gradebookutility/question.php?queID=52019)	**Cor** Cho b
Question **Which is true regarding the use of flaps during level turns?** (/gradebookutility/question.php?queID=51954)	**Cor** Cho b
Question **Lift on a wing is most properly defined as the** (/gradebookutility/question.php?queID=51994)	**Cor** Cho a

Question	Answer
Question **Limit load factor is the ratio of** (/gradebookutility/question.php?queID=52041)	**Cor** Cho c
Question **Baggage weighing 90 pounds is placed in a normal category airplane's baggage compartment which is placarded at 100 pounds. If this airplane is subjected to a positive load factor of 3.5 Gs, the total load of the baggage would be** (/gradebookutility/question.php?queID=52038)	**Cor** Cho b
Question **(Refer to illustration 1.) If the aircraft turns to the heading indicated by the heading marker, it will** (/gradebookutility/question.php?queID=46245) (/gradebookutility/question.php?queID=46245)  Figure 17. (/pled/assessment/main.php?page=imageviewer&origin=gb&imgKey=17_color&tabs=17_color&asIds[]=123649)	**Inc (a)** Cho b
Question **When the CDI needle is centered during an airborne VOR check, the omnibearing selector and the TO/FROM indicator should read** (/gradebookutility/question.php?queID=46231)	**Cor** Cho b
Question **At what altitude is the freezing level over area 5 on the 12-hr. significant weather prognostic chart?** (/gradebookutility/question.php?queID=52194) (/gradebookutility/question.php?queID=52194)  Figure 71. (/pled/assessment/main.php?page=imageviewer&origin=gb&imgKey=71&tabs=71&asIds[]=123649)	**Cor** Cho c
Question **During the life cycle of a thunderstorm, which stage is characterized predominately by downdrafts?** (/gradebookutility/question.php?queID=52124)	**Cor** Cho c
Question **Which is true regarding the use of airborne weather-avoidance radar for the recognition of certain weather conditions?** (/gradebookutility/question.php?queID=52126)	**Cor** Cho a

Question	Answer
Question **Which situation would most likely result in freezing precipitation? Rain falling from air which has a temperature of** (/gradebookutility/question.php?queID=52127)	**Cor** Cho c
Question **Fog produced by frontal activity is a result of saturation due to** (/gradebookutility/question.php?queID=52088)	**Cor** Cho c
Question **(Refer to illustration 2.) If the aircraft turns to the heading indicated by the heading marker, it will** (/gradebookutility/question.php?queID=46246) (/gradebookutility/question.php?queID=46246)  Figure 17. (/pled/assessment/main.php?page=imageviewer&origin=gb&imgKey=17_color&tabs=17_color&asIds[]=123649)	**Inc** **(c)** Cho b
Question **Virga is best described as** (/gradebookutility/question.php?queID=52081)	**Cor** Cho a
Question **The station originating the following METAR observation has a field elevation of 3,500 feet MSL. If the sky cover is one continuous layer, what is the thickness of the cloud layer? (Top of overcast reported at 7,500 feet MSL.)** **METAR KHOB 151250Z 17006KT 4SM OVC005 13/11 A2998** (/gradebookutility/question.php?queID=52162)	**Cor** Cho b
Question **If the airspeed is increased from 89 knots to 98 knots during a coordinated level 45° banked turn, the load factor will** (/gradebookutility/question.php?queID=52037)	**Cor** Cho a
Question **The visibility entry in a Terminal Aerodrome Forecast (TAF) of P6SM implies that the prevailing visibility is expected to be greater than** (/gradebookutility/question.php?queID=52179)	**Cor** Cho b
Question **Of the following, which is accurate regarding turbulence associated with thunderstorms?** (/gradebookutility/question.php?queID=52119)	**Cor** Cho c

Question	Answer
Question **As you are flying with a headwind from the coastline inland toward your destination airport, your aircraft has engine failure. You would expect your glide path to be** (/gradebookutility/question.php?queID=52004) (/gradebookutility/question.php?queID=52004)  Figure 3A. (/pled/assessment/main.php? page=imageviewer&origin=gb&imgKey=3a&tabs=3a&asIds[]=123649)	**Cor** Cho b
Question **Which is a characteristic of stable air?** (/gradebookutility/question.php? queID=52101)	**Cor** Cho c
Question **The most current en route and destination weather information for an instrument flight should be obtained from the** (/gradebookutility/question.php? queID=52157)	**Cor** Cho a
Question **Effective navigation by means of GPS includes** (/gradebookutility/question.php?queID=46247)	**Cor** Cho a
Question **If the same angle of attack is maintained in ground effect as when out of ground effect, lift will** (/gradebookutility/question.php?queID=52008)	**Cor** Cho a
Question **A left side slip is used to counteract a crosswind drift during the final approach for landing. An over-the-top spin would most likely occur if the controls were used in which of the following ways? Holding the stick** (/gradebookutility/question.php?queID=51977)	**Cor** Cho c
Question **The Low Level Wind Shear Alert System (LLWAS) provides wind data and software process to detect the presence of a** (/gradebookutility/question.php? queID=52149)	**Cor** Cho b

Course Assessment Form

Course: FSCI 2150 Flight 3
Semester Taught: Spring 2021
Number of Students in Course: 12

Student Learning Outcome Assessed	Assessment Results: (Percentage of student written exams and stage checks passed on first attempt)	Benchmark achieved? (Benchmark: 70% of student written exams and stage checks passed on first attempt)
H. Use the techniques, skills, and modern technology necessary for professional practice.	Stage Check Pass Rate: 82% Written Exam Pass Rate: 100%	Yes
J. Apply pertinent knowledge in identifying and solving problems.	Stage Check Pass Rate: 82% Written Exam Pass Rate: 100%	Yes

Description of Assessment: The student assessment consists of multiple-choice module written exams as well as stage check practical exams. Written exams require a minimum score of 70% in order to pass. Each stage check consists of an oral portion and a flight portion, and satisfactory or unsatisfactory performance is determined in accordance with the Module Completion Standards and/or the appropriate Airmen Certification Standards (ACS)/Practical Test Standards (PTS). Attached are the module completion standards included in the approved Training Course Outline. This document describes the expectations and assessment standards for stage check oral and flight checks. Also attached is a sample of a student's completed module written exam.

Recommendations: Continue to identify and discuss student stage check deficiencies with the instructional staff each semester. Revisions to course content and/or module completion standards will be made as needed to ensure adequate student preparation.

Module 6

Holding and Approach Procedures

Prerequisites: Prior to beginning this module the student must possess a Private Pilot Certificate with an Airplane Single-Engine Land rating, a First or Second Class Medical Certificate and may be concurrently enrolled in the Instrument Rating Course and the Commercial Pilot Course.

Objective: To introduce the student to instrument flight operations, including holding procedures and instrument approach procedures.

Completion Standards:

- The student must meet the following minimum training time requirements during this module:

DUAL		OTHER		
Local	Inst. Ref.	ATD	Pre/ Post	Ground
12.0	8.8	7.0	5.6	17.5

- Prior to completion of the module, students must pass a written exam and stage check to evaluate their understanding of:
    1) Operation and common failure modes of flight instruments, including the pitot-static system, gyroscopic/electric instruments, magnetic compass, and vacuum systems.
    2) Characteristics of VOR, DME, and NDB equipment, including orientation, course determination, equipment, required checks, regulations, and common failure modes.
    3) Holding procedures, including purpose, reporting criteria, recommended entry procedures, holding speeds, and wind correction.
    4) Symbology found on IFR enroute and approach charts and diagrams.
    5) Procedures and limitations associated with non-precision approaches, precision approaches, missed approach procedures, circling approaches, and landing from an instrument approach.

- Prior to completion of the module, students must pass a stage check to evaluate their ability to:
  1) Perform an adequate preflight inspection of installed flight instruments, avionics, and navigation equipment by following the appropriate checklist and determine the aircraft is in a condition for safe instrument flight.
  2) Control the aircraft solely by reference to instruments in straight and level flight, constant rate/airspeed climbs and descents, and turns to headings while maintaining altitude +/- 150 feet, heading +/- 15 degrees, and airspeed +/- 15 knots.
  3) Comply with instrument approach procedures, establish the appropriate configuration, and maintain altitude +/- 200 feet, heading +/- 20 degrees, airspeed +/- 20 knots, and never allow full-scale deflection of the CDI, glideslope, or localizer indications.
  4) During non-precision approaches, establish a stabilized approach profile with a rate of descent that will ensure arrival at the MDA prior to reaching the missed approach point. Maintain the MDA, when reached, +200/-0 feet to the missed approach point.
  5) Transition at the decision altitude or MDA to a visual flight condition, allowing for safe visual maneuvering and a normal landing. Maintain positive aircraft control throughout the landing maneuver.
  6) During circling approaches, maneuver the aircraft after reaching the MDA on a flight path that will permit a normal landing on a runway. Maintain altitude +200/-0 feet until a descent to a normal landing can be made.
  7) Initiate a missed approach upon reaching the missed approach point or decision altitude when the required visual references are not available. Comply with published missed approach procedures and maintain recommended airspeed +/- 20 knots, heading or course +/- 20 degrees, and altitude +/- 200 feet during the missed approach procedure.
  8) Intercept a DME arc and maintain that arc within +/- 1 nautical mile while maintaining altitude +/- 200 feet and airspeed +/- 20 knots.

9) Conduct holding procedures, use an entry procedure that ensure the aircraft remains within the holding pattern airspace, use proper wind correction, and maintain airspeed +/- 20 knots, altitude +/- 200 feet, headings +/- 20 degrees, and never allow full-scale deflection of the CDI.

Notes:

- Lessons may be completed out of sequence as necessary to meet academic goals set by the instructor.
- Multiple instructional periods may be required to meet lesson requirements.

GLEIM

Aviation

Instrument Pilot, Quiz Module 5 Exam (AQ)

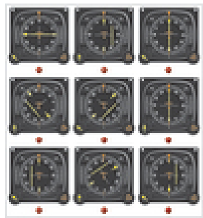
Started: Mar 08, 2021 01:02 PM

Stopped: Mar 08, 2021 01:39 PM

Grade: 84.00

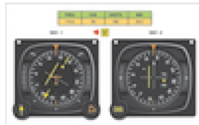
Quiz Deadline: Sep 30, 2021 12:00 AM

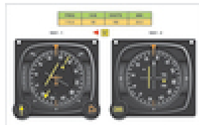
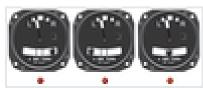
Question	Answer
Question **Which condition would cause the altimeter to indicate a lower altitude than actually flown (true altitude)?** (/gradebookutility/question.php?queID=49952)	**Correct** Chosen: c

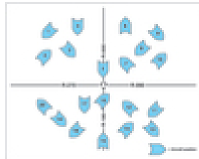
Question	Answer
Question **To which aircraft position does HSI presentation “F” correspond?** (/gradebookutility/question.php?queID=46477) (/gradebookutility/question.php?queID=46477)  Figure 96. (/pled/assessment/main.php?page=imageviewer&origin=gb&imgKey=96&tabs=96,97&asIds[]=123650)  Figure 97. (/pled/assessment/main.php?page=imageviewer&origin=gb&imgKey=97&tabs=96,97&asIds[]=123650)	**Correct** Chosen: a
Question **During IFR en route and terminal operations using an approved TSO-C129 or TSO-C196 GPS system for navigation, ground based navigational facilities** (/gradebookutility/question.php?queID=46484)	**Correct** Chosen: b
Question **Hand-held GPS systems, and GPS systems certified for VFR operation, may be used during IFR operations as** (/gradebookutility/question.php?queID=46482)	**Correct** Chosen: b
Question **Which of the following defines the type of altitude used when maintaining FL 210?** (/gradebookutility/question.php?queID=49948)	**Correct** Chosen: b
Question **If a half-standard-rate turn is maintained, how much time would be required to turn clockwise from a heading of 090° to a heading of 180°?** (/gradebookutility/question.php?queID=50008)	**Incorrect (b)** Chosen: a
Question **When airspeed is decreased in a turn, what must be done to maintain level flight?** (/gradebookutility/question.php?queID=50001)	**Correct** Chosen: a

Question	Answer
Question **What is the flight attitude? One instrument has malfunctioned.** (/gradebookutility/question.php?queID=50039) (/gradebookutility/question.php?queID=50039)  Figure 150. (/pled/assessment/main.php?page=imageviewer&origin=gb&imgKey=150&tabs=150&asIds[]=123650)	**Incorrect (a)** Chosen: b
Question **Reliance on GPS units** (/gradebookutility/question.php?queID=46490)	**Correct** Chosen: a
Question **On the taxi check, the magnetic compass should** (/gradebookutility/question.php?queID=49907)	**Correct** Chosen: c
Question **To level off at an airspeed higher than the descent speed, the addition of power should be made, assuming a 500 FPM rate of descent, at approximately** (/gradebookutility/question.php?queID=50019)	**Correct** Chosen: b
Question **When the CDI needle is centered during an airborne VOR check, the omni-bearing selector and the TO/FROM indicator should read** (/gradebookutility/question.php?queID=46433)	**Correct** Chosen: b
Question **What is the correct sequence in which to use the three skills used in instrument flying?** (/gradebookutility/question.php?queID=50026)	**Correct** Chosen: c
Question **Approximately what percent of the indicated vertical speed should be used to determine the number of feet to lead the level-off from a climb to a specific altitude?** (/gradebookutility/question.php?queID=50012)	**Correct** Chosen: a
Question **If a half-standard-rate turn is maintained, how long would it take to turn 135°?** (/gradebookutility/question.php?queID=50005)	**Correct** Chosen: c
Question **What indication should be observed on a turn coordinator during a left turn while taxiing?** (/gradebookutility/question.php?queID=49974)	**Correct** Chosen: b
Question **What is the third fundamental skill in attitude instrument flying?** (/gradebookutility/question.php?queID=50023)	**Correct** Chosen: c

Question	Answer
Question **While airborne, what is the maximum permissible variation between the two indicated bearings when checking one VOR system against the other?** (/gradebookutility/question.php?queID=46435)	**Correct** Chosen: b
Question **On what headings will the magnetic compass read most accurately during a level 360° turn, with a bank of approximately 15°?** (/gradebookutility/question.php?queID=49910)	**Correct** Chosen: b
Question **What is the first fundamental skill in attitude instrument flying?** (/gradebookutility/question.php?queID=50024)	**Correct** Chosen: b
Question **When an aircraft is decelerated, some attitude indicators will precess and incorrectly indicate a** (/gradebookutility/question.php?queID=49964)	**Correct** Chosen: c
Question **Where can the VOT frequency for a particular airport be found?** (/gradebookutility/question.php?queID=46437)	**Correct** Chosen: b
Question **To which aircraft position does HSI presentation "D" correspond?** (/gradebookutility/question.php?queID=46469) (/gradebookutility/question.php?queID=46469)  Figure 98. (/pled/assessment/main.php?page=imageviewer&origin=gb&imgKey=98&tabs=98,99&asIds[]=123650)  Figure 99. (/pled/assessment/main.php?page=imageviewer&origin=gb&imgKey=99&tabs=98,99&asIds[]=123650)	**Incorrect (c)** Chosen: a
Question **If the pitot tube ram air pressure hole and drain hole become obstructed, the airspeed indicator will operate** (/gradebookutility/question.php?queID=49926)	**Correct** Chosen: a
Question **For maintaining level flight at constant thrust, which instrument would be the least appropriate for determining the need for a pitch change?** (/gradebookutility/question.php?queID=50028)	**Incorrect (c)** Chosen: a

Question	Answer
Question **Conditions that determine pitch attitude required to maintain level flight are** (/gradebookutility/question.php?queID=50013)	**Correct** Chosen: b
Question **On which radial is the aircraft as indicated by the No. 1 NAV?** (/gradebookutility/question.php?queID=46461) (/gradebookutility/question.php?queID=46461)  Figure 95. (/pled/assessment/main.php? page=imageviewer&origin=gb&imgKey=95&tabs=95&asIds[]=123650)	**Correct** Chosen: c
Question **Which practical test should be made on the electric gyro instruments prior to starting an engine?** (/gradebookutility/question.php? queID=49954)	**Correct** Chosen: c
Question **During recoveries from unusual attitudes, level flight is attained the instant** (/gradebookutility/question.php?queID=50033)	**Correct** Chosen: c
Question **When airspeed is increased in a turn, what must be done to maintain a constant altitude?** (/gradebookutility/question.php? queID=50000)	**Correct** Chosen: b
Question **Which altitude is indicated when the altimeter is set to 29.92" Hg?** (/gradebookutility/question.php?queID=49937)	**Correct** Chosen: b
Question **When using VOT to make a VOR receiver check, the CDI should be centered and the OBS should indicate that the aircraft is on the** (/gradebookutility/question.php?queID=46430)	**Correct** Chosen: c
Question **What is the procedure for setting the altimeter when assigned an IFR altitude of 18,000 feet or higher on a direct flight off airways?** (/gradebookutility/question.php?queID=49946)	**Correct** Chosen: c
Question **During coordinated turns, which force moves the pendulous vanes of a vacuum-driven attitude indicator resulting in precession of the gyro toward the inside of the turn?** (/gradebookutility/question.php? queID=49959)	**Correct** Chosen: c

Question	Answer
Question **Which OBS selection on the No. 2 NAV would center the CDI and change the ambiguity indication to a TO?** (/gradebookutility/question.php?queID=46465) (/gradebookutility/question.php?queID=46465)  Figure 95. (/pled/assessment/main.php?page=imageviewer&origin=gb&imgKey=95&tabs=95&asIds[]=123650)	**Incorrect (c)** Chosen: b
Question **Which illustration indicates a slipping turn?** (/gradebookutility/question.php?queID=49994) (/gradebookutility/question.php?queID=49994)  Figure 144. (/pled/assessment/main.php?page=imageviewer&origin=gb&imgKey=144&tabs=144&asIds[]=123650)	**Correct** Chosen: c
Question **If, while in level flight, it becomes necessary to use an alternate source of static pressure vented inside the airplane, which of the following should the pilot expect?** (/gradebookutility/question.php?queID=49927)	**Correct** Chosen: a
Question **If a half-standard-rate turn is maintained, how long would it take to turn 360°?** (/gradebookutility/question.php?queID=50006)	**Correct** Chosen: c
Question **When checking the sensitivity of a VOR receiver, the number of degrees in course change as the OBS is rotated to move the CDI from center to the last dot on either side should be between** (/gradebookutility/question.php?queID=46449)	**Correct** Chosen: c
Question **In a Technologically Advanced Aircraft, the pilot sees the flight instruments on what?** (/gradebookutility/question.php?queID=49982)	**Correct** Chosen: a
Question **What indications should you observe on the turn-and-slip indicator during taxi?** (/gradebookutility/question.php?queID=49968)	**Correct** Chosen: a

Question	Answer
Question **To which aircraft position does HSI presentation “F” correspond?** (/gradebookutility/question.php?queID=46471) (/gradebookutility/question.php?queID=46471)  Figure 98. (/pled/assessment/main.php?page=imageviewer&origin=gb&imgKey=98&tabs=98,99&asIds[]=123650)  Figure 99. (/pled/assessment/main.php?page=imageviewer&origin=gb&imgKey=99&tabs=98,99&asIds[]=123650)	**Correct** Chosen: c
Question **During normal flight with a vacuum driven attitude indicator, control pressures normally should not move the horizon bar more than** (/gradebookutility/question.php?queID=49966)	**Incorrect (c)** Chosen: b
Question **If a standard-rate turn is maintained, how much time would be required to turn to the right from a heading of 090° to a heading of 270°?** (/gradebookutility/question.php?queID=50011)	**Correct** Chosen: a
Question **To which aircraft position does HSI presentation “D” correspond?** (/gradebookutility/question.php?queID=46475) (/gradebookutility/question.php?queID=46475)  Figure 96. (/pled/assessment/main.php?page=imageviewer&origin=gb&imgKey=96&tabs=96,97&asIds[]=123650)  Figure 97. (/pled/assessment/main.php?page=imageviewer&origin=gb&imgKey=97&tabs=96,97&asIds[]=123650)	**Incorrect (c)** Chosen: a

Question	Answer
Question **How should you preflight check the altimeter prior to an IFR flight?** (/gradebookutility/question.php?queID=49934)	**Correct** Chosen: c
Question **When an altimeter is changed from 30.11" Hg to 29.96" Hg, in which direction will the indicated altitude change and by what value?** (/gradebookutility/question.php?queID=49953)	**Correct** Chosen: b
Question **To which aircraft position(s) does HSI presentation "B" correspond?** (/gradebookutility/question.php?queID=46473) (/gradebookutility/question.php?queID=46473)  Figure 96. (/pled/assessment/main.php?page=imageviewer&origin=gb&imgKey=96&tabs=96,97&asIds[]=123650)  Figure 97. (/pled/assessment/main.php?page=imageviewer&origin=gb&imgKey=97&tabs=96,97&asIds[]=123650)	**Incorrect (b)** Chosen: c
Question **The primary reason the pitch attitude must be increased, to maintain a constant altitude during a coordinated turn, is because the** (/gradebookutility/question.php?queID=50003)	**Correct** Chosen: b
Question **What is the correct sequence for recovery from the unusual attitude indicated?** (/gradebookutility/question.php?queID=50034) (/gradebookutility/question.php?queID=50034)  Figure 145. (/pled/assessment/main.php?page=imageviewer&origin=gb&imgKey=145&tabs=145&asIds[]=123650)	**Correct** Chosen: b

Phone: (800) 874-5346 | Fax: (352) 375-6940

Course Assessment Form

Course: FSCI 2550 Flight 4
Semester Taught: Spring 2021
Number of Students in Course: 14

Student Learning Outcome Assessed	Assessment Results: (Percentage of student written exams and stage checks passed on first attempt)	Benchmark achieved? (Benchmark: 70% of student written exams and stage checks passed on first attempt)
H. Use the techniques, skills, and modern technology necessary for professional practice.	Stage Check Pass Rate: 78% Written Exam Pass Rate: 100%	Yes
J. Apply pertinent knowledge in identifying and solving problems.	Stage Check Pass Rate: 78% Written Exam Pass Rate: 100%	Yes

Description of Assessment: The student assessment consists of multiple-choice module written exams as well as stage check practical exams. Written exams require a minimum score of 70% in order to pass. Each stage check consists of an oral portion and a flight portion, and satisfactory or unsatisfactory performance is determined in accordance with the Module Completion Standards and/or the appropriate Airmen Certification Standards (ACS)/Practical Test Standards (PTS). Attached are the module completion standards included in the approved Training Course Outline. This document describes the expectations and assessment standards for stage check oral and flight checks. Also attached is a sample of a student's completed module written exam.

Recommendations: Continue to identify and discuss student stage check deficiencies with the instructional staff each semester. Revisions to course content and/or module completion standards will be made as needed to ensure adequate student preparation.

Module 8

Technically Advanced Airplane Operations

Prerequisites: Prior to beginning this module the student must possess a Private Pilot Airplane Single-engine Land certificate and an Instrument Airplane Rating.

Objective: To introduce the student to Technologically Advanced Airplane (TAA) operations and to gain proficiency in cross-country operations, commercial pilot maneuvers, and commercial aeronautical knowledge.

Completion Standards:

- The student must meet the following minimum training time requirements during this module:

TOTAL				OTHER		
Local	XC	TAA	Airplane	ATD	Pre/ Post	Ground
15.0	8.5	10.0	23.5	4.5	5.6	13.5

- Prior to completion of the module, students must pass a written exam to evaluate their understanding of:
  1) Major aircraft components and systems by describing normal operation of systems such as primary and secondary flight controls and trim, powerplant and propeller, landing gear, fuel, oil, hydraulic, electrical, flight instruments, avionics, and environmental systems.
  2) Use of all performance charts, tables, and data to determine takeoff and landing, climb, and cruise performance.
  3) Weather products required for preflight planning, current and forecast weather for departure, enroute, and arrival phases of flight.
  4) Meteorology applicable for flights conducted in both instrument and Visual Meteorological Conditions to include atmospheric composition and stability, wind, temperature, moisture, precipitation, weather system formation, airmasses, fronts, clouds, turbulence, thunderstorms, microbursts, icing, and fog.

5) Airworthiness, including certificate and document locations and expiration, required inspections, airworthiness directives, equipment requirements, and flight with inoperative equipment.
6) Currency requirements, privileges, limitations, medical certification, and documents related to commercial pilot operations.

- Prior to completion of the module, students must pass a stage check to evaluate their ability to:
    1) Perform steep turns and slow flight in accordance with published procedures while maintaining altitude +/- 100 feet, airspeed +/- 10 knots, and heading +/- 10 degrees.
    2) Perform power-on, power-off, and accelerated stalls in accordance with the Commercial Pilot testing standards.
    3) Perform chandelles in accordance with published procedures, complete the rollout at the 180° point +/- 15 degrees, no more than 10 knots above stall speed.
    4) Perform lazy eights in accordance with published procedures, arrive at each 180° point +/- 15 degrees, at an altitude +/- 150 feet from entry altitude, at an airspeed +/- 15 knots from entry airspeed.
    5) Perform steep spirals in accordance with published procedures, maintain a constant radius with only minor deviations while maintaining specified airspeed +/- 15 knots, and roll out toward specified heading +/- 15 degrees.
    6) Perform eights on pylons in accordance with published procedures, select suitable pylons, determine the approximate pivotal altitude, enter the maneuver at the appropriate altitude and airspeed, and maintain the reference line on each pylon with only minor deviations.
    7) Perform a power-off 180° accuracy approach and touch down -200/+400 feet from the specified touchdown point.
    8) Perform normal takeoffs and landings, short-field takeoffs, soft-field takeoffs, and soft-field landings in accordance with the Commercial Pilot testing standards.

9) Perform short-field landings, establish the recommended approach and landing configuration while maintaining airspeed +/- 5 knots, touchdown within 400 feet beyond a specified point with no side drift and minimum float.

Notes:

- Lessons may be completed out of sequence as necessary to meet academic goals set by the instructor.
- Multiple instructional periods may be required to meet lesson requirements.

GLEIM

Aviation

Commercial Pilot, Quiz Module 8 Exam (AQ)

Started: May 10, 2021 10:01 AM

Stopped: May 10, 2021 10:48 AM

Grade: 88.00

Quiz Deadline: Sep 30, 2021 12:00 AM

Question	Answer
Question **If the airspeed is increased from 90 knots to 135 knots during a level 60° banked turn, the load factor will** (/gradebookutility/question.php?queID=52031)	**Correct** Chosen: c
Question **Acceleration past critical Mach speed may cause compressibility issues such as** (/gradebookutility/question.php?queID=52045)	**Incorrect (c)** Chosen: a

<table>
<tr><th>Question</th><th>Answer</th></tr>
<tr><td>Question The need to slow an aircraft below V_A is brought about by the following weather phenomenon: (/gradebookutility/question.php?queID=51966)</td><td>Correct
Chosen: b</td></tr>
<tr><td>Question To serve as pilot in command of an airplane that is certified for more than one pilot crewmember, and operated under Part 91, a person must (/gradebookutility/question.php?queID=45745)</td><td>Correct
Chosen: c</td></tr>
<tr><td>Question Of the following, which is accurate regarding turbulence associated with thunderstorms? (/gradebookutility/question.php?queID=52119)</td><td>Correct
Chosen: c</td></tr>
<tr><td>Question
GIVEN:
<table>
<tr><td>Temperature</td><td>75°F</td></tr>
<tr><td>Pressure altitude</td><td>6,000 ft</td></tr>
<tr><td>Weight</td><td>2,900 lb</td></tr>
<tr><td>Headwind</td><td>20 kts</td></tr>
</table>
To safely take off over a 50-foot obstacle in 1,000 feet, what weight reduction is necessary? (/gradebookutility/question.php?queID=45887)
(/gradebookutility/question.php?queID=45887)

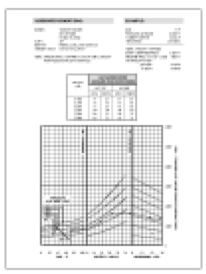
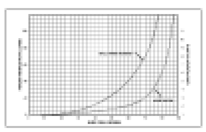
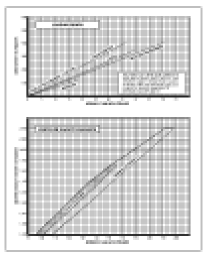
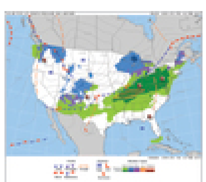



Figure 32.
(/pled/assessment/main.php?page=imageviewer&origin=gb&imgKey=32&tabs=32&asIds[]=123657)</td><td>Correct
Chosen: c</td></tr>
<tr><td>Question An aircraft carrying passengers for hire has been on a schedule of inspection every 100 hours of time in service. Under which condition, if any, may that aircraft be operated beyond 100 hours without a new inspection? (/gradebookutility/question.php?queID=45847)</td><td>Correct
Chosen: c</td></tr>
<tr><td>Question Which is the correct symbol for the stalling speed or the minimum steady flight speed in a specified configuration? (/gradebookutility/question.php?queID=45705)</td><td>Correct
Chosen: b</td></tr>
<tr><td>Question Except when necessary for takeoff or landing or unless otherwise authorized by the Administrator, the minimum altitude for IFR flight is (/gradebookutility/question.php?queID=45811)</td><td>Correct
Chosen: c</td></tr>
</table>

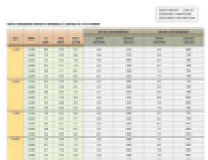
Question	Answer
Question **Aircraft maintenance records must include the current status of the** (/gradebookutility/question.php?queID=45851)	**Correct** Chosen: c
Question **Airborne weather radar is installed to help the crew** (/gradebookutility/question.php?queID=52138)	**Correct** Chosen: b
Question **What is the standard temperature at 6,500 feet?** (/gradebookutility/question.php?queID=52074)	**Correct** Chosen: b
Question **Which statement is true concerning the effect of the application of carburetor heat?** (/gradebookutility/question.php?queID=52314)	**Correct** Chosen: a
Question **Every physical process of weather is accompanied by or is the result of** (/gradebookutility/question.php?queID=52047)	**Correct** Chosen: a
Question **What is the stall speed of an airplane under a load factor of 2.5 Gs if the unaccelerated stall speed is 60 knots?** (/gradebookutility/question.php?queID=52033) (/gradebookutility/question.php?queID=52033)  Figure 4. (/pled/assessment/main.php?page=imageviewer&origin=gb&imgKey=4&tabs=4&asIds[]=123657)	**Correct** Chosen: c
Question **Detonation may occur at high-power settings when** (/gradebookutility/question.php?queID=52318)	**Correct** Chosen: a
Question **Which is true concerning required maintenance inspections?** (/gradebookutility/question.php?queID=45846)	**Correct** Chosen: b
Question **Your transponder is inoperative. In order to enter Class B airspace, you must submit a request for a deviation from the** (/gradebookutility/question.php?queID=45834)	**Correct** Chosen: c
Question **The conditions necessary for the formation of cumulonimbus clouds are a lifting action and** (/gradebookutility/question.php?queID=52118)	**Correct** Chosen: c
Question **If an airplane is loaded to the rear of its CG range, it will tend to be unstable about its** (/gradebookutility/question.php?queID=52013)	**Correct** Chosen: b

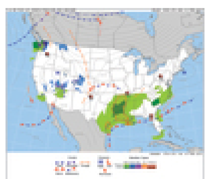
Question	Answer
Question **14 CFR Part 1 defines V_{NO} as** (/gradebookutility/question.php?queID=45712)	**Incorrect (a)** Chosen: c
Question **To act as pilot in command of a tailwheel airplane, without prior experience, a pilot must** (/gradebookutility/question.php?queID=45735)	**Correct** Chosen: b
Question GIVEN: (see table below) **Will the CG remain within limits after 30 gallons of fuel has been used in flight?** (/gradebookutility/question.php?queID=45935) (/gradebookutility/question.php?queID=45935)  Figure 38. (/pled/assessment/main.php?page=imageviewer&origin=gb&imgKey=38&tabs=38&asIds[]=123657)	**Incorrect (a)** Chosen: c
Question **At what time will the forecast conditions occur?** (/gradebookutility/question.php?queID=52199) (/gradebookutility/question.php?queID=52199)  Figure 70. (/pled/assessment/main.php?page=imageviewer&origin=gb&imgKey=70&tabs=70&asIds[]=123657)	**Correct** Chosen: a
Question **Which statement is true regarding squall lines?** (/gradebookutility/question.php?queID=52121)	**Correct** Chosen: c

GIVEN:

Empty weight (oil is included)	1,271 lb
Empty weight moment (in-lb./1,000)	102.04
Pilot and copilot	360 lb
Cargo	340 lb
Fuel	37 gal

Question	Answer
Question **Which in-flight hazard is most commonly associated with warm fronts?** (/gradebookutility/question.php?queID=52089)	**Correct** Chosen: c
Question **A pilot convicted of operating an aircraft as a crewmember under the influence of alcohol, or using drugs that affect the person's faculties, is grounds for a** (/gradebookutility/question.php?queID=45724)	**Correct** Chosen: c
Question **When must an operational check on the aircraft VOR equipment be accomplished to operate under IFR? Within the preceding** (/gradebookutility/question.php?queID=45805)	**Correct** Chosen: c
Question **Which is the correct symbol for the stalling speed or the minimum steady flight speed at which the airplane is controllable?** (/gradebookutility/question.php?queID=45706)	**Incorrect (a)** Chosen: c
Question **What type of In-Flight Weather Advisories provides an en route pilot with information regarding the possibility of moderate icing, moderate turbulence, winds of 30 knots or more at the surface and extensive mountain obscurement?** (/gradebookutility/question.php?queID=52184)	**Correct** Chosen: c
Question **How many days after an accident is a report required to be filed with the nearest NTSB field office?** (/gradebookutility/question.php?queID=45869)	**Correct** Chosen: c
Question **The U.S. Low-Level Significant Weather Prognostic Chart depicts weather conditions** (/gradebookutility/question.php?queID=52196) (/gradebookutility/question.php?queID=52196)  Figure 71. (/pled/assessment/main.php?page=imageviewer&origin=gb&imgKey=71&tabs=71&asIds[]=123657)	**Correct** Chosen: a
Question **Required flight crewmembers' seatbelts must be fastened** (/gradebookutility/question.php?queID=45772)	**Correct** Chosen: b
Question **The ratio between the total airload imposed on the wing and the gross weight of an aircraft in flight is known as** (/gradebookutility/question.php?queID=52024)	**Correct** Chosen: a
Question **What is indicated by a bold green line on a High-Level Significant Weather Chart?** (/gradebookutility/question.php?queID=52192)	**Correct** Chosen: c

Question	Answer
Question **Portable electronic devices which may cause interference with the navigation or communication system may not be operated on a U.S.-registered civil aircraft being flown** (/gradebookutility/question.php?queID=45763)	**Correct** Chosen: c
Question **What would be the endurance at an altitude of 7,500 feet, using 52 percent power?** **NOTE: (With 48 gallons of fuel – no reserve.)** (/gradebookutility/question.php?queID=45903) (/gradebookutility/question.php?queID=45903)  Figure 11. (/pled/assessment/main.php?page=imageviewer&origin=gb&imgKey=11&tabs=11&asIds[]=123657)	**Correct** Chosen: b
Question **After an ATC clearance has been obtained, a pilot may not deviate from that clearance, unless the pilot** (/gradebookutility/question.php?queID=45796)	**Correct** Chosen: c
Question **Which is required equipment for powered aircraft during VFR night flights?** (/gradebookutility/question.php?queID=45822)	**Correct** Chosen: a
Question **If a pilot does not meet the recency of experience requirements for night flight and official sunset is 1900 CST, the latest time passengers should be carried is** (/gradebookutility/question.php?queID=45741)	**Correct** Chosen: c
Question **To hold an airplane in level flight at airspeeds from very slow to very fast, a pilot must coordinate thrust and** (/gradebookutility/question.php?queID=51998)	**Correct** Chosen: c
Question **One of the main functions of flaps during the approach and landing is to** (/gradebookutility/question.php?queID=51953)	**Correct** Chosen: b
Question **During departure, under conditions of suspected low-level wind shear, a sudden decrease in headwind will cause** (/gradebookutility/question.php?queID=52147)	**Correct** Chosen: a
Question **Convective circulation patterns associated with sea breezes are caused by** (/gradebookutility/question.php?queID=52110)	**Incorrect (b)** Chosen: c

Question	Answer
Question **The conditions most favorable to wave formation over mountainous areas are a layer of** (/gradebookutility/question.php?queID=52144)	**Correct** Chosen: a
Question **While executing a 60° level turn, your aircraft is at a load factor of 2.0. What does this mean?** (/gradebookutility/question.php?queID=52040)	**Correct** Chosen: a
Question **To maintain a standard rate turn as the airspeed decreases, the bank angle of the airplane will need to** (/gradebookutility/question.php?queID=52023)	**Incorrect (a)** Chosen: c
Question **For internal cooling, reciprocating aircraft engines are especially dependent on** (/gradebookutility/question.php?queID=52329)	**Correct** Chosen: b
Question **You are planning to depart on a flight from area 2 to area 4 in 12 hours. What weather is forecast to occur along your route?** (/gradebookutility/question.php?queID=52198) (/gradebookutility/question.php?queID=52198)  Figure 69. (/pled/assessment/main.php?page=imageviewer&origin=gb&imgKey=69&tabs=69&asIds[]=123657)	**Correct** Chosen: a
Question **Which would increase the stability of an air mass?** (/gradebookutility/question.php?queID=52100)	**Correct** Chosen: b

Course Assessment Form

Course: FSCI 2650 Navigation Foundations
Semester Taught: Spring 2021
Number of Students in Course: 26

Student Learning Outcome Assessed	Assessment Results: (Indicate what % of class achieved a minimum 70%)	Benchmark achieved? (Benchmark: 80% of students will score a minimum of 70% = "C")
A. Apply mathematics, science, and applied sciences to aviation-related disciplines.	Midterm Question #1 – 88.46% Midterm Question #2 – 92.31% Midterm Question #9 – 80.77% Final Question #1 – 92.31% Final Question #7 – 84.62%	Yes.
H. Use the techniques, skills, and modern technology necessary for professional practice.	Midterm Question #11 – 80.77% Midterm Question #23 – 96.15% Midterm Question #29 – 88.46% Final Question #6 – 80.77% Final Question #9 – 84.62%	Yes.

Course Assessment (Intended Use of Results)
The following will be used for recommendations to improve the quality of course delivery based on assessment results. These recommendations may include prerequisite change; changing course outline and adding more topics; adding a third assessment; changing the course sequence, etc.

Recommendation is to continue the current methods of presenting the course materials to the class.

**Attach description of assignment used for assessment and samples of student work.*

Grade Center **Column Statistics** | Edit Mode is: ON ?

Column Statistics

*Users who are unavailable are not included in column statistics. To include them, select the check box and click **Refresh**. To view statistics for another column, select the column name and click **Go** or click the next or previous arrows to navigate sequentially.*

Column: -Select- Go Show Statistics For: Available Users only Refresh

Column **Midterm Exam (Test)**

COLUMN DETAILS

Column	Midterm Exam (Test)
Points Possible	40
Description	

STATISTICS

Count	26
Minimum Value	17.00
Maximum Value	39.00
Range	22.00
Average	29.46153
Median	30.00
Standard Deviation	5.41529
Variance	29.32544

STATUS DISTRIBUTION

Null	0
In Progress	0
Needs Grading	0
Exempt	0

GRADE DISTRIBUTION

Greater than 100	0
90 - 100	2
80 - 89	7
70 - 79	10
60 - 69	2
50 - 59	4
40 - 49	1
30 - 39	0
20 - 29	0
10 - 19	0
0 - 9	0
Less than 0	0

← **OK**

Correct		Percent Answered
	2,000'	7.692%
	7,200'	11.538%
	8,300'	7.692%
✓	9,500'	73.076%
	Unanswered	0.00%

Question 20: Multiple Choice — **Average Score 0.42307 points**

You are flying at 400 knots TAS, Indicated Air Temperature = -20°C. What is your OAT? (1.0CT)

Correct		Percent Answered
	1°C	15.384%
	-21°C	42.307%
✓	-41°C	42.307%
	-61°C	0.00%
	Unanswered	0.00%

Question 21: Multiple Choice — **Average Score 0.57692 points**

You are flying at FL350 at Mach No. 0.88. Ambient temperature is ISA +10°C. What is your TAS?

Correct		Percent Answered
	500 knots	19.23%
✓	515 knots	57.692%
	575 knots	15.384%
	612 knots	7.692%
	Unanswered	0.00%

Question 22: Multiple Choice — **Average Score 0.1923 points**

You plan to land on RWY 22. The TAF forecast wind velocity is 190/30. Variation is 30W. What crosswind do you expect?

Correct		Percent Answered
✓	0 knots	19.23%
	15 knots	30.769%
	26 knots	46.153%
	30 knots	3.846%
	Unanswered	0.00%

Question 23: Multiple Choice — **Average Score 0.96153 points**

Given: CAS 150 knots, FL080, OAT -15°C. What is the TAS?

Correct		Percent Answered
	180 knots	0.00%
✓	164 knots	96.153%
	136 knots	3.846%
	120 knots	0.00%
	Unanswered	0.00%

Question 24: Multiple Choice — **Average Score 0.38461 points**

Given: True Heading 145°, TAS 240 knots, True Track 150°, G/S 210 knots, calculate the W/V.

Correct		Percent Answered
	360/35	3.846%
	295/35	11.538%
	180/35	46.153%
✓	115/35	38.461%
	Unanswered	0.00%

Question 25: Multiple Choice — **Average Score 1 points**

G/S = 360 knots, distance to go = 600 NM. What is time to go?

Correct		Percent Answered
	10 minutes	0.00%
	1 hour	0.00%
	1h 10 min	0.00%
✓	1h 40 min	100.00%
	Unanswered	0.00%

Question 26: Multiple Choice — **Average Score 0.88461 points**

Course 040(T), TAS 120 knots, wind speed = 30 knots. From which direction will the wind give the greatest drift?

Correct		Percent Answered
	215(T)	7.692%
	230(T)	3.846%
	235(T)	0.00%
✓	240(T)	88.461%
	Unanswered	0.00%

Question 27: Multiple Choice — **Average Score 0.96153 points**

You have passed checkpoint X at 1420Z. You travel 30 NM to reach checkpoint Y at 1450Z. What is your ETA to checkpoint Z, 20 NM beyond Y?

Correct		Percent Answered
	1506Z	0.00%
✓	1510Z	96.153%
	1512Z	3.846%
	1515Z	0.00%
	Unanswered	0.00%

Question 28: Multiple Choice — **Average Score 0.5 points**

You are flying at a Mach No. of 0.85 with an SAT of -45°C. At 1000 hours you are 100 NM from the CSX DME and your ETA at CSX is 1012. Kansas City Center asks you to slow down to be at CSX at 1016. What should your new Mach No. be if you reduce speed at 100 NM to go?

Correct		Percent Answered
	0.67	42.307%
✓	0.64	50.00%
	0.54	7.692%
	0.51	0.00%
	Unanswered	0.00%

Question 29: Multiple Choice — **Average Score 0.88461 points**

You leave A to fly to B, 475 NM away, at 1000 hours. Your ETA at B is 1130. At 1040, you are 190 NM from A. What ground speed is required to arrive on time at B?

Correct		Percent Answered
	317 knots	3.846%
	330 knots	7.692%
✓	342 knots	88.461%
	360 knots	0.00%
	Unanswered	0.00%

Question 30: Multiple Choice — **Average Score 0.57692 points**

An aircraft is climbing at a constant CAS in ISA conditions. What will be the effect on TAS and Mach No.?

Correct		Percent Answered
	TAS increases and Mach No. decreases	15.384%
✓	Both increase	57.692%
	Both decrease	11.538%
	TAS decreases and Mach No. increases	15.384%
	Unanswered	0.00%

Question 31: Multiple Choice — **Average Score 0.96153 points**

Convert 90 meters/second into knots.

Correct		Percent Answered
	23 knots	0.00%
	55 knots	0.00%
✓	176 knots	96.153%
	194 knots	3.846%
	Unanswered	0.00%

Question 32: Multiple Choice — **Average Score 0.15384 points**

You are flying from A to B, planned track 245°(M), distance 225 NM. Your ground speed is 180 knots. After 15 minutes flying, you fix your position as 3 NM left of planned track. Which of the following statements is correct?

Correct		Percent Answered
	Your drift is 2P (2° Port)	26.923%
	Your drift is 4S (4° Starboard)	50.00%
✓	You should turn 5° right to go direct to B	15.384%
	You should turn 8° right to go direct to B	3.846%
	Unanswered	3.846%

Question 33: Multiple Choice — **Average Score 0.6923 points**

You receive the following signals from a VOR DME station.

Radial = 180° ± 1°, distance = 200 NM

What is the approximate maximum error? (At 200 NM with ± 1° error, what is this error in NM?)

Correct		Percent Answered
	± 1 NM	3.846%
	± 2 NM	23.076%
✓	± 3.5 NM	69.23%
	± 7 NM	3.846%
	Unanswered	0.00%

Question 34: Multiple Choice — **Average Score 0.65384 points**

By what amount must you change your rate of descent given a 10 knot increase in headwind on a 3° glide slope?

Correct		Percent Answered
	30 feet per minute increase	3.846%
	50 feet per minute increase	7.692%
	30 feet per minute decrease	23.076%
✓	50 feet per minute decrease	65.384%
	Unanswered	0.00%

Question 35: Multiple Choice — **Average Score 0.53846 points**

You are on an ILS with a 3° glide slope which passes over the runway threshold at 50 feet. Your DME range is 25 NM from the threshold. What is your height above the runway threshold elevation? (Using 1 in 60 rule: 6000' = 1 NM.)

Correct		Percent Answered
	6450 feet	3.846%
	7450 feet	19.23%
✓	7550 feet	53.846%
	8010 feet	23.076%
	Unanswered	0.00%

Question 36: Multiple Choice — **Average Score 0.73076 points**

An aircraft flies directly from 56N 020W to 56N 030W. The initial Great Circle track from 020W is:

Correct		Percent Answered
	086(T)	3.846%
	082(T)	3.846%
✓	274(T)	73.076%
	278(T)	19.23%
	Unanswered	0.00%

Question 37: Multiple Choice — **Average Score 0.80769 points**

An aircraft starts at position 0410S 17822W and tracks true north for 2950 NM, then turns 90 degrees left, and maintains a rhumb line track for 314 kilometers. What is the final position?

Correct		Percent Answered
	5500N 17422W	11.538%
	4500N 17422W	3.846%
	5500N 17738E	3.846%
✓	4500N 17738E	80.769%
	Unanswered	0.00%

Question 38: Multiple Choice — **Average Score 0.96153 points**

On a chart, 49 nautical miles is represented by 7 centimeters. What is the scale?

Correct		Percent Answered
	1 / 2,015,396	0.00%
✓	1 / 1,296,400	96.153%
	1 / 1,156,600	0.00%
	1 / 700,000	3.846%
	Unanswered	0.00%

Question 39: Multiple Choice — **Average Score 0.42307 points**

Which of the following differences in latitude will give the biggest difference in the initial great circle track and the mean great circle track between two points separated by 10° change of longitude?

Correct		Percent Answered
	60N and 60S	38.461%
✓	60N and 55N	42.307%
	30S and 30N	11.538%
	30S and 25S	3.846%
	Unanswered	3.846%

Question 40: Multiple Choice — **Average Score 0.80769 points**

A non-perspective chart:

Correct		Percent Answered
	Is produced directly from a light projection of a Reduced Earth	15.384%
	Cannot be used for navigation	3.846%
✓	Is produced by mathematically adjusting a light projection of the Reduced Earth	80.769%
	Is used for a polar stereographic projection	0.00%
	Unanswered	0.00%

Question 41: Calculated Numeric — **Average Score 0.15384 points (Extra Credit)**

Airfield elevation is 1,500 feet. The QNH (Altimeter Setting) is 977hPa. Use 27 feet per hectopascal. What is pressure altitude?

(Use *only* numbers in your answer. No symbols or letters.)

Correct	Answers	Percent Answered
	2477.6025	3.846%
	26379	3.846%
	2000	3.846%
✓	2472	7.692%
	2570	19.23%
	1700	3.846%
	2569	3.846%
	2479	3.846%
	3,000	3.846%
	2500	11.538%
	1675	15.384%
	921	3.846%
	1905	3.846%
	528	11.538%
	Unanswered	0.00%

← OK

Grade Center **Column Statistics** Edit Mode is: ON ?

Column Statistics

*Users who are unavailable are not included in column statistics. To include them, select the check box and click **Refresh**. To view statistics for another column, select the column name and click **Go** or click the next or previous arrows to navigate sequentially.*

Column: -Select- Go Show Statistics For: Available Users only Refresh

Column **Final Exam (Test)**

COLUMN DETAILS

Column	Final Exam (Test)
Points Possible	36
Description	

STATISTICS

Count	26
Minimum Value	15.00
Maximum Value	39.25
Range	24.25
Average	27.48076
Median	29.00
Standard Deviation	5.67506
Variance	32.20636

STATUS DISTRIBUTION

Null	0
In Progress	0
Needs Grading	0
Exempt	0

GRADE DISTRIBUTION

Greater than 100	1
90 - 100	3
80 - 89	10
70 - 79	5
60 - 69	2
50 - 59	2
40 - 49	3
30 - 39	0
20 - 29	0
10 - 19	0
0 - 9	0
Less than 0	0

← OK

Test Statistics: Final Exam

The statistics are calculated based only on the attempts being used in the grading option (Last attempt, First attempt, Lowest Score, Highest Score, or Average of Scores). If Average of Scores is the grading option, then all attempts are included in the statistics.

Name	Final Exam
Average Score	27.48076
Attempts	26 (Total of 26 attempts for this assessment)
Graded Attempts	26
Attempts that Need Grading	0
Instructions	
Alignments	

Question 1: Short Answer — Average Score 0.92307 points

G/S = 300 kts, Distance to go = 560 nm. What is time to go? (1 pt)

Example Answer

Unanswered Responses
1

Given Answers
1 hour 52 minutes
1 hour and 52 minutes
Around 1 hour and 10 minutes
1 hour 52 min
an hour and 50 minutes
The time to go is 112 minutes.
1.867 hours
1 hour and 52 minutes (112 minutes)
1 Hour 52 Minutes
112 mins
112 minutes
112 minutes or 1 hr 52 min.
112 minutes
The time to go would be 112 minutes.
111 mins 1.51 Hours 1.85 hours
112 mins
112 minutes.
The duration of flight is 112 minutes or 1 hour and 52 minutes.
1hr 50min
560 nm / 300 kts = 1.51 hrs
1.51 hrs to go.

Question 2: Short Answer — Average Score 1.73076 points

Course 275°T, TAS 120 kts, Wind speed = 30 kts: From which direction (in degrees) will the wind give the greatest drift? (2 pts)

Example Answer

Unanswered Responses
1

Given Answers
005° and 185°
185 degrees / 005 degrees
185 degrees and 005 degrees
185°/005°
005, 185 degrees
005 degrees and 185 degrees will give the greatest drift.
185° and 005°
The greatest drift will be from a degrees of 185 and 005.
005 and 185
The directions with the greatest wind drift are 185 and 005 degrees.
185 degrees and 005 degrees, if the wind was coming from either of the two angles it would produce the greatest drift.
Greatest drift would be felt from 185 degrees and 005 degrees.
The greatest drift would come from 185° and 005°.
The best drift can come from 005° and 185°.
280
185/005 degrees
005 or 185
A wind of 185 degrees or 005 degrees will give you the greatest drift.
005 degrees and 185 degrees
The greatest wind drift will come from 005 and 185
185 degrees and 005 degrees
005 deg T/ 185 deg T
185
The directions that will give the greatest drifts are 005 and 185 degrees.

Question 3: Short Answer — Average Score 0.1923 points

You are flying 030°C heading. Deviation is 2E and Variation is 12E. Your TAS is 210 kts. You are flying the 060 radial outbound from a VOR and you have gone 17 nm in 6 minutes. What is the W/V (°T)? (2 pts)

Example Answer

Unanswered Responses
1

Given Answers
45 knots, from 065 degrees
010/51
060/43kts
The wind speed and direction is 060°/43kts.
070° at 45 kts
060/42
060°/45 knots
065 @ 45
The W/V is 065 degrees at 45 knots.
060 deg @43 Kts
060° @ 45kt
345/50kts
060 @ 45 kts
065 degrees at 45 knots
30
010/50
020/90 W/V
0 degrees at 13 kts
065° at 45 knots
Winds are 060 @ 43 kts
060 at 42 kts
The wind vector is 355° @ 51 kts
070/45 [t]
The wind component would be 065 degrees at 45kts.

Question 4: Short Answer — Average Score 0.46153 points

An aircraft is flying TAS 240 kts and tracking 085°T. The W/V is 030/30. How far can the aircraft fly out from its base and return within 1 hour? (1 pt)

Example Answer

Unanswered Responses
1

Given Answers
126.3 NM
The aircraft can fly up to 260 nm away and return within an hour
The point of no return is 120NM.
The aircraft can fly no more than 30 minutes out from its base
300 nautical miles
The furthest they could travel and be able to return within one hour is ~34 minutes outbound and 133 nm
The aircraft will reach its point of no return in approximately 34 minutes.
The furthest they can travel to return within one hour is about 34 minutes outbound.
133 nm
It can fly 34 minutes out.
149 NM
The aircraft can fly 57 min. from its base and return within 1 hour
127nm
The aircraft can fly outbound approximately 35 nm.
155
The aircraft can fly 596 miles and return within 1 hour
126.16 nm
127 nautical miles
About 34 minutes after departure
The aircraft can fly out from its base and return within the hour in 34.5 minutes.
Aprox 35 nm
104 NM
125nm
Until the aircraft has 30 minutes of fuel during the day or 45 minutes of fuel during the night.

Question 5: Short Answer — Average Score 0.30769 points

An aircraft is at FL100 with 260 KCAS and a true -10°C OAT. The wind component is a tailwind of 55 kts. When the aircraft is at 120 nm from a reporting point, ATC requests the crew to arrive 2 minutes later than planned at the reporting point. How much do they need to reduce CAS? (2 pts)

Example Answer

Unanswered Responses
1

Given Answers
They would need to reduce CAS by 10 knots.
Reduce by 37 KCAS.
They need to reduce CAS by 10 kts
by 10 kts
10 KCAS
100
Reduce KCAS 10kts from 260 KCAS to 250 KCAS.
They need to reduce their CAS by 10 knots (to approximately 250 KCAS).
25 Knots
5hrs
Reduce speed by 10KCAS
They need to reduce their airspeed to about 238CAS
They need to reduce KCAS by 10 kts
The aircraft needs a CAS of 225. Therefore they need to reduce the speed by 35 CAS.
By 10 KCAS
The pilots need to reduce CAS by 10 knots
They should reduce the CAS by 10 knots.
must reduce CAS by ~10kts
The KCAS must be reduced by about 10kts.
must fly 237kcas with 23kcol reduction
They will need to reduce speed by about 25 knots
24
The crew must reduce CAS by 10 knots.

Question 6: Short Answer — Average Score 0.80769 points

An aircraft has 300 KTAS and is over a stretch of water between two airfields 500 nm apart. If the wind component is a headwind of 60 kts, what is the distance from the first airfield to the critical point? (1 pt)

Example Answer

Unanswered Responses
1

Given Answers
The critical point is at 300NM.
300NM
The required distance to the first airfield is 300 nautical miles.
272.7 nautical miles
300 NM
300 nm
The distance from the first airfield to the critical point is 300 nm.
300 nautical miles from the first airfield to the critical point.
290 NM
277nm
300 meters
The critical point is 300 nm.
500 nm / 300 KTAS = 1.40 hrs
(1.40 hrs x 500 nm) / (360 KGS(O) + 240 KGS(H)) = 1.23 hrs
1.23 hrs x 240 KGS = 332 nm
The critical point is 332 nautical miles from the departure airfield
300 nautical miles
300nm
300NM.
300nm.
300nm

Question 7: Short Answer — Average Score 0.84615 points

Airport elevation is 900 feet, QNH 1001 hPa, what is the approximate airport pressure altitude? Assume 1 hPa = 30' (1 pt)

Example Answer

Unanswered Responses
0

Given Answers
860
860'
About 860 ft MSL
860 ft MSL
Around 336 feet
861
Airport pressure altitude is approximately 860 ft MSL.
860 feet
Approximately 860FT MSL
1001 - 1013 = -12
-12 x 30 = -360
900 - 360 = 540
The airport's pressure altitude is 140 feet
The airport pressure altitude is 860 feet.
860 ft MSL
861 ft
860 ft
860 Feet
The approximate airport pressure altitude is 860'.
Approximate pressure altitude is 860 feet
906

Question 8: Short Answer — Average Score 1 points

An aircraft starts at a position 04°10'S 178°00'E and heads true north for 1200 nm, then turns 90° left and maintains a rhumb line track for 300 nm. What is its final position? (2 pts)

Example Answer

Unanswered Responses
2

Given Answers
15 deg 50' N 173 deg 46' E
Its final position is 015 degrees 15 minutes N and 173 degrees 46 minutes E.
15 degrees 50' N and 173 degrees 46' E
15°50'N 173°46' E
15 degrees 50' N 174 degrees E
16°13N 183 26'W
16°00' N 173°50' E
15 degrees 10'N, 173 degrees 44' E
4056 N 16740 E
15°50' N and 174°56' E
016.10 N 003.48 W
15° 10' N 174° 00' E

[illegible]

The average ground speed is 409 knots.
GS is 390 kts
403 kts
~409 kts
340 kts gs
GS = 390 kts
389.2 kts
average GS = 410 kts
323 KTS GS
409 knots
The average ground speed for this leg would be 409 knots.
390 kts ground speed.
340 Knots

Question 12: Multiple Choice — Average Score 1 points

At what times of the year does the length of the hours of daylight change most rapidly?

Correct		Percent Answered
✓	Spring Equinox and Autumn Equinox	100.00%
	Summer Solstice and Winter Solstice	0.00%
	Spring Equinox and Summer Solstice	0.00%
	Autumn Equinox and Winter Solstice	0.00%
	Unanswered	0.00%

Question 13: Multiple Choice — Average Score 0.6923 points

Given: Heading 165°M, Variation 25W, Drift 10°R, G/S 360 kts. At 'A' your relative bearing to an NDB is 325. Five minutes later, at 'B', the relative bearing is 280. What is the True Bearing and Distance from 'B' to the NDB?

Correct		Percent Answered
	060°T 40nm	0.00%
	105°T 30nm	15.384%
✓	060°T 30nm	69.23%
	105°T 40nm	11.538%
	Unanswered	3.846%

Question 14: Multiple Choice — Average Score 0.88461 points

On a particular take-off, you can accept up to 10 kts tailwind. The runway QDM is 047°, the variation is 17E and the ATIS gives the wind direction as 210°. What is the maximum wind strength you can accept?

Correct		Percent Answered
	18 kts	3.846%
✓	11 kts	88.461%
	8 kts	7.692%
	4 kts	0.00%
	Unanswered	0.00%

Question 15: Multiple Choice — Average Score 0.80769 points

What is the duration of civil twilight?

Correct		Percent Answered
	From the moment when the center of the sun is on the sensible horizon until the center reaches a depression angle of 6° from the sensible horizon.	15.384%
	From the moment when the tip of the sun disappears below the sensible horizon until the center reaches a depression angle of 6° from the sensible horizon.	3.846%
	From the moment when the center of the sun is on the visual horizon until the center reaches a depression angle of 6° from the sensible horizon.	0.00%
✓	From the moment when the tip of the sun disappears below the visual horizon until the center reaches a depression angle of 6° from the sensible horizon.	80.769%
	Unanswered	0.00%

Question 16: Multiple Choice — Average Score 0.84615 points

What is the definition of magnetic variation?

Correct		Percent Answered
	The angle between the direction indicated by a compass and Magnetic North.	0.00%
	The angle between True North and Compass North.	15.384%
✓	The angle between Magnetic North and True North.	84.615%
	The angle between Magnetic Heading and Magnetic North.	0.00%
	Unanswered	0.00%

Question 17: Multiple Choice — Average Score 0.88461 points

You are in the southern hemisphere, heading West, and the aircraft is accelerating. The direct reading magnetic compass will:

Correct		Percent Answered
	Indicate a turn to the north.	7.692%
✓	Indicate a turn to the south.	88.461%
	Indicate no change in heading.	3.846%
	Unanswered	0.00%

Question 18: Multiple Choice — Average Score 0.6923 points

You are in the northern hemisphere, heading 095°C on a direct reading magnetic compass. You turn right in a standard rate turn for 40 seconds. You begin your roll out on an indicated heading of:

Correct		Percent Answered
✓	Greater than 215	69.23%
	Less than 215	3.846%
	Equal to 215	23.076%
	Not possible to determine	3.846%
	Unanswered	0.00%

Question 19: Multiple Choice — Average Score 0.88461 points

The main reason that day and night, throughout the year, have different durations is due to the:

Correct		Percent Answered
	Earth's rotation.	11.538%
	Relative speed of the sun along the ecliptic.	0.00%
✓	Inclination of the ecliptic to the equator.	88.461%
	Gravitational effect of the sun and the moon on the speed of rotation of the earth.	0.00%
	Unanswered	0.00%

Question 20: Multiple Choice — Average Score 0.76923 points

The scale on a Lambert's conformal conic chart:

Correct		Percent Answered
	Is constant along a meridian of longitude.	0.00%
✓	Is constant along a parallel of latitude.	76.923%
	Varies slightly as a function of latitude and longitude.	15.384%
	Is constant across the whole map.	7.692%
	Unanswered	0.00%

Question 21: Multiple Choice — Average Score 1 points

On a chart, 49 nautical miles is represented by 7.0 centimeters. What is the scale?

Correct		Percent Answered
	1 / 700,000	0.00%
	1 / 1,156,000	0.00%
✓	1 / 1,296,400	100.00%
	1 / 2,015,396	0.00%
	Unanswered	0.00%

Question 22: Multiple Choice — Average Score 0.76923 points

The agonic line:

Correct		Percent Answered
	Is midway between the magnetic North and South poles.	7.692%
	Follows the geographic equator.	0.00%
	Is the shorter distance between the respective True and Magnetic North and South poles.	15.384%
✓	Follows separate paths out of the North polar regions, one currently running through Western Europe and the other through the USA.	76.923%
	Unanswered	0.00%

Question 23: Multiple Choice — Average Score 0.92307 points

What does the sensor of an INS/IRS measure?

Correct		Percent Answered
	Velocity	3.846%
	Displacement	3.846%
	Pressure	0.00%
✓	Acceleration	92.307%
	Unanswered	0.00%

Question 24: Multiple Choice — Average Score 1 points

What is the highest latitude listed below at which the sun will rise above the horizon and set every day (never a constant day or constant night)?

Correct		Percent Answered
	72°N	0.00%
	68°N	0.00%
✓	66°N	100.00%
	62°N	0.00%
	Unanswered	0.00%

Question 25: Multiple Choice — Average Score 1 points

If acceleration is zero:

Correct		Percent Answered
	Velocity decreases.	0.00%
	Velocity increases.	0.00%
✓	Velocity is constant.	100.00%
	Velocity is zero.	0.00%
	Unanswered	0.00%

Question 26: Multiple Choice — Average Score 0.26923 points

The distance A to B is 90 nm in a straight line. You are 30 nm from A when you fix your position 4 nm to the left of track. What correction do you need to make to arrive at B?

Correct		Percent Answered
	4°	26.923%
	8°	46.153%
	10°	0.00%
✓	12°	26.923%
	Unanswered	0.00%

Question 27: Multiple Choice — Average Score 0.57692 points

Given: Dry operating mass (DOM) 33,510kg, Payload 7,600kg, Final reserve fuel 983kg, Alternate fuel 1,100kg, Contingency fuel (@ 5%) 102kg. The estimated takeoff mass for departure should be:

Correct		Percent Answered
	45,233kg	7.692%
✓	45,335kg	57.692%
	45,330kg	26.923%
	45,452kg	7.692%
	Unanswered	0.00%

Question 28: Multiple Choice — Average Score 0.61538 points

An aircraft departs Taiwan (23N 121E) at 2300 Local Mean Time on 30th April local date. Flight time to Los Angeles, California, USA (34N 118W) is 11 hours 15 minutes. What is the Local Mean Time and local date of arrival?

Correct		Percent Answered
	1919 LMT 30 Apr	30.769%
	1819 LMT 01 May	0.00%
	1919 LMT 01 May	7.692%
✓	1819 LMT 30 Apr	61.538%
	Unanswered	0.00%

Question 29: Multiple Choice — Average Score 0.88461 points

Which of the following does not need to be included in an IFR-certified GPS navigation database?

Correct		Percent Answered
	Airports	3.846%
	Intersections	0.00%
	NDBs	7.692%
✓	Terrain	88.461%
	Unanswered	0.00%

Question 30: Multiple Choice — Average Score 0.92307 points

How will a GPS unit warn you if you should not use the GPS as the primary navigation source to fly a selected instrument approach procedure?

Correct		Percent Answered
	It will never warn you. You must already know this information by reading the approach chart.	7.692%
	There is no need for it to warn you because all instrument approach procedures may be flown utilizing the GPS as the primary navigation source.	0.00%
	Message stating, "Do not fly this approach"	0.00%
✓	Message stating, "Approach not approved for GPS. Use for monitoring only"	92.307%
	Unanswered	0.00%

Question 31: Multiple Choice — Average Score 0.84615 points

When compared to other navigation systems, the most unique characteristic of an Inertial Navigation System is that it:

Correct		Percent Answered
	Constantly keeps track of the aircraft's position without pilot input.	11.538%
	Can utilize multiple navaid sensors to determine the aircraft's position.	3.846%
✓	Can work from entirely self-contained components and does not rely on other navaid signals.	84.615%
	Is a Flight Management System.	0.00%
	Unanswered	0.00%

Question 32: Multiple Choice — Average Score 0.96153 points

An Attitude Director Indicator is different than an Attitude Indicator in that it:

Correct		Percent Answered
	Is not different. They are the same thing.	0.00%
✓	Displays more precise attitude information in addition to Command Bars from a Flight Director system.	96.153%
	Is displayed as part of an Electronic Flight Instrumentation System ("Glass Cockpit").	3.846%
	Will display a plan view (overhead/birds-eye view) of your course navigation information provided by any one of your navigation systems.	0.00%
	Unanswered	0.00%

Question 33: Short Answer — Average Score 1.15384 points (Extra Credit)

The VOR/DME approach to runway 13 at Martin State (KMTN) airport starts on a 14.7 DME arc with a descent from an altitude of 1800' at R-039 to 22' at R-060 right over the runway end. If you plan to fly the arc at 90 kts, what is the descent angle assuming a constant descent from R-039 to R-060? (4 pts)

Example Answer

Unanswered Responses
4

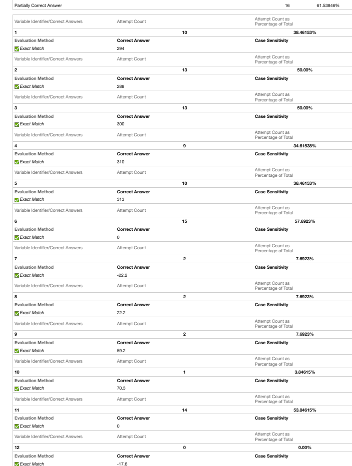
Given Answers
6.2°
~1.2 degree descent angle
3
1.43° decent angle
3 degrees
1.2°
1.3° descent angle
1.2 degrees
5 degrees
3.00 °
Approximately 1.2 degrees of decent angle
1.21 degrees
1.2° descent angle.
The descent angle is 1.2°.
3.0 degrees
Roughly 1.3 degrees
About 1.2° decent angle
Approximately 1.4 degree descent angle
It is approximately a 1.3° descent angle.
329 ft/nm descent
1.15 degrees

Question 34: Fill in Multiple Blanks — Average Score 1.61538 points (Extra Credit)

Fill out this table given the following information: You are flying from Stony Rapids (59N 106W) in Saskatchewan, Canada to John F Kennedy Intl (41N 074W) in New York, USA. Distance is 1,640 nm, average Ground Speed is 250 kts. (5 pts)

Remember your signs (+/-)!!

Position:	Origin	25%	50%	75%	100%
Height:	[1]	[2]	[3]	[4]	[5]
Drift:	[6]	[7]	[8]	[9]	[10]
Crab:	[11]	[12]	[13]	[14]	[15]
Waypoint:	[16]	[17]	[18]	[19]	[20]



Final Exam CPC.pgn

Category	Attempt Count	Attempt Count as Percentage of Total
Total Attempts	26	100.00%
Unanswered Attempts	10	38.46153%
Correct Answer	0	0.00%
Partially Correct Answer	16	61.53846%

Variable Identifier/Correct Answers	Attempt Count	Attempt Count as Percentage of Total
1	10	38.46153%
Evaluation Method	Correct Answer	Case Sensitivity
✓ Exact Match	294	

Variable Identifier/Correct Answers	Attempt Count	Attempt Count as Percentage of Total
2	13	50.00%
Evaluation Method	Correct Answer	Case Sensitivity
✓ Exact Match	288	

Variable Identifier/Correct Answers	Attempt Count	Attempt Count as Percentage of Total
3	13	50.00%

[illegible]

Course Assessment Form

Course: FSCI 3550 Flight 5
Semester Taught: Spring 2021
Number of Students in Course: 14

Student Learning Outcome Assessed	Assessment Results: (Percentage of student written exams and stage checks passed on first attempt)	Benchmark achieved? (Benchmark: 70% of student written exams and stage checks passed on first attempt)
H. Use the techniques, skills, and modern technology necessary for professional practice.	Stage Check Pass Rate: 69% Written Exam Pass Rate: 100%	No
J. Apply pertinent knowledge in identifying and solving problems.	Stage Check Pass Rate: 69% Written Exam Pass Rate: 100%	No

Description of Assessment: The student assessment consists of multiple-choice module written exams as well as stage check practical exams. Written exams require a minimum score of 70% in order to pass. Each stage check consists of an oral portion and a flight portion, and satisfactory or unsatisfactory performance is determined in accordance with the Module Completion Standards and/or the appropriate Airmen Certification Standards (ACS)/Practical Test Standards (PTS). Attached are the module completion standards included in the approved Training Course Outline. This document describes the expectations and assessment standards for stage check oral and flight checks. Also attached is a sample of a student's completed module written exam.

Recommendations: Student weaknesses in commercial pilot knowledge areas were identified during stage check orals resulting in a decrease in pass rates. These deficiencies will be discussed and addressed over the summer during instructor training sessions prior to the start of the Fall 2021 semester. Additional emphasis will be placed on these tasks during new-hire instructor standardizations. If the deficiencies continue, revisions to the course content will be considered.

Module 10

Multiengine Aircraft Operations

Prerequisites: Prior to beginning this module the student must be enrolled in the Commercial Pilot Added Rating Course, must hold a Commercial Pilot Airplane Single-engine Land certificate and must possess a valid Medical Certificate.

Objective: To complete the aeronautical knowledge and flight training required to prepare students to pass the Commercial Pilot Airplane Multiengine Land Added Class Rating Practical Exam.

Completion Standards:

- The student must meet the following minimum training time requirements during this module:

DUAL				**TOTAL**	OTHER		
Local Total	XC Total	XC Night	Inst. Ref.	**AMEL**	ATD	Pre/ Post	Ground
9.5	4.0	2.0	5.0	**13.5**	6.0	5.6	15.5

- Prior to completion of the module, students must pass a written exam to evaluate their understanding of the required knowledge areas included in the Commercial Pilot Airmen Certification Standards for an added Airplane Multiengine Land class rating.
- Prior to completion of the module, students must pass a stage check to evaluate their ability to:
  1) Demonstrate all applicable Tasks as specified in the Commercial Pilot Airplane Airmen Certification Standards within the established standards.
  2) Demonstrate mastery of the aircraft by performing each Task successfully.
  3) Demonstrate proficiency and competency in accordance with the standards.
  4) Demonstrate sound judgment and exercise aeronautical decision making and risk management.

Notes:

- Lessons may be completed out of sequence as necessary to meet academic goals set by the instructor.
- Multiple instructional periods may be required to meet lesson requirements.

Blackboard learn

Home Blue Course Evaluations Ac Ryan Boyer 40

Grade Center **Grade Test: Module 10 Exam** Edit Mode is: ON ?

Grade Test: Module 10 Exam

Assign a grade and feedback for the current test attempt. Expand the ***Test Information*** *section to clear the student's attempt or edit the test. More Help*

Jump to... Show User Names

Viewing 1 of 2 gradable items

Student 1 (Hide User Names is enabled)

Test Information

QUESTION 1: FILL IN THE BLANK — 1 out of 1 points

For the following questions on airspeeds, please ensure your answer includes NUMBERS ONLY.

What airspeed (in knots) represents Vso in the PA44?

Given Answer:	55	
Evaluation Method	**Correct Answer:**	**Case Sensitivity**
Exact Match	55	

QUESTION 2: FILL IN THE BLANK — 1 out of 1 points

What airspeed (in knots) represents Vs1 in the PA44?

Given Answer:	57	
Evaluation Method	**Correct Answer:**	**Case Sensitivity**
Exact Match	57	

1 out of 1 points

What airspeed (in knots) represents Vmc in the PA44?

Given Answer:	56	
Evaluation Method	**Correct Answer:**	**Case Sensitivity**
Exact Match	56	

QUESTION 4: FILL IN THE BLANK

1 out of 1 points

What airspeed (in knots) represents Vfe in the PA44?

Given Answer:	111	
Evaluation Method	**Correct Answer:**	**Case Sensitivity**
Exact Match	111	

QUESTION 5: FILL IN THE BLANK

1 out of 1 points

What airspeed (in knots) represents Vx in the PA44?

Given Answer:	82	
Evaluation Method	**Correct Answer:**	**Case Sensitivity**
Exact Match	82	

QUESTION 6: FILL IN THE BLANK

1 out of 1 points

What airspeed (in knots) represents Vy in the PA44?

Given Answer:	88	
Evaluation Method	**Correct Answer:**	**Case Sensitivity**
Exact Match	88	

QUESTION 7: FILL IN THE BLANK

1 out of 1 points

What airspeed (in knots) represents Vxse in the PA44?

Given Answer:	82	
Evaluation Method	**Correct Answer:**	**Case Sensitivity**
Exact Match	82	

QUESTION 8: FILL IN THE BLANK

1 out of 1 points

What airspeed (in knots) represents Vyse in the PA44?

Given Answer: 88

Evaluation Method	Correct Answer:	Case Sensitivity
Exact Match	88	

QUESTION 9: FILL IN THE BLANK

1 out of 1 points

What airspeed (in knots) represents Vlo (retraction) in the PA44?

Given Answer: 109

Evaluation Method	Correct Answer:	Case Sensitivity
Exact Match	109	

QUESTION 10: FILL IN THE BLANK

1 out of 1 points

What airspeed (in knots) represents Vlo (extension) in the PA44?

Given Answer: 140

Evaluation Method	Correct Answer:	Case Sensitivity
Exact Match	140	

QUESTION 11: FILL IN THE BLANK

1 out of 1 points

What airspeed (in knots) represents Vle in the PA44?

Given Answer: 140

Evaluation Method	Correct Answer:	Case Sensitivity
Exact Match	140	

QUESTION 12: FILL IN THE BLANK

1 out of 1 points

What airspeed (in knots) represents Va in the PA44?

Given Answer: 135

Evaluation Method	Correct Answer:	Case Sensitivity
Exact Match	135	

1 out of 1 points

What airspeed (in knots) represents Vno in the PA44?

Given Answer:	169	
Evaluation Method	**Correct Answer:**	**Case Sensitivity**
Exact Match	169	

QUESTION 14: FILL IN THE BLANK

1 out of 1 points

What airspeed (in knots) represents Vne in the PA44?

Given Answer:	202	
Evaluation Method	**Correct Answer:**	**Case Sensitivity**
Exact Match	202	

QUESTION 15: FILL IN THE BLANK

1 out of 1 points

At what airspeed (in knots) should the PA44 rotate during a normal takeoff?

Given Answer:	75	
Evaluation Method	**Correct Answer:**	**Case Sensitivity**
Exact Match	75	

QUESTION 16: FILL IN THE BLANK

1 out of 1 points

At what airspeed (in knots) should you conduct a short field approach in the PA44 (assume maximum gross weight)?

Given Answer:	75	
Evaluation Method	**Correct Answer:**	**Case Sensitivity**
Exact Match	75	

QUESTION 17: FILL IN THE BLANK

1 out of 1 points

What is the maximum demonstrated crosswind component (in knots)?

Given Answer:	17	
Evaluation Method	**Correct Answer:**	**Case Sensitivity**
Exact Match	17	

QUESTION 18: FILL IN THE BLANK

1 out of 1 points

What is the maximum ramp weight for the PA44 (in pounds)?

Given Answer: 3816

Evaluation Method	Correct Answer:	Case Sensitivity
Exact Match	3816	
Exact Match	3,816	

QUESTION 19: FILL IN THE BLANK

1 out of 1 points

What is the maximum takeoff weight for the PA44 (in pounds)?

Given Answer: 3800

Evaluation Method	Correct Answer:	Case Sensitivity
Exact Match	3800	
Exact Match	3,800	

QUESTION 20: FILL IN THE BLANK

1 out of 1 points

What is the maximum permissible weight in the baggage compartment in the PA44?

Given Answer: 200

Evaluation Method	Correct Answer:	Case Sensitivity
Exact Match	200	

QUESTION 21: FILL IN THE BLANK

1 out of 1 points

What is the maximum total fuel quantity (in gallons)?

Given Answer: 110

Evaluation Method	Correct Answer:	Case Sensitivity
Exact Match	110	

QUESTION 22: FILL IN THE BLANK

1 out of 1 points

What is the maximum usable fuel quantity (in gallons)?

Exact Match	108

QUESTION 23: MULTIPLE CHOICE

1 out of 1 points

What is the model of the right engine on the PA-44-180?

Given Answer: LO-360-A1H6

Correct Answer: LO-360-A1H6

QUESTION 24: TRUE/FALSE

1 out of 1 points

The engines on the PA-44-180 are fuel injected and horizontally opposed.

Given Answer: False

Correct Answer: False

QUESTION 25: TRUE/FALSE

1 out of 1 points

The PA-44-180 is considered a high performance aircraft since the total horsepower is 360.

Given Answer: False

Correct Answer: False

QUESTION 26: MULTIPLE CHOICE

1 out of 1 points

Cylinder head temperatures may be lowered during a climb by:

Given Answer: All of the above

Correct Answer: All of the above

QUESTION 27: MULTIPLE CHOICE

1 out of 1 points

In the PA-44-180, carburetor ice can be first detected by:

Given Answer: A slow decrease in manifold pressure.

Correct Answer: A slow decrease in manifold pressure.

QUESTION 28: MULTIPLE CHOICE

1 out of 1 points

If the aircraft's battery is depleted, one way to get the aircraft started is to:

Given Answer: Connect a 14 volt power source to the external power receptacle located on the lower right side of the nose section.

Correct Answer: Connect a 14 volt power source to the external power receptacle located on the lower right side of the nose section.

QUESTION 29: MULTIPLE CHOICE

1 out of 1 points

The purpose for the overvoltage relays are to prevent damage to the electrical and avionics equipment should an alternator's output cause the bus voltage to exceed ________ volts.

Given Answer: 17

Correct Answer: 17

QUESTION 30: MULTIPLE CHOICE

1 out of 1 points

How would a pilot notice if an alternator has failed in flight in the PA-44-180?

Given Answer: The ALT light will illuminate and the ammeter for the failed alternator will show zero.

Correct Answer: The ALT light will illuminate and the ammeter for the failed alternator will show zero.

QUESTION 31: MULTIPLE CHOICE

1 out of 1 points

If one alternator fails in flight, what are the proper initial steps to restore operation of the affected alternator?

Given Answer: Turn the affected alternator switch OFF, then after one or more seconds, turn the affected alternator switch ON.

Correct Answer: Turn the affected alternator switch OFF, then after one or more seconds, turn the affected alternator switch ON.

QUESTION 32: MULTIPLE CHOICE

1 out of 1 points

Under which conditions will the "Gear Warning Horn Mute Switch" silence the horn?

Given Answer: Only if the horn was triggered by the power lever position.

Correct Answer: Only if the horn was triggered by the power lever position.

QUESTION 33: MULTIPLE CHOICE

1 out of 1 points

The squat switch located on which gear prevents activation of the gear pump when the aircraft is on the ground?

Given Answer: Left main gear

Correct Answer: Left main gear

QUESTION 34: MULTIPLE CHOICE

1 out of 1 points

Assume the landing gear pump circuit breaker has popped and cannot be reset. Which is of the following statements is true?

Given Answer: The aircraft should be slowed to less than 100 KIAS and the emergency gear extension handle pulled.

Correct Answer: The aircraft should be slowed to less than 100 KIAS and the emergency gear extension handle pulled.

QUESTION 35: MULTIPLE CHOICE

1 out of 1 points

During a pre-flight inspection of the aircraft you are checking the stall warning system and notice the stall warning horn does not sound when you lift on either of the lift detectors. Which of these statements is true?

Given Answer: The stall warning horn cannot be tested on the ground since the squat switch on the right main landing gear does not allow it.

Correct Answer: The stall warning horn cannot be tested on the ground since the squat switch on the right main landing gear does not allow it.

QUESTION 36: MULTIPLE CHOICE

1 out of 1 points

If an engine loses oil pressure during flight, how will the propeller system be affected?

Given Answer: The propeller blade angle will increase toward the low RPM setting.

Correct Answer: The propeller blade angle will increase toward the low RPM setting.

QUESTION 37: MULTIPLE CHOICE

1 out of 1 points

What are the advantages of equipping the propeller system of a multiengine airplane with an accumulator?

Given Answer: It allows for easier restarting of the engine in flight.

Correct Answer: It allows for easier restarting of the engine in flight.

QUESTION 38: MULTIPLE CHOICE

1 out of 1 points

The propellers contain feathering locks for what purpose?

Given Answer: They prevent feathering during engine shutdown on the ground.

Correct Answer: They prevent feathering during engine shutdown on the ground.

QUESTION 39: MULTIPLE CHOICE

1 out of 1 points

Which of the following is true if the temperature of the combustion heater exceeds limitations during flight?

Given Answer: The overheat safety switch will cause an annunciator to illuminate, and the heater will automatically shut off.

Correct Answer: The overheat safety switch will cause an annunciator to illuminate, and the heater will automatically shut off.

QUESTION 40: MULTIPLE CHOICE 1 out of 1 points

The source of fuel for the cabin heater is:

Given Answer: The left fuel tank at approximately ½ gallon of fuel per hour.

Correct Answer: The left fuel tank at approximately ½ gallon of fuel per hour.

QUESTION 41: MULTIPLE CHOICE 1 out of 1 points

To prevent excessive temperatures, the heater should be shut down as follows:

Given Answer: While in the air, the heater switch should be turned off at least 15 seconds before closing the air intake. On the ground, the heater control switch should be placed in the fan position for at least two minutes to cool down before closing the air intake.

Correct Answer: While in the air, the heater switch should be turned off at least 15 seconds before closing the air intake. On the ground, the heater control switch should be placed in the fan position for at least two minutes to cool down before closing the air intake.

QUESTION 42: MULTIPLE CHOICE 1 out of 1 points

Which of the following is the best course of action in the event of an engine fire during start?

Given Answer: Move the throttle to the full open position. Move the mixture control to the cut-off position. Continue cranking the engine.

Correct Answer: Move the throttle to the full open position. Move the mixture control to the cut-off position. Continue cranking the engine.

QUESTION 43: MULTIPLE CHOICE 1 out of 1 points

At sea level, the stall speed and the Vmc speed for the PA44 are nearly the same, but as altitude increases:

Given Answer: The Vmc speed decreases.

Correct Answer: The Vmc speed decreases.

QUESTION 44: MULTIPLE CHOICE

1 out of 1 points

The term "Critical Engine" means:

Given Answer: The engine whose failure would most adversely affect the performance or handling qualities of an aircraft.

Correct Answer: The engine whose failure would most adversely affect the performance or handling qualities of an aircraft.

QUESTION 45: MULTIPLE CHOICE

1 out of 1 points

Which engine would be considered critical on a conventional multiengine airplane that is not equipped with counter-rotating propellers?

Given Answer: Left engine

Correct Answer: Left engine

QUESTION 46: MULTIPLE CHOICE

1 out of 1 points

The published Vmc airspeed is based upon which of the following conditions?

Given Answer: Maximum available takeoff power and propeller controls in the recommended takeoff position

Correct Answer: Maximum available takeoff power and propeller controls in the recommended takeoff position

QUESTION 47: MULTIPLE CHOICE

1 out of 1 points

The published Vmc airspeed is based upon which of the following conditions?

Given Answer: Aft-most CG and most unfavorable weight

Correct Answer: Aft-most CG and most unfavorable weight

QUESTION 48: MULTIPLE CHOICE

1 out of 1 points

Given Answer: Flaps in the takeoff position and landing gear retracted

Correct Answer: Flaps in the takeoff position and landing gear retracted

QUESTION 49: MULTIPLE CHOICE

1 out of 1 points

The published Vmc airspeed is based upon which of the following conditions?

Given Answer: An angle of bank of not more than 5 degrees

Correct Answer: An angle of bank of not more than 5 degrees

QUESTION 50: MULTIPLE CHOICE

1 out of 1 points

What is the proper way to identify and verify a failed engine in flight?

Given Answer: Identify the failed engine by evaluating the need for rudder pressure. Verify using the throttle.

Correct Answer: Identify the failed engine by evaluating the need for rudder pressure. Verify using the throttle.

QUESTION 51: MULTIPLE CHOICE

1 out of 1 points

In the event of an engine failure, how should the airplane be flown to ensure a zero-sideslip condition?

Given Answer: Shallow bank toward the operating engine and the inclinometer ball slightly off-center

Correct Answer: Shallow bank toward the operating engine and the inclinometer ball slightly off-center

QUESTION 52: MULTIPLE CHOICE

1 out of 1 points

How does the procedure for an engine failure at cruise airspeed differ from an engine failure below Vmc?

Given Answer: The throttles should be reduced if below Vmc to lessen the effects

Answer: The throttles should be reduced if below Vmc to lessen the effects of asymmetrical thrust.

QUESTION 53: MULTIPLE CHOICE

1 out of 1 points

In the event of an engine failure after takeoff over the runway in a multiengine airplane, under what circumstances should the airplane be landed straight ahead?

Given Answer: Sufficient runway remains for the airplane to land and come to a complete stop.

Correct Answer: Sufficient runway remains for the airplane to land and come to a complete stop.

QUESTION 54: MULTIPLE CHOICE

1 out of 1 points

After an engine failure in flight, under which of the following circumstances would it be appropriate to troubleshoot the engine before securing it?

Given Answer: During cruise flight at an altitude above 4000 AGL with a maximum VSI indication of -100 FPM

Correct Answer: During cruise flight at an altitude above 4000 AGL with a maximum VSI indication of -100 FPM

QUESTION 55: MULTIPLE CHOICE

1 out of 1 points

While on the final approach segment of an instrument approach ending in a circle-to-land maneuver with one engine inoperative, the correct configuration for the aircraft is:

Given Answer: Gear and flaps retracted until the aircraft is in a position where a landing is assured

Correct Answer: Gear and flaps retracted until the aircraft is in a position where a landing is assured

QUESTION 56: MULTIPLE CHOICE

1 out of 1 points

"Accelerate-stop distance" is the distance required to:

Given Answer: Accelerate to Vr or Vlof (as specified by the manufacturer), experience an engine failure, and bring the airplane to a complete stop.

Correct Answer: Accelerate to Vr or Vlof (as specified by the manufacturer), experience an engine failure, and bring the airplane to a complete stop.

QUESTION 57: MULTIPLE CHOICE

1 out of 1 points

The intentional one engine inoperative speed in the PA-44-180 for flight training purposes is:

Given Answer: Vsse

Correct Answer: Vsse

QUESTION 58: MULTIPLE CHOICE

1 out of 1 points

The definition of a single-engine service ceiling for a multiengine airplane is:

Given Answer: An altitude above which a rate of climb of least a 50 FPM cannot be maintained.

Correct Answer: An altitude above which a rate of climb of least a 50 FPM cannot be maintained.

FEEDBACK AND NOTES FOR ATTEMPT

Feedback to Learner

Paragraph Arial 3 (12pt)

Mashups

Course Assessment Form

Course: FSCI 3700 Principles of Flight Instruction
Semester Taught: Spring 2021
Number of Students in Course: 19

Student Learning Outcome Assessed	Assessment Results: (Indicate what % of class achieved a minimum 70%)	Benchmark achieved? (Benchmark: 80% of students will score a minimum of 70% = "C")
H. Use the techniques, skills, and modern technology necessary for professional practice.	System Lesson Plans – 94.42% Final Lesson Plans - 93.25% Teaching Final Lesson – 87.35% Syllabus Problem Based Learning – 100%	Yes
J. Apply pertinent knowledge in identifying and solving problems.	Lesson Plan Problem Based Learning – 100% Friday Reflection – 93.68%	Yes

Course Assessment (Intended Use of Results)
The following will be used for recommendations to improve the quality of course delivery based on assessment results. These recommendations may include prerequisite change; changing course outline and adding more topics; adding a third assessment; changing the course sequence, etc.

**Attach description of assignment used for assessment and samples of student work.*

Systems and Final Lesson Plans

Learners were asked to create a lesson plan that would be used to teach a lesson on “systems” over the current aircraft they were flying at the airport (Diamond, Archer, and Seminole).

Final Lesson Plans were over any subject the student wanted to include that would be taught to primary learners.

Example of Systems Lesson Plan 1:

Archer Systems Lesson Plan for Pre-Private Student

Objective: To introduce and explain the systems of the PA-28 Archer.

References: Piper PA-28 Operating Handbook, all chapters

FAR 91.205 for required equipment.

Material:

Continental IO-360B4A Engine (POH Chapter 1)

- Fuel Injected
- Horizontally opposed
- Direct drive
- Air cooled
- 360 cubic inches inside the cylinders

Fuel system (POH Chapter 7)

- Show diagram
- Electric fuel pump
- Engine driven fuel pump
- 2 25-gallon (24 usable) wing tanks

Electrical System (POH Chapter 7)

- Show diagram
- 28 volt system, 24 volt battery, 70 amp 28 volt alternator, 24 volt emergency battery
- Explain different busses
  - Lighting buss
  - Non-essential bus
  - Essential bus
  - Avionics bus

PFD (POH Chapter 7)

- Explain G1000 gauges and buttons (Take student out to archer to demonstrate)
- Show location of all instruments
- Demonstrate how to radio and nav frequencies

MFD (POH Chapter 7)

- Explain engine instruments, map functions, connect setup and flight plan inputting

Autopilot (Will gloss over or skip over for pre-private student)

- 2 axis autopilot
- Explain flight director
- Explain how to activate and deactivate autopilot

- Explain different modes (nav, heading, roll, vs, vnav, flight level change, pitch)

No magnetic compass

- 2 magnetometer's that operate independently

Evaluation: Student can describe the operation and functionality of the Archer systems as well as navigate the PFD and MFD pages, input a basic flight plan and use the direct-to function with limited guidance.

Systems 2

PA44 Systems (M10G1)

- **<u>Lesson Objective:</u>** In this lesson, the student will refresh their memory on basic commercial pilot content from the previous course. The student will also be introduced to the various systems associated with the functioning of the Piper Seminole. The student will better grasp the differences found in the systems on board multi-engine aircraft in relation to a single-engine aircraft. Since the aircraft is 'complex', the student will be introduced to the systems associated with a constant-speed propeller and a retractable landing gears. In addition, the student will understand the troubleshooting functions the plane has the case of an engine failure.

- **<u>Lesson Duration:</u>** 2.0.
- **<u>Equipment:</u>**

-Whiteboard
- FAR 61.133
-FAR 119.1
-Model twin-propeller airplane
-PA44 for walkaround
-PA44 POH
-Videos
-McCauley's Guide to 'how constant speed propellers work'
-PA44 systems Fill in sheet.

- **<u>Content:</u>**

-Intro to Module 10
→Overview of Mod 10 TCO and standards
→Mod 10 Exam deadline

-Commercial Pilot Airman Certification Standards
→Part 61 and Part 141 hours to qualify.
→ACS standards for Commercial pilot
→Medical class

-FAR 61.133 Commercial Pilot Privileges and Limits
→Hire and compensation.
→Non-Instrument rating limits
→Public carriage
→Private carriage
→Holding out
→Operator Certificate
→FAR 119.1 (e) exceptions

-Primary and Secondary Flight Controls and Trim
→Aileron
→Elevator and elevator trim
→Rudder and rudder trim
→Rudder trim during single engine operations
→Flaps and speeds

-Aircraft Engine
→2 Lycoming O360, 180 HP, 2700 RPM
→Counter rotating engines, conventional twin, critical engine.
→Oil capacity
→Cowl Flap
→2 Throttles, 2 propeller levers, 2 mixtures
→4 Magnetos total
→2 primers

-Fuel Systems
→Location
→Capacity, usable, unusable
→Fuel vent, scupper drain
→Fuel system diagram (7-15 in POH)

-Carburetor Operation
→2 carburetors
→Venturi, Bernoulli principle
→Advantages (In comparison with fuel injected engines)
→Disadvantage (In comparison with fuel injected engines)

-Carburetor Ice
→Venturi, Bernoulli principle, temperature and humidity
→Cockpit indications
→2 Carb heat levers and appropriate RPM indications.
→Ground check for efficacy of carb heat.

-Electrical system
→2 Alternators, Voltmeter
→Voltage regulator
→Battery
→Electrical system diagram (7-23 in POH)
→Dependence of Landing gear system on the electrical system.

-Landing Gear System
→Tricycle
→Differential braking
→Hydraulicly powered.
→Extension/Retraction speeds
→Emergency gear release, emergency freefall.
→Landing gear system (7-9 in POH)
→Hydraulic reservoir
→High HYD. Press: Extension and why?
→Low HYD. Press: Retraction and why? Function with emergency gear release
→Shuttle Valve
→Mechanical lock, J hook, Green lights
→Safety (squat) switch, circuits

→Proximity switch
→GUMP checklist
→Reasons for lights not illuminating green.

-Propeller System
→'Hertzel' propeller
→Constant speed- Hydraulically actuated by oil pressure.
→Pitch control due to nitrogen and oil
→Governor
→Fly weights, Coriolis force
→Speeder springs, propeller lever
→Pilot valve, Oil TO FINE, Oil AWAY COURSE
→How are blade angle changes made?
→Aircraft pitch changes blade pitch to maintain RPM.
→Loss of oil pressure

-Feathering propellers
→Unfeathering Accumulator, Nitrogen charge
→Feathering and Unfeathering times and limits
→Effect on drag.
→Effect on VMC
→Ground check
→Video
→Hand out 'McCauley's guide to constant speed propellers' for student to read at home.

-Horizontal Situation Indicator
→G5, accelerometer, MEM type gyro.
→Magnetometer.
→Abnormal indications
→GAD29B.
→GPS

-Combustion Heater
→Location in FWD fuselage
→Fuel from left tank, electric pump, 1.5 gph.
→Distribution to seats and defroster
→Three levers: Air intake, Cabin Temperature and Defrosters
→Secondary controls by each passenger
→Three position switch- Cabin heat
→Automatic function once desired temperature is reached.
→Environmental System (7-31 in POH)

-Conclusion
→Walk out to PA44 for depiction of particular systems (if PA44 is available)
→Multi-engine aircraft are different from single-engine aircraft.
→Redundancy and dependence between different systems .
→Student will explain how a blade pitch change occurs in different stages of flight.
→Student will explain how the landing gear both extends and retracts.
→Systems will be pointed out during our introduction flight.

- **<u>Instructor actions:</u>** review commercial content as well as present in depth all concepts regarding the systems of a multi-engine aircraft. Ensure that all concepts are later shown to student during preflight and flight itself.

- **<u>Student actions:</u>** student understands the functioning of all systems found on a multi-engine aircraft but mostly those absent from a single-engine aircraft such as the landing gear system, constant speed propeller, combustion heater and carburetor functions.

- **<u>Completion standards:</u>** Student can explain central concepts regarding the various systems found on board a multi-engine aircraft while also visually showing where these are found on the PA44.

Systems 3

Ground Lesson on Operation of Systems

Unit Description: Operation of Systems.

Objectives:

- Introducing of aircraft operating limitations, flight controls, systems, instruments, and anything related to Aircraft Flight Manual, specifically for PA-28-181, ARCHER III

Content:

- Primary flight controls and trim.
- Wing flaps.
- Powerplant/Engine
- Propeller.
- Landing gear system.
- Fuel, oil, and hydraulic systems.
- Electrical systems.
- Avionics
- Autopilot
- Pitot static vacuum/pressure and associated flight instruments.
- Environmental systems.
- Aircraft Flight Manual or Pilot's Operating Handbook.
- Operating limitations, placards, instrument markings.
- Deicing and anti-icing.

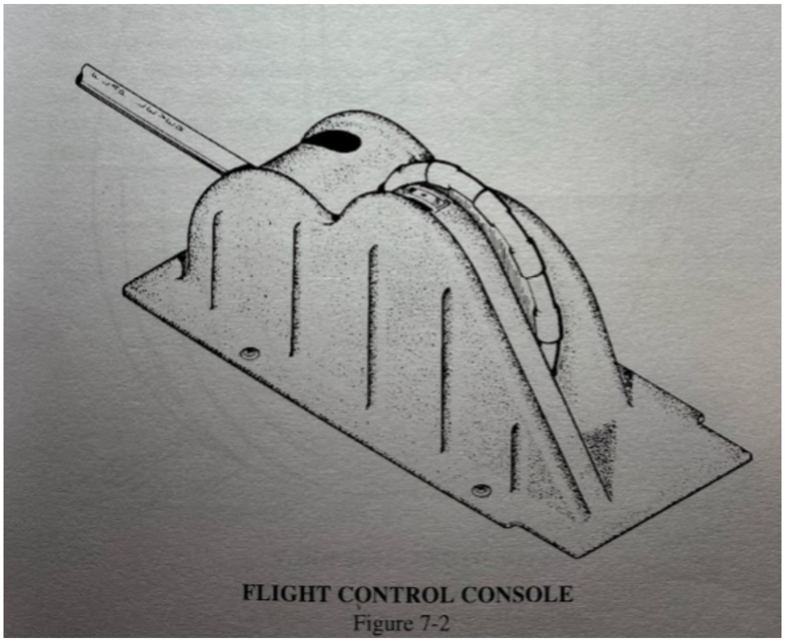
Completion Standards:

- The student will have received the ground training from an authorized instructor on the knowledge areas include in this lesson in preparation for meeting the module completion standards.

Lesson Plan:

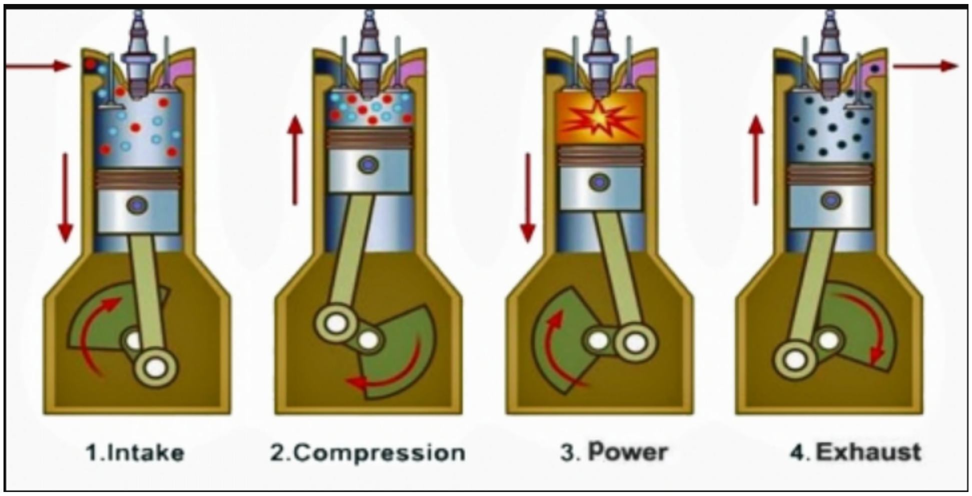
- Primary flight controls and Trim (Information Manual → 7-5)
  - Dual controls with a cable system used between the controls and the surfaces.
  - Stabilator: all movable slab type with a trim tab mounted on the trailing edge of the stabilator to reduce the control system forces.
  - Trim tab: A control wheel between the front seats is used to control the trim tab.
  - Rudder trim: Adjustment is mounted on the right side of the pedestal bellow the throttle quadrant and permits directional trim as needed in flight.

- ✈ Wing flaps.



- Manually operated and spring-loaded to return to the up position. The flaps have three extended positions, 10, 25, and 40 degrees.
- Slotted flaps, which means it incorporates a gap between the flap and the wing to force high pressure air from below the wing over the upper surface of the flap. This helps reduce boundary layer separation and allows the airflow over the flap to remain laminar.

- ✈ Powerplant/ Engine (Information Manual → 1-5)
  - Lycoming IO-360-B4A, four cylinder and direct drive (no transmission).
  - IO stand for fuel injected and horizontally opposed.
  - 360 stands for displacement (cubic inches), which is 361.0.
  - The powerplant work in combination to produce thrust. The powerplant propels the airplane and drives the various systems that support the operation of an airplane.
  - The engine goes through four strokes:
    - Intake: Valve lets in air. Piston moves in pulling in combustible gas (air and fuel)
    - Compression: Valves close and piston compresses gas. This is because compressed gasses ignite more easily.
    - Combustion (power): Spark plugs ignite the mixture, and it combust.
    - Exhaust: Creates exhaust and releases through the exhaust pipe.

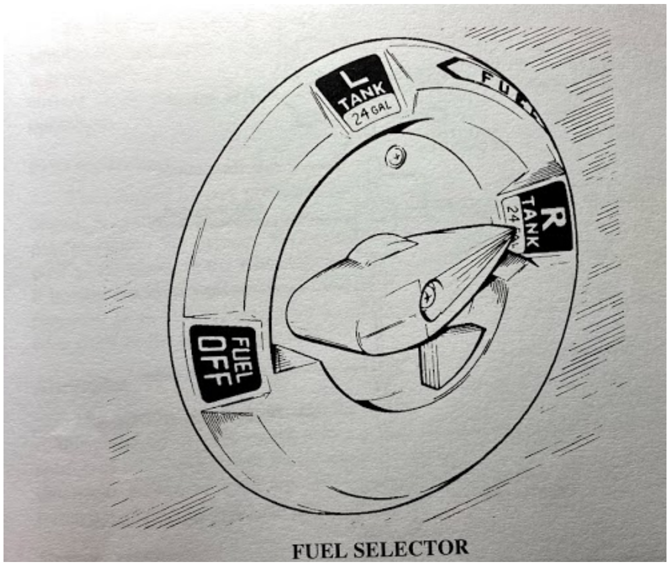


- ✈ Propeller (Information Manual 1-5).
  - o The purpose of the propeller is to provide a method of propulsion, so the aircraft is able to move forward through the air.
  - o Propeller type: fixed pitch.
  - o Hazards: spinning propellor blade is extremely dangerous and adequate distance must be maintained in the vicinity of aircraft.
  - o Never hand-prop aircraft unless properly trained.

- ✈ Landing gear system (Information Manual 7-7)
  - o A spring device is incorporated in the rudder pedal torque tube assembly to provide rudder trim. By using the rudder pedals and brake, the nose gear is steerable through a 20 degree arc each side of center. A shimmy dampener is included in the nose gear.
  - o The brake system consists of dual toe brakes attached to the rudder pedals and a hand brake lever located below, behind, and to the left of the throttle quadrant.

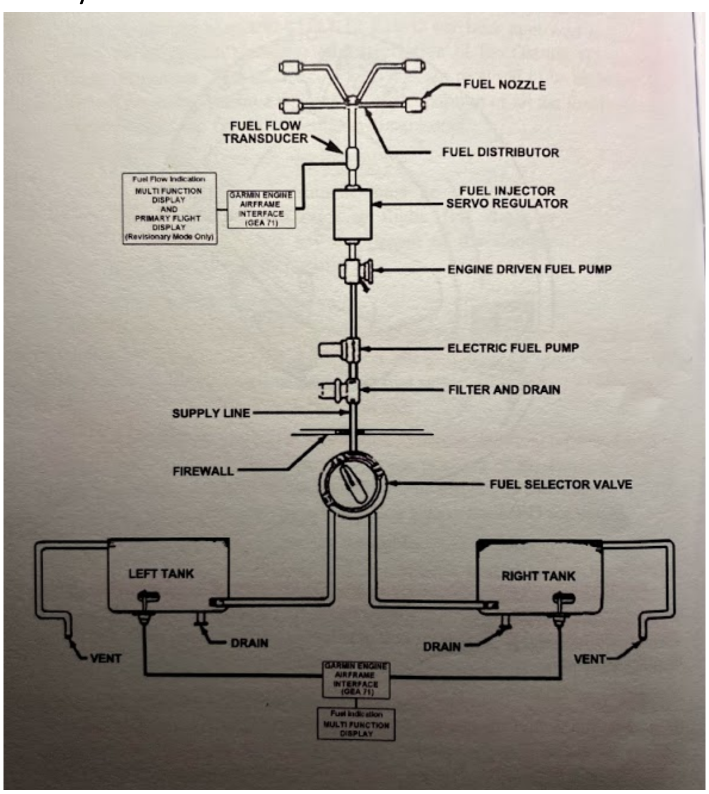
- ✈ Fuel, oil, and hydraulic systems (Information Manual 7-46).
  - o Two twenty-five gallon (24 gallons usable) fuel tanks are secured as the leading edge of each wing by screws and nut plates.
  - o Each tank contains an indicator tab in the filler neck to determine fuel status.
  - o 17 gallons of usable fuel is measured at the bottom of each indicator tab,
  - o One float type fuel sensor in each wing. The signal corresponding to the position of the floats is sent to the Garmin Engine Airframe (GEA) interface unit where it is converted into fuel quantity. The fuel quantity information is then sent to the MFD for display.
  - o An auxiliary electric fuel pump is provided in case of failure of the engine driven pump.

  - o Fuel selector control contains three positions: “OFF”, “L” (left tank), and “R” (right tank). To turn the fuel off, rotate selector handle counter-clockwise to the “OFF” position while depressing the button. Rotate the selector handle clockwise to either “L” or “R” positions to permit fuel flow. The button will release automatically preventing accidental selection of the fuel to the off position.



FUEL SELECTOR

- The fuel drain is provided at the lowest, inboard corner of each wing tank.
- An engine fuel strainer is accessible through the exterior, lower, left nose section.
- Fuel system schematic



- ✈ Electrical systems (Information Manual 7-49).
  - The 28 volt electrical system includes a 24 volt primary battery, a 70 ampere 28 volt alternator, a single external power connector and an isolated 24 volt emergency battery.
  - Primary battery: provides for electric power to the equipment when engine is not running and for engine starting.
  - The alternator is belt driven directly from the engine.
  - Once the engine is running and the ALTR switch is activated, the alternator becomes the primary source of electrical power for the aircraft.

- Emergency battery provides electrical power to the emergency bus in the unlikely event of a complete electrical failure (30 minutes).
- Generator/Alternator: 70 amps, 28 volts
  - Ensure 23.3 volts before flight in order to use EMER BATT for 30 minutes
- Electrical distribution(diagrams) and busses
  - BATT 1
    - Essential
    - Non-Essential
    - Hot Batt
    - Emergency (also powered by EMER BATT)
    - Avionics
    - Lighting
- Electrical system indications
  - Green: good
  - Yellow: caution
  - Red: bad
- Systems dependent on electrical power
  - ADAHRS
  - Lights
  - Avionics
- Main and Essential Bus warnings and cautions
  - Check Circuit Breakers
- Alternator failure
  - First indication: bright RED light in front (not an EMERGENCY)
  - Warning message
  - Recycle ALT switch
  - Land as soon as practical
- Purpose and operation of the emergency battery
  - 24 volts EMER BATT that supports necessary electrical equipment for a minimum of 30 minutes.
- Complete electrical failure
  - Recycle everything.
  - Standby should function just fine.
  - EMER BATT should support standby instruments.
  - Understanding the ability to limit electrical usage to make to it to your destination while communicating as best as possible.
  - Ensure the importance of electrical system is well understood.

- Light Gun Signals

Color and Type of Signal	Movement of Vehicles, Equipment and Personnel	Aircraft on the Ground	Aircraft in Flight
Steady green	Cleared to cross, proceed or go	Cleared for takeoff	Cleared to land
Flashing green	Not applicable	Cleared for taxi	Return for landing (to be followed by steady green at the proper time)
Steady red	Stop	Stop	Give way to other aircraft and continue circling
Flashing red	Clear the taxiway/runway	Taxi clear of the runway in use	Airport unsafe, do not land
Flashing white	Return to starting point on airport	Return to starting point on airport	Not applicable
Alternating red and green	Exercise extreme caution!!!!	Exercise extreme caution!!!!	Exercise extreme caution!!!!

- Avionics
    - Primary components
        - **A**ir**D**ata**A**ttitude**H**eading**R**eference**S**ystem
            - 2 redundant systems in each aircraft
        - Air Data: pitot/static data into digital reading, and temp. Info
            - Airspeed, Altimeter, and VSI
        - AHRS: gyroscope and magnetometer: attitude and heading info.
            - laser ring gyro (internal accelerometer): all electric
                - IRS: Inertial Reference System
                - DO NOT TALK ABOUT
                - See on A/C
            - Magnetometer: magnetic heading, not prone to compass errors
            - Attitude, HSI, Turn Coordinator
    - Automatic and manual activation of Display Backup Mode
        - Red Button = reversionary mode
    - Airworthiness considerations with inoperative components
        - Red X's = cannot takeoff
    - Navigation database currency requirements
        - 28 days for IFR only = database currency for approaches, if using for VFR is does not matter
- Autopilot (Information Manual 7-38)
    - When the AVION MASTER switch is selected ON, the GFC700 automatically conduct a self-test, as indicated by a white boxed PFT on the PFD.
    - Pressing the AP key activates the autopilot and fight director in the default ROL and PIT modes.
    - A flashing yellow mode annunciation and annunciator light indicate loss of sensor (ADC) or navigation data (VOR, LOC, GPS, VNV, SBAS) required to compute commands.
    - Autopilot disengagement methods:
        - Pressing the A/P DISC/ TRIM INTER switch on the control whel
        - Activation of either half or both halves of the manual electric pitch trim switch on the control wheel
        - Pressing the AP key on the MFD
        - Pressing the TO/GA switch on the throttle

- Environmental Systems

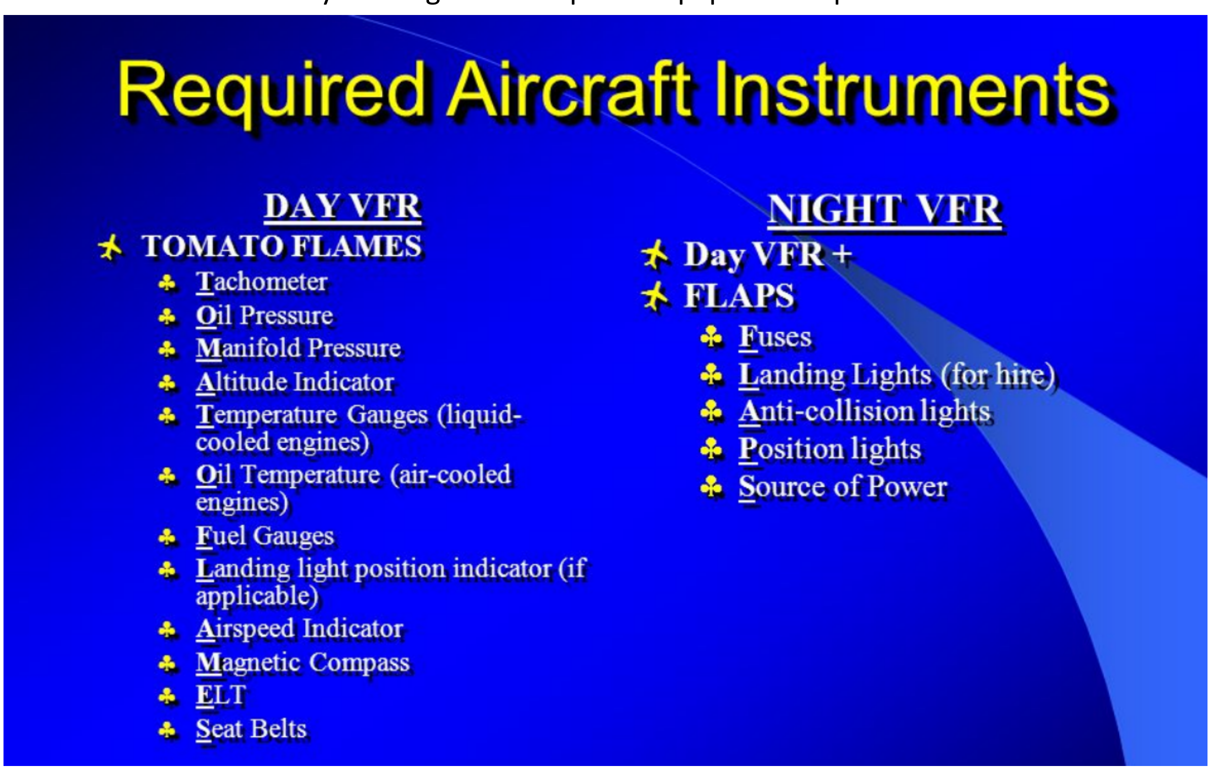
- Cabin Heating
    - Redirected air from heat of engine.
    - From shroud around the exhaust manifold
    - HAZARD: crack/leak in exhaust shroud causing carbon monoxide poisoning leading to passing out or death
- Ventilation
    - Electric fan
    - Outside ram air vents

✈ Aircraft Flight Manual/Pilot's Operating Handbook

- List the required aircraft documents.
    - Certificate location and expiration dates
    - Additional document requirements related to avionics.
        - Airworthiness Certificate
            - Expires when A/C unairworthy
        - Registration Certificate
            - Renewed every 3 years.
        - Radio License (international flights ONLY)
        - Operating Limitations:
            - Ch. 2 AFM
        - Weight and Balance
            - Specified for that A/C
        - Supplements
            - Guidelines of operational use for equipment in aircraft that is non-standard; Ch. 9

✈ Operating Limitations, Placards, Instrument Markings

- Cross-referencing VFR equipment and why we don't need certain equipment
- Determine the airworthiness of the aircraft with inoperative equipment (FAR 91.213)
    - Day and Night VFR required equipment in part 91.205



- GRABCARD
    - Generator
    - Rate of turn
    - Altimeter
    - Ball
    - Clock
    - Attitude indicator
    - Radios
    - Directional gyro
    - DME above FL 240
- Use of Kinds of Operations list in AFM
    - Ch. 2 AFM
    - Airworthiness Directives

- Online
- Basic understanding between FAA and manufacturer
- Ways to comply:
  - Add to inspection
  - One-time fix; recurrent (supplemental type certificates)
    - Fixes the issue so they no longer have to continue process of AD
- Type Certificate Data Sheet
  - Formal definition of what makes that aircraft that aircraft
  - Validates the A/C as being certified as long as specific is included on aircraft
  - Defines what makes it that specific A/C
    - If equipment is added, must receive supplemental type certificate; requires a reevaluation
  - Paralleled to normal equipment list
  - Online
- ON ANY OF THESE = **UNAIRWORTHY**
- <u>IF NOT</u>:
  - Placarding requirements
    - Remove or deactivate and placard "Inoperative"

- Explain the basic purpose and use of an MEL
  - PURPOSE: list of items that <u>can</u> be inoperative and A/C still airworthy
  - Obtaining an MEL
    - Obtained by operator
    - Master Minimum Equipment List from Manufacturer
    - Arranged with local FSDO
    - Obtained with Letter of Authorization
  - Content of an MEL
  - Using an MEL to determine Airworthiness
    - If item on MEL = Airworthy if <u>complied</u> with
    - **Not** on MEL = Unairworthy

- Explain the purpose of a Special Flight Permit and how to obtain one FAR 21.197
  - Something is broken and need to fly to a place to have it repaired
  - Obtain through local FSDO
- ✈ Deicing and anti-icing
  - Equipment available to handle induction and structural icing
    - De-icing: let it accumulate and break off
      - Boots: rubber on wings held by suction, when ice accumulates, activate boots, expand boots break ice
      - Hot plate: for windshield
      - De-icing fluid: on the ground
    - Anti-icing: a prevention
      - Weeping wing: sweats solution onto the wing, trail back while flying
        - Alcohol substance
        - Thousands of pin holes on leading edge of wing
        - Sucked out of holes with low pressure going across wing

        - Problems: inspected a lot and expensive/inefficient systems to maintain
      - Heated wing: ducts, hot bleed air from the engine, ducted through and keeping wings hot
      - Pitot heat: anti-ice
- Tailplane Icing
  - Tailplane icing
    - Upside-down wing-Negative AOA
      - Pitching down and adding flaps causes tail to reach critical AOA
    - Tail-down force
    - DO NOT apply flaps in tail plane icing conditions
      - Increases the negative effectiveness of nose-heavy CG
    - Recovery: pitch up, reduce flaps

<u>Example of Final Lesson Plans</u>

Airport Operations Lesson Plan

Redacted Student Name

Objective: To teach the learner about airport operations including information for both operating on the ground and in the air around airports.

Schedule: 2 hours

Instructor actions: Instructor will teach the learner about airport operation so that the learner can understand how to navigate taxiways, runways, and fly in the vicinity of airports.

Learner actions: Learner will learn how to read markings on the ground while taxiing as well as how to navigate the airspace around airports.

Completion standards: Learner will be evaluated at the end of the lesson with a short quiz (verbal/written) to determine how well they understand the material.

	DIRECTION	MATERIAL
ENGAGE	Are you familiar with any documents we could use to learn more about specific airports? Are there any airports you can think of that might have lots of ground communication? Why might that be? What are some possible dangers while operating on the airport surface or in its vicinity?	None. Asking generic questions to engage learner with the topic that will be discussed
EXPLORE	Have learner search and tab the FAR/AIM over relevant sections as it relates to airspace, airport operations, etc. If able, have learner scan through Chapter 14 in the Pilot's Handbook of Aeronautical Knowledge to gain a baseline understanding of what the lesson will be about.	FAR 91.123 Compliance with ATC clearances and instructions FAR 91.125 ATC light signals FAR 91.126 *through* 91.131 Operations in Class G (E)(D)(C)(B) airspace Chapter 14 of the Pilot's Handbook of Aeronautical Knowledge
EXPLAIN	Types of airports Towered (blue) Non-towered (magenta) Sources for airport information Aeronautical charts/Airport diagrams Chart supplement NOTAMs ATIS Runway markings and signs Displaced threshold (Figure 14-6A and B)	Chapter 14 of the Pilot's Handbook of Aeronautical Knowledge Chapter 4, Section 3 of the Aeronautical Information Manual- Airport Operations

	Runway holding position sign Runway holding position marking Runway designation marking LAHSO (Land and Hold Short Operations) Know landing distances Advise ATC if unable Know markings at LAHSO point Taxiway markings and signs Destination signs Holding position signs and markings for an ILS critical area Marking and lighting of temporarily closed runways and taxiways Airport, taxiway and runway lighting Airport beacon Approach light systems Visual glideslope indicators Runway edge lights Taxiway omnidirectional lights Radio communication Proper verbiage/order Traffic pattern ATC light signals Runway incursion avoidance Wake turbulence avoidance Wind shear avoidance	
ELABORATE	Discuss FAR 91.123 and FAR 91.125 in depth Discuss FAR 91.126 *through* 91.131 so student gains a basic understanding of entry requirements for different airspace Show learner diagrams throughout Chapter 14 of the PHAK to aid in the learning of the markings and signs	FAR 91.123 Compliance with ATC clearances and instructions FAR 91.125 ATC light signals FAR 91.126 *through* 91.131 Operations in Class G (E)(D)(C)(B) airspace Chapter 14 of the Pilot's Handbook of Aeronautical Knowledge
EVALUATE	Have learner answer the following questions at the end of the lesson: In your opinion, why as a pilot is it important to be knowledgeable about the airport environment? Can you determine risks associated with operating at non-towered airports? What about towered airports? Describe LAHSO. What are the requirements? How would you justify accepting the LAHSO? If you are planning a cross country, what kinds of documents will you analyze to become familiar with the airport and its environment?	Some type of informal evaluation Written quiz Verbal quiz If teaching multiple learners, a Kahoot! could be a fun way to quiz learners White Board Dry Erase Markers/Eraser Notebook Pen/Pencil

	Have student give example of calling up ground for taxiing and what proper verbiage would be using KCPS taxi diagram for assistance.	

**Note: Instructor will supplement the explanation of airport operations with their own notes/study guides

Lesson plan 5
Weight and Balance

To understand the importance of weight on a aircraft and how to fill out a weight & balance

Weight and Balance
Effects of weight and balance on performance

Work on a weight and Balance sheet

DIAMOND DA20-C1 PERFORMANCE AND WEIGHT AND BALANCE

	Weight	Arm	Moment
Basic Empty Weight			
Pilot/Front Passenger		5.63	
Baggage Area		32.44	
Fuel		32.44	
Ramp Weight			
Start-up/Taxi Fuel Burn		32.44	
Takeoff Weight			
Enroute Fuel Burn		32.44	
Landing Weight			

Current Conditions

Altimeter Setting: _______ Pressure Altitude: ___________
Temperature: _______ Density Altitude: ___________

	Headwind	Crosswind
Departure		
Destination		

Takeoff

Takeoff Ground Roll: _______________
Takeoff Distance to Clear 50 Feet: _______________

Climb

Rate of Climb (FPM): _______________
Time (Altitude to Gain ÷ Rate of Climb): _______________
Fuel Burn (Time x GPH): _______________
Distance (Time x Groundspeed): _______________

Cruise

RPM: _______________
% BHP: _______________
KTAS: _______________
Fuel Flow (GPH): _______________
Endurance (Fuel Onboard ÷ GPH): _______________
Range (Endurance x Groundspeed): _______________
Maneuvering Speed: _______________

Descent

Time (Altitude to Lose ÷ ~500 FPM): _______________
Distance (Time x Groundspeed): _______________

Landing

Landing Ground Roll: _______________
Landing Distance to Clear 50 Feet: _______________

- Would teach the student how to fill this out

- Explain Arm and Moment
- Teach the student how to calculate total weight and find the center of gravity.

Effects of weight and balance on performance

- Too much weight on aircraft can cause structural damage.

- Forward Center of Gravity and Back Center of Gravity
    - Forward CG causes less performance because you need to increase the angle of attack to remain level flight but it is easier to recover from stall.
- Back CG causes better performance because you lessen the amount of angle of attack needed also you get a increase in maneuverability but it is harder to recover from stall.

Lesson Duration: 1 hour

Final Lesson Plan 3

Lesson Plan - Airworthiness

Texts and Materials

- Pilot's Handbook of Aeronautical Knowledge (PHAK)
    - Chapter 1 - Flight Manuals and other Documents
    - FAR AIM (References are listed next to each subtopic)

Audience

- Mod 2 or pre-private student

Lesson Duration: 1HR

Lesson Objectives + Completion standards

1. By the end of this lesson, the learner will be able to become familiar with the documentation and manuals required to fly the aircraft legally and safely.
2. The learner will also be able to know what equipment the aircraft needs to fly.

Content

1. Required aircraft documents
    a. Airworthiness (NEVER EXPIRES) (91.203)
    b. Registration (EXPIRES EVERY 3 YRS)
    c. Radio operating license (INTERNATIONAL)
    d. Operating limitations
    e. Weight and balance

Example of airworthiness certificate:

UNITED STATES OF AMERICA
DEPARTMENT OF TRANSPORTATION—FEDERAL AVIATION ADMINISTRATION
STANDARD AIRWORTHINESS CERTIFICATE

1. NATIONALITY AND REGISTRATION MARKS	2. MANUFACTURER AND MODEL	3. AIRCRAFT SERIAL NUMBER	4. CATEGORY
N12345	CESSNA C-150L	6969	NORMAL

5. AUTHORITY AND BASIS FOR ISSUANCE
This airworthiness certificate is issued pursuant to the Federal Aviation Act of 1958 and certifies that, as of the date of issuance, the aircraft to which issued has been inspected and found to conform to the type certificate therefor, to be in condition for safe operation, and has been shown to meet the requirements of the applicable comprehensive and detailed airworthiness code as provided by Annex 8 to the Convention on International Civil Aviation, except as noted herein.
Exceptions:
NONE

6. TERMS AND CONDITIONS
Unless sooner surrendered, suspended, revoked, or a termination date is otherwise established by the Administrator, this airworthiness certificate is effective as long as the maintenance, preventative maintenance, and alterations are performed in accordance with Parts 21, 43, and 91 of the Federal Aviation Regulations, as appropriate, and the aircraft is registered in the United States.

DATE OF ISSUANCE	FAA REPRESENTATIVE	DESIGNATION NUMBER
1/29/96	R.E. BARO	AEA-FSDO-03

Any alteration, reproduction, or misuse of this certificate may be punishable by a fine not exceeding $1,000 or imprisonment not exceeding 3 years, or both. THIS CERTIFICATE MUST BE DISPLAYED IN THE AIRCRAFT IN ACCORDANCE WITH APPLICABLE FEDERAL AVIATION REGULATIONS.

FAA FORM 8100-2 (8-82) GPO 892-804

2. Required Aircraft Inspections
    a. ANNUAL (12 Calendar mts)
    b. VOR Check (IFR)

c. I00 hrs inspection
d. Altimeter (IFR)
e. Transponder (24 calendar months)
f. ELT (12 calendar months)
    i. ELT inspection and battery replacement
        1. For the inspection: 1) proper installation 2) battery corrosion 3)operation of controls and crash sensor 4) presence of sufficient antenna signal
        2. For replacement: 1) when the transmitter has been in use for more than 1 cumulative hour. 2) when 50% of battery useful life has expired

3. Airworthiness Directives (ADs)
    a. Is a notice by the FAA that defines an unsafe condition that commonly occurs in an aircraft type and prescribes appropriate corrective actions. Before every flight, the pilot-in-command must make sure that the aircraft is in compliance with all applicable ADs. Compliance is MANDATORY!
4. Special airworthiness information bulletins (SAIBs)’
    a. information tool that alerts, educates, and makes recommendations to the aviation community. Not mandatory.
5. Service bulletins
    a. notice to aircraft operator from a manufacturer informing them of product improvement

Required Equipment

FAR 91.205
Day VFR: ATOMATOFLAMES
- Airspeed indicator
- Tachometer
- Oil pressure gauge
- Manifold Pressure gauge
- Altimeter
- Temperature gauge
- Oil Temperature gauge
- Fuel gauge
- Landing gear position indicator
- Anti-collision lights
- Magnetic Heading indicator
- ELT
- Seat belts

Night: FLAPS
- Fuses

- Landing lights
- Anti-collision lights
- Position lights
- Source of electricity

How would you determine airworthiness of aircraft if there is inoperative equipment?

1. Check the day and night VFR required equipment in 91.205
2. Use Kinds of Operations List (KOL) in AFM.
3. Check the Type Certificate Data Sheet (TCDS) listed with your make and model of aircraft on the FAA website.
4. Placard
    a. 2 methods to placard
        i. Remove, placard, & record in maintenance logs according to 43.9
        ii. Deactivate & placard. If maintenance is performed, it is logged according to 43.9

Teaching a Final Lesson:

Learners were tasked with teaching one of the instructors in a one-on-one environment a lesson plan of their choosing. The lesson was required to be about 10 minutes in length. Evaluation was at the discretion of the instructor based on a rubric used to evaluate if the learner applied principles learned throughout the course.

Name Practice Lesson Rubric

Description

Rubric Detail

	Levels of Achievement			
Criteria	Poor	Novice	Competent	Proficient
Setting instructional outcomes	0 to 7 points Serious deficiencies in this area	7 to 8 points Instructional outcomes are too general, and /or do not reflect CFI Practical Test and Appropriate Airman Certification Standards.	8 to 9 points Instructional outcomes are stated as goals reflecting high-level learning and curriculum standards that align with CFI Practical Test and Appropriate Airman Certification Standards.	9 to 10 points Instructional outcomes are stated as challenging goals that can be assessed, reflecting rigorous learning and CFI Practical Test and Appropriate Airman Certification Standards.
Demonstrating knowledge of content and pedagogy	0 to 7 points Serious deficiencies in this area	7 to 8 points Instructor's plans and practice reflect some awareness of the important concepts and prerequisite relations between them.	8 to 9 points Instructor's plans and practice reflect solid knowledge of the content, and prerequisite relations between important concepts.	9 to 10 points Instructor's plans and practice reflect extensive knowledge of the content and of the structure of the discipline. Instructor actively builds on knowledge of prerequisites and misconceptions when describing instruction or seeking causes for student misunderstanding.
Designing coherent instruction	0 to 7 points Serious deficiencies in this area	7 to 8 points The series of learning experiences demonstrates partial alignment with instructional outcomes, some of which are likely to engage students in significant learning. The lesson or unit has a recognizable structure and reflects partial knowledge of students and resources.	8 to 9 points Instructor coordinates knowledge of content, of students, and of resources, to design a series of learning experiences aligned to instructional outcomes. The lesson or unit has a clear structure and is likely to engage students in significant learning.	9 to 10 points Instructor coordinates knowledge of content, of students, and of resources, to design a series of learning experiences aligned to instructional outcomes, differentiated where appropriate to make them suitable to all students and likely to engage them in significant learning as they relate to concepts and processes in Ohio standards and school/district curriculum. The lesson or unit's structure is clear and allows for different pathways according to student needs
Using Assessment in Instruction	0 to 7 points Serious deficiencies in this area	7 to 8 points Assessment is occasionally used in instruction, through some monitoring of progress of learning. Feedback to students is uneven, and students are aware of only some of the assessment criteria used to evaluate their work.	8 to 9 points Assessment is regularly used in instruction, through self-assessment by students, monitoring of progress of learning by Instructor, and through high quality feedback to students. Students are fully aware of the assessment criteria used to evaluate their work.	9 to 10 points Assessment is used in a sophisticated manner in instruction, through student involvement in establishing the assessment criteria, self-assessment by students and monitoring of progress by both students and Instructors, and high quality feedback to students.

View Associated Items

Print Close Window

Rubric Statistics Report

Report Sections	Overview Rubric Overall Performance Rubric Analysis Frequency Distribution

Overview

Current Instrument Name	Final Lesson Plans
Rubric Name	Lesson Plan Rubric
Rubric Description	
Total Evaluations	0
Begin Date	Jan 1, 2021
End Date	May 1, 2021

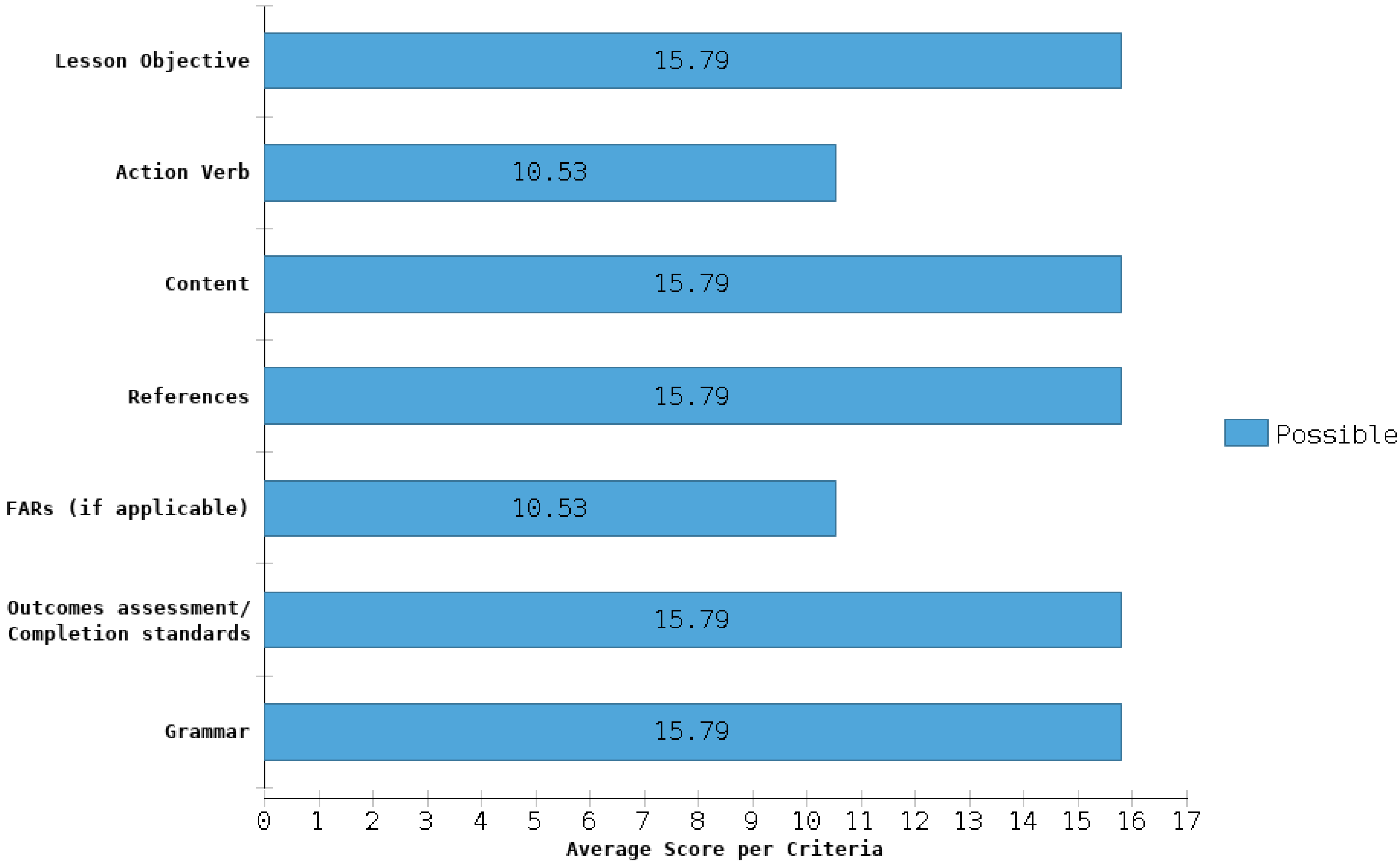
Rubric Overall Performance

Points Possible: 100.00

Rubric Statistics Report

Rubric Analysis

Lesson Plan Rubric



Rubric Statistics Report

Frequency Distribution

Lesson Plan Rubric

Criteria		Needs Improvemen	Meets Expectations	Exceptional	Number Evaluation	Average	Median	Mode	Std. Deviation
Grammar	Points	0.00 - 5.26	5.26 - 10.53	10.53 - 15.79					
Lesson Objective	Points	0.00 - 5.26	5.26 - 10.53	10.53 - 15.79					
Action Verb	Points	0.00 - 0.00	0.00 - 5.26	5.26 - 10.53					
Content	Points	0.00 - 5.26	5.26 - 10.53	10.53 - 15.79					
References	Points	0.00 - 5.26	5.26 - 10.53	10.53 - 15.79					
FARs (if applicable)	Points	0.00 - 0.00	0.00 - 5.26	5.26 - 10.53					
Outcomes assessment/ Completion standards	Points	0.00 - 5.26	5.26 - 10.53	10.53 - 15.79					

Problem Based Learning Assignments:

Learners were tasked with forming a group and evaluating possible solutions to a scenario presented by the instructor. The possible solutions were then discussed in class as a whole and their effectiveness was evaluated from a discussion standpoint.

1. Syllabus Problem Based Learning

Learners were tasked with creating a syllabus aimed towards pre-Private students who were younger in nature. The purpose behind the younger audience was because previously the course included teaching lessons at an Elementary School as an outreach program. The content was centered around a few introductory sims that would be useful, yet hopefully entertaining for kids to pique their interest in aviation.

Example Below:

Syllabus PBL 1

Information

- Meeting Location- SLU Hall, room 123
- Professor- **Redacted Student Name**
- Contact
  - Email- **Redacted Student Email**
  - Phone- **Redacted Student Phone Number**

Required Materials

- Pens
- Colored pencils
- Airplane Flight!: A lift-the-flap Adventure (Book) by Susanna Leonard Hill
  - $7.99 at Target

Course Description

- Fundamentals of basic operation and function of aircraft
- Understand the basics of lift by use of paper airplanes
- Understand airspaces, navigation basics, radio calls, and other private pilot basics
- Be able to complete a full preflight

Why is this class important?

- Every country has its own minima for how old an individual must be to fly, in the United States, one must be 16 to solo
- This class is designed for middle schoolers to understand the basics of flight and, at the end of the course, get to fly in the copilot's seat of a Cessna 172 out of the Dubai International Airport, United Arab Emirates
- When it is time to start flight training, one will have the information needed to begin training with a flight instructor

---

Course Schedule

- Meeting times – Monday, Wednesday, Friday from 9 – 11 AM
- Unit 1 – What is an aircraft?
- Unit 2 – The forces of flight
- Unit 3 – Airspace and radio calls
- Unit 4 – Pre-solo knowledge

Grading

- 1 quiz per unit – 1% each, 4% total
- Homework – 1%
- Participation – 1%
- Positive attitude – 94%
- Every absence will result in a 30% grade reduction, unless an individual missed class for an aviation-related reason

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Course Policy

- Most assignments will be able to be completed in class, but if there is unfinished work, it should be done by the start of next class to continue with our learning
- Students MUST show up to class with a positive attitude and a willingness to learn, even if the student is not prepared

Final notes

- At the end of the source, each student will receive their very own Learning to Fly completion certificate, which shows their hard work put into the class and understanding of basic flight concepts
- Thank you for your interest in aviation and willingness to learn by taking my class!

Syllabus PBL 2

Saint Louis University
Parks College
AVSCI 0010 Adolescent Aircraft Acquanting

Course Information:
Name: Adolescent Aircraft Acquanting (And Additional Adages About the Aviation ABC's for Amateurs)
Location: MDH 3001
Time: Thursdays @ 6:00pm-8:00pm

About your instructor
- Office: Cockpit of N577PC
- Office Hours: MWF 7:30-9:30

Course Goals
This course will familiarize you with the basics of aircraft flying, focusing on basic handling as well as a few simple maneuvers. By the end of this course students will have a rudimentary understanding of flying an airplane that serves as a foundation for future training.

Grading is based on participation and effort (satisfactory/unsatisfactory), and as such is a pass/fail class. Below is a set of expectations…

Attendance	Students will be present for every class unless they have an exception (illness, accident, family emergency, etc…). 3 or more absencess will result in a failure of the course
Effort	Students will enter this course willing and ready to learn. It is expected that you have an understanding of the basics of these maneuvers, however mastery is not required
Participation	Students will actively participate in classroom and simulator activities

Additionally, there will be two assessments during the semester which will act as a measure of what you have learned. These are graded on the same standards as any other lesson and will be weighted the same as any other lesson.

Course Materials
- Notebook
- Pencils

Course Requirements
There is no prerequisite class, nor is there any requirement to get a medical or liscense. Rather students should show up prepared and eager to learn.

University Policies

- **Electronic Devices During Class**

You may use personal electronic devices in class to take notes and for legitimate classroom purposes. You may not text message during class. As a courtesy to the rest of the class please set all devices to silent modes before class begins. Students found using electronic devices for personal purposes not germane to the course, or text messaging during class, may be asked to leave and an absence recorded for attendance.

- **Title IX**
  Saint Louis University and its faculty are committed to supporting our students and seeking an environment that is free of bias, discrimination, and harassment. If you have encountered any form of sexual misconduct (e.g. sexual assault, sexual harassment, stalking, domestic or dating violence), we encourage you to report this to the University. If you speak with a faculty member about an incident of misconduct, that faculty member must notify SLU's Title IX coordinator, Anna R. Kratky
  (DuBourg Hall, room 36; http://akratky@slu.edu; 314-977-3886) and share the basic facts of your experience with her. The
  Title IX coordinator will then be available to assist you in understanding all of your options and in connecting you with all possible resources on and off campus.
  If you wish to speak with a confidential source, you may contact the counselors at the University Counseling Center at 314-
  977-TALK. To view SLU's sexual misconduct policy and for resources, please visit the following web addresses: http://www.slu.edu/here4you and https://www.slu.edu/general-counsel.

- **Disability Services**
  Students with a documented disability who wish to request academic accommodations must contact Disability Services to discuss accommodation requests and eligibility requirements. Once successfully registered, the student also must notify the course instructor that they wish to access accommodations in the course.
  Please contact Disability Services, located within the Student Success Center, at
  Disability_services@slu.edu or 314.977.3484 to schedule an appointment. Confidentiality will be observed in all inquiries.
  Once approved, information about the student's eligibility for academic accommodations will be shared with course instructors via email from Disability Services and viewed within Banner via the instructor's course roster.
  Note: Students who do not have a documented disability but who think they may have one are encouraged to contact Disability Services.

- **Academic Integrity**
  Academic integrity is honest, truthful and responsible conduct in all academic endeavors. The mission of Saint Louis University is "the pursuit of truth for the greater glory of God and for the service of humanity." Accordingly, all acts of falsehood demean and compromise the corporate endeavors of teaching, research, health care, and community service

Schedule

Week (Class Date)	Lesson
1/21	Four Forces and Fundamentals
1/28	Slow Flight
2/4	Stalls
4/11	Midterm Exam
4/18	Steep Turns
4/25	Stalls and Slow Flight
5/4	Final Exam

Syllabus PBL 3

Fundamentals of Flight 101
Fridays 15:00 (3:00pm) to 17:00 (5:00pm)
KCPS Hangar 8
Instructor Information:

- Commercial Pilot License, Instrument Rating, Airplane Single Engine Land (ASEL).
- Majoring in Aeronautics, concentration of Flight Sciences, Minor in Air Traffic Control.

Course will be taught through small lectures and through the application of flight simulators.
Course Goals:
The purpose of this course is to introduce the basic elements of flight and how to control an aircraft through the use of flight simulators. Maneuvers that will be presented are straight-and-level flight, Steep turns, Slow flight, and Stalls. The ultimate goal of this course is to develop a passion for aviation that could progress later on to receiving more training, but overall is to have fun!
Required Materials:

Pencils, notebook

Policies:

Food and drink are allowed during the small classroom portions, but not to be brought into the simulator. **Attention** is required during both the

Grading:

Grading will be on both the flight maneuvers that will be discussed and used in the sim (straight and level, steep turns, slow flight, and stalls), as well as topics that are covered in the classroom portion. Grading in the sim will be on a 1 to 5 scale with 5 being the highest, each sim lesson will follow this grading system. A grade of 5 will consist of doing the above maneuvers with minor changes needed to constantly maintain the maneuver. The classroom portion will be graded on a participation basis, so please participate to better help everyone else.

Schedule:

Fridays from 15:00 (3:00pm) to 17:00 (5:00pm) starting on February 12th.

Friday February 12th	Straight and Level, flight basics
Friday February 19th	Stalls
Friday February 26th	Steep Turns
Friday March 5th	Slow Flight
Friday March 12th	Final over all four maneuvers together

Lesson Plan PBL 1

Feb 12, 2021

FSCI 3700

Laws of Learning PBL

Scenario:

You have just acquired a new primary student. The student has about 15 hours of flight time in a Cessna 172N (older model that is carbureted) aircraft. The flight school you work at currently utilizes Diamond DA-20-C1's for primary flight training. You purpose an introductory flight with the student to assess their piloting ability and gain a baseline to move forward. You begin by asking the student how they think their progress is moving along. They project a very high confidence about their ability to fly, as their previous CFI always had positive things to say. On the flight, the student has a really tough time controlling pitch and airspeed throughout all phases of flight. You notice the student does not utilize trim and does not seem to accept your suggestion to utilize the electronic trim. Other suggestions seem to be met with similar hesitation, as this was not how they learned to fly. After the flight, during the debrief, the student thought the flight went really well and that they had a good grasp on the new aircraft. As the instructor, you felt the opposite was true in almost every stage. You send the student home and decide to come up with a game plan for the next lesson (ground/flight).

Objective:

There are two parts to this assignment, I want you to first try and think of some possible explanations for why the student is falling into these pitfalls. Once you have created a list of potential issues (skill based or attitude issues), I want you to develop some methods to move forward teaching the student utilizing Thorndikes laws of learning. (You should come up with at least one method to satisfy each of the laws: REEPIR).

Readiness: The student is not familiar with the aircraft, nor are they familiar with the importance of trim. The student should take the time to read up on some of the system differences, as well as watch some YouTube videos on pitch/airspeed/trim control. An elevator trim stall is a great way to demonstrate the importance of trim.

Effect: Establish the importance of energy management in later operations (such as jets), and on the next flight take the time to demonstrate how much easier it is to fly when taking these things into account.

Exercise: A practical hands-on demonstration (as mentioned above) would demonstrate the impact of trim and energy management, but the same could be accomplished with a simulator lesson (and put into riskier scenarios)

Primacy: To reset the initial knowledge, address and focus on the issue. A conversation is a good starting point.

Intensity: Demonstrate a "worst case" hypothetical in the sim (such as elevator trim stall), but also provide some demonstrations in the plane. One way to do this would be slow flight

Recency: As training continues, the new knowledge should retroactively displace the pilot's older habits

Lesson Plan PBL 2

Feb 12, 2021
FSCI 3700

Laws of Learning PBL

Scenario:
You have just acquired a new primary student. The student has about 15 hours of flight time in a Cessna 172N (older model that is carburated) aircraft. The flight school you work at currently utilizes Diamond DA-20-C1's for primary flight training. You purpose an introductory flight with the student to assess their piloting ability and gain a baseline to move forward. You begin by asking the student how they think their progress is moving along. They project a very high confidence about their ability to fly, as their previous CFI always had positive things to say. On the flight, the student has a really tough time controlling pitch and airspeed throughout all phases of flight. You notice the student does not utilize trim, and does not seem to accept your suggestion to utilize the electronic trim. Other suggestions seem to be met with similar hesitation, as this was not how they learned to fly. After the flight, during the debrief, the student thought the flight went really well and that they had a good grasp on the new aircraft. As the instructor, you felt the opposite was true in almost every stage. You send the student home and decide to come up with a game plan for the next lesson (ground/flight).

Objective:
There are two parts to this assignment, I want you to first try and think of some possible explanations for why the student is falling into these pitfalls. Once you have created a list of potential issues (skill based or attitude issues), I want you to develop some methods to move forward teaching the student utilizing Thorndikes law's of learning. (You should come up with at least one method to satisfy each of the laws: REEPIR).

- The student is overconfident
- The student has possibly received poor instruction in the past
- The student is struggling to transition to the new aircraft

Readiness: Have the students read through the flight manual and complete a weight and balance sheet before the next flight. Go over types of drag and well as systems (fuel injection, control surfaces, GPS etc.) during the next ground lesson which should be completed before another flight.

Effect: There should have been a more critical post flight brief, after the next lesson, there should be a more negative brief that is more accurate. The student is overconfident and is exhibiting hazardous attitudes.

Exercise: Have the student chair fly before the next lesson. In addition, the student should watch YouTube videos on maneuvers and landings. Focus on flying with 3 fingers using the stick to get the student to use the trim more.

Primacy: Teach the student how to use the trim as well as consistently fly straight and level. That seems to be the most pressing issue and controlling the airplane should come first.

Intensity: Make the student let go of the controls momentarily in order to see how well they have trimmed the aircraft.

Recency: Make sure the material covered in the ground is demonstrated in the flight afterwards. Continue to get the student regular practice in the airplane.

Lesson Plan PBL 3

Feb 12, 2021
FSCI 3700

Laws of Learning PBL

Names:

Scenario:
You have just acquired a new primary student. The student has about 15 hours of flight time in a Cessna 172N (older model that is carburated) aircraft. The flight school you work at currently utilizes Diamond DA-20-C1's for primary flight training. You purpose an introductory flight with the student to assess their piloting ability and gain a baseline to move forward. You begin by asking the student how they think their progress is moving along. They project a very high confidence about their ability to fly, as their previous CFI always had positive things to say. On the flight, the student has a really tough time controlling pitch and airspeed throughout all phases of flight. You notice the student does not utilize trim, and does not seem to accept your suggestion to utilize the electronic trim. Other suggestions seem to be met with similar hesitation, as this was not how they learned to fly. After the flight, during the debrief, the student thought the flight went really well and that they had a good grasp on the new aircraft. As the instructor, you felt the opposite was true in almost every stage. You send the student home and decide to come up with a game plan for the next lesson (ground/flight).

Objective:
There are two parts to this assignment, I want you to first try and think of some possible explanations for why the student is falling into these pitfalls. Once you have created a list of potential issues (skill based or attitude issues), I want you to develop some methods to move forward teaching the student utilizing Thorndikes law's of learning. (You should come up with at least one method to satisfy each of the laws: REEPIR).

It could be not being taught to use trim correctly, using a carbureted aircraft (different systems), student always received positive reinforcement from old instructor

Readiness: Giving homework on learning the systems of the DA-20 and memorizing procedures, Tell the student to be more open-minded about learning the intricacies of the new aircraft, Perform a ground lesson to learn re-learn the basics of flight, Could also teach chair flying or assign videos to watch on their specific problem areas

Effect: After a successful ground lesson they can practice that in the aircraft and make sure that there is some kind of reinforcement being implemented there on out

Exercise: During the ground lesson, you can talk about using trim and controlling pitch and make sure they use what they learned to practice in flight. (letting go of controls and having them feel the difference of using trim or not using it), PRACTICE MULTITASKING

Primacy: Make sure trim was even taught (maybe their previous CFI never even taught how to use it correctly), re-teach any other deficiencies we noticed on the flight

Intensity: Getting back in the airplane, "fly straight-and-level" and let go of aircraft controls. Have them see what happened to the aircraft (notice change in aircraft pitch/airspeed). Then, reinforce the use of trim and show how it helps (lower altitudes)

Recency: Make sure there isn't a lot of time in between the ground lesson and the flight so that the information is still fresh in the student's mind

Friday Problem Based Learning

FSCI 3700

Background:

You are an instructor at an accredited 141 flight school. There are about 20 instructors employed at the flight school. You overhear some of the learners talking about situations they and their various instructors have gotten into:

Scenario #1: Learner "My instructor is hilarious! We were doing some instrument training and this female radar controller was controlling us. My instructor said she sounded "hot" and decided to try and ask for her number to try and take her on a date! Isn't ________ hilarious!

Scenario #2: Instructor "Man last night was wild. That hockey game went into 3 overtime periods! Me and _______ just couldn't leave since it's the playoffs! The game didn't even start until 8:30"
You look at your watch and it is 7:45AM.

Scenario #3: Learner "I was walking by the dispatch office this morning and I overheard your instructor talking about you." Learner 2 "Oh what did they say?" Learner 1 "Sounds like you are trying to be a farmer" Learner 2 "What do you mean a farmer? How does that apply to the conversation?" Learner 1 "Well you keep *PLANTING* the airplane onto the runway so I figured you wanted to become a farmer and not a pilot"

Scenario #4: You are out at a bar on Friday night. You see a couple Learners walk into the bar. You know most of them well as they are only a year or two behind you. They come over and say hi and you invite them to have a seat and you all begin drinking.

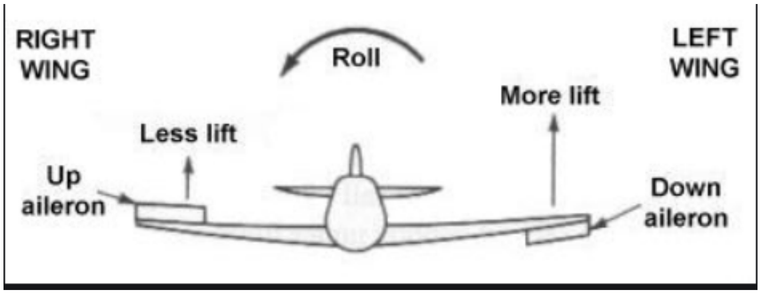
Evaluation was graded based on quality of discussion around these professionalism-based scenarios that were designed to be semi-realistic yet not specific to any one situation.

Friday Reflection 1

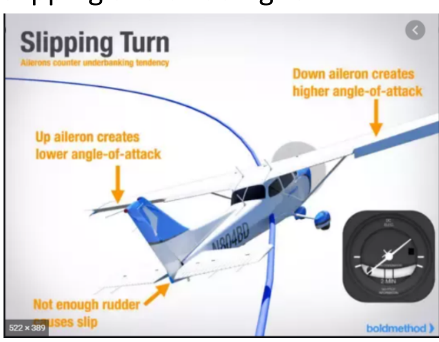
Scenario: Check instructor ask mod 1 learner - what makes an airplane turn?
There are four forces of flight - lift, weight, thrust, and drag. Lift is what makes an airplane fly, where airflow goes over the wing and makes an airplane want to go up. When the aircraft is not turning, there is not a vertical component. When the aircraft is turning, the lift component splits into a horizontal component and vertical component. You will need to compensate for the split of the lift components by adding more back pressure, so you do not lose altitude. The horizontal component of lift is caused by a centripetal force pulling the airplane into a turn. There are also three primary control components of flight - yaw, pitch, and bank. You will use your stick or yoke (right and left) to adjust your ailerons for banking, rudders for yawing, and stick/yoke (forward and aft) to adjust the elevator for pitching. You will use your stick to roll into a turn, while also using the rudder to coordinate the turn. You will also use your stick to slightly pitch up in order to stay on the same altitude.

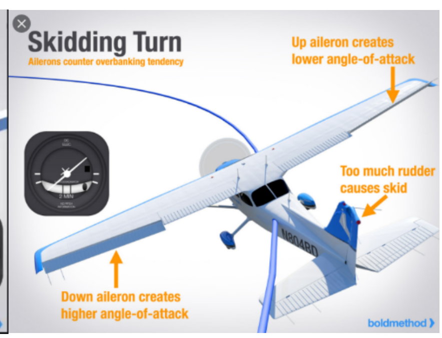
Friday Reflection 2

What makes an airplane turn?

- Materials
  - Whiteboard and markers, plane model if you can move its parts it would be more helpful.
- Introduction on four forces
- Deflection of ailerons
  - 

  - Air deflecting on the ailerons
    - Creating more lift on one side and less lift on the other side
    - Newton's third law: equal and opposite reaction when force is applied.

- Air is deflected downward on down aileron and deflected upward on up aileron. Since there is equal and opposite reactive force when force is applied, the reactive force is added to the lift and creates unequal lifts on the wing and makes the plane to turn.
  - Putting back pressure when turning
    - To compensate the lost lift due to the change in lift vector
    - The weight stays same since it always works towards the Earth regardless of the position of the plane
- Rudder for coordinated flight
  - Slipping and skidding turn
  - 



Friday Reflection 3

What makes an airplane turn?

Turning of the yoke deflects the ailerons a certain way depending on which way you want to turn. A turn of the yoke to the left will deflect the left wing's aileron up, decreasing lift on that wing causing it to drop. The opposite wing will deflect its ailerons down increasing the angle of attack, creating more lift, and causing the wing to rise. When the aircraft is now in a bank there are 2 components of lift: vertical and horizontal. Because lift always acts perpendicular to the wing's surface there will be a decrease in vertical lift and an increase of horizontal lift when you turn, requiring additional backpressure to maintain altitude. The horizontal component moves us in the direction of the turn.

A demonstration of the change of lift components during turns in the actual aircraft can help the student understand the decrease of the vertical component.

Course Assessment Form

Course: FSCI 3750 Flight 6
Semester Taught: Spring 2021
Number of Students in Course: 7

Student Learning Outcome Assessed	Assessment Results: (Percentage of student written exams and stage checks passed on first attempt)	Benchmark achieved? (Benchmark: 70% of student written exams and stage checks passed on first attempt)
H. Use the techniques, skills, and modern technology necessary for professional practice.	Stage Check Pass Rate: 79% Written Exam Pass Rate: 100%	Yes
J. Apply pertinent knowledge in identifying and solving problems.	Stage Check Pass Rate: 79% Written Exam Pass Rate: 100%	Yes

Description of Assessment: The student assessment consists of multiple-choice module written exams as well as stage check practical exams. Written exams require a minimum score of 70% in order to pass. Each stage check consists of an oral portion and a flight portion, and satisfactory or unsatisfactory performance is determined in accordance with the Module Completion Standards and/or the appropriate Airmen Certification Standards (ACS)/Practical Test Standards (PTS). Attached are the module completion standards included in the approved Training Course Outline. This document describes the expectations and assessment standards for stage check oral and flight checks. Also attached is a sample of a student's completed module written exam.

Recommendations: Continue to identify and discuss student stage check deficiencies with the instructional staff each semester. Revisions to course content and/or module completion standards will be made as needed to ensure adequate student preparation.

Module 12

Flight Instructor Practical Test Preparation

Prerequisites: Prior to beginning this module the student must possess an ATP Certificate with an Airplane Single-Engine Land Rating or Commercial Pilot Certificate with Airplane Single-Engine Land and Instrument Ratings.

Objective: To gain proficiency in teaching technical subject areas and demonstrating and describing all required procedures and maneuvers. To complete the aeronautical knowledge and flight training required for the Certified Flight Instructor Practical Exam.

Completion Standards:

- The student must meet the following minimum training time requirements during this module:

DUAL	OTHER	
Airplane	Pre/ Post	Ground
12.3	4.2	20.0

- Prior to completion of the module, students must pass the FAA Flight Instructor Airplane and Advanced Ground Instructor Knowledge Exams.
- Prior to completion of the module, students must pass a stage check to evaluate their:
  1) Ability to demonstrate all applicable tasks as specified in the Flight Instructor Practical Test Standards or Airmen Certification Standards within the established standards.
  2) Knowledge of the fundamentals of instruction, technical subject areas, and instructor responsibilities.
  3) Ability to demonstrate the procedures and maneuvers to at least the Commercial Pilot skill level while giving effective instruction.
  4) Competence in teaching the selected procedures and maneuvers.
  5) Competence in describing, recognizing, analyzing, and correcting common errors.

6) Knowledge of the development and effective use of a course of training, syllabus, and lesson plan.

Notes:

- Lessons may be completed out of sequence as necessary to meet academic goals set by the instructor.
- Multiple instructional periods may be required to meet lesson requirements.

U.S. DEPARTMENT OF TRANSPORTATION
Federal Aviation Administration
Airman Knowledge Test Report

NAME:

FAA TRACKING NUMBER (FTN): **EXAM ID:**

EXAM: Fundamentals of Instructing (FOI)

EXAM DATE: 03/09/2021 **EXAM SITE:** LAS63104

SCORE: 94% **GRADE:** Pass **TAKE:** 1

Learning statement codes listed below represent incorrectly answered questions. Learning statement codes and their associated statements can be found at https://www.faa.gov/training_testing/testing/media/LearningStatementReferenceGuide.pdf.

Reference material associated with the learning statement codes can be found in the appropriate knowledge test guide at https://www.faa.gov/training_testing/testing/.

A single code may represent more than one incorrect response.

PLT204 PLT228 PLT488

EXPIRATION DATE: 03/31/2023

DO NOT LOSE THIS REPORT

AUTHORIZED INSTRUCTOR'S STATEMENT: (if applicable)
On __________ (date) I gave the above named applicant _____ hours of additional instruction, covering each subject area shown to be deficient, and consider the applicant competent to pass the knowledge test.

Name____

Cert. No.____ *(print clearly)*

Type of instructor certificate_____________________________

Signature ____

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