FITS Piston Technically Advanced Aircraft Recurrent Training Syllabus and Standards Version 2.0 June, 2006

FITS Piston Technically Advanced Aircraft
Recurrent Training Syllabus and Standards

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Acknowledgements:

The Syllabus prepared by:

EMBRY-RIDDLE AERONAUTICAL UNIVERSITY

UND AEROSPACE UNIVERSITY OF NORTH DAKOTA

And the FITS Launch Partners:

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AirShares elite

CIRRUS DESIGN

REVISIONS

The following are the changes from Version 1.0 dated January 26, 2004 to this version 12.0:

- Contents-Removed reference to Appendix 1

- Reference to Runway Incursion Awareness have been added to the following pages:
  - Page 5, Updated definition of Light Turbine TAA
  - Page 6, Updated definition of IFR Automated Navigation Leg
  - Page 11 (Section 3, Content)
  - Pages 17, 24, 31, (Lesson Content, Lesson Sub Activity #2)
  - Page 24 (Lesson Content, Lesson Sub Activity #2)
  - Page 47 (Lesson 4, Scenario Simulator Activity/Outcome List, Engine Start and Taxi Procedure Scenario Sub Activities)
  - Page 52 (Lesson 5, Scenario Simulator Activity/Outcome List, Engine Start and Taxi Procedure Scenario Sub Activities)
  - Page 58 (Lesson 6, Scenario Simulator Activity/Outcome List, Engine Start and Taxi Procedure Scenario Sub Activities)

- Pages 18, 25, 32, and 61-Added reference to both in flight and during taxi in Performance Task 4, Standards.

- Page 63-TAA 04 table. Added to SRM/Situational Awareness section actual aircraft taxi as a Condition, and knowledge of runway, taxiway, taxi clearances and runway incursion issues to the Standard.

- Added Section 6-Flight Risk Assessment Guide

How to use this generic FITS Recurrent Training Syllabus

This FITS Recurrent Training Syllabus is intended as a guide for aircraft manufacturers, training providers, and flight schools to use in developing a specifics FITS curriculum for their aircraft, geographic region, and customer base. The syllabus lays out a series of six learning modules that will present, in an interactive format, the concepts of Risk Management and Aeronautical Decision making that provide the main challenge for single pilots operations in the National Airspace System.

To Pilots in Training

The value of recurrent training is in the individual pilot's assessment of their knowledge and readiness for flight. All training should be evaluated so that the participating pilot can identify weaknesses in aircraft systems knowledge, regulations, and general airmanship pilot decision-making, risk management, and judgment

To Instructors

Instructors should participate in and be familiar with the FITS recurrent training program. The program should generate requests for flight and ground instruction and will generate discussion about the aircraft, regulations, and Single Pilot Resource management. Be prepared to leverage those discussions into opportunities to improve individual pilot knowledge and decision-making skills.

To Aircraft Manufacturers, Training Providers, and Flight Schools

This generic syllabus is a guide for you to use in developing your specific recurrent curriculum. FITS "recognition" is achieved by developing your specific curriculum and submitting it to:

The FITS Program Manager, AFS-840
800 Independence Avenue, SW, Washington DC, 20591
202 -267-8212

***Use of the FITS Logo*.**

Once recognized, you are free to use the FITS logo on all curriculums and in advertising about this particular curriculum. The FITS logo will not be used in relationship to non-FITS products.

Section 1 - FITS Introduction

FAA Industry Training Standards (FITS)

The FITS Program is a joint project of the FAA sponsored Center for General Aviation Research (CGAR), Embry Riddle Aeronautical University, The University of North Dakota, and the General Aviation Industry.

FITS Mission Statement

Improve pilot learning to safely, competently, and efficiently operate a technically advanced piston or light jet aircraft in the modern National Airspace System (NAS).

FITS Imperatives:

Pilot training in Technically Advanced Aircraft (TAA) will require an emphasis on realistic scenario based training to develop the higher order thinking skills required to help reduce the General Aviation accident rate to meet the SAFER SKIES standard. FITS will also address new communications, navigation, and surveillance (CNS) systems and related airspace and procedures, and the problem of new pilots flying for transportation purposes.

FITS training recognizes the wide variety of advanced technology systems and their differences when compared to the relatively similar layout found in conventional cockpits

- Within a type of system (e.g. different operations of GPS navigators)
- Within categories of advanced technology systems
    - Primary Flight Displays (PFD)
    - Multi Function Displays (MFD)
    - Traffic Displays
    - Weather displays
    - Terrain Displays
    - Autopilots

FITS Training Goals (In priority of importance)

- Higher Order Thinking
    - Aeronautical Decision Making
    - Situational Awareness
    - Pattern Recognition (Emergency Procedure) and Decision Making
- Automation Competence
- Planning and Execution
- Procedural Knowledge
- Psychomotor Skills

Section 2 - FITS Terminology/Definitions

Key Terms

Technically Advanced Aircraft (TAA) **–** A General Aviation aircraft that combines some or all of the following design features; advanced cockpit automation system (Moving Map GPS/ Glass Cockpit) for IFR/VFR flight operations, automated engine and systems management, and integrated auto flight/autopilot systems.

Light Turbine TAA **–** is a jet or turboprop TAA certified for single-pilot operations, weighing 12,500 lbs or less, that may be equipped with cabin pressurization, and may be capable of operating in Class A airspace on normal mission profiles.

Scenario Based Training **–** A training system that uses a highly structured script of real-world experiences to address flight training objectives in an operational environment. Such training can include initial training, transition training, upgrade training, recurrent training, and special training. The appropriate term should appear with the term "Scenario Based," e.g., "Scenario Based Recurrent Training," to reflect the specific application.

Single Pilot Resource Management (SRM) **–** The art and science of managing all resources (both on-board the aircraft and from outside sources) available to a single-pilot (prior and during flight) to ensure the successful outcome of the flight is never in doubt.

Related Terms and Abbreviations

***Aircraft Automation Management* –** The demonstrated ability to control and navigate an aircraft by means of the automated systems installed in the aircraft.

Automated Navigation leg – A flight of 30 minutes or more conducted between two separate airports in which the aircraft is controlled primarily by the autopilot and the on-board navigation systems.

A ***VFR Automated Navigation Leg*** is flown on autopilot from 1,000 ft AGL on the departure until entry to the 45 degree leg in the VFR pattern.

An ***IFR Automated Navigation Leg*** is flown on autopilot beginning from 500 ft AGL on departure (unless the limitations of the autopilot require a higher altitude, then from that altitude) until reaching the decision altitude or missed approach point on the instrument approach (unless the limitations of the autopilot require a higher altitude, then from that altitude). If a missed approach is flown, it will also be flown using the autopilot and on-board navigation systems.

***Automation Competence* –** The demonstrated ability to understand and operate the automated systems installed in the aircraft.

***Automation Surprise* –** occurs when the automation behaves in a manner that is different from what the operator is expecting.

***Automation Bias* –** The relative willingness of the pilot to trust and utilize automated systems.

***Candidate Assessment* –** A system of critical thinking and skill evaluations designed to assess a student's readiness to begin training at the required level.

***Critical Safety Tasks/Event* –** Those mission related tasks/events that if not accomplished quickly and accurately, may result in damage to the aircraft or loss of life.

Data link Situational Awareness Systems – Systems that feed real-time information to the cockpit on weather, traffic, terrain, and flight planning. This information may be displayed on the PFD, MFD, or on other related cockpit displays.

Learner Centered Grading - Desired Scenario Outcomes

(1) The objective of scenario-based training is a change in the thought processes, habits, and behaviors of the learners during the planning and execution of the scenario. Since the training is learner centered, the success of the training is measured in the following desired outcomes.

(a) Maneuver, Skill or Task Grades

- Describe – at the completion of the scenario, the PT will be able to describe the physical characteristics and cognitive elements of the scenario activities. *Instructor assistance is required to successfully execute the maneuver.*
- Explain – at the completion of the scenario the learner will be able to describe the scenario activity and understand the underlying concepts, principles, and procedures that comprise the activity. *Instructor assistance is required to successfully execute the maneuver.*
- Practice – at the completion of the scenario the learner will be able to plan and execute the scenario. *Some coaching, instruction, and/or assistance from the instructor are required to correct deviations and errors.*
- Perform – at the completion of the scenario, the learner will be able to perform the activity without assistance from the instructor. *Errors and deviations will be identified and corrected by the learner in an expeditious manner.* At no time will the successful completion of the activity be in doubt. "Perform" will be used to signify that the learner is satisfactorily demonstrating proficiency in piloting and systems operation skills.
- Not Observed – Any event not accomplished or required.

***(b)* Single Pilot Resource Management (SRM) Grades**

- Explain – the learner can verbally identify, describe, and understand the risks inherent in the flight scenario. *The* learner *will need to be prompted to identify risks and make decisions.*
- Practice – the learner is able to identify, understand, and apply SRM principles to the actual flight situation. *Coaching, instruction, and/or assistance from the instructor will quickly correct minor deviations and errors identified by the instructor.* The learner will be an active decision maker.
- Manage/Decide **–** the learner can correctly gather the most important data available both within and outside the cockpit, identify possible courses of action, evaluate the risk inherent in each course of action, and make the appropriate decision. *Instructor intervention is not required for the safe completion of the flight.*
- Not Observed – Any event not accomplished or required.

(2) Grading will be conducted independently by the learner and the instructor, then compared during the post flight critique.

(3) Learner centered grading is a vital part of the FITS concept. Traditional syllabi and curriculum have depended on a grading scale designed to maximize learner management and ease of instructor use. Thus the traditional: "excellent, good, fair, poor" or "exceeds standards, meets standards, needs more training" often meet the instructor's needs but not the learner's. The learner centered grading described above is a way for the instructor and learner to determine the learner's level of knowledge and understanding. "Perform" is used to describe proficiency in a skill item such as an approach or landing. "Manage-Decide" is used to describe proficiency in the SRM area such as ADM.

(4) Grading should be progressive. During each flight, the learner should achieve a new level of learning (e.g. flight one, the automation management area, might be an "explain" item, by flight three a "practice" item, and by flight five a "manage-decide" item.

Emergency Escape Maneuver **–** A maneuver (or series of maneuvers) performed manually or with the aid of the aircraft's automated systems that will allow a pilot to successfully escape from an inadvertent encounter with Instrument Meteorological Conditions (IMC) or other life-threatening situations.

Mission Related Tasks **–** Those tasks required for the safe and effective accomplishment of the mission(s) the aircraft is capable of and required to conduct.

Multi-Function Display MFD – Any display that combines primarily navigation, systems, and situational awareness information onto a single electronic display.

Primary Flight Display (PFD) – Any display that combines the primary six flight instruments, plus other related navigation and situational awareness information into a single electronic display.

Proficiency-Based Qualification **–** Aviation task qualification based on demonstrated performance rather than other flight time or experience.

Simulation **–** Any use of animation and/or actual representations of aircraft systems to simulate the flight environment. Student interaction with the simulation and task fidelity for the task to be performed are required for effective simulation.

Training Only Tasks **–** Training maneuvers that while valuable to the student's ability to understand and perform a mission related task, are not in and of themselves required for the student to demonstrate proficiency. However, flight instructors would be required to demonstrate proficiency in Training Only Tasks.

Section 3 – The FITS Recurrent Master Syllabus

The FITS Recurrent Training Program is designed to be a scenario based academic and flight refresher program for pilots of Piston TAA. Successful completion of the program will satisfy the requirements of 14 CFR section 61-56(e), Flight Review / Pilot Proficiency Award Program.

WHAT'S NEW:

Scenario Based Training (SBT) is the key to the home study portion of the recurrent training program. After more traditional Computer Based Training (CBT) lessons on Weather, FAA regulations, and aircraft systems, the pilot is taken on an interactive trip requiring decision-making. The quality of those decisions is evaluated and the pilot is required to continue making decisions based on previous decisions.

Accident statistics show that a single poor decision does not typically result in an accident or fatality. Rather a series of poor decisions usually leads to the accident. Therefore, after a poor decision is made, it is important for the pilot to adjust by following up with a series of good decisions. The ability to "rehearse" these decision chain scenarios without the added mental and emotional demands imposed by actual flight allows the pilot to reinforce the kind of fact-based decision-making that results in successful flights.

STRUCTURE:

The program will consist of three learning modules per calendar year. In addition to the interactive web based instruction the pilot will fly a minimum of a one-hour flight with a Certificated and TAA Recognized Flight Instructor (CFI). (Note: F*or Cirrus SR 20 and SR 22 pilots these flights may be conducted through the existing Cirrus Pilot Proficiency (CPP) flight program.)*

The individual TAA pilot will accomplish the interactive Web/CD-based modules on their home computer. The computer program will individually track their progress. Each module can be completed at one sitting or the pilot may elect to complete the module program at several sittings during the four-month period.

The flight will consist of a minimum of a one-hour flight with a TAA- recognized CFI. A detailed pre-briefing and post flight discussion will accompany each flight.

Completion:

The requirement for the Flight Review under this program will be met when the pilot completes five interactive web based modules and one hour of flight with a TAA Recognized CFI, within a 24 calendar month period. The last module must be the flight.

CONTENT:

Each four-month interactive learning module will consist of the following items:

1. A seasonal knowledge-based CBT lesson covering select aviation regulations of Title 14 of the Code of Federal Regulations (14 CFR parts), weather, and general information (including Controlled Flight Into Terrain and Runway Incursion awareness). For instance- TKS and aircraft icing regulations in the fall; thunderstorm avoidance, data link weather, and associated regulations in the spring.

2. A knowledge level of aircraft type specific CBT systems course designed to review individual systems and introduce new software and systems upgrades. The individual TAA pilot can select these courses based on the equipment installed in their aircraft. At the end of the 24 calendar month period each participating pilot will have reviewed all systems in their type aircraft.

3. A scenario based lesson will take the pilot through a typical mission profile from pre-flight to post-flight, and all points in between. It will provide the pilot with realistic and meaningful training that will relate what the pilot is learning to what the pilot would actually do on a typical flight. The pilot will be presented a series of situations that require a decision. This will allow the pilot to learn and practice decisions that are appropriate to the typical flight and to things that actually happen to airplanes. This will prepare the pilot for making the decisions needed during normal, ad-normal, and emergencies situation and develop the mental skills needed to be a safe pilot.

The scenarios may be presented in a variety of ways:

a. ***"Single String" CBT Lesson*** The pilot is presented a flight scenario in PowerPoint (or a suitable similar format) and asked to make decisions at each point in the scenario. These decisions may involve go no-go issues, weather divert decisions, or simple systems configuration, integration, and emergency items. As the recurrent pilot answers each set of questions, they will receive instant feedback on their response. After the decision is evaluated, the scenario will continue in a predetermined pattern. The pilot would be graded on the accuracy of the answers given and corrected to 100%.

b. ***"Multiple String"*** CBT lesson. Similar to the "Single String" CBT, each presentation will involve a series of decision points. Each will consist of a narrative followed by a question requiring the pilot to select one of three decisions. Once the decision is made, the pilot will receive detailed feedback on the quality of his or her decision (good, fair, or poor). Once a decision is made, it cannot be retracted until the scenario is ended. After each decision point, the pilot will be confronted with a new set of decisions based on the previous decision. It will again consist of three choices and selection of any choice will result in a decision grade (good, fair, or poor) and a new set of decisions. Much like an actual flight, each decision is a result of the decisions made before, the pilot's knowledge of the aircraft, and the conditions present at the time of the decision. [Note: Once the pilot has completed the scenario to a successful landing, off airport landing, or Ballistic Recovery System (BRS) deployment, the pilot will be allowed to restart the scenario.] The scenario will not be considered complete unless the pilot achieves a successful outcome. The pilot will be graded on the accuracy of the answers given and corrected to 100%.

c. ***"Hypothetical Case Study" CBT lesson*** The pilot is presented a case study based on a series of incidents/accidents from the National Transportation Safety Board (NTSB) files. All of these occurrences will be sterilized to protect privileged information and customized to bring out seasonal and topical learning objectives. Once the pilot has read the scenarios, a series of detailed question will be presented. The questions will require the pilot to make decisions as if he or she were in the scenario. Additional detailed cognitive questions will be included to ensure knowledge of vital aircraft systems, automation capabilities, and automation integration. The pilot will be graded on the accuracy of the answers given and corrected to 100%.

d. ***"Desktop Flight Simulation" Scenario*** The pilot will log onto the web site and will be presented with a realistic flight scenario using a commercial cockpit simulation software such as the one offered by "Aerosim" for corporate and airline aircraft. Each pilot will have received the software as a CD ROM product prior to purchase of the aircraft. The scenario and route will be predetermined and the pilot must simply pre-flight, depart, and fly the route electronically. Similar to a Line Operational Flight Training (LOFT) exercise, the software will have systems failures, traffic, route changes, weather, and a variety of challenges programmed into the individual flight plan. Grading may be more problematic in the scenario but the training will be more realistic. The simulation will include all options available to the pilot in the aircraft.

e. ***Visual (Motion Optional) Flight Simulation*** Several manufacturers are currently producing or considering visual and/or motion-based flight simulation devices for the TAA currently on the market. This level of sophistication will allow the Pilot in Training (PT) to access a level of recurrent training once only available to airline and military pilots. The airlines have determined that these devices are most effectively used in a LOFT (scenario-based) environment. Additionally, these devices allow the TAA pilot to practice emergency escape maneuvers, automation management concepts, and SRM in an environment free of physical danger. A caution; traditionally simulators have often been used to practice a rapid succession of emergency procedures in a short period of time. This generally overwhelms the student and detracts from learning transfer. The scenario-based approach to simulator training allows the TAA pilot to make decisions in real time and occasionally take a time out to understand and learn from the situations presented and the pilot's response to them. FITS simulation training will follow this latter model.

During any two-year period the recurrent pilot will be exposed to five of the scenario based recurrent training modules. Each scenario should take no longer than one to two hours to complete. Each time the scenarios are presented, they will be offered in both a VFR and IFR version. Pilot completion of the modules and any identified areas for additional training would be recorded on the web site and available to the pilot to help set the agenda for the flight portion of the curricula.

TRAINING MEDIA:

The program will require the establishment of a web site (or addition to the FITS website, etc.) or CD distribution mechanism that will allow individual registration and scoring of participants. The site should support interactive PowerPoint (or other appropriate medium) CBT lessons. It may also support web-based simulation if available.

PILOT INCENTIVES:

1. Pilots participating in the program will receive credit for the Flight Review under 14 CFR §61.56(e).
2. Pilots participating in the program may qualify for more favorable underwriting consideration through participating insurers.
3. Manufacturers and training providers should consider some sort of visible recognition items for participants (caps, pins, web site recognition, etc.)

Section 4 - FITS Recurrent Scenario Training Scenarios

Lesson 1 – (Case Study Web/CD Based Training)

OBJECTIVE

The pilot in training (PT) will demonstrate an in depth understanding of the capabilities and limitations of the Technically Advanced Aircraft, the airspace system, and the resources available to resolve aircraft, weather, and airspace difficulties that may occur during the course of normal operations.

The pilot will demonstrate the ability to make accurate, fact-based decisions in a variety of mission scenarios.

The pilot will learn and practice proper SRM techniques in order to deal with the multitude of information and prioritize the variety of tasks required.

"Hypothetical Case Study lesson"

In this format, the pilot is presented a case study based on a series of incidents/accidents from the NTSB accident file. All of these occurrences are sterilized to protect confidentiality and are customized to bring out seasonal and topical learning objectives. Once the PT has reviewed the scenarios, a series of detailed questions will be presented. The questions will require the pilot to make decisions as if he or she were in the scenario. Additional detailed cognitive questions need to be included to ensure that the pilot has an appropriate understanding of vital aircraft systems, automation capabilities, and automation integration. The pilot is graded on the accuracy of the answers given and corrected to 100%.

PREREQUISITES

None are required prior to logging on to the site or installing the CD.
Successful completion of the knowledge-based systems, weather, and regulatory CBT lessons is required before moving on to the scenario and case- based lessons.

PILOT IN TRAINING PREPARATION

Review the following:

a. Normal operating procedures in the aircraft type specific POH
   2. Normal and Emergency procedures
   3. Aircraft and avionics systems display and procedures
b. Applicable FAA regulations, handbooks, and documents

Learner Centered Grading - Desired Scenario Outcomes

(1) The objective of scenario-based training is a change in the thought processes, habits, and behaviors of the learners during the planning and execution of the scenario. Since the training is learner centered, the success of the training is measured in the following desired outcomes.

(a) Maneuver, Skill or Task Grades

- Describe – at the completion of the scenario, the PT will be able to describe the physical characteristics and cognitive elements of the scenario activities. *Instructor assistance is required to successfully execute the maneuver.*
- Explain – at the completion of the scenario the learner will be able to describe the scenario activity and understand the underlying concepts, principles, and procedures that comprise the activity. *Instructor assistance is required to successfully execute the maneuver.*
- Practice – at the completion of the scenario the learner will be able to plan and execute the scenario. *Some coaching, instruction, and/or assistance from the instructor is required to correct deviations and errors.*
- Perform – at the completion of the scenario, the learner will be able to perform the activity without assistance from the instructor. *Errors and deviations will be identified and corrected by the learner in an expeditious manner.* At no time will the successful completion of the activity be in doubt. "Perform" will be used to signify that the learner is satisfactorily demonstrating proficiency in piloting and systems operation skills.
- Not Observed – Any event not accomplished or required.

***(b)* Single Pilot Resource Management (SRM) Grades**

- Explain – the learner can verbally identify, describe, and understand the risks inherent in the flight scenario. *The* learner *will need to be prompted to identify risks and make decisions.*
- Practice – the learner is able to identify, understand, and apply SRM principles to the actual flight situation. *Coaching, instruction, and/or assistance from the instructor will quickly correct minor deviations and errors identified by the instructor.* The learner will be an active decision maker.
- Manage/Decide - the learner can correctly gather the most important data available both within and outside the cockpit, identify possible courses of action, evaluate the risk inherent in each course of action, and make the appropriate decision. *Instructor intervention is not required for the safe completion of the flight.*
- Not Observed – Any event not accomplished or required.

(2) Grading will be conducted independently by the learner and the instructor, then compared during the post flight critique.

(3) Learner centered grading is a vital part of the FITS concept. Traditional syllabi and curriculum have depended on a grading scale designed to maximize learner management and ease of instructor use. Thus the traditional: "excellent, good, fair, poor" or "exceeds standards, meets standards, needs more training" often meet the instructor's needs but not the learner's. The learner centered grading described above is a way for the instructor and learner to determine the learner's level of knowledge and understanding. "Perform" is used to describe proficiency in a skill item such as an approach or landing. "Manage-Decide" is used to describe proficiency in the SRM area such as ADM.

(4) Grading should be progressive. During each flight, the learner should achieve a new level of learning (e.g. flight one, the automation management area, might be an "explain" item, by flight three a "practice" item, and by flight five a "manage-decide" item.

Recurrent Lesson 1 (Web/CD Based Case Study)

Lesson Content

Recurrent Lesson Activity	Recurrent Lesson Sub Activity	Desired Learning Outcome
1. **Aircraft/Systems CBT** – 20 Questions (Approx 45 Minutes) Minimum Initial Passing Score is 70% - All responses corrected to 100%	1. Communication Management Systems 2. Electrical Power Systems 3. MFD Programming and Operation 4. GPS Programming and Operation 5. Anti/De Icing Systems 6. Ballistic recovery (Parachute/CAPS) system (if equipped)	Explain Questions in this block should reference the appropriate POH or handbook supplement section and require specific fact based answers.
2. **Weather and Regulation CBT** – 20 Questions (Approx 45 Minutes) Minimum Initial Passing Score is 70% - All responses corrected to 100%	1. Density Altitude 2. Performance data Requirements and Calculations 3. IFR/VFR Communications requirements 4. IFR Lost Communication Requirements 5. IFR/VFR Weather requirements 6. Enroute Charts 7. Mountain Flying Requirements 8. Airspace 9. Runway Incursion Awareness	Explain Questions in this block should reference the appropriate FAA Regulation, Handbook, POH, Handbook Supplement, or other authoritative publication and require specific fact based answers
3. **Case Study** – 20 Questions (Approx 45 Minutes Case Study can either be a sanitized sterilized accident report, fictional flight scenario, or a set of common conditions.	Mountain Flying/Lost Communications/Icing Case Study Study should involve all the elements listed under sub-level activity in blocks 1 and 2 above.	Manage/Decide Questions in this segment of the Case Study should all require pilot SRM responses as listed below.

TAA 00	Single Pilot Resource Management (SRM)	
Unit Objective – Demonstrates safe and efficient operations by adequately managing all available resources.		
Performance	Conditions	Standards
The training task is:	The training is conducted during:	The pilot in training will:
1. Task Management (TM)	Note: All tasks under SRM will be embedded into the curriculum and the training will occur selectively during all phases of training. SRM will be graded as it occurs during the training scenario syllabus.	Prioritize and select the most appropriate tasks (or series of tasks) to ensure successful completion of the training scenario.
2. Automation Management (AM)		Program and utilize the most appropriate and useful modes of cockpit automation to ensure successful completion of the training scenario.
3. Risk Management (RM) and Aeronautical Decision Making (ADM)		Consistently make informed decisions in a timely manner based on the task at hand and a thorough knowledge and use of all available resources.
4. Situational Awareness (SA)		Be aware of all factors such as traffic (both in flight and during taxi), weather, fuel status, aircraft mechanical condition, and pilot fatigue level that may have an impact on the successful completion of the training scenario.
5. Controlled Flight Into Terrain (CFIT) Awareness		a. Understand, describe, and apply techniques to avoid CFIT encounters: b. During inadvertent encounters with Instrument meteorological Conditions during VFR flight c. During system and navigation failures and physiological incidents during IFR flight

Case Study Sample Scenario – Presentation Method

"Hypothetical Case Study CBT" lesson

In this format, the pilot is presented a case study based on a series of incidents/accidents from the NTSB accident file All of these occurrences will be sterilized to protect confidentiality and are customized into scenarios to bring out seasonal and topical learning objectives. After the pilot has reviewed the scenarios, a series of detailed question will be presented. The questions will require the pilot to make decisions as if he or she were in the scenario. Additional detailed cognitive questions will be included to ensure that the pilot has an appropriate understanding of vital aircraft systems, automation capabilities and automation integration. The pilot will be graded on the accuracy of the answers given and corrected to 100%.

Sample Case Based Scenario - IFR

(Note: scenarios will be developed for IFR and VFR Pilots by the training provider and actual scenarios will consist of several scenarios like the one presented below. This sample is presented solely as a demonstration item.)

The following case study poses a real situation in which you as the pilot would be called upon to execute and perform in an authentic SRM environment. As you study this, you might think about the different SRM skills that you should use. (Note: the following case study is loosely based on an actual accident/incident)

Taxing to the takeoff runway you look over the departure SID (Standard Instrument Departure route) one more time. You are flying from Colorado Springs to Montrose, Colorado. You are to join V108 following your takeoff to the south. The airplane is fully loaded with four adults, baggage, and fuel. The departure ATIS is reporting the ceiling at the airport as 3,500 feet overcast with 4 miles visibility in light drizzle. The weather across the mountains is similar. The clouds are covering the mountains and are forecast to have tops at about 15,000 feet. Your flight is filed for 16,000 feet. Based on the existing weather information, you feel that you will be in the clear once you get to your cruise altitude. You call the tower for takeoff as you prepare to taxi the airplane on to the runway. The tower clears you to taxi into position and hold. Just as the before

takeoff checklist is completed, the tower clears you to take off and instructs you to turn left to a heading of 270 degrees.

The takeoff is routine, and you are switched to departure control. Departure tells you to turn right to a heading of 300 degrees to intercept the Black Forest VOR 273-degree radial. You are cleared “as filed” but are asked to maintain 7,000 feet; higher after you are clear of the in bound traffic at 9,000 feet. The cloud layer is a bit lower than reported and by 3,500 feet you are in solid clouds. You switch on the TKS de-ice system and settle back for the climb. Reaching 7,000 feet, you are on course and note that it has been some time since you heard from departure control. You call departure control and ask when you can expect to climb. There is no response. You call again and soon you hear several other airplanes calling, all with no response. You try the other radio. The results are the same. You are beginning to become concerned about the rising terrain to the west, which is well above your present altitude. Now there are numerous transmissions on the frequency as other airplanes are attempting to reach departure control. You say to yourself, “I don’t like this.” In solid clouds at 7,000 feet you go back to the tower frequency and there also you have no luck. Realizing you do not have a lot of time to waste, what would you do?

Sample Questions: (all would be presented in a multiple-choice format)

1. **What immediate action would you take?**
2. **Assuming the person in the right front seat is an IFR qualified pilot in the make and model aircraft what tasks might you delegate to him/her?**
3. **Assuming the person in the right front seat is not a pilot, what action would you take?**
4. **Assuming you decided to return to Colorado Springs, how would you separate yourself from terrain and/ or traffic?**
5. **Where might you find additional radio frequencies and airport information? How can you display that data without losing situational awareness?**
6. **What about the transponder in this situation and how would you use it?**
7. **Would you consider declaring an emergency, and, if so, how?**
8. **Are you properly utilizing the TKS system?**
9. **What is the capacity of the TKS tank and what does that convert to in terms of minutes of ice protection?**
10. **When and in what manner would you consider using the BRS system?**

The scenario would continue until the aircraft was safely on the ground. The second half of the case study would present 10 additional questions with multiple-choice answers.

In the event PT has questions about the text a chat room or E-mail address should be set up to address those concerns.

Lesson 2 – (Single String Web/CD Based)

OBJECTIVE

The pilot in training (PT) will demonstrate an in depth understanding of the capabilities and limitations of the Technically Advanced Aircraft, the airspace system, and the resources available to resolve aircraft, weather, and airspace difficulties that may occur during the course of normal operations.

The pilot will demonstrate the ability to make accurate, fact-based decisions in a variety of mission scenarios.

The pilot will learn and practice proper SRM techniques in order to deal with the multitude of information and prioritize the variety of tasks required.

"Single String" CBT

This is a lesson in which the pilot is presented a flight scenario in PowerPoint (or a suitable similar format) and asked to make decisions on at each point in the scenario. These decisions may involve go / no-go issues, weather divert decisions, or simple systems configuration, integration, and emergency items. As the recurrent pilot answers each set of questions they will receive instant feedback on their response. After the decision is evaluated, the scenario will continue in a predetermined pattern. The pilot would be graded on the accuracy of the answers given and corrected to 100%.

PREREQUISITES

None are required prior to logging on to the site.

Successful completion of the Knowledge based systems, weather, and regulatory CBT lessons is required before moving on to the Scenario and Case Based lessons.

PILOT IN TRAINING PREPARATION

Review the following:

- Normal operating procedures found in the aircraft's POH
    - Normal and Emergency procedures
    - Aircraft and avionics systems display and procedures
- Applicable aviation regulations and FAA documents

Learner Centered Grading - Desired Scenario Outcomes

(1) The objective of scenario-based training is a change in the thought processes, habits, and behaviors of the learners during the planning and execution of the scenario. Since the training is learner centered, the success of the training is measured in the following desired outcomes.

(a) Maneuver, Skill or Task Grades

- Describe – at the completion of the scenario, the PT will be able to describe the physical characteristics and cognitive elements of the scenario activities. *Instructor assistance is required to successfully execute the maneuver.*
- Explain – at the completion of the scenario the learner will be able to describe the scenario activity and understand the underlying concepts, principles, and procedures that comprise the activity. *Instructor assistance is required to successfully execute the maneuver.*
- Practice – at the completion of the scenario the learner will be able to plan and execute the scenario. *Some coaching, instruction, and/or assistance from the instructor is required to correct deviations and errors.*
- Perform – at the completion of the scenario, the learner will be able to perform the activity without assistance from the instructor. *Errors and deviations will be identified and corrected by the learner in an expeditious manner.* At no time will the successful completion of the activity be in doubt. "Perform" will be used to signify that the learner is satisfactorily demonstrating proficiency in piloting and systems operation skills.
- Not Observed – Any event not accomplished or required.

***(b)* Single Pilot Resource Management (SRM) Grades**

- Explain – the learner can verbally identify, describe, and understand the risks inherent in the flight scenario. *The* learner *will need to be prompted to identify risks and make decisions.*
- Practice – the learner is able to identify, understand, and apply SRM principles to the actual flight situation. *Coaching, instruction, and/or assistance from the instructor will quickly correct minor deviations and errors identified by the instructor.* The learner will be an active decision maker.
- Manage/Decide - the learner can correctly gather the most important data available both within and outside the cockpit, identify possible courses of action, evaluate the risk inherent in each course of action, and make the appropriate decision. *Instructor intervention is not required for the safe completion of the flight.*
- Not Observed – Any event not accomplished or required.

(2) Grading will be conducted independently by the learner and the instructor, then compared during the post flight critique.

(3) Learner centered grading is a vital part of the FITS concept. Traditional syllabi and curriculum have depended on a grading scale designed to maximize learner management and ease of instructor use. Thus the traditional: "excellent, good, fair, poor" or "exceeds standards, meets standards, needs more training" often meet the instructor's needs but not the learner's. The learner centered grading described above is a way for the instructor and learner to determine the learner's level of knowledge and understanding. "Perform" is used to describe proficiency in a skill item such as an approach or landing. "Manage-Decide" is used to describe proficiency in the SRM area such as ADM.

(4) Grading should be progressive. During each flight, the learner should achieve a new level of learning (e.g. flight one, the automation management area, might be an "explain" item, by flight three a "practice" item, and by flight five a "manage-decide" item.

Lesson Content

Recurrent lesson Activity	Recurrent lesson Sub Activity	Desired learning Outcome
1. Aircraft/Systems CBT – 20 Questions (Approx 45 Minutes) Minimum Initial Passing Score is 70% - All responses corrected to 100%	1. Communication Management Systems 2. Flight Control Systems 3. Autopilot Programming 4. MFD Programming and Operation 5. GPS Programming and Operation 6. Fuel System 7. Datalink Situational Awareness Systems (Weather)	Explain Questions in this block should reference the appropriate POH or handbook supplement section and require specific fact based answers.
2. Weather and Regulation CBT – 20 Questions (Approx 45 Minutes Minimum Initial Passing Score is 70% - All responses corrected to 100%	1. VFR/IFR Low ceiling Operations 2. Instrument Approach procedures 3. IFR/VFR Reserve Fuel Considerations 4. IFR Alternate requirements 5. IFR/VFR Communications requirements 6. Thunderstorm Avoidance 7. Airspace 8. Runway Incursion Awareness	Explain Questions in this block should reference the appropriate FAA Regulation, Handbook, POH, Handbook Supplement, or other authoritative publication and require specific fact based answers
3. Case Study – 20 Questions (Approx 45 Minutes Case Study can either be a sterilized accident report, fictional flight scenario, or a set of common conditions.	Springtime low ceiling IFR/VFR operations and thunderstorm avoidance. Study should involve all the elements listed under sub-level activity in blocks 1 and 2 above.	Manage/Decide Questions in this segment of the Case Study should all require pilot SRM responses as listed below.

Single Pilot Resource Management (SRM)		
Unit Objective – Demonstrates safe and efficient operations by adequately managing all available resources.		
Performance	Conditions	Standards
The training task is:	The training is conducted during:	The pilot in training will:
1. Task Management (TM)	Note: All tasks under SRM will be embedded into the curriculum and the training will occur selectively during all phases of training. SRM will be graded as it occurs during the training scenario syllabus.	Prioritize and select the most appropriate tasks (or series of tasks) to ensure successful completion of the training scenario.
2. Automation Management (AM)		Program and utilize the most appropriate and useful modes of cockpit automation to ensure successful completion of the training scenario.
3. Risk Management (RM) and Aeronautical Decision Making (ADM)		Consistently make informed decisions in a timely manner based on the task at hand and a thorough knowledge and use of all available resources.
4. Situational Awareness (SA)		Be aware of all factors such as traffic (both in flight and during taxi), weather, fuel state, aircraft mechanical condition, and pilot fatigue level that may have an impact on the successful completion of the training scenario.
5. Controlled Flight Into Terrain (CFIT) Awareness		a. Understand, describe, and apply techniques to avoid CFIT encounters: b. During inadvertent encounters with Instrument meteorological Conditions during VFR flight c. During system and navigation failures and physiological incidents during IFR flight

SCENARIO 2 – Single String Sample Scenario

"Single String" Computer Based Training

This is lesson in which the pilot is presented a preflight to landing flight scenario in PowerPoint (or a suitable similar format) and asked to make decisions on at each point in the scenario. These decisions may involve go/no-go issues, weather divert decisions, or simple systems configuration, integration, and emergency items. As the pilot answers each set of questions they will receive instant feedback on their response. After the decision is evaluated the scenario will continue in a predetermined pattern. The pilot will be graded on the accuracy of the answers given and corrected to 100%.

Sample Single String (IFR) Scenario

(Note: a VFR scenario will be developed as well)

Slide 1

The following scenario is a perfect example of a situation involving navigation, systems knowledge, and communications skills. The pilot in command must be decisive, firm, and clear.

Enroute to Jacksonville, Florida (JAX) you tune in the ATIS. Information Mike tells you that conditions at JAX are down to "minimums." You know that you and the aircraft are fully qualified. As you approach the Jacksonville area from the west, the center issues you holding instructions and gives you an Expected Further Clearance (EFC) time one hour away. A quick review of your fuel tells you can hold for slightly over an hour.

1. **Will you enter holding or ask for a clearance direct to MCO?**

(Sample Questions: all would be presented in a multiple-choice format. Answering each question would lead you to a new slide with a new set of question)

Slide 2

Your alternate is Orlando (MCO). Fifteen minutes into the hold you ask the center how much longer you might expect to hold and if there is any chance of getting in prior to the EFC. You are told to expect a hold of slightly less than the EFC time. While you continue to hold you call Flight Watch on 122.0 to check for additional information on the weather in the area. Your passenger insists that you stay around as long as you can because he has an appointment that he cannot afford to miss.

2. **What additional automated sources of weather are available to you?**
3. **Will you heed your passengers wish to remain in the Jacksonville area or depart for MCO?**

Slide 3

You find out from the data link weather service and Flight Watch that the only good alternate is MCO. Fog is blanketing the entire southeast coast of the United States. As your EFC approaches you decide it is time to go and request clearance to your alternate, MCO. Clearance is issued and 5 minutes after leaving the holding pattern JAX center calls and tells you approach control just called to say the weather has improved to 300 and 1. and they can take you straight in if you want. The controller then says you need to let them know right away if you want the approach or not as they are holding a slot for you. You note on the MFD that your course to MCO has kept Jacksonville an equal distance off your left shoulder.

4. Should you return to JAX or continue to MCO?

Slide 4

You decide to continue to MCO and are given a GPS direct clearance to MCO. You begin to become concerned about your low fuel state. Winds between your aircraft and MCO appear stronger than forecast. Shortly you are switched to approach control and begin to receive more vectors using up more of your reserve fuel. You note an airliner with a landing gear malfunction is also on the frequency. Finally you are on final and told to contact the tower for landing. The extra vectoring has caused you to burn 10 minutes into your required IFR reserve fuel.

5. **What will you declare to the approach controller?**
   a) **Nothing**
   b) **Minimum Fuel**
   c) **Emergency Fuel**

Slide 5

After declaring “minimum fuel” you change frequencies and are vectored to the ILS to runway 19R. Approaching the final approach fix you call the tower and are immediately told to go around. You ask why and are told the airport is closed due to an airliner disabled airplane on the runway and will not open for 15 minutes. You now have 30 minutes of fuel available until dry tanks.

6. **What is your plan of action (prioritize from a list)?**
   - **a) Declare an emergency?**
   - **b) Engage the autopilot?**
   - **c) Request vectors to a short ILS to another runway (MCO has three)?**
   - **d) Request an immediate divert to Orland Executive, which has similar weather, and an ILS?**
   - **e) Notify and reassure your passengers and ask them to help (if they are capable?**
   - **f) Program the GPS?**
   - **g) Program the MFD?**
   - **h) Program the HSI?**
   - **i) Fly the aircraft?**

Slide 6

Thankfully you chose fly the aircraft as your first priority. Immediately after engaging the autopilot and declaring an emergency you become the MCO approach controls number one priority. You immediately request vectors to the ILS on the parallel runway. Since the autopilot is engaged you have the time to program the GPS/ILS while maintaining situational awareness on the MFD, and monitoring the PFD for airspeed, altitude, and heading. Approach control immediately provides short vectors to the ILS runway 19L. . As you turn final and begin to intercept the final approach course, the ceiling is 250 feet and the visibility is ¾ of a mile:

7. **Will you fly a coupled ILS approach or a manual approach?**
   - **a) If you chose the coupled approach, how will you configure your autopilot, GPS, and MFD and how will you brief your passengers?**
   - **b) If you chose a hand flown ILS, how will you set up your HIS, GPS, and MFD and how will you brief your passengers?**

Slide 7

Just as you had briefed her to do, your right seat passenger (a private pilot) called out the altitudes every 100 feet below 1,000 MSL. At 300 feet you sighted the approach lights, but elected to let the autopilot continue to fly the aircraft until the decision altitude. At the decision altitude, you disengage the autopilot while your right seat passenger called out the altitude every 50 feet until touchdown. Avoiding a duck under maneuver by monitoring the glide slope on the HSI you execute a flawless landing with 15 minutes worth of fuel in the main tanks. Before you quit the scenario today review the following:

8. **What might you have done differently to avoid the low fuel landing at MCO?**
9. **How might you use your passengers more effectively in abnormal or emergency situation?**

Note: While this example only contains seven slides, the final product will contain 20 slides, each with a question. Animation, graphics, video, and simulation may all be used to increase the realism of the scenario and maintain the PT's interest.

Lesson Three – (Multiple String Web/CD Based)

OBJECTIVE

The PT will demonstrate an in depth understanding of the capabilities and limitations of the TAA, the airspace systems, and the resources available to resolve aircraft, weather, and airspace situations that may occur during the course of normal mission profiles.

The pilot will demonstrate the ability to make accurate, fact-based decisions in a variety of mission scenarios.

The pilot will learn and practice proper SRM techniques to deal with the multitude of information and prioritize the variety of tasks required.

"Multiple String" CBT lesson.

Similar to the single string CBT, each presentation will be a series of decision points. Each will consist of a narrative, followed by a question requiring the pilot to select one of three decisions. Once the decision is made, the pilot will receive detailed feedback on the quality of the decision (good, fair, or poor). Once a decision is made, it cannot be retracted until the scenario has ended. ***After each decision point, the pilot will be confronted with a new set of decisions based on the previous decision.*** It will again consist of three choices, and selection of any choice will result in a decision grade (good, fair, or poor) and a new set of decisions. Much like an actual flight, each decision is a result of the decisions made before, the pilot's knowledge of the aircraft, and the conditions present at the time of the decision. [Note: once the pilot has completed the scenario to a successful landing, off-airport landing, or BRS deployment, if equipped, the pilot will be allowed to restart the scenario.] The scenario will not be considered complete until the pilot achieves a successful outcome. The pilot would be graded on the accuracy of the answers given and corrected to 100%.

PREREQUISITES

None required prior to logging on to the site.

Successful completion of the Knowledge based systems, weather, and regulatory CBT lessons is required before moving on to the Scenario and Case Based lessons.

PILOT IN TRAINING PREPARATION

Review the following:

1. Normal operating procedures in the aircraft POH
    a. Normal and Emergency procedures
    b. Aircraft and avionics systems display and procedures
2. Applicable aviation regulations and FAA documents

Lesson Three – (Multiple String Web/CD Based)

Lesson Content

Recurrent lesson Activity	Recurrent lesson Sub Activity	Desired learning Outcome
1. Aircraft/Systems CBT – 20 Questions (Approx 45 Minutes) Minimum Initial Passing Score is 70% - All responses corrected to 100%	1. Communication Management Systems 2. Flight Control Systems 3. Electrical Power System 4. MFD Programming and Operation 5. De/Anti Icing SystemsGPS	Explain Questions in this block should reference the appropriate POH or handbook supplement section and require specific

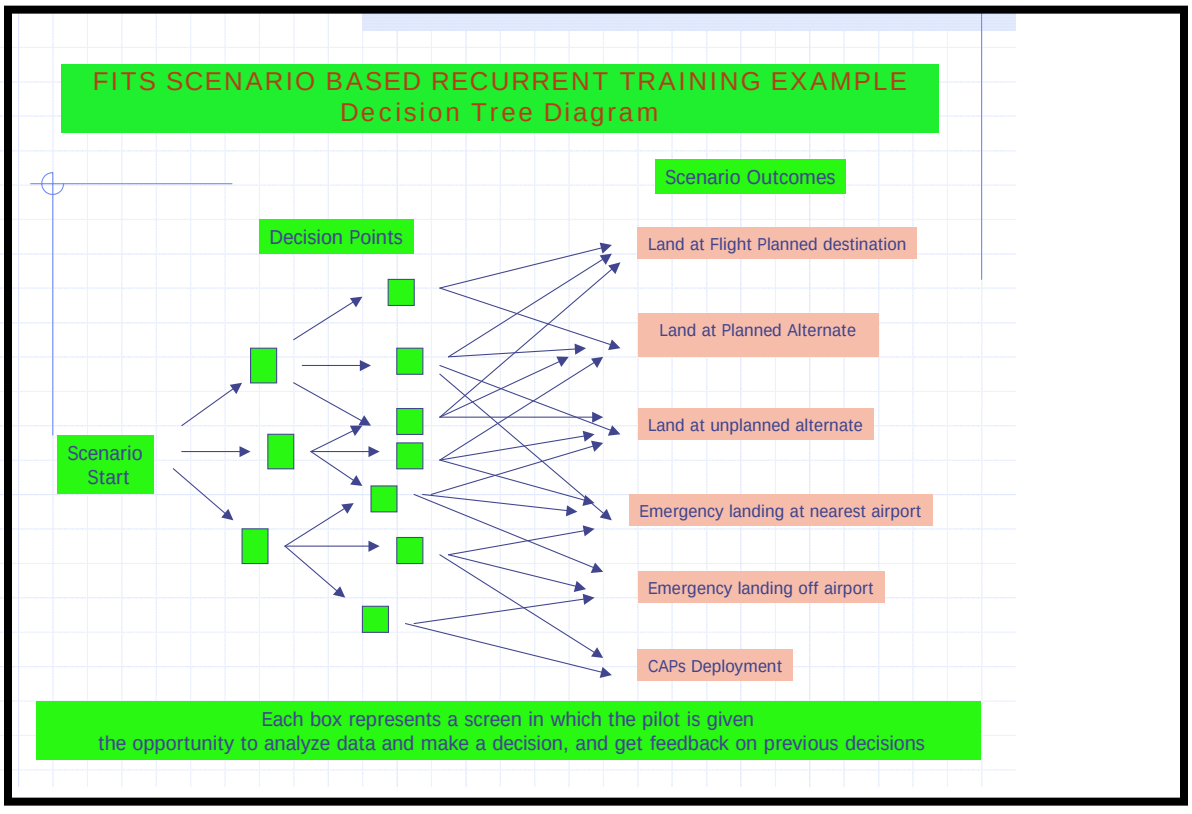
	Programming and Operation 6. Ballistic Recovery System	fact based answers.
2. Weather and Regulation CBT – 20 Questions (Approx 45 Minutes Minimum Initial Passing Score is 70% - All responses corrected to 100%	1. Winter Flying 2. Icing Conditions 3. Lost Communication 4. Airspace 5. Runway Incursion Awareness	Explain Questions in this block should reference the appropriate FAA Regulation, Handbook, POH, Handbook Supplement, or other authoritative publication and require specific fact based answers

Single Pilot Resource Management (SRM)		
Unit Objective – Demonstrates safe and efficient operations by adequately managing all available resources.		
Performance	Conditions	Standards
The training task is:	The training is conducted during:	The pilot in training will:
1. Task Management (TM)	Note: All tasks under SRM will be embedded into the curriculum and the training will occur selectively during all phases of training. SRM will be graded as it occurs during the training scenario syllabus.	Prioritize and select the most appropriate tasks (or series of tasks) to ensure successful completion of the training scenario
2. Automation Management (AM)		Program and utilize the most appropriate and useful modes of cockpit automation to ensure successful completion of the training scenario
3. Risk Management (RM) and Aeronautical Decision Making (ADM)		Consistently make informed decisions in a timely manner based on the task at hand and a thorough knowledge and use of all available resources.
4. Situational Awareness (SA)		Be aware of all factors such as traffic (both in flight and during taxi), weather, fuel state, aircraft mechanical condition, and pilot fatigue level that may have an impact on the successful completion of the training scenario.
5. Controlled Flight Into Terrain (CFIT) Awareness		a. Understand, describe, and apply techniques to avoid CFIT encounters: b. During inadvertent encounters with Instrument meteorological Conditions during VFR flight c. During system and navigation failures and physiological incidents during IFR flight

SCENARIO 3 – Multiple String Sample

"Multiple String" CBT lesson.

Similar to the single string CBT, each presentation will be a series of decision points. Each will consist of a narrative, followed by a question requiring the pilot to select one of three decisions. Once the decision is made, the pilot will receive detailed feedback on the quality of his or her decision (good, fair, or poor). Once a decision is made, it cannot be retracted until the scenario has ended. ***After each decision point, the pilot will be confronted with a new set of decisions based on the previous decision.*** It will again consist of three choices and selection of any choice will result in a decision grade (good, fair, or poor) and a new set of decisions. Much like an actual flight, each decision is a result of the decisions made before, the pilot's knowledge of the aircraft, and the conditions present at the time of the decision. [Note: once the pilot has completed the scenario to a successful landing, off airport landing, or BRS deployment the pilot will be allowed to restart the scenario.] The scenario will not be considered complete until the pilot achieves a successful outcome. The pilot would be graded on the accuracy of the answers given and corrected to 100%.



Slide 1 **Sample Scenario**

You are about 300 miles from your destination at 8,000 feet in solid IMC when a call to ATC goes unanswered.

You Should (Select One)

- Squawk 7600 and continue on to your IAF at your assigned altitude and route.
- Descend to a VFR altitude on the airway and deviate to an area of known VFR weather conditions and land.
- Fly the aircraft and troubleshoot the audio panel and GPS/COM

Slide 2

YOU SELECTED

BEST CHOICE

Fly the aircraft and troubleshoot the audio panel and GPS/COM

Confirm the correct airspeed, altitude, position and heading and keep up a strong crosscheck. Modern GPS receivers can consume a lot of a pilots "think time" during the programming and troubleshooting phase. More than likely the GPS/Com is working fine . However, the pilots programming may be at fault.

Before you assume you've lost comm., you should do a little troubleshooting

a. **Check the audio panel to make sure you haven't muted it or switched it off**
b. **Check the volume control and primary /secondary selector on the GPS/COM**
c. **See that the avionics master is on and that the volume controls are up**
d. **Are your headsets functioning and plugged in**
e. **Pull the squelch back to see if you're getting any audio signal at all**
f. **Try the speaker (maybe) it's just a broken wire to the headsets**
g. **Try unplugging the mike (might be a stuck mike or a shorted push-to-talk)**

GOOD CHOICE

Squawk 7600 continue on to your destination at your assigned altitude and route.

This choice is going according to the book and certainly would get you there but it could be a bit embarrassing when you do arrive only to discover that a simple troubleshoot of the radios was all that was needed.

POOR CHOICE

Descend to a VFR altitude on the airway and deviate to an area of known VFR weather conditions and land.

It's NEVER a good idea to descend on the airway and the weather below is uncertain!

You complete your troubleshooting on the radio and still have no communication capability.

YOU SHOULD (Select One)

- Consider other frequencies or communication possibilities
- Try the previous frequency and, if not receiving squawk 7600, and continue at last assigned altitude and route.
- Declare an emergency and proceed to VFR conditions to land and have the radios repaired.

Slide 4

YOU SELECTED

BEST CHOICE

Consider other frequencies or communication possibilities:

1. **You could have simply flown out of the range of the last ATC facility you were talking to.**
2. **Try the previous frequency.**
3. **Look up the discrete ARTCC frequency for the chart sector you happen to be in**
4. **Look up the nearest tower or approach facility.**
5. **Consider communications navaids (no comm., the freq. is underlined on NOS charts, no freq. Listed in the freq. Box on the Jepp charts.).**
6. **Check the Charts for RCOs (if you can receive but can not transmit you can use your transponder ident to respond to instructions, assuming it's still working).**

GOOD CHOICE

Try the previous frequency and, if unable to receive squawk 7600 and continue at last assigned altitude and route.

If you were talking to ATC on another frequency just a short time ago, then there is a good probability that you will be able to do so again. If you cannot, then you would not be in violation of any Regulation if you elected to continue on to your destination.

Fly the routing assigned, expected, or filed, in that order.
Fly the highest assigned, MEA, or expected (EFC) altitude.

POOR CHOICE

Declare an emergency and proceed to VFR conditions to land and have the radios repaired.

This is only an emergency if you make it one, and who would you declare it to? You still have a number of options available that might reveal that there isn't even problem and a simple frequency change could put you right back on track.

Slide 5

Radio communications are still not possible and low IMC conditions prevail just about everywhere within your remaining fuel range.

YOU SHOULD (Select One)

- Use your cell phone to call ATC
- Do the often recommended 180 degree turn and return to your departure airport
- Squawk 7600 and continue on your assigned route and altitude

Slide 6

YOU SELECTED
BEST CHOICE

Use your cellular phone and call ATC. Who would you phone?

- **Fly the airplane, do not neglect your basic airspeed, altitude, and heading.**
- **Call the Center number if you know it or have it available.**
- **Phone the nearest FSS on the toll-free number and have them find the number for you.**

GOOD CHOICE

Squawk 7600 and continue on your assigned route and altitude.

Even if you can call on your cell phone, you still need to maintain the required course and altitude. The regulations specify that you should continue on to the IAF via the routing assigned, expected, or filed, in that order; and the highest assigned, MEA, or expected (EFC) altitude; or proceed to VFR conditions and land.

POOR CHOICE

Do the often-recommended 180-degree turn and return to your departure airport

The regulations specify that you should continue on to the IAF via the routing assigned, expected, or filed, in that order; and the highest assigned, MEA, or expected (EFC) altitude; or proceed to VFR conditions and land.

Slide 7

Unfortunately, your cellular phone is packed in the baggage compartment and you are not able to get to it.

YOU SHOULD (Select One)

- Squawk 7600 and proceed on to your destination at the highest of your assigned, expected, or MEA/MOCA altitude
- Squawk 7600 and proceed on to your IAF at the MEA on your filed route
- Squawk 7600 and deviate to known VFR conditions to land

Slide 8

BEST CHOICE

Squawk 7600 and proceed to your IAF at the highest of your assigned, expected, MEA/MOCA altitude.

You have had a radio communications failure and you should follow the published radio failure procedures to the letter.

YOU SELECTED
GOOD CHOICE

Squawk 7600 and proceed on to your IAF at the MEA on your filed route.

You have had a radio communications failure and regulations require you to proceed at the highest altitude of your assigned, expected or MEA/MOCA and on your assigned or expected routing, before you revert to filed routing.

POOR CHOICE

Squawk 7600 and 7600, deviate to known VFR conditions and land.

Low IFR Conditions preclude this possibility.

NOTE: This segment of the scenario represents a generic, all electric aircraft, and does not represent the unique hardware and software of any particular type. It is for illustrative purposes only.

As you continue to your destination you now note that your number one alternator has failed and you are now operating on your number one battery and still have no voice communications.

YOU SHOULD (Select One)

- Confirm the number two battery and charging system are operating normally and begin a diversion to the nearest airfield.
- Stay with the number one battery and shut off all unnecessary accessories.
- Immediately descend while you still have battery power to find VFR conditions

Slide 10

YOU SELECTED

BEST CHOICE

Confirm the number two battery and charging system is operating normally. Think about which systems and capabilities you have lost (and will lose). Remember that the PFD is driven by an electrically driven attitude heading reference system, so you must be on the ground by the time all electrical power fails. Once you have completed this step, a diversion as described below may be the best course of action

Good Choice

Divert to known VFR conditions. Use the MFD and GPS to obtain a fix on the nearest airport where you can execute a visual approach (or instrument approach if necessary).

Your decision to continue to your destination should consider the following:

Is your destination below VFR minimums?

- **Will you have electrical power for an approach?**
- **What is the terrain, weather and or the circumstances?**
- **What is the weather at any nearby airport?**
- **What is the weather at your alternate?**
- **How much power do you have for navigation (If you are 200 miles out you may have to reach the IAF with compass and clock alone) if your backup flight instruments remain operative?**
- **Will you be reaching the IAF before your ETA. If so a 7700 squawk will alert the controller that you intend an immediate approach?**

Poor Choice

Stay with the number one battery and shut off all unnecessary accessories (pull the circuit breakers). With all unnecessary accessories shut off you might get 30 minutes of transceiver operation after the alternator goes off line (24-volt lead-acid batteries have a useful emergency capacity of just 8 to 10 ampere-hours). You need to start thinking about how you can get to the final approach fix at your destination airport at the proper time without an electronic means of doing so. In any event, the number two generator and battery are a better choice.

Slide 11

Your number one and two alternators have definitely failed, but you haven't been monitoring it because heavy rain has created a distraction. You've been too busy with the weather to notice that your ammeters are pegged to the left. At this point everything dies as the battery fades. The PFD and MFD go dark.

YOU SHOULD

- Change to the number 2 alternator.
- Broadcast a May Day message in the blind on the number one radio.
- Follow POH procedure for use of the Ballistic Recovery System (BRS) parachute.

Slide 12

YOU SELECTED

BEST CHOICE

Frankly, the third option is probably your only choice unless you are in VFR conditions. An all-electric aircraft is essentially unflyable in IFR conditions with complete electrical failure. While this is a remote possibility given the redundancy of the electrical system, a methodical approach to use of the BRS has proven to save lives.

Lesson Four - Desktop Flight Simulation Training

Note: These advanced scenarios are dependant on the development of a desktop cockpit flight simulation program for the specific aircraft. If simulation is not available, then additional scenarios will be developed for the web-based delivery in lessons 1, 2, or 3.

OBJECTIVE

The pilot in training (PT) will demonstrate an in depth understanding of the capabilities and limitations of the Technically Advanced Aircraft, the airspace system, and the resources available to resolve aircraft, weather, and airspace difficulties that may occur during the course of normal operations.

The pilot will demonstrate the ability to make accurate, fact-based decisions in a variety of mission scenarios.

The pilot will learn and reinforce proper SRM techniques to deal with the multitude of information and prioritize the variety of tasks required.

Desktop Flight Simulation Scenario

The pilot would log onto the web site and will be presented with a realistic flight scenario using a commercial cockpit simulation software such as the one offered by “Aerosim” for corporate and airline aircraft. Each pilot will have received the software as a CD ROM product prior to purchase of the aircraft for use in learning the full capabilities of the installed avionics systems. The scenario and route will be pre-determined, and the pilot must simply pre-flight, depart, and fly the route electronically. Similar to a LOFT exercise, the software will have systems failures, traffic, route changes, unforecast weather, and a variety of challenges programmed into the individual flight plan. Grading may be more problematic in the scenario, but the training will be more realistic. The simulation will include all options available to the pilot in the aircraft.

PREREQUISITES

None required prior to logging on to the site.

Successful completion of the Knowledge based systems, weather, and regulatory CBT lessons is required before moving on to the Scenario and Case Based lessons.

PILOT IN TRAINING PREPARATION

Review the following:

1. Normal operating procedures in the aircraft POH
    a. Normal and Emergency procedures
    b. Aircraft and avionics systems display and procedures
2. Applicable aviation regulations and FAA documents

Lesson Four – (Web/CD Based)

Desktop Simulation

Lesson content will be designed using the following modified in-flight scenario outcomes as a guide. Skill maneuvers are not included in the simulation, except as they aid in the simulation (e.g. takeoff and landing). All SRM and automation management items are included.

Scenario Simulator Activity/Outcomes List

Scenario Activities	Scenario Sub Activities	Desired PT Scenario Outcome
Normal Preflight and Cockpit procedures	1. Normal Pre-Takeoff Checklist Procedures 2. GPS Programming 3. MFD Setup 4. PFD Setup	1. Perform 2. Perform 3. Perform 4. Perform
Engine Start and Taxi Procedures	1. Engine Start 2. Taxi 3. SRM/Situational Awareness 4. Runway Incursion Awareness	1. Perform 2. Perform 3. Manage/Decide 4. Perform
Before Takeoff Checks	1. Normal and Abnormal Indications 2. Aircraft Automation Management 3. Aeronautical Decision Making and Risk management	1. Perform 2. Manage/Decide 3. Manage/Decide
Takeoff	1. Normal Takeoff 2. Aborted Takeoff 3. Situational Awareness 4. ADM and Risk Management	1. Perform 2. Perform 3. Manage/Decide 4. Manage/Decide
Climb procedures	1. Autopilot Climb 2. Navigation programming 3. Power management 4. Situational Awareness, Task management, and ADM	1. Perform 2. Perform 3. Perform 4. Manage/Decide
Cruise Procedures	1. Lean Assist (if so equipped)	1. Perform 2. Perform

	2. Best Power vs. Best Economy 3. Autopilot Cruise 4. Navigation programming 5. Automated navigation leg 6. Task Management, SA, and ADM	3. Perform 4. Perform 5. Perform 6. Manage/Decide
Systems malfunctions	1. Electrical System failures 2. Engine failure 3. Avionics failures 4. PFD/MFD Failures 5. GPS/COM Failures 6. Fuel System Failures	1. Manage/Decide 2. Manage/Decide 3. Manage/Decide 4. Manage/Decide 5. Manage/Decide 6. Manage/Decide
Weather Emergencies	1. Thunderstorms 2. Icing 3. Turbulence 4. Wind (excessive)	1. Manage/Decide 2. Manage/Decide 3. Manage/Decide 4. Manage/Decide
Data link Situational Awareness Systems and Additional Avionics Setup (NOTE: some or all of these systems may not be installed or available in the aircraft)	1. Data link Weather Setup and operation 2. Data link Traffic Setup and operation 3. Data link Terrain Display and Warning Setup and operation 4. Data link Flight Planning and Traffic Control (CNS) Setup and operation	1. Explain/Practice 2. Perform 3. Explain/Practice 4. Explain/Practice
Emergency Escape Maneuvers, Emergency Procedures/Recovery from Unusual Attitudes and Upsets/Use of BRS	1. PFD Unusual Attitude recovery 2. Backup Instrument Unusual Attitude recovery 3. Autopilot Unusual Attitude recovery 4. BRS 5. Engine failure/Emergency descent 6. Risk Management and decision making	1. Perform 2. Perform 3. Explain/Practice 4. Explain/Practice (simulated) 5. Perform 6. Manage/Decide
GPS Operation and Programming	1. VFR (non instrument rated PT) a. Direct-To b. Nearest c. Airport Information d. Flight Plan 2. IFR (instrument rated PT) a. Direct-To b. Nearest c. Airport Information d. Approach Select e. Flight Plan	1. Perform 2. Perform
Autopilot Programming, Modes and Annunciations	1. Control Wheel Steering (if installed) 2. LNAV Programming 3. Vertical Speed and Altitude Hold 4. Navigation Modes	1. Perform 2. Perform 3. Perform 4. Perform 5. Perform 6. Explain

	5. Coupled Approach Modes 6. Auto Trim Modes 7. Flight Director/PFD Interface	7. Perform
Avionics Operation	1. Pilot Flight Display (if installed) 2. MFD Normal Operation a. Setup Pages b. Navigation Mode c. Checklist Mode 3. Abnormal/Emergency Modes 4. EHSI Operation	1. Perform 2. Perform 3. Perform 4. Perform
Avionics Interface	1. Identification of Data/Power sources 2. Identification of PFD Failure Modes 3. Aircraft Automation management	1. Explain 2. Explain 3. Explain
Descent Planning and Execution	1. Automation Management 2. VNAV Planning 3. Navigation programming 4. Manual Descent 5. Autopilot descent 6. TA, SA, CFIT Avoidance	1. Manage/Decide 2. Perform 3. Perform 4. Perform 5. Perform 6. Manage/Decide
Instrument Approach procedures (IFR Rated Pilot)	1. Manual ILS 2. Coupled ILS 3. Manual VOR 4. Manual GPS 5. Autopilot Assisted VOR/GPS VNAV Approach 6. Manual Missed Approach 7. Autopilot Assisted Missed Approach 8. Procedure Turn 9. Holding 10. Task management and decision making	1. Perform 2. Perform 3. Perform 4. Perform 5. Perform 6. Perform 7. Perform 8. (Optional)Perform 9. (Optional) Perform 10. Manage / Decide
Landing	1. Before landing procedures 2. IFR Landing Transition 3. Normal Landing 4. ADM and SA	1. Perform 2. Perform 3. Perform 4. Manage/decide
Aircraft Shutdown and Securing procedure	1. Aircraft Shutdown and Securing Checklist 2. Aircraft Towing, Ground Handling, and Tie down	1. Perform 2. Explain/Practice

Scenario 5 – Sample Desktop Simulation

"Desktop Flight Simulation Scenario"

The pilot will log onto the web site and will be presented with a realistic flight scenario using a commercial cockpit simulation software such as the one offered by "Aerosim" for corporate and airline aircraft. Each pilot will have received the software as a CD ROM product prior to purchase of the aircraft for use in learning the full capabilities of the installed avionics systems. The scenario and route will be pre-determined and the pilot must simply pre-flight, depart, and fly the route electronically. Similar to a LOFT exercise, the software will have systems failures, traffic, route changes, un-forecast weather, and a variety of challenges programmed into the individual flight plan. Grading may be more problematic in the scenario, but the training will be more realistic. The simulation will include all options available to the pilot in the aircraft.

Sample Scenarios

Sample scenarios will be developed from the courseware authoring tool provided by the software manufacturer. Script development will be based on a combination of seasonal weather stimuli, generic systems malfunctions, and pilot decision-making. Sterilized versions of NTSB reports may allow PTs to see the accidents and incidents through the eyes of the actual pilot and allow them to make decisions based on the same stimuli. **These will be scripted scenarios in which the pilot will be allowed to make judgments and decisions.**

Note: These advanced scenarios are dependant on the development of a desktop cockpit flight simulation program. In the event the simulation is not ready then new scenarios will be developed for the web-based delivery in lessons 1, 2, or 3.

Lesson Five – (Visual (Motion Optional) Flight Simulation Training)

Note: These advanced scenarios are dependant on the development of full visual and/or motion based flight simulation devices. If these devices are not available, then new scenarios will be developed for the web-based delivery in lessons 1, 2, or 3.

Objective

The PT will demonstrate proficiency in the flight simulation device in flight maneuvers, systems and regulatory knowledge, Single Pilot Resource Management, and Aeronautical Decision Making. The PT will demonstrate practical knowledge of risk factors associated with his or her geographical region, season, and type of flight operations. Emphasis will be placed on performing maneuvers that are difficult to accomplish or might pose a hazard to flight safety if performed in flight (such as emergency procedures, emergency escape maneuvers, etc.)

Visual (Motion Optional) Flight Simulation Several manufacturers are currently producing or considering visual and/or motion-based flight simulation devices for the TAA currently on the market. This level of sophistication will allow the PT to access a level of recurrent training once only available to airline and military pilots. The airlines have determined that these devices are most effectively used in a LOFT (scenario-based) environment. Additionally, these devices allow the TAA pilot to practice emergency escape maneuvers, automation management concepts, and SRM in an environment designed to test their ability to respond, and yet free of physical danger. Traditionally simulation devices have been used to practice a rapid succession of emergency procedures in a short period of time. This generally overwhelms a PT and detracts from learning transfer. The scenario-based approach to simulation training allows the TAA pilot to make decisions in real time and occasionally take a time out to understand and learn from the situations presented and the pilot's response to them. FITS simulation training will follow this latter model.

Pre Simulation Scenario

The PT and Instructor will review the intended simulator scenario in detail, identifying areas of higher risk and potential decision-making points. The instructor will pose a series of realistic weather, air traffic control, and flight maneuver challenges to the PT and help him or her find the successful outcomes. This phase of the recurrent training should last approximately one hour.

Simulator Scenario

The PT will plan a simulation profile typical of the way that he or she employs the aircraft on a daily basis, or in a way that the PT has little experience but wants to learn more about. The profile should be a cross-country scenario (VFR or IFR depending on the pilot's qualification) and should involve arrival and departure from two separate airports. The flight should be planned to include the use of Class B or C airspace.

The PT will perform all preflight procedures, engine start-up, avionics set-up, taxi, and before-takeoff procedures. At the option of instructor, routine pre and post-flight actions may be abbreviated. However, the simulation period will be conducted as a full flight scenario. The instructor will be responsible for developing a challenging, yet realistic, scenario that will accomplish lesson
objectives.

The PT will perform a normal takeoff and departure to a safe altitude. Aircraft systems, avionics and autopilot functions will all be demonstrated during cruise, descent and normal landing phase of the flight.

PREREQUISITES

Completion of three web based Recurrent Training Modules.

PT PREPARATION

Review the following:

1. Normal operating procedures in the aircraft POH
2. Aircraft and avionics systems display and procedures.
3. Emergency and abnormal procedures.
4. Airport information for departure and destination airports.
5. Route of flight information for the trip.

BRIEFING ITEMS

A. INITIAL INTRODUCTION:

PT should have a clear understanding that he or she is expected to conduct the entire simulation profile as if alone in the "aircraft". The instructor may stop the simulation at any time to reinforce a teaching point, re-fly an incorrectly performed maneuver, and discuss SRM issues. The simulation provides a unique opportunity to integrate teaching and PT performance, and it should be utilized to the maximum extent possible.

B. SINGLE PILOT RESOURCE MANAGEMENT (SRM)

1. Task Management
2. Automation Management
3. Risk management and ADM
4. Situational Awareness
5. Controlled Flight Into Terrain (CFIT) – If applicable

Scenario Simulator Activity/Outcomes List

The PT and CFI will select activities from the following list of outcomes and develop an out and back flight scenario from them.

Scenario Activities	Scenario Sub Activities	Desired PT Scenario Outcome
Flight Planning	1. Scenario Planning 2. Weight and Balance and Aircraft Performance Calculations 3. Preflight SRM Briefing 4. ADM and Risk Management	1. Perform 2. Perform 3. Perform 4. Manage/Decide
Normal Preflight and Cockpit procedures	1. Normal Pre-Takeoff Checklist Procedures 2. GPS Programming 3. MFD Setup 4. PFD Setup	1. Perform 2. Perform 3. Perform 4. Perform
Engine Start and Taxi Procedures	1. Engine Start 2. Taxi 3. SRM/Situational Awareness 4. Runway Incursion Awareness	1. Perform 2. Perform 3. Manage/Decide 4. Perform
Before Takeoff Checks	1. Normal and Abnormal Indications 2. Aircraft Automation Management 3. ADM and Risk Management	1. Perform 2. Manage/Decide 3. Manage/Decide
Takeoff	1. Normal Takeoff 2. Crosswind Takeoff 3. Aborted Takeoff 4. Soft Field/Short Field Takeoff 5. Situational Awareness 6. ADM and Risk Management	1. Perform 2. Perform 3. Perform 4. Perform 5. Manage/Decide 6. Manage/Decide
Climb procedures	1. Manual Climb 2. Autopilot Climb 3. Navigation programming 4. Power management 5. Situational Awareness, Task Management, and ADM	1. Perform 2. Perform 3. Perform 4. Perform 5. Manage/Decide
Cruise Procedures	1. Lean Assist (if so equipped) 2. Best Power vs. Best Economy 3. Manual Cruise 4. Autopilot Cruise 5. Navigation programming 6. Automated navigation leg 7. Task Management, SA, and ADM	1. Perform 2. Perform 3. Perform 4. Perform 5. Perform 6. Perform 7. Manage/Decide
Control Performance Instrument /Visual Crosscheck Note: All items will be accomplished enroute during	1. Straight and level 2. Normal Turns 3. Climbing and Descending Turns	1. Perform 2. Perform 3. Perform

the scenario		
Low Speed Envelope Note 1: Slow Flight and Stall Recovery may be accomplished enroute or in a practice area Note 2: Emphasis will be placed on stall prevention and recovery	1. Configuration Changes and Slow Flight 2. Recovery from Power Off Stalls 3. Recovery from Power On Stalls 4. Stall prevention, SA, TM, and ADM 5. Low Speed performance and Steep Turns	1. Perform 2. Perform 3. Perform 4. Manage/Decide 5. Perform
GPS Operation and Programming	1. VFR (non instrument rated PT) a. Direct-To b. Nearest c. Airport Information d. Flight Plan 2. IFR (instrument rated PT) a. Direct-To b. Nearest c. Airport Information d. Approach Select e. Flight Plan	1. Perform 2. Perform
Autopilot Programming, Modes and Annunciations	1. Control Wheel Steering (if installed) 2. LNAV Programming 3. Vertical Speed and Altitude Hold 4. Navigation Modes 5. Coupled Approach Modes 6. Auto Trim Modes 7. Flight Director/PFD Interface	1. Perform 2. Perform 3. Perform 4. Perform 5. Perform 6. Explain 7. Perform
Avionics Operation	1. Pilot Flight Display (if installed 2. MFD Normal Operation a. Setup Pages b. Navigation Mode c. Checklist Mode 3. Abnormal/Emergency Modes 4. EHSI Operation	1. Perform 2. Perform 3. Perform 4. Perform
Avionics Interface	1. Identification of Data/Power sources 2. Identification of PFD Failure Modes 3. Aircraft Automation management	1. Explain 2. Explain 3. Explain
Data link Situational Awareness Systems and Additional Avionics Setup (NOTE: some or all of these systems may not be installed or available in the aircraft)	1. Data link Weather Setup and operation 2. Data link Traffic Setup and operation 3. Data link Terrain Display and Warning Setup and operation 4. Data link Flight Planning and Traffic Control (CNS)	1. Explain/Practice 2. Perform 3. Explain/Practice 4. Explain/Practice

	Setup and operation	
Emergency Escape Maneuvers, Emergency Procedures/Recovery from Unusual Attitudes and Upsets/Use of BRS, if installed	1. PFD Unusual Attitude recovery 2. Backup Instrument Unusual Attitude recovery 3. Autopilot Unusual Attitude recovery 4. BRS 5. Engine failure/Emergency descent 6. Emergency Escape Maneuver 7. Risk Management and decision making	1. Perform 2. Perform 3. Explain/Practice 4. Explain/Practice (simulated) 5. Perform 6. Perform 7. Manage/Decide
Descent Planning and Execution	1. Automation Management 2. VNAV Planning 3. Navigation programming 4. Manual Descent 5. Autopilot descent 6. TA, SA, CFIT Avoidance	1. Manage/Decide 2. Perform 3. Perform 4. Perform 5. Perform 6. Manage/Decide
Instrument Approach procedures (IFR Rated Pilot)	1. Manual ILS 2. Coupled ILS 3. Manual VOR 4. Manual GPS 5. Autopilot Assisted VOR/GPS VNAV Approach 6. Manual Missed Approach 7. Autopilot Assisted Missed Approach 8. Procedure Turn 9. Holding 10. Task management and decision making	1. Perform 2. Perform 3. Perform 4. Perform 5. Perform 6. Perform 7. Perform 8. (Optional)Perform 9. (Optional) Perform 10. Manage / Decide
Landing	1. Before landing procedures 2. IFR Landing Transition 3. Normal Landing 4. Soft and Short field landing 5. Partial Flap Landing 6. Zero Flap landing 7. Crosswind landing 8. Balked landing and Go-Around 9. ADM and SA	1. Perform 2. Perform 3. Perform 4. Perform 5. (Optional) Perform 6. (Optional) Perform 7. Perform 8. Perform 9. Manage/decide
Aircraft Shutdown and Securing procedure	1. Aircraft Shutdown and Securing Checklist 2. Aircraft Towing, Ground Handling, and Tie down	1. Perform 2. Explain/Practice

Lesson Six – Recurrent Scenario Based Flight Training

Note: Completion of the Cirrus Pilot Proficiency (CPP) program or other manufacturer accepted flight proficiency program satisfies the objectives of lesson Six of this syllabus

Objective

The PT will demonstrate proficiency in flight maneuvers, systems and regulatory knowledge, Single Pilot Resource Management, and Aeronautical Decision Making. The PT will demonstrate practical knowledge of risk factors associated with his or her geographical region, season, and type of flight operations.

Ground Scenario

The PT and Instructor will review the intended flight scenario in detail, identifying areas of higher risk and potential decision-making points. The instructor will pose a series of realistic weather, air traffic control, and flight maneuver challenges to the PT while helping them find successful outcomes. This phase of the recurrent training should last approximately one hour.

Flight Scenario

The PT will plan a flight profile typical of the way that he or she employs the aircraft, or in a way that the PT has little experience but wants to learn more. The profile should be a cross-country scenario (VFR or IFR depending on the pilot's qualification), and should involve arrival and departure from two separate airports. The flight should be planned to include the use of Class B or C airspace.

The PT will perform all preflight procedures, engine start-up, avionics set-up, taxi, and before-takeoff procedures.

The PT will perform a normal takeoff and departure to a safe altitude. Aircraft systems, avionics and autopilot functions will all be demonstrated during the cruise, descent and normal landing phases of the flight.

A different route should be used for the return trip and an actual or simulated crosswind takeoff should be performed. After the aircraft is established in cruise, the autopilot should be turned off and the flight continued in the manual mode with continued practice in the use of aircraft systems and avionics.

The PT will perform a manual descent and transition into the pattern with a rejected landing, a go-around, and a crosswind landing.

The PT will perform all aircraft shutdown and securing procedures.

PREREQUISITES

Completion of three quarterly web based Recurrent Training Modules.

PILOT IN TRAINING PREPARATION

Review the following:

1. Normal operating procedures found in the aircraft POH.
2. Airport information for departure and destination airports.
3. Route of flight information for both trips.
4. Aircraft and avionics systems display and procedures.

BRIEFING ITEMS

A. INITIAL INTRODUCTION:

PT should have a clear understanding that he or she is expected to conduct the entire flight profile as if alone in the aircraft. This should be an enjoyable opportunity for the PT and instructor to share techniques, review procedures, and learn about both the aircraft and the flight environment.

B. SINGLE PILOT RESOURCE MANAGEMENT (SRM)

1. Task Management
2. Automation Management
3. Risk management and ADM
4. Situational Awareness
5. CFIT – If applicable

Scenario Flight Activity/Outcomes List

The PT and Instructor will select activities from the following list of outcomes and develop an out and back flight scenario from them.

Scenario Activities	Scenario Sub Activities	Desired PT Scenario Outcome
Flight Planning	1. Scenario Planning 2. Weight and Balance and Aircraft Performance Calculations 3. Preflight SRM Briefing 4. Decision making and risk management	1. Perform 2. Perform 3. Perform 4. Manage/Decide
Normal Preflight and Cockpit procedures	1. Normal Pre-Takeoff Checklist Procedures 2. GPS Programming 3. MFD Setup 4. PFD Setup	1. Perform 2. Perform 3. Perform 4. Perform
Engine Start and Taxi Procedures	1. Engine Start 2. Taxi 3. SRM/Situational Awareness 4. Runway Incursion Awareness	1. Perform 2. Perform 3. Manage/Decide 4. Perform
Before Takeoff Checks	1. Normal and Abnormal Indications 2. Aircraft Automation Management 3. Aeronautical Decision Making and Risk management	1. Perform 2. Manage/Decide 3. Manage/Decide
Takeoff	1. Normal Takeoff 2. Crosswind Takeoff 3. Aborted Takeoff 4. Soft Field/Short Field Takeoff 5. Situational Awareness 6. ADM and Risk Management	1. Perform 2. Perform 3. Perform 4. Perform 5. Manage/Decide 6. Manage/Decide
Climb procedures	1. Manual Climb 2. Autopilot Climb 3. Navigation programming 4. Power management 5. Situational Awareness, Task management, and ADM	1. Perform 2. Perform 3. Perform 4. Perform 5. Manage/Decide
Cruise Procedures	1. Lean Assist (if so equipped) 2. Best Power vs. Best Economy 3. Manual Cruise 4. Autopilot Cruise 5. Navigation programming 6. Automated navigation leg 7. Task Management, SA, and ADM	1. Perform 2. Perform 3. Perform 4. Perform 5. Perform 6. Perform 7. Manage/Decide

Control Performance Instrument /Visual Crosscheck Note: All items will be accomplished enroute during the scenario	1. Straight and level 2. Normal Turns 3. Climbing and Descending Turns	1. Perform 2. Perform 3. Perform
Low Speed Envelope Note 1: Slow Flight and Stall Recovery may be accomplished enroute or in a practice area Note 2: Emphasis will be placed on stall prevention and recovery	1. Configuration Changes and Slow Flight 2. Recovery from Power Off Stalls 3. Recovery from Power On Stalls 4. Stall prevention, SA, TM, and ADM 5. Low Speed performance and Steep Turns	1. Perform 2. Perform 3. Perform 4. Manage/Decide 5. Perform
GPS Operation and Programming	1. VFR (non instrument rated PT) a. Direct-To b. Nearest c. Airport Information d. Flight Plan 2. IFR (instrument rated PT) a. Direct-To b. Nearest c. Airport Information d. Approach Select e. Flight Plan	1. Perform 2. Perform
Autopilot Programming, Modes and Annunciations	1. Control Wheel Steering (if installed) 2. LNAV Programming 3. Vertical Speed and Altitude Hold 4. Navigation Modes 5. Coupled Approach Modes 6. Auto Trim Modes 7. Flight Director/PFD Interface	1. Perform 2. Perform 3. Perform 4. Perform 5. Perform 6. Explain 7. Perform
Avionics Operation	1. Pilot Flight Display (if installed 2. MFD Normal Operation a. Setup Pages b. Navigation Mode c. Checklist Mode 3. Abnormal/Emergency Modes 4. EHSI Operation	1. Perform 2. Perform 3. Perform 4. Perform
Avionics Interface	1. Identification of Data/Power sources 2. Identification of PFD Failure Modes 3. Aircraft Automation Management	1. Explain 2. Explain 3. Explain
Data link Situational Awareness Systems and Additional Avionics Setup (NOTE: some or all of these	1. Data link Weather Setup and operation 2. Data link Traffic Setup and operation 3. Data link Terrain Display	1. Explain/Practice 2. Perform 3. Explain/Practice 4. Explain/Practice

systems may not be installed or available in the aircraft)	and Warning Setup and operation 4. Data link Flight Planning and Traffic Control (CNS) Setup and operation	
Emergency Escape Maneuvers, Emergency Procedures/Recovery from Unusual Attitudes and Upsets/Use of BRS	1. PFD Unusual Attitude recovery 2. Backup Instrument Unusual Attitude recovery 3. Autopilot Unusual Attitude recovery 4. BRS 5. Engine failure/Emergency descent 6. Risk Management and decision making	1. Perform 2. Perform 3. Explain/Practice 4. Explain/Practice (simulated) 5. Perform 6. Manage/Decide
Descent Planning and Execution	1. Automation Management 2. VNAV Planning 3. Navigation programming 4. Manual Descent 5. Autopilot descent 6. TA, SA, CFIT Avoidance	1. Manage/Decide 2. Perform 3. Perform 4. Perform 5. Perform 6. Manage/Decide
Instrument Approach procedures (IFR Rated Pilot)	1. Manual ILS 2. Coupled ILS 3. Manual VOR 4. Manual GPS 5. Autopilot Assisted VOR/GPS VNAV Approach 6. Manual Missed Approach 7. Autopilot Assisted Missed Approach 8. Procedure Turn 9. Holding 10. Task management and decision making	1. Perform 2. Perform 3. Perform 4. Perform 5. Perform 6. Perform 7. Perform 8. (Optional)Perform 9. (Optional) Perform 10. Manage / Decide
Landing	1. Before landing procedures 2. IFR Landing Transition 3. Normal Landing 4. Soft and Short field landing 5. Partial Flap Landing 6. Zero Flap landing 7. Crosswind landing 8. Balked landing and Go-Around 9. ADM and SA	1. Perform 2. Perform 3. Perform 4. Perform 5. (Optional) Perform 6. (Optional) Perform 7. Perform 8. Perform 9. Manage/decide
Aircraft Shutdown and Securing procedure	1. Aircraft Shutdown and Securing Checklist 2. 2. Aircraft Towing, Ground Handling, and Tie down	1. Perform 2. Explain/Practice

Section 5 - FITS Master Training Outcomes List

TAA 01	**Single Pilot Resource Management (SRM)**	
Unit Objective – Demonstrates safe and efficient operations by adequately managing all available resources.		
Performance	Conditions	Standards
The training task is:	The training is conducted during:	The pilot in training will:
1. Task Management (TM)	Note: All tasks under SRM will be embedded into the curriculum and the training will occur selectively during all phases of training. SRM will be graded as it occurs during the training scenario syllabus.	Prioritize and select the most appropriate tasks (or series of tasks) to ensure successful completion of the training scenario.
2. Automation Management (AM)		Program and utilize the most appropriate and useful modes of cockpit automation to ensure successful completion of the training scenario.
3. Risk Management (RM) and Aeronautical Decision Making (ADM)		Consistently make informed decisions in a timely manner based on the task at hand and a thorough knowledge and use of all available resources.
4. Situational Awareness (SA)		Be aware of all factors such as traffic (both in flight and during taxi), weather, fuel state, aircraft mechanical condition, and pilot fatigue level that may have an impact on the successful completion of the training scenario.
5. Controlled Flight Into Terrain (CFIT) Awareness		Understand, describe, and apply techniques to avoid CFIT encounters: a. During inadvertent encounters with Instrument meteorological Conditions during VFR flight. b. During system and navigation failures and physiological incidents during IFR flight.

TAA 02	Flight Planning	
Unit Objective – Develop thorough and successful preflight habit patterns for flight planning, performance, weight and balance, and normal and emergency single pilot resource management		
Performance	Conditions	Standards
The training task is:	The training is conducted during:	The pilot in training will:
1. Flight Training Scenario Planning	Preflight planning	a. Review the required elements of the appropriate flight training scenario. b. Decide on the optimum route and sequence of events to accomplish all required tasks. c. Obtain all required charts and documents. d. Obtain and analyze an FAA approved weather briefing appropriate to the scenario to be flown. e. File a flight plan (VFR/IFR) for the scenario to be flown.
2. Weight and Balance and Aircraft Performance Computation	a. Classroom training b. Preflight planning	Perform weight and balance and performance computations for the specific training scenario to be flown without error.
3. Preflight SRM Briefing	Preflight planning	a. Orally review in specific terms all aspects of the flight scenario. b. Identify possible emergency and abnormal procedures relevant to the scenario and describe successful SRM strategies to deal with them.
4. Decision Making and Risk Management	a. Pre-Arrival e Learning b. Classroom Training c. All phases of flight planning and flight	a. Make sound decisions based on a logical analysis of factual information, aircraft capability, and pilot experience and skill. b. Continuously critique the success of the flight scenario. c. Adjust the training scenario to maintain flight safety at all times.

TAA 03	Normal Preflight & Cockpit Procedures	
Unit Objective – Aircraft familiarization, checklists, cockpit procedures and PFD/GPS/MFD and autopilot operation.		
Performance	Conditions	Standards
The training task is:	The training is conducted during:	The pilot in training will:
1. Normal Pre-takeoff Checklist procedures	a. Pre-arrival – eLearning b. Pre-flight briefing c. Actual aircraft pre-flight	a. Perform normal exterior inspection by reference to the written checklist. b. Perform normal interior preflight inspection, engine start, taxi, before takeoff checklists by reference to the MFD. c. Perform all checklists in the proper sequence and without error.
2. PFD/MFD/GPS Autopilot Programming	a. Pre-arrival – eLearning b. Pre-flight briefing c. Actual aircraft pre-flight	a. Perform PFD/AHRS initialization. b. Perform autopilot pre-flight checks. c. Program all the GPS and MFD according to the aircraft POH for the specific training scenario to be flown.

TAA 04	Engine Start and Taxi Procedures	
Unit Objective – Demonstrate the proper Engine Start and taxi procedures for the TAA		
Performance	Conditions	Standards
The training task is:	The training is conducted during:	The pilot in training will:
1. Engine Start	a. Pre-arrival – eLearning b. Actual aircraft pre-flight	a. Demonstrate the correct procedures for engine start under all conditions. b. Demonstrate the correct emergency procedures associated with engine start. c. Successfully start the engine.
2. Taxi	a. Pre-arrival – eLearning b. Actual aircraft pre-flight	a. Understand the proper technique to control the aircraft using differential braking and power. b. Successfully taxi the aircraft.
3. SRM/Situational Awareness	a. Pre-arrival – eLearning b. Pre-flight briefing c. Actual aircraft pre-flight d. Actual aircraft taxi	a. Understand the capability of the MFD/GPS to aid in low visibility/congested airport taxi situations. b. Demonstrate the proper visual clearing techniques during all taxi operations. c. Demonstrate understanding of runway and taxiway markings, taxi clearances and runway incursion issues.

TAA 05	Before Takeoff Checks	
Unit Objective – demonstrate the proper pre-takeoff procedures for the TAA		
Performance	Conditions	Standards
The training task is:	The training is conducted during:	The pilot in training will:
1. Normal and Abnormal Indications	a. Pre-arrival – eLearning b. Actual aircraft pre-flight	a. Complete all Pre- Takeoff checklist items correctly and in the proper sequence. b. Identify normal and abnormal systems indications using the MFD and the POH.
2. Aircraft Automation Management	a. Pre-arrival – eLearning b. Actual aircraft pre-flight	Correctly configure and program the PFD /MFD /HSI /GPS /Autopilot for the departure.
3. Aeronautical Decision Making/Risk Management		Make the correct go / no-go decision based on the status of the aircraft, pilot, and the weather.

TAA 06	**Takeoff**	
Unit Objective – demonstrate the proper takeoff procedures for the TAA		
Performance	Conditions	Standards
The training task is:	The training is conducted during:	The pilot in training will:
1. Normal takeoff	a. Pre-Flight briefing b. In-Flight from lineup on the runway through flap retraction	Perform a normal takeoff within the Practical Test Standards (PTS).
2. Crosswind takeoff		Perform a crosswind takeoff within the PTS.
3. Aborted takeoff		Perform the aborted takeoff procedure within the PTS standard.
4. Soft Field/Short field Takeoff		Perform a Soft Field/Short Field Takeoff within the PTS.
5. Situational Awareness		a. Identify traffic, systems failures, and other developing situations that might prompt the performance of an aborted takeoff. b. Verbalize and prioritize those situations present during any given takeoff
6 .Aeronautical Decision Making/Risk Management		Decide to continue or abort any given takeoff based on the actual situation or a simulated scenario created by the instructor.

TAA 07	Climb Procedures	
Unit Objective – demonstrate the proper climb procedures for the TAA		
Performance	Conditions	Standards
The training task is:	The training is conducted during:	The pilot in training will:
1. Manual Climb	a. Pre-Flight briefing b. In-Flight from flap retraction until after initial level-off at cruise altitude	a. Perform a hand flown climb and level-off within the PTS. b. Establishes pitch within the PTS.
2. Autopilot Climb		a. Perform an autopilot flown climb and level-off within the PTS. b. Establishes pitch attitude within the PTS.
3. Navigation Programming		Program the GPS/MFD to comply with the flight planned course and all ATC clearances.
4. Power Management		Set appropriate power/engine leaning settings by reference to the MFD.
5. Situational Awareness, Task Management, and Decision Making		a. Identify all traffic, hazardous terrain, and potentially hazardous situation as they occur by reference to visual clearing and the MFD (if available and optioned). b. Perform all required in-cockpit tasks in such a manner that visual clearing is not impacted negatively. c. Make timely decisions based on information obtained, visually, by radio, or by aircraft automation equipment.

TAA 08	**Cruise procedures**	
Unit Objective – demonstrate the proper cruise procedures for the TAA		
Performance	Conditions	Standards
The training task is:	The training is conducted during:	The pilot in training will:
1. Lean Assist MFD 2. Best Power vs. Best Economy	a. Pre-arrival – eLearning b. In Cruise Flight	Lean the engine using the Lean Assist procedures and the MFD.
3. Manual Cruise	In Cruise Flight	a. Perform hand flown manual cruise within the PTS. b. Maintains altitude, within the PTS.
4. Autopilot Cruise		a. Perform an autopilot assisted cruise within the PTS (for manual cruise). b. Maintains altitude within the PTS. c. Demonstrate the aircraft reaction to course changes programmed into the GPS/MFD.
5. Navigation Programming		Program flight plan changes into the GPS.
6. Automated Navigation Leg		a. In VFR conditions conduct a navigation leg of 30 minutes or more to a different airfield by use of the autopilot beginning at 1,000 ft AGL on departure and terminating autopilot use just prior to entry to the VFR pattern. b. In IFR conditions (or simulated IFR) conduct a navigation leg of 30 minutes or more to a different airfield by use of the autopilot beginning at 500 ft AGL on departure and terminating autopilot use at the decision altitude or missed approach point as applicable. If a missed approach is flown it will be flown by use of the autopilot.

7. Task Management, Situational Awareness, and Decision making		a. Identify all traffic, hazardous terrain, and potentially hazardous situation as they occur by reference to visual clearing and the MFD (if available and optioned). b. Perform all required in-cockpit tasks in such a manner that visual clearing is not impacted negatively. c. Make timely decisions based on information obtained, visually, by radio, or by aircraft automation equipment.

TAA 09	**Control Performance Instrument/Visual crosscheck**	
Unit Objective – demonstrate the proper use of flight controls and Visual or PFD derived cues to perform basic flight maneuvers in the TAA		
Performance	Conditions	Standards
The training task is:	The training is conducted during:	The pilot in training will:
1. Straight and level 2. Normal Turns 3. Climbing and Descending Turns 4. Steep Turns (45 degree)	a. Pre-Flight briefing b. In Flight	a. Establishes airspeed and altitude within the PTS standard. b. Perform the maneuver by sole reference to the horizon within the PTS standard. c. Perform the maneuver by sole reference to the PFD within the PTS standard.

TAA 10	Low Speed Envelope	
Unit Objective – recognize the onset of low speed flight regimes and demonstrate the proper use of flight controls and Visual or PFD derived cues to perform basic low speed flight maneuvers in the TAA		
Performance The training task is:	Conditions The training is conducted during:	Standards The pilot in training will:
1. Configuration changes 2. Slow Flight	a. Pre-Flight briefing b. In Flight	Demonstrate slow flight within the PTS standard with the flaps in all possible flap positions and detents/
3. Recovery From Power – Off and Power -On Stalls		a. Demonstrate a recovery from a planned Power-Off or Power-On Stall with minimum altitude loss. b. Demonstrate a recovery from an instructor induced Power-On/Power-Off stall with minimum altitude loss.
4. Recovery from autopilot induced stall		Demonstrate a recovery from an autopilot induced stall with minimum altitude loss.
5. Stall Prevention, Situational Awareness, Task management, and Decision Making		a. Describe possible situations that might lead to an inadvertent stall and cockpit indications that would warn of an impending stall. b. Demonstrate pilot actions to avert the stall prior to its occurrence.

TAA 11	Descent Planning and Execution	
Unit Objective – demonstrate the proper descent procedures for the TAA		
Performance	Conditions	Standards
The training task is:	The training is conducted during:	The pilot in training will:
1. Automation management	a. Pre-Fight briefing b. Descent planning during the cruise leg and the descent itself from cruise altitude until just prior to flap extension for landing	a. Decide which automated features will be used during the descent and program then prior to beginning the descent/ b. Monitor and update the automated features during the descent.
2. Vertical Navigation (VNAV) Planning		Use the descent features of the GPS and the map features of the MFD to plan a fuel efficient descent that avoids known obstacles and terrain.
3. Navigation Programming		Program the entire descent (VFR) and program and activate the desired approach and go-around (IFR).
4. Manual Descent		Perform a manual descent within PTS.
5. Autopilot Descent		Perform an autopilot descent within PTS (for a manual descent)
6. Task Management, Situational Awareness, CFIT Avoidance		Identify and display the most important data available pertinent to the task

TAA 12	Landings	
Unit Objective – demonstrate landing procedures in the TAA.		
Performance	Conditions	Standards
The training task is:	The training is conducted during:	The pilot in training will:
1. Before landing procedures	a. Pre-arrival – eLearning b. Pre-Flight Briefing c. In flight d. (VFR) flap extension to turning off the runway or return to pattern altitude in the event of a go-around e. (IFR) from 1,000 feet (stabilized approach until turning off the runway or climb to missed approach altitude	Perform all pre-landing checklist items correctly and in sequence.
2. IFR Landing Transition (Autopilot to manual and manual to Manual)		a. Demonstrate the proper transition from instrument reference to visual reference. b. Demonstrate the proper procedures for autopilot disengagement and transition to landing.
3. Normal landing		Perform a normal full flap landing within the PTS standard.
4. Soft and Short Field landing		Perform Soft and Short field landings within the PTS standard.
5. Partial Flap landing		Perform a partial flap landing within the PTS standard.
6. Zero Flap landing		Perform a zero flap landing within the PTS standard.
7. Crosswind landing		Perform a crosswind landing within the PTS standard.
8. Balked landing and Go-Around		a. Make a timely decision to go-around either in flight or after initial touchdown if the landing cannot be accomplished safely. b. Perform the balked landing procedure within the PTS.
9. Decision Making and Situational Awareness		a. Demonstrate awareness of all potential weather, traffic, and airfield factors that might impact the approach and landing. b. Make timely decisions to mitigate risks and ensure a successful approach and landing.

TAA 13	Aircraft Shutdown and Securing procedures	
Unit Objective – demonstrate proficiency shutting down and securing the TAA		
Performance	Conditions	Standards
The training task is:	The training is conducted during:	The pilot in training will:
1. Aircraft Shutdown & Securing Checklist	Post flight	Demonstrate proficiency properly concluding a flight including engine shutdown and securing.
2. Aircraft Towing, Ground Handling, and Tiedown		Demonstrate proficiency properly concluding a flight including aircraft storage.

TAA 14	Automated Avionics Interface	
Unit Objective – demonstrate proficiency interfacing the avionics for flight operations		
Performance	Conditions	Standards
The training task is:	The training is conducted during:	The pilot in training will:
1. Identification of Data/Power Sources a. Air Data failure b. AHRS failure c. Generator/battery failure	a. Pre-Arrival E learning b .Classroom c. Pre-flight d. In-flight	a. Understand data/power source failure modes that affect operation of the PFD. b. Identify specific failures and their associated cues.
2. Identification of PFD Failure Modes and corrective actions a. Invalid Sensor Data b. Invalid Heading c. Crosscheck Monitor d. Recoverable Attitude e. Invalid Attitude and Heading f. Complete/partial Electrical Power failure		Perform the appropriate corrective action for each malfunction.
3. Aircraft Automation Management		a. Understand and be able to correctly describe the interface between all the installed avionics systems in the aircraft. b. Demonstrate proficiency operating the avionics installed on the aircraft as an integrated system.

TAA 15	GPS Operation and Programming	
Unit Objective – demonstrate proficiency with the GPS		
Performance	Conditions	Standards
The training task is:	The training is conducted during:	The pilot in training will:
1. VFR: Direct-To Function Nearest Function Airport Information Function Flight Plan Function	In-flight	Demonstrate proficiency using the GPS including the Direct-To, Nearest, and Airport Information functions.
2. IFR: Direct-To Function Nearest Function DP/STAR/Approach Function Flight Plan Function	a. Pre-flight b. In-flight	a. Demonstrate proficiency using the GPS including the Direct-To, Nearest, Airport Information, DP/STAR/Approach functions. b. Demonstrate proficiency flight planning the GPS and flying the flight plan.

TAA 16	Autopilot Programming, Modes, and Annunciators	
Unit Objective – demonstrate proper use of the autopilot.		
Performance	Conditions	Standards
The training task is:	The training is conducted during:	The pilot in training will:
1. Control Wheel Steering	In-flight	Demonstrate proper use of the control wheel steering.
2. LNAV and VNAV Programming		Demonstrate proper use of the LNAV and VNAV functions of the autopilot.
3. Vertical Speed and Altitude Hold		Demonstrate proper use of the vertical speed and altitude hold.
4. Navigation Modes		Demonstrate proper use of the navigation modes of the autopilot.
5. Coupled Approach Modes		Demonstrate proper use of the coupled approach modes of the autopilot.
6. Auto trim Mode		Demonstrate proper use of the auto trim mode of the autopilot.
7. Flight Director/PFD Interface		Demonstrate proper use of the flight director/PFD interfaces.

TAA 17	Automated Avionics Operation and Systems Interface	
Unit Objective – demonstrate proper use of the Avionics Interface including normal, abnormal, and emergency operations of the TAA and all installed avionics.		
Performance	Conditions	Standards
The training task is:	The training is conducted during:	The pilot in training will:
1. Pilot Flight Display	In-flight	Demonstrate proper use of the PFD during autopilot.
2. Multi Function Display Normal Operation Setup Pages Navigation Modes Traffic Mode Weather Modes Checklist Modes	Pre-flight In Flight a. Post Flight	Demonstrate proper use of the avionics interface during normal operations including setup, navigation, traffic, weather, and checklist.
3. Abnormal and Emergency Indications and Operations Navigation Modes Traffic Mode Weather Modes Checklist Modes		Demonstrate proper use of the avionics interface during abnormal and emergency operations including setup, navigation, traffic, weather, and checklist.
4. EHSI Operation	a. Pre-flight b. In-flight	Demonstrate proper setup, use, and operation.

TAA 18	Datalink Situational Awareness Systems and Additional Avionics Setup	
Unit Objective –demonstrate proper use of the EHSI and its interface with other installed avionics.		
Performance	Conditions	Standards
The training task is:	The training is conducted during:	The pilot in training will:
1. Datalink Weather Setup and Operation	a. Pre-flight. In-flight	a. Demonstrate the proper setup of the information and related displays. b. Demonstrate the proper decision making skills based on the information presented.
2. Datalink Traffic Setup and Operation		a. Demonstrate the proper setup of the information and related displays. b. Demonstrate the proper decision making skills based on the information presented.
3. Terrain Display and Avoidance Systems Setup and Operation		a. Demonstrate the proper setup of the information and related displays. b. Demonstrate the proper decision making skills based on the information presented.

4. Datalink Flight Plan and Traffic Control Systems Setup and Operation		a. Demonstrate the proper setup of the information and related displays. b. Demonstrate the proper decision making skills based on the information presented.

TAA 19 Emergency Escape Maneuvers/ Recovery from Unusual Attitudes and Upsets/ Use of Ballistic Parachute Recovery System (BRS)		
Unit Objective – demonstrate unusual attitude/upset recovery in the TAA and discuss the proper use of the BRS if installed.		
Performance	Conditions	Standards
The training task is:	The training is conducted during:	The pilot in training will:
1. PFD	In-flight	Demonstrate unusual attitude recovery using the PFD to PTS.
2. Backup Instruments		Demonstrate unusual attitude recovery using backup instruments to PTS.
3. Autopilot – Limitations of it use for recovery	a. Pre-flight b. In-flight	Demonstrate unusual attitude recovery using the autopilot to PTS.
4. Upset Training	In-flight	Demonstrate upset recovery using the PFD.
5. BRS Preflight In-flight Activation Post Deployment Procedures Reasons for Deployment	a. Pre-flight b. In-flight c. BRS Training Device	a. Demonstrate procedural knowledge proper use of BRS. b. Describe situations when it is appropriate to deploy the BRS and situations when it is not appropriate.
6. Engine Failure/Emergency Descent		a. Demonstrate procedures to be used during engine failure or situations requiring an emergency descent. b. When given a realistic scenario make an appropriate decision between landing the aircraft or deployment of the BRS system.
7. Emergency Escape Maneuvers, Risk management, and Decision Making		a. Understand the capabilities of the PFD, Autopilot, and BRS. b. Develop a problem solving matrix for use of all these systems when faced with IFR/VFR emergency procedures. c. Demonstrate the ability to make correct decisions when faced with IFR/VFR emergency conditions.

TAA 20 Instrument Approach Procedures (IFR Rated Pilots Only)		
Unit Objective – demonstrate IFR procedure proficient in the TAA using the installed equipment.		
Performance	Conditions	Standards
The training task is:	The training is conducted during:	The pilot in training will:
1. Manual ILS	a. Pre-arrival – eLearning b. Pre-Flight Briefing c. In-Flight	Perform the approach within the PTS.
2. Coupled ILS		Perform the approach within the PTS (for a manual approach.
3. Manual VOR		Perform the approach within the PTS.
4. Manual GPS		a. Program and activate the GPS approach in a timely manner. b. Perform the approach within the PTS.
5. Coupled VOR/GPS VNAV Approach		a. Program and activate the GPS/VNAV approach in a timely manner. b. Perform the GPS/VNAV approach within the PTS (for a manual approach).
6. Manual Missed Approach		Perform the missed approach within the PTS.
7. Autopilot Flown missed Approach		Perform the missed approach within the PTS (for a manual missed approach).
8. Procedure Turn		Demonstrate Procedure to PTS.
9. Holding		Demonstrate Instrument Holding to PTS.
10. Task Management and Decision making	In-flight	Demonstrate proper planning and prioritization of time between avionics programming and execution of IFR procedures.
11. Situational Awareness	.In-Flight	Demonstrate proper use of the MFD and HIS to maintain situational awareness during IFR procedures.

Section 6 – Flight Risk Assessment

Pilot

Factor	***VFR***	***IFR***	***Score***
Less than 100 hours in type	+2	+3	
Unfamiliar Destination	+1	+1	
Fatigue (less than normal sleep prior night)	+2	+3	
Flight at end of work day	+2	+3	
Scheduled commitment after flight	+2	+2	
Recent death of close family member	+2	+2	
Major domestic problems	+2	+2	
Illness in family	+1	+1	
Second pilot who is rated and current	-1	-1	
Alcohol within the last 24 hours	+2	+2	
Taking over the counter medications	+3	+3	
Inadequate food prior to flight	+2	+2	
Inadequate water prior to flight/no water on board	+2	+2	
Flight duration more than 3 hours	+2	+2	
Total			

Aircraft

Factor	*VFR*	*IFR*	*Score*
Fuel calculation completed for flight with reserves for day/night conditions	-1	-1	
Total fuel required for flight with reserves for day/night conditions less 60% of available fuel	-2	-3	
Weight and balance calculated	-1	-1	
Weight within 10% of maximum gross	+2	+2	
Takeoff or landing distance more than 50% of runway length	+2	+2	
Total			

Environment

Factor	*VFR*	*IFR*	*Score*
Visibility 3 to 5 miles	+2	0	
Visibility 1 to 3 miles	+3	0	
Destination visibility less than 1 mile	+20	+1	
Ceilings less than 3,000’ AGL	+3	0	
Destination ceilings less than 1,000’ AGL	+10	+1	
Destination ceilings less than 500’ AGL +20	+1		
Convective activity within 20 NM of flight path	+5	+3	
Convective activity/no storm scope/detection capability	+10	+3	
Convective activity with detection capability	0	-2	
Destination dew point spread less than 3°	+5	+1	
No ice protection equipment, surface temperatures less than 40°F, and low clouds or precipitation	+30	+10	
Icing forecast (AIRMET more than light) at altitude required to fly with ice protection equipment	N/A	+2	
Operational control tower at destination	-2	-2	
VASI/PAPI at destination	-1	-1	
Radar environment at destination	-1	-1	
Mountainous terrain	+3	+3	
Approach/departure over water	+1	+1	
High bird hazard	+1	+1	
Unpaved runway	+1	+1	
IFR and only approach is non-precision	N/A	+2	
Weather reporting at airport	-1	-1	
Precipitation causing obstruction to visibility	+2	+1	
Wet runway	+1	+1	
Ice on runway	+2	+2	
Crosswind 90% of max POH	+2	+2	
Using flight following/radar advisories in high density traffic areas	-1	N/A	
On IFR flight plan during VFR conditions	-1	N/A	
Total			
Grand Total			

	VFR Grand Total	**VFR Action**	**IFR Grand Total**	**IFR Action**
Minimal	Less than 6	Go	Less than 7	Go
Low	6 to 8	Consider alternate actions	7 to 10	Consider alternate actions
Medium	9 to 14	Consult experienced CFI	11 to 15	Consult experienced CFI
High	More than 14	Don’t Go	More than 15	Don’t Go