FITS Generic
Private Pilot ASEL Syllabus

JULY 2021

Version 1.0

TABLE OF CONTENTS

SECTION 1 – INTRODUCTION

How to use this generic FITS Syllabus

This syllabus is an FAA Industry Training Standards (FITS) accepted training method. This generic syllabus is a guide for you to use in developing your specific FITS curriculum. This FITS Syllabus is intended as a guide for aircraft manufacturers, training providers, and flight schools to use in developing a specific FITS curriculum for their aircraft, geographic region, and customer base. This syllabus is unique in several ways. First, it is a syllabus that uses real-world scenarios as the foundation of the training. Flight maneuvers are still a vital part of flight training and flight maneuvers are a part of this syllabus, but the use of real-world scenarios is used to also enhance the pilot's decision making skills. The syllabus presents situations and circumstances that pilots face everyday as learning experiences and lessons. The primary tenant of FITS training is that you prepare for the real world of flying, by acting as a pilot while in training. Therefore, throughout the syllabus, the pilot in training (PT) will take on different tasks or jobs just as if they were already certificated pilots. The second important unique feature of this syllabus and of FITS training is that it is all competency based. When the pilot in training (PT) masters a particular skill area in the syllabus, he/she moves on regardless of how much time it takes to reach that point of mastery. This means that each lesson does not necessarily equal one flight. It may take several flights before the PT masters the elements of the lesson and is ready to move on to the next lesson. Consequently, the amount of total flight hours a PT has when the syllabus is completed may be more or less than the minimum times under current aviation regulations. Please note that FITS training is conducted under the current CFAR's. Although philosophically, FITS is competency based, many training organizations must still require their students to meet the FAA minimum training hours. Courses under CFAR Part 142 and section 141.55(d) may be approved to train to competency and not require a minimum number of hours.

Regulations

This generic syllabus is adaptable to 14 CFR Parts 142, 141, or 61. Please refer to the appropriate regulations for your specific curriculum requirements.

FITS Acceptance

FITS acceptance is achieved by developing your specific curriculum and submitting it to: FITS Program Manager, AFS-840 800 Independence Avenue, SW, Washington DC, 20591 202 -267-8212 *Use of the FITS logo*. Once accepted, 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.

The Four Levels of FITS Acceptance

1. Accepted FITS Flight Syllabus: Will contain all the tenets of FITS and will include flight in an aircraft or at least an Advanced Training Device. Examples of this type of syllabus include initial, transition, and recurrent training syllabi.

2. Accepted FITS Syllabus (No flight): It is not intended to teach the pilot in training (PT) psychomotor pilot skills or full cockpit/aircraft integration in a specific aircraft. It's intended to enhance certain skill sets of the PT. Application of this level of acceptance may be to teach the PT how to use a new glass cockpit display or develop better SRM skills. A FITS Accepted Syllabus will also contain all the tenets of FITS. A live instructor will lead the training.

3. Accepted FITS Self-Learning Program: This acceptance is between the FITS Accepted Syllabus and FITS Supporting Material. It may be either an interactive CD or on-line course on a specific application or subject. The purpose of this training is to learn a specific piece of equipment or enhance a specific higher order thinking skill. Scenario training and/or testing is required. Since a live instructor is not required, Learner Centered Grading may not be applicable.
    a. If the program is for a piece of equipment (i.e. GPS), the equipment should act like the actual piece of equipment during the interaction with the equipment (to a point). After basic training on the equipment, scenarios should be used to demonstrate PT proficiency and knowledge. The program should allow errors and demonstrate the consequences of those errors.
    b. For non equipment programs (i.e. ADM development) scenarios with multi-string testing should be used.

4. Accepted FITS Supporting Material: These products do not meet the training tenets of FITS (i.e. may not be scenario based), but the subject is integral to FITS. These products could be accepted on their own technical merit, but only as a part of an Accepted FITS Flight Syllabus or FITS Syllabus. For example, a CBI on risk management could be accepted as and used as a module in a FITS accepted transition syllabus. Original equipment manufacturers (Cessna, Cirrus, Eclipse, etc.) or developers of training materials (Sporty's, Jeppesen, King Schools, etc.) normally develop Accepted FITS Supporting Material.

SECTION 2 – FITS TERMINOLOGY

Automation Bias – The relative willingness of the pilot to trust and utilize automated systems.
Automation Competence – The demonstrated ability to understand and operate the automated systems installed in the 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 airports in which the aircraft is controlled primarily by the autopilot and the on board navigation systems.
Automation Surprise – Occurs when the automation behaves in a manner that is different from what the operator is expecting.
Candidate Assessment – A system of critical thinking and skill evaluations designed to assess a pilot in training's readiness to begin training at the required level.
Critical Safety Tasks/Events – 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.
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 unanticipated flight into Instrument Meteorological Conditions (IMC) or other life-threatening situations.
IFR Automated Navigation Leg – A leg 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.
Light Turbine TAA –is a jet or turboprop Technically Advance Aircraft (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.
Mission Related Tasks – Those tasks required for safe and effective operations within the aircraft's certificated performance envelope.
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.

Scenario Based Training – SBT is 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 Transition Training," to reflect the specific application.

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

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.

Technically Advanced Aircraft (TAA) – A General Aviation aircraft that contains the following design features: Advanced automated cockpit such as MFD or PFD or other variations of a Glass Cockpit, or a traditional cockpit with GPS navigation capability, moving map display and autopilot. It includes aircraft used in both VFR and IFR operations, with systems certified to either VFR or IFR standards. TAA's may also have automated engine and systems management. **VFR Automated Navigation Leg –** A leg flown on autopilot from 1,000 ft AGL on the departure until entry to the 45-degree leg in the VFR pattern.

SECTION 3 – TRAINING PHILOSOPHY

FITS Training is a scenario-based approach to training pilots. It emphasizes the development of critical thinking and flight management skills, rather than traditional maneuver-based skills. The goal of this training philosophy is the accelerated acquisition of higher-level decision-making skills. Such skills are necessary to prevent pilot-induced accidents.

FITS Training Goals

- Higher Order Thinking Skills
- Aeronautical Decision Making
- Situational Awareness
- Pattern Recognition (Emergency Procedures) and Judgment Skills
- Automation Competence
- Planning and Execution
- Procedural Knowledge
- Psychomotor (Hand-Eye Coordination) Skills
- Risk Management
- Task Management
- Controlled Flight into Terrain (CFIT) Awareness

Previous training philosophies assumed that newly certified pilots generally remain in the local area until their aviation skills are refined. This is no longer true with the advent of Technically Advanced Aircraft (TAA). Offering superior avionics and performance capabilities, these aircraft travel faster and further than their predecessors. As a result, a growing number of entry-level pilots are suddenly capable of long distance/high speed travel—and its inherent challenges. Flights of this nature routinely span diverse weather systems and topography requiring advanced flight planning and operational skills. Advanced cockpits and avionics, while generally considered enhancements, require increased technical knowledge and finely tuned automation competence. Without these skills, the potential for an increased number of pilot-induced accidents is daunting. A different method of training is required to accelerate the acquisition of these skills during the training process.

Research has proven that learning is enhanced when training is realistic. In addition, the underlying skills needed to make good judgments and decisions are teachable. Both the military and commercial airlines have embraced these principles through the integration of Line Oriented Flight Training (LOFT) and Cockpit Resource Management (CRM) training into their qualification programs. Both LOFT and CRM lessons mimic real-life scenarios as a means to expose pilots to realistic operations and critical decision-making opportunities. The most significant shift in these programs has been the movement from traditional maneuver-based training to incorporate training that is scenario-based.

Maneuver-based training emphasizes the mastery of individual tasks or elements. Regulations, as well as Practical Test Standards (PTS), drive completion standards. Flight hours and the ability to fly within specified tolerances determine competence. The emphasis is on development of motor skills to satisfactorily accomplish individual maneuvers. Only limited emphasis is placed on decision-making. As a result, when the newly trained pilot flies in the real-world environment, he or she is inadequately prepared to make crucial decisions. Scenario Based Training (SBT) and Single Pilot Resource Management (SRM) are similar to LOFT and CRM training. However, each is tailored to the pilot's training needs. These techniques use the same individual tasks that are found in Maneuver Based Training, but script them into scenarios that mimic real-life cross-country travel. By emphasizing the goal of flying safely, the pilot in training correlates the importance of individual training maneuvers to safe mission accomplishment. In addition, the instructor continuously interjects "What If?" discussions as a means to provide the trainee with increased exposure to proper decision-making. Because the "What If?" discussions are in reference to the scenario, there is a clear connection between decisions made and the final outcome. The "What If?" discussions are designed to accelerate the development of decision-making skills by posing situations for the pilot in training to consider. Once again, research has shown these types of discussions help build judgment and offset low experience.

Questions or situations posed by the instructor must be open-ended (rather than requiring only rote or one-line responses). In addition, the instructor guides the pilot in training through the decision process by: 1) Posing a question or situation that engages the pilot in training in some form of decision-making activity. 2) Examining the decisions made. 3) Exploring other ways to solve the problem. 4) Evaluating which way is best. For example, when the pilot in training is given a simulated engine failure, the instructor might ask questions such as: "What should we do now?" Or, "Why did you pick that place to land?" Or, "Is there a better choice?" Or, "Which place is the safest?" Or, "Why?" These questions force the pilot in training to focus on the decision process. This accelerates the acquisition of improved judgment, which is simply the decision-making process resulting from experience. It is not innate. All of our life experiences mold the judgment tendencies we bring to our flight situations. By introducing decision-making opportunities into routine training lessons, we speed-up acquisition of experience, thus enhancing judgment.

For further information, please reference "Aeronautical Decision Making" in the FAA Aviation Instructor's Handbook.

SECTION 4 – TEACHING METHODS

Scenario Based Training (SBT)

For Scenario Based Training (SBT) to be effective, it is vital that the pilot in training and the Instructor communicate the following information well in advance of every training flight:

Purpose of flight
Scenario destination(s)
Desired pilot in training learning outcomes
Desired level of pilot in training performance
Desired level of automation assistance
Possible in-flight scenario changes (during later stages of the program)

With the guidance of the Instructor, the pilot in training should make the flight scenario as realistic as possible. This means the pilot in training will know where they are going and what will transpire during the flight. While the actual flight may deviate from the original plan, it allows the pilot in training to be placed in a realistic scenario.

Scenario Planning – Prior to the flight, the Instructor will brief the scenario to be planned. The Instructor will review the plan and offer guidance on how to make the lesson more effective. Discussion, in part, will reflect ways in which the Instructor can most effectively draw out a pilot in training's knowledge and decision processes. This enables the Instructor to analyze and evaluate the pilot in training's level of understanding. After discussion with the Instructor, the pilot in training will plan the flight to include:

Reason to go flying
Route
Destination(s)
Weather
Notams
Desired pilot in training learning outcomes
Possible alternate scenarios and emergency procedures

Example of Scenario Based Training

Consider the following example: The Instructor provides a detailed explanation on how to control for wind drift. The explanation includes a thorough coverage of heading, speed, angle of bank, altitude, terrain, and wind direction plus velocity. The explanation is followed by a demonstration and repeated practice of a specific flight maneuver, such as turns around a point or S turns across the road until the maneuver can be consistently accomplished in a safe and effective manner within a specified limit of heading, altitude, and airspeed**. *At the end of this lesson, the pilot in training is only capable of performing the maneuver.***

Now, consider a different example: The pilot in training is asked to plan for the arrival at a specific uncontrolled airport. The planning should take into consideration the possible wind conditions, arrival paths, airport information and communication procedures, available runways, recommended traffic patterns, courses of action, and preparation for unexpected situations. Upon arrival at the airport the pilot in training makes decisions (with guidance and feedback as necessary) to safely enter and fly the traffic pattern. This is followed by a discussion of what was done, why it was done, the consequences, and other possible courses of action and how it applies to other airports. ***At the end of this lesson the pilot in training is capable of explaining the safe arrival at any uncontrolled airport in any wind condition.***

The first example is one of traditional learning, where the focus is on the maneuver. The second is an example of scenario-based training, where the focus is on real world performance. Many learning developers in flight training have built on the former option. Traditional training methods in many instances are giving way to more realistic and fluid forms of learning. The aviation industry is moving from traditional knowledge-related learning outcomes to an emphasis on increased internalized learning in which learners are able to assess situations and appropriately react. Knowledge components are becoming an important side effect of a dynamic learning experience.

Reality is the ultimate learning situation and scenario-based training attempts to get as close as possible to this ideal. In simple terms, scenario-based training addresses learning that occurs in a context or situation. It is based on the concept of situated cognition, which is the idea that knowledge cannot be known and fully understood independent of its context. ***In other words, we learn better, the more realistic the situation is and the more we are counted on to performs.***

Michael Hebron, a well-known golf instructor, suggests that there is little the expert can do in the way of teaching the learner particular motions of the golf swing. Instead, learning has to be experiential and feedback based; only a handful of basic principles are involved. The same goes, he says, for any and all kinds of learning. ***“It’s about learning, not about golf.”***

Scenario-based training (SBT) is similar to the experiential model of learning. The adherents of experiential learning are fairly adamant about how people learn. **They would tell us that learning seldom takes place by rote.** Learning occurs because we immerse ourselves in a situation in which we are forced to perform. We get feedback from our environment and adjust our behavior. We do this automatically and with such frequency in a compressed timeframe that we hardly notice we are going through a learning process. Indeed, we may not even be able to recite particular principles or describe how and why we engaged in a specific behavior. Yet, we are still able to replicate the behavior with increasing skill as we practice. If we could ask Mark MacGuire to map out the actions that describe how he hits a home run, he would probable look at us dumbfounded and say, “I just do it.” On the other hand, I am sure Mark MacGuire could describe in detail the size and characteristics of every one of the baseball diamonds he was playing in as well as the strengths, weaknesses and common practices of every one of the pitchers he faced.

Developing Scenario-Based Training

Scenario-based training best fits an open philosophy of blended and multiple learning solutions in which change and experience are valued and the lines between training and performance improvement are blurred. For scenario-based training to be effective it must generally follow a performance improvement imperative. The focus is on improved outcomes rather than the acquisition of knowledge and skills. Success requires a blended, performance-based, and reinforced solution.

An athletic exercise such as Basketball might prove to be a very good example. Clearly, the team's objective is to win, which means scoring more points than the other team. That's the performance objective. Each member of the team also has personal performance goals. The coach can stand at a blackboard and explain defensive and offensive diagrams with players, the rules of the game, and so forth. By doing that, he has identified a set of learning subjects (rules and play patterns) that are best delivered in a traditional fashion.

On the other hand, the application of these subjects and the level of proficiency required in their use can only be learned on the court. The scenario in this example is a scrimmage. During a typical scrimmage, experienced players are mixed with non-experienced players and matched against a similarly constituted practice team. The two teams play a game, and the coaches stop the action at appropriate intervals to offer feedback. Learning takes place in a highly iterative fashion often without the player realizing that specific bits of learning are taking place. The scrimmage provides a player with the opportunity to make several decisions, engage in complex and fast-paced behaviors, and immediately see impact. The coach may have some general ideas of basketball in mind and perhaps some specific learning objectives for the day, but in most cases does not know precisely which of them will be addressed during the scrimmage – that depends on the flow of practice.

Similarly, most flight training consists of both kinds of subjects: those amenable to traditional instructional design techniques and those better approached through scenario-based training. Neither is all that useful without the other. Before a learner can engage in a scenario, he or she needs some basic subject knowledge and skill. However, the strongest adherents of the scenario-based approach suggest very little subject knowledge is needed in order to take advantage of SBT. **The main point is that knowledge without application is worth very little.**

The first step in the scenario design process is to engage a number of subject matter experts in a series of discovery sessions and interactive meetings for the purpose of identifying issues and learning objectives including higher-level and performance objectives. With clearly identified learning objectives, appropriate techniques and where to use they can be specified. In the basketball example, players need some rudimentary knowledge of the game and basic skill in order to make the practice session efficient and effective. Consequently, the required knowledge and skill objects need to be integrated into the actual sessions of practice. So, like a train pulling a number of

boxcars, a traditional piece of learning precedes or is integrated into a scenario, with the scenario dictating what information is covered in the traditional piece. If, as described in the scrimmage session above, you don't precisely know what will come up in the practice, you shouldn't waste time in the traditional preparation. It's more efficient to share very basic principles and devote your resources to preparing to teach any situation that may arise. What is important, however, is to establish the boundaries of the scenarios. These are done using performance-based learning objectives (Internalized Responses) as opposed to knowledge-based learning objectives, and are worded as performance objectives rather than skill-based behavior objectives.

For example, in the traditional, more repetitive, intensive flight training sessions, objectives are knowledge-based and tend to be specific and limited. On the other hand, in scenario-based training we are simply trying to determine whether the learner has the minimum necessary knowledge/skill to qualify for the scenario. With scenario-based objectives, we are looking for performance behaviors and indicators of internalized responses, which are usually situational recognition indicators.

We can see this clearly illustrated in an automobile driver-training example (Table 1). The traditional Behavior (skill) objective is knowledge based and the SBT Performance objective is performance-based (responses which are situational recognition indicators).

Table 1: Driving Learning Objectives

Knowledge		**Behavior (Skill)**
Traditional	Know what a STOP sign and a Railroad crossing sign look like and what they mean. Describe the correct parallel parking procedure	Drive an automatic shift car on a county road over a 2-mile route with one RR crossing and 2 full stops. Maneuver the automobile into a normal parallel parking space between 2 other cars.
Internalized Response		**Performance**
Scenario-Based	Appropriately apply the rules of the road for driving in the local area in moderate traffic. Determine the shortest route and apply the appropriate procedures for driving in heavy and complex traffic conditions.	Drive from your garage to the Shopping Center on the same side of town Drive from your garage to a specified address in another town over 50 miles away on the Interstate and an Expressway system.

Scenario design sessions should resemble focus groups in which participants work through a series of issues, from broad scenario outlines to very specific scenario details. Direct participants to address two general areas: content and style.

Sessions to determine content usually ask participants to:

- Share experiences about the subject event
- Describe desirable outcomes
- Share best practices or known instances of consistent achievement of the desired outcomes
- Create indicators of successful outcomes
- Create strategies expected to lead to successful outcomes
- Establish descriptions of successful and unsuccessful performance behaviors related to these strategies (note that outcome measures and performance behaviors will constitute the evaluative criteria for assessing performance in the scenario).

After the content discussion, ask participants to review the look, feel, and flow of the scenario. This is much like the process used for instructional design. Develop a storyboard with a general beginning and end, using the boundaries established earlier. Talk through the scenario in the session and, through iteration, create a flow script from the results.

With these two elements in place, you can begin the actual construction of the scenario. A subcommittee of Flight Instructors and subject matter experts (SMEs) should review and revise the scenario to fit into the whole course of instruction.

Scenarios are meant to be real situations. In an ideal world, an assessment team would evaluate behavior and agree on several critical performance dimensions. The key indicators should come from the initial SMEs, in which they also create strategies expected to lead to successful outcomes and establish descriptions of successful and unsuccessful performance behaviors. Outcome measures and performance behaviors will constitute the evaluative criteria for assessing performance in the scenario.

Examples of indicators of successful outcomes are whether an airplane arrived and was secured at the destination airport and how safe were all aspects of the flight or were there any regulatory violations. Strategies are clusters of internally consistent behaviors directed toward the achievement of a goal. Performance behaviors are the key behaviors in those strategies. Establishing these dimensions should be a group process and is usually completed in the subject matter expert design session.

Review, obtain learner feedback, and revise**.** All learning, even the most traditional, is iterative. The key to creating a useful scenario is to see it as a learning experience for the designers as well as the learners. This means that results and comments about the learning experience are shared with the SMEs and the designer so that they can review and modify the scenarios as necessary. Obtain open –ended qualitative data from the learner and the Flight Instructor about the experience and review the data with the SME's and the designer.

Based on this kind of feedback, scenarios can be revised to better target the learner population. That process mirrors the original design steps. There are some cautions,

however, in the revision process. First, there is an old saying: “It doesn’t take a cannon to blow away a tin can.” Basically, revisions should not needlessly complicate the scenario or the technology needed to employ it. It is crucial to weigh the risks of complication against the genuine learning needs. Before any revision, affirm the original purpose statement and the categorization of learning elements.

Also, do not let principles and main points become diluted by revisions. It is tempting to add more items and nuances in a scenario, but doing so further complicates the learning process. Save complexity for a full-scale “capstone” experience. Remember, adding an item in traditional learning complicates the learning process in a linear fashion. In scenarios, complication grows non-linearly with the addition of learning items. So, beware. A rule of thumb is to reduce rather than increase principles and main points in a revision.

Always review success and failure paths for realism. Remember that any change in a scenario item complicates all items on the path following it. Any time a decision node is altered, chances are that the decision nodes and information items following it must change. With every revision, follow and ensure the consistency of associated paths.

Finally, remember that traditional learning elements should service the scenario-based learning elements, which are situated in a real context and based on the idea that knowledge cannot be known and fully understood independent of its context. It is essential to place boundaries around scenarios to make the transitions between scenarios and traditional learning as efficient as possible.

Table 2: The Main Points

- Scenario-based training (SBT) is situated in a real context and is based on the idea that knowledge cannot be known and fully understood independent of its context.
- SBT accords with a performance improvement and behavior change philosophy of the learning function.
- SBT is different from traditional instructional design and one must be aware of the differences to successfully employ SBT.
- All learning solutions should employ both traditional and scenario-based training.
- Traditional learning elements should service the scenario-based training elements.
- It is essential to place boundaries around scenarios to make the transitions between scenarios and traditional learning as efficient as possible.
- Use interactive discovery techniques with subject matter experts (SMEs) and designers to establish the purpose and outcomes of scenarios create the scenarios and appropriate strategies and performance behaviors, and develop learner evaluation criteria.
- SBT occurs by following success and failure paths through a realistic situation. Typically, these paths must be limited to stress the main learning objective. Otherwise the scenario can become too complex and unwieldy.
- Open-ended qualitative learner feedback is key to successful scenario revision, but revisions should not further complicate the scenario unless highly justified.

Kindley, R. (2002). *Scenario-Based E-Learning: A Step Beyond Traditional E-Learning.* Retrieved 02/02/05 from http://www.learningcircuits.org/2002/may2002/kindley.html

Single Pilot Resource Management

The art and science of managing all the resources (both on-board the aircraft and from outside sources) available to a single-pilot (prior and during flight) to ensure that the successful outcome of the flight is never in doubt. Most of us remember a favorite Instructor from our past that showed us the best way to solve in-flight problems and unforeseen circumstances. The FITS team has combined much of this collective CFI body of knowledge with some innovative teaching methods to give pilots practical tools to teach aeronautical decision-making and judgment. It is called Single Pilot Resource Management (SRM). SRM includes the concepts of Aeronautical Decision Making (ADM), Risk Management (RM), Task Management (TM), Automation Management (AM), Controlled Flight Into Terrain (CFIT) Awareness, and Situational Awareness (SA). SRM training helps the pilot maintain situational awareness by managing the automation and associated aircraft control and navigation tasks. This enables the pilot to accurately assess and manage risk and make accurate and timely decisions. ***This is what SRM is all about, helping pilots learn how to gather information, analyze it, and make decisions.***

Teaching pilots to identify problems, analyze the information, and make informed and timely decisions is one of the most difficult tasks for Instructors. By way of comparison, the training of specific maneuvers is fairly straightforward and reasonably easy to understand. We explain, demonstrate, and practice a maneuver until proficiency is achieved. We are teaching the pilot in training ***"what to think"*** about each maneuver and sign them off when they demonstrate proficiency. Teaching judgment is harder. Now we are faced with teaching the pilot in training ***"how to think"*** in the endless variety of situations they may encounter while flying out in the "real world." Often, they learn this by watching Instructors. They observe reactions, and more importantly, actions, during flight situations and they often adapt the styles of the Instructor to their own personalities.

The SRM scenarios, developed by the FITS team, incorporate several maneuvers and flight situations into realistic flight scenarios. The scenarios are much like the Line Oriented Flight Training (LOFT) employed by the major corporate and airline training organizations for years. Pilots in training may range from 100-hour VFR-only pilots, all the way to multi-thousand hours ATP's. The strength of this format is that the participants learn not only from their Flight Instructor, but from each other as well. The collective knowledge of many pilots, when guided by an experienced CFI, is much greater than the knowledge of each participant, including the Flight Instructor. In these scenarios, there are no right answers, rather each pilot is expected to analyze each situation in light of their experience level, personal minimums, and current physical and mental readiness level, and make their own decision.

Table 3: Single Pilot Resource Management (SRM

Performance The training task is:	**Standards** The pilot in training will:	**Conditions** The training is conducted during:
1. Task Management (TM)	Prioritize and select the most appropriate tasks (or series of tasks) to ensure successful completion of the training scenario.	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.
2. Automation Management (AM)	Program and utilize the most appropriate and useful modes of cockpit automation to ensure successful completion of the training scenario.	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.
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.	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.
4. Situational Awareness (SA)	Be aware of all factors such as traffic, weather, fuel state, aircraft mechanical condition, and pilot fatigue level that may have an impact on the successful completion of the training scenario.	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.
5. Controlled Flight Into Terrain (CFIT) Awareness	Understand, describe, and apply techniques to avoid CFIT encounters: a. During inadvertent encounters with IMC during VFR flight. b. During system and navigation failures and physiological incidents during IFR flight.	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.

The “5P” Check

SRM sounds good on paper, however, it requires a way for pilots to understand and deploy it in their daily flights. This practical application is called the “Five P’s (5P’s)” The 5P’s consist of “the Plan, the Plane, the Pilot, the Passengers, and the Programming”. Each of these areas consists of a set of challenges and opportunities that face a single pilot. And each can substantially increase or decrease the risk of successfully completing the flight based on the pilot’s ability to make informed and timely decisions. The 5P’s are used to evaluate the pilot’s current situation at key decision points during the flight, or when an emergency arises. These decision points include, pre-flight, pre-takeoff, hourly or at the midpoint of the flight, pre-descent, and just prior to the final approach fix or landing.

The 5P’s are based on the idea that the pilots have essentially five variables that impact his or her environment and that can cause the pilot to make a single critical decision, or several less critical decisions, that when added together can create a critical outcome. These variables are the Plan, the Plane, the Pilot, the Passengers, and the Programming. The authors of the FITS concept felt that current decision-making models tended to be reactionary in nature. A change has to occur and be detected to drive a risk management decision by the pilot. For instance, many pilots ascribe to the use of risk management sheets that are filled out by the pilot prior to takeoff. These catalog risks that may be encountered that day and turn them into numerical values. If the total exceeds a certain level, the flight is altered or cancelled. Informal research shows that while these are useful documents for teaching risk factors, they are almost never used outside of formal training programs. The number of pilots who use them before each and every flight approaches zero. The 5P concept is an attempt to take the information contained in those sheets, and in the other available models and operationalize it.

The 5P concept relies on the pilot to adopt a “scheduled” review of the critical variables at points in the flight where decisions are most likely to be effective. For instance, the easiest point to cancel a flight due to bad weather is before the pilot and passengers walk out the door and load the aircraft. So the first decision point is Pre-Flight in the flight planning room, where all the information is readily available to make a sound decision, and where communication and FBO services are readily available to make alternate travel plans.

The second easiest point in the flight to make a critical safety decision is just prior to takeoff. Few pilots have ever had to make an “emergency take-off”. While the point of the 5P check is to help you fly, the correct application of the 5P before takeoff is to assist in making a reasoned go-no-go decision based on all the information available. That decision will usually be to “go”, with certain restrictions and changes, but may also be a “no-go”. The key point is that these two points in the process of flying are critical go-no go points on each and every flight.

The third place to review the 5Ps is at the mid point of the flight. Often, pilots may wait until the ATIS is in range to check weather, yet at this point in the flight many good

options have already passed behind the aircraft and pilot. Additionally, fatigue and low altitude hypoxia serve to rob the pilot of much of their energy by the end of a long and tiring flight day. This leads to a transition from a decision-making mode to an acceptance mode on the part of the pilot.

The last two decision points are just prior to decent into the terminal area and just prior to the final approach fix as preparations for landing commence. Most pilots execute approaches with the expectation that they will land out of the approach every time. A healthier approach requires the pilot to assume that changing conditions (the 5Ps again) will cause the pilot to divert or execute the missed approach on every approach. This keeps the pilot alert to all manner of conditions that may increase risk and threaten the safe conduct of the flight. Diverting from cruise altitude saves fuel, allows unhurried use of the autopilot, and is less reactive in nature. Diverting from the final approach fix, while more difficult, still allows the pilot to plan and coordinate better, rather than executing a futile missed approach. Now lets look in detail at each of the “Five P’s”.

The Plan

The “Plan” can also be called the mission or the task. It contains the basic elements of cross country planning, weather, route, fuel, publications currency, etc. Unlike risk management sheets that pilot fill out before a flight, the “Plan” should be reviewed and updated several times during the course of the flight. A delayed takeoff due to maintenance, fast moving weather, and a short notice Temporary Flight Restriction (TFR) may all radically alter the plan. Several excellent flight planning software packages are available that automate this process, allowing the pilot additional time to evaluate and make decisions. Some include real time and graphical TFR depictions. The “plan” is not just about the flight plan, but the entire days events surrounding the flight and allowing the pilot to accomplish the mission. The plan is always being updated and modified and is especially responsive to changes in the other four remaining P’s. If for no other reason, the 5P check reminds the pilot that the day’s flight plan is a “living” document, subject to change at any time.

Obviously the weather is a huge part of any “plan.” The addition of real time data link weather information give the TAA pilot a real advantage in inclement weather, but only if the pilot is trained to retrieve, and evaluate the weather in real time without sacrificing situational awareness. And of course, weather information should drive a decision, even if that decision is to continue on the current “plan.”

The Plane

Both the “plan” and the “plane” are fairly familiar to most pilots. The “plane” consists of the usual array of mechanical and cosmetic issues that every aircraft pilot, owner, or operator can identity. However, with the advent of the Technically Advanced Aircraft (TAA), the “plane” has expanded to include database currency, automation status, and emergency backup systems that were unknown a few years ago. Much has been written about single pilot IFR flight both with, and without, an autopilot. While this is a personal decision, it is just that, a decision. Low IFR in a non-autopilot equipped aircraft may depend on several of the other “P’s” we will discuss. Pilot proficiency, currency,

and fatigue are among them. The TAA offers many new capabilities and simplifies the basic flying tasks, but only if the pilot is properly trained and all the equipment is working as advertised.

The Pilot

This is an area all pilots are learning more and more about each day. Technically Advanced Aircraft (TAA), especially when used for business transportation, expose the pilot to more high altitude flying, long distance and endurance, and more challenging weather simply due to their advanced capabilities. The traditional “IMSAFE” checklist is a good start. However, each of these factors must be taken in consideration of the cumulative effect of all of them together and the insidious effects of low altitude hypoxia. The authors informal survey of TAA pilots show that almost half fly with pulse oxymeters to display the effects of low altitude hypoxia in a graphic manner.

The combination of late night, pilot fatigue, and the effects of sustained flight above 5,000 feet may cause pilots to become less discerning, less critical of information, less decisive and more compliant and accepting. Just as the most critical portion of the flight approaches (for instance a night instrument approach, in the weather, after a four hour flight) the pilot’s guard is down the most. The “5P” process emphasizes that pilot recognize the physiological situation they are placing themselves in at the end of the flight, before they even takeoff, and continue to update their condition as the flight progresses. Once identified, the pilot is in an infinitely better place to make alternate plans that lessen the effect of these factors and provide a safer solution.

The Passengers

One of the key differences between CRM and SRM is the way passengers interact with the pilot. In the airline industry the passengers have entered into a contractual agreement with the pilots company with a clearly defined set of possible outcomes. In corporate aviation, the relationship between crew and passengers is much closer, yet is still governed by a set of operating guidelines and the more formal lines of corporate authority. However, the pilot of a highly capable single engine aircraft has entered into a very personal relationship with the passengers, in fact, they sit within an arms reach all of the time.

It may be easy, especially in business travel, for the desire of the passengers to make airline connections or important business meetings to enter into the pilot’s decision-making loop. If this is done in a healthy and open way, it is a very positive thing. However, this is not always the case. For instance, imagine a flight to Dulles Airport and the passengers, both close friends and business partners, need to get to Washington D.C. for an important meeting. The weather is VFR all the way to southern Virginia then turns to low IFR as the pilot approaches Dulles. A pilot employing the 5P approach might consider reserving a rental car at an airport in northern North Carolina or southern Virginia to coincide with a refueling stop. Thus, the passengers have a way to get to Washington, and the pilot has an out to avoid being pressured into continuing the flight if the conditions do not improve.

Passengers can also be pilots. The old joke says that when four Certified Flight Instructors (CFI) board a light general aviation, a NOTAM should be posted. There is some truth to this. If no one is designated as pilot in command and unplanned circumstances arise, the decision-making styles of four self confident CFI's may come into conflict. Another situation arises when an owner pilot flies with a former CFI in the right seat on a business trip. Unless a clear relationship is defined and briefed prior to the flight, the owner pilot may feel some pressure to perform for the Individual Learning Manager (possibly beyond his or her capability), and the Individual Learning Manager may feel inhibited from intervening in small decisions until it is clearly evident that the pilot is making poor decisions. This is actually a CRM situation and requires clear pre-flight understanding of roles, responsibilities, and communication. Non-Pilots can also cause the pilot to review the SRM process.

Pilots need to understand that non-pilots may not understand the level of risk involved in the flight. There is an element of risk in every flight. That's why SRM calls it risk management not risk elimination. While a pilot may feel comfortable with the risk present in a night IFR flight, the passengers may not and may manifest this during the flight. The human reaction to fear and uncertainty is as varied as the shapes of our ears. Some become quiet, some talk incessantly, and in extreme cases anger and fear are strongly manifested. This may be the last thing the pilot needs to deal with while shooting the ILS to 400 feet and a mile visibility at midnight.

The Programming

A pilot employing SRM should ensure that the passengers are involved in the decision-making and given tasks and duties to keep them busy and involved. If, upon a factual description of the risks present, the passengers decide to buy an airline ticket or rent a car, then a good decision has generally been made. This discussion also allows the pilot to move past what he or she "thinks" the passengers want to do and find out what they "actually" want to do. This removes a load of self-induced pressure from the pilot.

The TAA adds an entirely new dimension to the way General Aviation aircraft are flown. The Glass Cockpit, GPS, and Autopilot are tremendous boons to reduce pilot workload and increase pilot situational awareness. And frankly, the programming and operation of these devises is fairly simple and straightforward. However, unlike the analog instruments they replace, they tend to capture the pilot's attention and hold it for long periods of time (like a desktop computer). To avoid this phenomenon, the pilot should plan in advance when and where the programming for approaches, route changes, and airport information gathering should be accomplished...as well as times it should not. Pilot familiarity with the equipment, the route, the local air traffic control environment, and their own capabilities vis-à-vis the automation should drive when, where, and how the automation is programmed and used.

The pilot should also consider what his or her capabilities are in response to last minute changes of the approach (and the reprogramming required) and ability to make large-scale changes (a re-route for instance) while hand flying the aircraft. Since formats are not standardized, simply moving from one manufacturer's equipment to another should give the pilot pause and require more conservative planning and decisions.

The SRM Decision Process

The SRM process is simple. At least five times, before and during the flight, the pilot should review and consider the "Plan, the Plane, the Pilot, the Passengers, and the Programming" and make the appropriate decision required by the current situation. It is often said that failure to make a decision is a decision. Under SRM and the 5P's, even the decision to make no changes to the current plan, is made through a careful consideration of all the risk factors present.

Example of Single Pilot Resource Management

The teaching of SRM is best accomplished in a seminar environment. Recently, the authors conducted a set of classroom seminars that presented real time flight scenarios to a room full of qualified pilots of varied experiences. The first scenario presented was a night MVFR/IFR flight from St Augustine Florida to Washington Dulles Airport. The original **"Plan"** called for a non-stop flight with a 45-minute fuel reserve. The **"Plane"** was a well-equipped TAA with a minor navigation light problem that delayed departure by an hour. The **"Passengers"** were one pilot and one non-pilot. The non-pilot seemed nervous about the trip and a little ill. Both passengers needed to get to Washington DC for an important meeting the next day. The **"Pilot"** had spent a full day at a flight refresher clinic, including a two-hour flight and a three-hour class, and felt reasonably refreshed at the 5 PM departure time. And finally, the GPS/MFD, the "**Programming**," combination looked like it would make the flight a snap. However, there were questions about the currency of the database that required the pilot's attention.

The discussion that followed revolved around the reliability of the weather data, the fatigue of the pilot landing at Dulles at 9 PM, alternate ways to get the passengers to their meeting, minimum requirements for aircraft night flight, and a more complete understanding of the benefits and challenges posed by GPS programming and database currency. The 5p's ensured that each pilot looked at the entire picture prior to making the critical decisions that would lay the groundwork for success or failure over four hours later in Washington.

Predictably, the destination weather deteriorated slowly as the flight proceeded northbound. The pilot's fatigue level, low altitude/long duration hypoxia, a succession of minor annoyances caused by the airplane and the passengers, began to become a factor. Again, the pilots applied the 5p's, and many decided to land short of Washington Dulles, check the weather, and secure a rental car as a backup for the Monday morning meeting (in fact many decided this prior to takeoff).

For the purposes of the discussion, this aircraft was equipped with a ballistic parachute system. For those that proceeded to Dulles, the scenario ended with a spatial disorientation incident at 1500 feet, 10 miles short of the airport caused by pilot fatigue, latent hypoxia, and failure to use the autopilot. For many, it was the first time they had considered all the options available, and the criticality of quick and accurate decisions. In the background, another Individual Learning Manager began calling out altitudes and speeds as the aircraft descended to the ground, providing an added dose of realism and pressure. Should the class initiate an unusual attitude recovery, and if it did not work should they attempt another? How much will the passengers help or hinder the pilots thought processes? When, and how, should the ballistic parachute system be deployed, and what are its limitations. This scenario sparked questions about the capabilities and limitations of the autopilot, cockpit automation, and the parachute system. More importantly, it caused the pilots in the room to examine how they should gather critical information, assess the risks inherent in the flight, and take timely action. All agreed that a few accurate decisions before and during the early part of the flight reduced the risk to pilot and passengers.

All these questions were discussed in a lively thirty-minute session following the scenario. In this type of Scenario Based Training, the group discussion is just as important as the actual situation, for it is during the discussion that the pilots are most ready to learn, and begin to develop a mental model of how they might react to situations. Instead of encountering a once in a lifetime, life or death, situation alone on the proverbial dark and stormy night, the participants could examine how the situation had developed, understand the options available to them, and begin to develop a general plan of action well ahead of time.

Learner Centered Grading

The third component of the FITS training method, following each flight scenario, is to use the concept of “learner-centered grading.” Learner centered grading includes two parts: learner self assessment and a detailed debrief by the instructor. The purpose of the self assessment is to stimulate growth in the learner’s thought processes and, in turn, behaviors. The self-assessment is followed by an in-depth discussion between the instructor and the pilot in training which compares the instructor ratings to the pilot in training’s self-assessment.

To improve learning, it is recommended that learners prepare to learn from their experiences both before and after key events. This preparation should increase learning and enhance future performance. Pre-briefs are essential for setting goals. During key events, especially those that require high levels of attention, there may be little time for learning; most individuals allocate the bulk of their cognitive resources to performing the actual task; however, they may also dedicate some cognitive resources to self-monitoring, learning, and correction.

How facilitation and feedback occur is important to the learning process. In order for feedback to be useful for both informational and motivational purposes, it should be designed systematically. For example, the facilitator (Flight Instructor) should avoid lecturing the learner, and should withhold their observations and opinions of the exercise until the learner has given their opinion. The use of closed-ended questions may stymie the usefulness of the feedback process as well, as they encourage one-word/yes/no types of answers that do not elicit opinions of performance or suggestions for improvement. It is more effective to use open-ended questions that probe the learner to assess their own performance. Allotting enough time for the feedback is also important. Debriefs that are rushed often turn into one-way “lectures” due to time constraints. Referring to prior pre-briefs when conducting subsequent debriefs provides a sense of continuity, reliability, and consistency, all of which are desirable attributes of a feedback source. Reminding learners of goals and lessons learned from prior exercises helps them plan for future events. Learners may also be more receptive to feedback during a debrief if they were appraised of the goal criteria in a pre-brief.

The FITS approach utilizes scenarios to teach Single Pilot Resource Management (SRM) while simultaneously teaching individual tasks such as landings and takeoffs. The authors quickly realized that this required a new approach to the pilot in training's performance measurement. Traditional grading approaches are generally teacher centered and measure performance against an empirical standard. The following example of a traditional flight syllabus demonstrates.

Table 4: A Traditional Grading Scale

FI1□Excellent - the pilot in training has performed in an excellent manner FI1□Good – the pilot in training has exceeded basic requirements FI1□Satisfactory – the pilot in training has met basic standards FI1□Marginal – the pilot in training has failed to perform the task standards FI1□Unsatisfactory – the pilot in training has demonstrated significant performance difficulties

Table 5: A Traditional Lesson

Lesson Tasks	Lesson Sub Tasks	Lesson Grading
FI1□Flight Planning	FI1□Flight Planning FI1□Weight and Balance and Aircraft Performance Calculations	FI1□U, M, S, G, E FI1□U, M, S, G, E
FI1□Normal Preflight and Cockpit Procedures	FI1□Normal Pre-Takeoff Checklist Procedures FI1□GPS/Avionics Programming FI1□MFD /PFD Setup	FI1□U, M, S, G, E FI1□U, M, S, G, E FI1□U, M, S,

This type of grading scale (See Table 4) is in wide use throughout the aviation training industry. While it appears to be based on published standards, in reality it is often used as a tool to determine pilot in training progress and provide motivation. Thus, on the first lesson a pilot in training may receive an “Excellent” grade for attempting to plan the flight and accomplishing the weight and balance with a few minor errors. However, by the third flight, that same performance may only earn a “Satisfactory” grade due to lack of pilot in training progress (***note that while performance remained the same, the grade changed***). Additionally, the Flight Instructor awards the grade based on his or her observation of the pilot in training's performance. This observation, while accurate, may not be based on an understanding of the pilot in training’s level of knowledge and understanding of the task. Lastly, the pilot in training has been conditioned since grade school to look at grades as a reward for performance and may feel that there is a link between grades earned and their self-esteem. In reality, none of this aids pilot in training performance in any meaningful way.

The learner centered grading approach addresses the above concerns. First, the grade is now a “Desired Scenario Outcome.” These outcomes describe pilot in training-learning behavior in readily identifiable and measurable terms. They reflect the pilot in training’s ability to see, understand, and apply the skills and tasks that are learned to the scenario.

For instance, a pilot in training who can “explain” a successful landing has achieved the basic level of competence to begin the learning process. Once the pilot in training can “explain” the effect of crosswind and speed reduction on rudder effectiveness, they have achieved a level of learning that will allow for meaningful “Practice.” The “Perform” level denotes unsupervised practice and

self-correction of errors. These grades are equally applicable to the first scenario to the last since they are not lesson dependent.

The grade of “Manage/ Decide” is used solely for SRM grading and the grade of “Perform” is used solely for task grading. A pilot in training who is becoming proficient at aeronautical decision-making and risk management would be graded first at the “Explain” level, then at the “Practice”, and finally at the “Manage/Decide” level. A Manage/Decide or Perform grade does not describe perfection. Rather, these grades simply show a proficient pilot who corrects their own errors so that the outcome of the flight is never in doubt. Realistically, this is the performance level we desire. All pilots make mistakes, it is in learning to identify and correct mistakes that they become proficient pilots.

Desired Outcomes

The objective of scenario-based training is a change in the thought processes, habits, and behaviors of the pilot in training 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 pilot in training outcomes.

(a) Maneuver Grades (Tasks)

- 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 PT will be able to describe the scenario activity and understand the underlying concepts, principles, and procedures that comprise the activity. *Significant instructor effort will be required to successfully execute the maneuver.*
- Practice – at the completion of the scenario the pilot in training will be able to plan and execute the scenario. *Coaching, instruction, and/or assistance from the CFI will correct deviations and errors identified by the CFI.*
- Perform – at the completion of the scenario, the PT will be able to perform the activity without assistance from the CFI. *Errors and deviations will be identified and corrected by the PT 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 PT is satisfactorily demonstrating proficiency in traditional piloting and systems operation skills)
- Not Observed – Any event not accomplished or required

(b) Single Pilot Resource Management (SRM) Grades

- Explain – the pilot in training can verbally identify, describe, and understand the risks inherent in the flight scenario. *The pilot in training will need to be prompted to identify risks and make decisions.*
- Practice –the pilot in training is able to identify, understand, and apply SRM principles to the actual flight situation. *Coaching, instruction, and/or assistance from the CFI will quickly correct minor deviations and errors identified by the CFI.* The pilot in training will be an active decision maker.
- Manage/Decide - the pilot in training 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

Grading will be conducted independently by the pilot in training and the instructor, and then compared during the post flight critique.

Learner centered grading (outcomes assessment) is a vital part of the FITS concept. Previous syllabi and curriculum have depended on a grading scale designed to maximize pilot in training 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 needs of the pilot in training. The learner centered grading described above is a way for the instructor and pilot in training to determine the pilot in training’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. Describe, explain, and practice are used to describe pilot in training learning levels below proficiency in both.

Grading should be progressive. During each flight, the pilot in training should achieve a new level of learning (e.g. flight one, the automation management area, might be a “describe” item by flight three a “practice” item, and by flight five a “manage-decide” item.

An Example of Learner Centered Grading

Immediately after landing, and before beginning the critique, Flight Instructor Linda asks her pilot in training Brian to grade his performance for the day. Being asked to grade himself is a new experience but he goes along with it. The flight scenario had been a two-leg IFR scenario to a busy class B airport about 60 miles to the east. Brian had felt he had done well in keeping up with programming the GPS and the MFD until he reached the approach phase. He had attempted to program the ILS for runway 7L and had actually flown part of the approach until ATC asked him to execute a missed approach.

When he went to place a grade in that segment he noticed that the grades were different. Instead of satisfactory or unsatisfactory he found, “Describe, Explain, Practice, and Perform”. He decided he was at the Perform level since he had not made any mistakes.

When Linda returned Brian discovered that she had graded his flight as well, with a similar grade sheet. Most of their grades appeared to match until the item labeled “programming the approach”. Here, where he had placed a “Perform” Linda had placed a “Explain”. This immediately sparked a discussion. As it turned out, Brian had selected the correct approach, but he had not activated it. Before Linda could intervene, traffic dictated a go around. Her explain grade told Brian that he did not really understand how the GPS worked and he agreed. Now, learning could occur.

In Table 6 that follows, the desired outcome table denotes a pilot in training near the beginning of training and the grades reflect proficiency of the pilot in training to an expected level of performance in each of these areas. These grades are not self-esteem related since they do not describe a recognized level of prestige (such as A+ or “Outstanding”), rather a level of performance. You can’t flunk a lesson. However, you can fail to demonstrate the required flight and SRM skills. By reflecting on the lesson and grading their own performance, the pilot in training becomes actively involved in the critique process. Pilot in training participation in the process also reduces the self-esteem issue. But most importantly, this establishes the habit of healthy reflection and self-criticism that marks most competent pilots.

Table 6: Learner Centered Scenario Grading-Desired Outcome Table

Scenario Activities	Scenario Sub Activities	Desired 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. Explain/Practice
Normal Preflight and Cockpit procedures	1. Normal Pre-Takeoff Checklist Procedures 2. GPS Programming 3. MFD Setup 4. PFD Setup	1. Perform 2. Explain/Practice 3. Practice 4. Explain/Practice
Engine Start and Taxi Procedures	1. Engine Start 2. Taxi 3. SRM/Situational Awareness	1. Perform 2. Perform 3. Explain/Practice
Before Takeoff Checks	1. Normal and Abnormal Indications 2. Aircraft Automation Management 3. Aeronautical Decision Making and Risk management	1. Perform 2. Explain/Practice 3. Manage/Decide

SECTION 5 – FITS PRIVATE PILOT CERTIFICATION SYLLABUS

To The PT and Instructor That Will Use This Syllabus

This Private Pilot Syllabus is unique in several ways that you should be familiar with as you use the syllabus to acquire the FAA Private Pilot Certificate. First, it is a syllabus that uses real-world scenarios as the foundation of the training. This syllabus contains all of the elements of an FAA/Industry Training Standards (FITS) accepted training method. Flight maneuvers are still a vital part of flight training and flight maneuvers are a part of this syllabus, but real-world scenarios are used to enhance the pilot's decision making skills. The syllabus presents situations and circumstances that private pilots face every day as learning experiences and lessons. The primary tenet of FITS training is that you prepare for the real world of private pilot, by acting as a private pilot while in training. Therefore, throughout the syllabus, the pilot in training (PT) will take on different tasks or jobs just as if they were already a private pilot. The second important unique feature of this syllabus, and of FITS training, is that it is all competency based. The times shown in each lesson are target times and should not be considered the minimum or maximum ground/flight time for the lesson. When the pilot in training (PT) meets or exceed the desired outcome of a particular skill area in the syllabus, they move on regardless of how much time it takes to reach that point of mastery. This means that each lesson does not necessarily equal one flight. It may take several flights before the PT masters the elements of the lesson and is ready to move on to the next lesson. Consequently, the amount of total flight hours a PT has when the syllabus is completed may be more or less than the minimum times under current aviation regulations.

The Use of Decision-Making Scenarios in Flight Training

The PT, in this syllabus, is the student pilot or pilot applicant seeking the Private Pilot. Thus, the PT will be the pilot learning how to develop and use effective scenario-based learning. The PT will be asked to assume various pilot situations and asked to use and develop aeronautical-decision making skills in the various situations. In other words, the PT will be placed in a scenario, pilot situation, where the PT will be expected to use a problem solving process to solve problem or task presented in the scenario. The following discussion addresses how the CFI could use the decision-making scenario method.

For years, good flight instructors have incorporated some form of scenario-based learning into their flight training. Usually during a flight the CFI would tell the PT that something has occurred, such as deteriorating weather, an aircraft malfunction, or air traffic delay. The PT is to assume that the occurrence is actually real and to act accordingly. The PT might decide to divert to a different airport after the CFI tells them that the weather at their destination is poor. The PT may decide to change from the original plan and flies to a different airport. The difference between that and FITS is that FITS also incorporates the consequences of the failure to arrive at the originally planned airport. If a PT decides to fly to an alternate airport instead of the original destination because

the CFI “makes up” a story that the weather is bad, then that alone does not consider the consequences of that decision. What if, rather than a training flight, the flight to the original destination was to deliver a human organ for transplant – the decision to divert to an alternate airport could have the consequence of the patient dying that was awaiting the transplant. If the pilot understood that their decision has actual life or death consequences, then the decision to divert will be more difficult. In the real world, these are the type of decisions a pilot faces everyday – so in this syllabus we train the pilot to be ready to make those decisions. For these reasons, most of the lessons in this syllabus are actual “missions” that carry with them actual reasons for the flight and actual consequences for the decisions the pilot will make. The lessons are not “scripted” to the point that every outcome is known in advance. The PT and flight instructor must be flexible enough to accept this fact. Different PTs will make different decisions, and these different decisions will alter the outcome of each flight.

Using real world scenarios as part of flight training does not in any way diminish the need for pilots to also have good “stick and rudder” skills. Pilots will always need the skills, for instance, to land in a crosswind (although enhanced decision skills will prevent them from attempting a dangerous crosswind landing in the first place!). The lessons in this syllabus therefore are all part “mission” training and part “maneuvers” training on a sliding scale. None of the lessons in this syllabus are 100% mission and none are 100% maneuvers. The amount that any lesson is mission-based or maneuver-based is determined by the completion standards of that lesson.

The Pilot-In-Training Plays a Role in Grading the Lesson

Again, the PT training will learn how to use student-centered grading through instruction and through participation in a student-centered grading process during the course of this training.

Student-centered grading means that after each flight, the PT and instructor will have a discussion of the items that were encountered on the flight and each will evaluate the items. The PT will judge her/his own performance. The instructor, likewise will judge the PT’s performance and then the PT and instructor will compare evaluations. There will be items that both the PTs and instructor will agree were performed well and other that both agree could use improvement. Inevitably, the PT and instructor’s evaluations will disagree. This will be a great opportunity to discuss alternate methods, solutions and techniques that could have been used by the PT to have produced a more favorable outcome to the lesson. Mission based flight lessons can have multiple outcomes that are “correct.” The PT and instructor will discuss if the outcome of the flight was a safe outcome – which is the primary concern of any flight.

Beyond the basic safety of the flight, the PT and instructor will discuss if the outcome could have been even better – optimized. The instructor will use a “rubric” to grade the lessons based on what is an unacceptable outcome, versus

a range of possible acceptable outcomes (see Appendix A for example of a grading rubric).

The Format of Each Lesson

Each lesson in this syllabus will have the same format. The PT and instructor should read through the format information before the flight and as preparation for the flight. Each lesson will have:

1. Strand and Lesson Number
2. Mission
3. Title and Lesson Time
4. Scenario
5. Scenario Objectives
6. Scenario Completion Standards
7. Learning Objectives/Desire Outcome/Grade Sheet
8. Instructor Information
9. Next lesson preview and assignments

Syllabus Shuffle

This generic FITS Private Pilot Syllabus has one more unique feature. It contains three “learning strands.” The strands are: Pre-solo, Cross-country, and Oral & Evaluation. A PT does not have to complete each lesson in sequence within a strand. The syllabus is designed to be “shuffled” and to allow maximum flexibility to meet training constraints. There are some prerequisite lessons that must follow in a particular order, but most lessons can come in any order within each strand. If an instructor and PT had previously completed lessons 4 and are scheduled for flight lesson 5, but the weather at the destination prevents that lesson, the instructor could switch and conduct lesson 6 through 10 can completed.

Private Pilot Syllabus Strands

Pre-solo/Solo	**Cross-country**	**Oral & Flight Test**
Ground Lesson 1	Flight Lesson 15	Flight Lesson 27
Flight Lesson 2	Flight Lesson 16	Flight Lesson 28
Flight Lesson 3	Flight Lesson 17	Ground Lesson 29
Ground Lesson 4	Flight Lesson 18	Evaluation Lesson 30
Flight Lesson 5	Flight Lesson 19	
Flight Lesson 6	Ground Lesson 20	
Flight Lesson 7	Ground Lesson 21	
Flight Lesson 8	Flight Lesson 22	
Flight Lesson 9	Flight Lesson 23	
Flight Lesson 10	Flight Lesson 24	
Ground Lesson 11	Flight Lesson 25	
Flight Lesson 12	Evaluation Lesson 26	
Flight Lesson 13		
Evaluation Lesson 14		

Private Pilot Curriculum Outline

I. Pre-solo/Solo
- Ground Lesson 1 – Student Preparation
- Flight Lesson 2
- Flight Lesson 3
- Ground Lesson 4
- Flight Lesson 5
- Flight Lesson 6
- Flight Lesson 7
- Flight Lesson 8
- Flight Lesson 9
- Flight Lesson 10
- Ground Lesson 11
- Flight Lesson 12 (Dual/Solo)
- Flight Lesson 13
- Evaluation Lesson 14

II. Cross-country
- Flight Lesson 15
- Flight Lesson 16
- Flight Lesson 17
- Flight Lesson 18
- Flight Lesson 19 (Solo)
- Ground Lesson 20
- Ground Lesson 21
- Flight Lesson 22
- Flight Lesson 23
- Flight Lesson 24
- Flight Lesson 25
- Evaluation Lesson 26

III. Oral and Flight Test
- Flight Lesson 27 (Solo X-C)
- Flight Lesson 28
- Ground Lesson 29
- Evaluation Lesson 30

SECTION 5 – FITS PRIVATE PILOT CURRICULUM

Note: An example scenario is provided for each lesson in this syllabus. For FITS acceptance, a scenario is required for each lesson; however, you may use the example or create your own scenarios. In either case, the specific departure and destinations airports that relate to your location should be specifically named. In general, the Pre-Solo/Solo destinations are you local practice airports. The cross country airports were picked to allow adequate en-route time to meet PT needs and/or to comply with 14 CFR Part 61 or Part 141 cross country requirements. In other words, they are for guidance only.

Pre-Solo/Solo – Lesson 1

Mission – Student Pilot Preparation
GND Lesson 1 (Approximate lesson time 1.2 hours)

Scenario

You are a student pilot beginning your training to become a private pilot.

Scenario Objective

The purpose of this lesson is to provide the Pilot in Training with an overview of the Private Pilot Course (Airplane), scenario based training, learner centered grading, and single pilot resource management.

This lesson will also include discussions on the use and understanding of the Private Pilot Certificate and *Private Pilot Airplane Practical Test Standards* and the Safety Policies and Procedures.

Scenario Completion Standards

This lesson is complete when the Pilot in Training (PT) is able to meet the desired outcomes listed in the learning objectives table below, the PT will understand the basic outline of the Private Pilot Certification Course, the role of the Safety Policies, and Procedures and the Aviation Safety Program within their training. Additionally, the PT will be able to identify major components of the aircraft and, with instructor guidance, be able to describe why the procedures are to be used during the preflight and postflight inspection.

Learning Objectives/Desired Outcome/Grade Sheet

	Desired Outcome	Describe	Explain	Practice	Perform	Manage/Decide	Not observed
Private Pilot Course (Airplane)							
Understands the FITS scenario based training concept and learner centered grading	DESCRIBE						
Understands the concept of student led training	DESCRIBE						
Understands the concept of learner centered grading	DESCRIBE						
Understands the completion standards for the course	DESCRIBE						
Private Pilot Airplane Practical Test Standards							
Understands the role that the Practical Test Standards have in their training	DESCRIBE						
Understands the use of the Practical Test Standards through the application of certification scenarios	DESCRIBE						
Safety Policies and Procedures							
Understands the role that the Safety Policies and Procedures have in their training	DESCRIBE						
Properly applies the policies and procedures through discussions that include scenarios that may occur in actual instrument flight training	DESCRIBE						
Aviation Safety Program	DESCRIBE						
Introduction to Flight Training							
The instructor and student relationship	DESCRIBE						
The role of the FAA	DESCRIBE						
Study material	DESCRIBE						
Study habits	DESCRIBE						
The importance of safety awareness (ground & flight)	DESCRIBE						
General health	DESCRIBE						
Single-pilot resource management	DESCRIBE						
Aircraft preflight and postflight							
Interior	DESCRIBE						
Exterior	DESCRIBE						

Instructor Information

Explain SBT and the FITS program to the student and how scenarios will be incorporated into the day-to-day instruction. Assign a scenario and destination for Lesson 2 (FTD).

Assignment for Lesson 2

Student Preparation – a flight to a town nearby for a ball game

1. Practice normal checklists using the online trainer.
2. Review Syllabus for lesson content including taxiing or surface operations, including runups; effect and use of controls; straight and level, climbs, turns, and descents; aerodynamics demonstration.
3. Complete appropriate sections of Workbook (if applicable).
4. Draw Practice areas on VFR sectional.

FAA-H-8083-3, Pilot's Operating Handbook, Standardization Manual, and Airplane Checklist

1. Normal checklist procedures
2. Taxiing or surface operations, including runups
3. Effect and use of controls
4. Straight and level, climbs, turns, and descents
5. Aerodynamics Demonstration

Pre-Solo/Solo – Lesson 2

Mission – Introduce Airplane Cockpit and Fundamental Flight Maneuvers
FLT Lesson 2 (Approximate lesson time 1.0 hours)

Dual – Visual Flight Training Device

Scenario

You and a friend want to go to a town nearby to see a semi-professional baseball game. Your plan is to land two hours before game time in order to allow enough time for lunch.

Scenario Objective

The purpose of this lesson is to introduce the airplane cockpit and fundamental flight maneuvers. In addition, the PT will practice normal checklist procedures.

Scenario Completion Standards

The instructor will guide the student through cockpit familiarization and the correct control inputs for fundamental flight maneuvers in the appropriate configurations. This lesson is complete when the PT is able to meet the desired outcomes listed in the learning objectives table below, when the PT is able to conduct normal checklist procedures with little input from the instructor.

Learning Objectives/Desired Outcome/Grade Sheet

	Desired Outcome	Describe	Explain	Practice	Perform	Manage/Decide	Not observed
Preflight Discussion							
Discuss lesson objective and completion standards	DESCRIBE						
Normal checklist procedures	DESCRIBE						
Taxiing	DESCRIBE						
Straight and level, climbs, turns, and descents	DESCRIBE						
Aerodynamics Demonstration	DESCRIBE						
SRM	DESCRIBE						
1. Personal minimums	DESCRIBE						
2. Risk management	DESCRIBE						
Introduction							
Cockpit familiarization	DESCRIBE						
1. Instruments	DESCRIBE						
A. Flight	DESCRIBE						
B. Engine	DESCRIBE						
2. Avionics	DESCRIBE						
3. Controls	DESCRIBE						
A. Flight	DESCRIBE						
B. Engine	DESCRIBE						
Use of checklist	PRACTICE						
A. Normal checklist procedures	PRACTICE						
Power plant operations	PRACTICE						
A. Engine starting and warm-up	PRACTICE						
B. Pre-takeoff and run-up procedures	PRACTICE						
Proper use of the radio for two-way communication	DESCRIBE						
Taxiing	DESCRIBE						
Normal takeoff and climbout	DESCRIBE						
Effect and use of controls	DESCRIBE						
Climbs and climbing turns	DESCRIBE						
Straight and level flight	DESCRIBE						
A. Set cruise power	DESCRIBE						
B. Use of mixture control	DESCRIBE						
Turns	DESCRIBE						
A. Shallow	DESCRIBE						
B. Medium	DESCRIBE						
Descents	DESCRIBE						
A. Power-on	DESCRIBE						
B. Power-off	DESCRIBE						
Level off from climbs and descents	DESCRIBE						
Aerodynamics Demonstration	DESCRIBE						
Pre-landing procedures	DESCRIBE						
After landing, engine shutdown and securing procedures	DESCRIBE						
Postflight Discussion							
Critique student performance	DESCRIBE						

Instructor Information

NOTE: Can use GS-Plus feature in the simulator to accelerate the flight (located bottom right hand corner of track screen).

Preflight Discussion – Discuss scenario and how normal operations such as checklist usage and basic flight maneuvers are used on day-to-day flights like this one. Ask student to locate your destination airport on map and give basic navigation ideas on how to get there (head south, follow I-29, etc.).

Ground Ops – Show student how to input a basic flight plan in the GPS. Guide student through normal checklist procedures.

Home airport Departure – Conduct a normal takeoff and climb, show effects of coordinated and uncoordinated climb (refer to Aero Demo).

Simulate Departure Control requesting a level-off at 3500 ft during climb and maintain the current climb airspeed to avoid inbound DC-9 traffic.

At this point, show effects of all control surfaces; highlight dutch roll with rudder (refer to Aero Demo).

Shortly after level off, Departure instructs you to continue your climb. Show effects of uncoordinated and coordinated climb.

Level off and Cruise – Level off at 5500 ft, do cruise checklist, and trim for approximately 100 KIAS.
Discuss how to maintain straight and level flight (refer to Aero Demo).

Show effects of elevator input and discuss aircraft stability (refer to Aero Demo).

At this time, Departure warns of opposite direction traffic at your same altitude, and suggests altering course to the right.

Show effects of turns (shallow, medium, and steep) and how to keep those turns level (refer to Aero Demo).

Departure informs you that traffic is no longer a factor, radar service terminated, squawk VFR and proceed on course.

Proceed back on course using the GPS. Show effects of adverse yaw when maneuvering back on course and the effects of too much and too little rudder.

Approach and Arrival at Destination Airport – Start the descent checklist, get ATIS, and contact approach.

Approach advises to expect a 5 mile final for runway in use, and to start a descent at pilot's discretion to 2000 feet.

Show effect of descent with and without power, level off at 2000 feet, and set-up for a long final.

Add flaps on final and discuss effects of each additional setting. As you approach the runway, Tower directs a go around because of traffic on the runway (Sim feature may be used to put an aircraft on the runway). Conduct a normal go-around and show effects of using each flap position during the go-around.

Go around the pattern to a normal full-stop landing. Taxi to the ramp and complete all appropriate checklists. Emphasize that "mission is complete—we made a routine flight from A to B."

Assignment for Lesson 3

Student Preparation – a trip to another nearby town

1. Review syllabus contents for lesson.
2. Complete appropriate sections of the workbook.
3. Practice Checklists.
4. Locate the airport on the map and give consideration to how you will get there.

FAA-H-8083-3, Pilot's Operating Handbook

1. Collision avoidance procedures
2. Wake turbulence avoidance procedures
3. Wind shear avoidance procedures
4. Tracking a straight line
5. Airport traffic patterns
6. Normal and crosswind landings
7. Pilot's Operating Handbook - aircraft speeds

Pre-solo/Solo – Lesson 3
Mission – Flight to a nearby town and Return
FLT Lesson 3 (Approximate lesson time 1.3 hours)

Dual – Airplane

Scenario

You are a crop insurance salesman and a client of yours has a hail damage claim in one of his fields outside a nearby town. You will fly to the town, while en-route you will survey his field by air to assess the damage. After discussing the claim with him, you will return.

Scenario Objective

The purpose of this lesson is to review the listed maneuvers and procedures in an aircraft and introduce the elements associated with conducting flight within airport traffic patterns and approach to landings.

Scenario Completion Standards

This lesson is complete when the PT is able to meet the desired outcomes listed in the learning objectives table below, when the PT (1) can track a straight line and conduct traffic pattern procedures with instructor guidance, (2) is able to conduct normal checklist procedures with little input from the instructor, (3) is able to maintain directional control at all times during the takeoffs and landings with instructor guidance, (4) is able to identify and avoid areas of possible wake turbulence and windshear with instructor guidance, (5) maintains continuous vigilance for other aircraft with extra precautions taken in areas of congested traffic, (6) is able to maintain altitude ±250 feet, airspeed ±20 knots, heading ±30 degrees and roll out on headings within ±30 degrees of that desired while conducting fundamental flight maneuvers.

Learning Objectives/Desired Outcome/Grade Sheet

	Desired Outcome	Describe	Explain	Practice	Perform	Manage/ Decide	Not observed
Preflight Discussion							
Discuss lesson objective and completion standards	PRACTICE						
Preflight planning and preparation	PRACTICE						
Aircraft weight and balance considerations	PRACTICE						
Tracking a straight line	PRACTICE						
Airport traffic patterns	PRACTICE						
Normal and crosswind landings	PRACTICE						
Single-pilot Resource Management (SRM)	DESCRIBE						
3. Personal minimums	DESCRIBE						
4. Risk management	DESCRIBE						
Review							
Cockpit management	DESCRIBE						
Use of checklist	PRACTICE						
Power plant operations	PRACTICE						
A. Engine starting and warm-up	PRACTICE						
B. Pretakeoff and run-up procedures	PRACTICE						
Proper use of the radio for two-way communication	PRACTICE						
Taxiing	PRACTICE						
Normal or crosswind takeoffs and climbouts	PRACTICE						
Effect and use of controls	PRACTICE						
Climbs and climbing turns	PRACTICE						
Straight and level flight	PRACTICE						
Turns	PRACTICE						
A. Shallow	PRACTICE						
B. Medium	PRACTICE						
Descents with and without turns, using high and low drag configurations	PRACTICE						
Level off from climbs and descents	PRACTICE						
Aerodynamics Demonstration	PRACTICE						
Pre-landing procedures	PRACTICE						
After landing, engine shutdown, securing and postflight inspection	PRACTICE						
Introduction							
Aircraft preflight and postflight	DESCRIBE						
A. Interior and exterior	DESCRIBE						
B. Aircraft servicing	DESCRIBE						
Collision avoidance procedures	DESCRIBE						
Wake turbulence avoidance procedures	DESCRIBE						
Wind shear avoidance procedures	DESCRIBE						
Tracking a straight line	DESCRIBE						
Airport traffic pattern entry and departure procedures	DESCRIBE						
Normal or crosswind landings	DESCRIBE						
Postflight Discussion							
Critique student performance	PRACTICE						

Instructor Information

Ground Ops – Guide the student through obtaining a weather brief, pre-flight planning, and risk assessment. Discuss the scenario during the pre-flight discussion, showing where the hail damaged field is (suggest two miles south of Eldred). Show the student how to obtain info on their planned destination using the AFD.

Leg 1 Departure – Destination

Departure – Conduct a normal takeoff and climb out.

En-route – Review basic aircraft handling introduced on Lesson 2. After level off, discuss and demonstrate how to track a straight line to the farmer's field (appropriate point on map). Discuss scanning techniques and how to avoid other aircraft. Pretend you see an aircraft converging straight on--challenge student to take appropriate action. Discuss aerodynamic effects of whatever maneuver was executed. Once over the target field, make several turns to survey suspected damage and practice aircraft maneuvering. Perform the Aero Demo and other maneuvers as appropriate. Proceed to destination.
Destination Airport – Listen to the ASOS and CTAF. Discuss current traffic and weather situation. Complete appropriate pattern entry and full stop landing. If time allows, taxi to the ramp for validation of scenario. Observe other aircraft in the pattern and discuss separation standards and wake turbulence separation. Taxi out for takeoff and practice normal takeoff and landings while time and fuel permit. Demonstrate and discuss methods for wake turbulence avoidance.

Leg 2 First Destination – Home

Departures – Conduct a normal takeoff and climb out.

En-route – Practice maneuvers previously introduced as per the syllabus to ensure student understanding. When listening to ATIS, simulate a gusty wind condition. Discuss techniques for dealing with gusty winds and wind shear.

Home Airport – Fly the pattern as though gusty winds and wind shear actually exist. Also simulate the need to follow a DC-9 on final; reinforce the appropriate methods for avoiding wake turbulence.

Post Flight Debrief – Discuss accomplishment of the hail survey mission to put all maneuvers and activities in the proper context. Assign Lesson 4 scenario. Have the student obtain an outlook briefing for another cross-country for the scheduled time of Lesson 4 (GND).

Assignment for Lesson 4

Student Preparation – a trip to another nearby town

1. Review syllabus for contents of lesson.
2. Complete appropriate sections of the workbook.
3. Practice Checklists using the online trainer (if available).
4. Pick three family members to go on this fictitious trip and fill out chart below.

AC 00-45E, FAA-H-8083-25, Pilot's Operating Handbook, AIM

1. Weather briefings
2. Preflight planning
3. Risk assessment

Pre-solo/Solo – Lesson 4

Visit Manufacturing Facility at Nearby Town and Return – Mission
GND Lesson 4 (Approximate lesson time 1.3 hours)

Scenario

You and three family members are planning on flying to nearby city in order to tour a manufacturing plant. The plan is to fly to the airport where a friend will meet you and take you to the plant.

Family Member's Coming On Trip	
Name/relation	Weight in lbs

Scenario Objective

The purpose of this lesson is to introduce the student to pre-takeoff procedures and raise awareness of risk assessment.

Scenario Completion Standards

The instructor will guide the student through weather briefings, preflight planning, and risk assessment. This lesson will be complete when the PT (a) is able to meet the desired outcomes listed in the learning objectives table below, (b) is able to calculate weight and balance and aircraft performance with assistance from the instructor, and (c) has completed personal minimums based on risk assessment.

Learning Objectives/Desired Outcome/Grade Sheet

	Desired Outcome	Describe	Explain	Practice	Perform	Manage/Decide	Not observed
Weather briefing							
Types	DESCRIBE						
How to obtain	DESCRIBE						
Preflight planning							
Weight and balance	PRACTICE						
A. Computation	PRACTICE						
B. Center of gravity envelope	PRACTICE						
C. Effects of adding, removing, and shifting weight	PRACTICE						
Aircraft performance	PRACTICE						
A. Factor affecting performance	PRACTICE						
B. Computation of take-off and landing distances	PRACTICE						
Single-pilot Resource Management (SRM)							
Decision-making process	PRACTICE						
A. risk management	PRACTICE						
B. automation management	PRACTICE						
C. judgment	PRACTICE						
Factors affecting decision-making	PRACTICE						
A. personal minimums	PRACTICE						
B. hazardous attitudes	PRACTICE						
Use of resources	PRACTICE						
Situational awareness	PRACTICE						

Instructor Information

Using the scenario, walk the student through proper pre-flight planning.

Weather Briefings (Outlook and Normal) – Discuss what action might be taken if you knew about this flight several days before the trip. If you wanted a briefing the night before, which type would you request, and how? Have the student obtain a weather briefing over the phone from a preflight briefer.

Weight and Balance – Assign an aircraft tail number and have student calculate a weight and balance using estimated family member weights. Discuss the CG envelope and how they can add, remove, or shift weight to get the aircraft within limits.

Performance - Have the student calculate appropriate performance numbers and discuss variables that might affect that performance. For example:
If the wind was 230 at 12, how will our takeoff and landing distances change?
What if the elevation was 4730 ft MSL?
What if the temperature is -30°C?

Be sure to discuss with the student the accuracy of performance calculations, and how manufacturers calculate performance.

Risk Assessment – Discuss proper risk assessment and the factors that might influence their decisions. For example, if the sky is overcast at 1500 ft, with 7 SM visibility; how will this affect their Go/No Go decision? Would their risk assessment change if a good airline pilot friend (with lots of B-777 experience) was going to make the trip with them? If this airline pilot friend was pressing you to go, how might that affect your decision making? Introduce the student to risk assessment tools--such as the PAVE acronym and Personal Minimums.

Hazardous Attitudes – Use NTSB accident reports, other incident reports, or personal experiences to relate how hazardous attitudes influence aeronautical decision making.

Abbreviated Briefing – Once the discussion of pre-takeoff procedures is complete, simulate the need for an up-date on the current weather. What type of weather briefing should we ask for? Discuss the advantages of an abbreviated briefing, than have the student obtain one.

Assignment for Lesson 5

Student Preparation – short cross-country flight

1. Review syllabus for contents of lesson.
2. Complete appropriate sections of the workbook.
3. Obtain a weather brief.
4. Conduct appropriate pre-flight procedures: weight and balance and performance.
5. Be prepared to lead discussions on how to secure your cargo and also your weight and balance computations.

FAA-H-8083-3, Pilot Operating Handbook, Standardization Manual

1. Maximum performance climbs
   A. Best angle (V_X)
   B. Best rate (V_Y)
2. Slips to landings
3. Stabilized Approach
4. Go around from rejected landing

Pre-solo/Solo – Lesson 5
Mission – Pickup a Friend at a nearby City and Return
FLT Lesson 5 (Approximate lesson time 1.3 hours)

Dual – Airplane

Scenario

A friend of yours from a nearby city is an avid car collector. In order to have her 1966 Ford Mustang in tip top shape, she needs a new transmission bell housing. You have volunteered to pick one up for her and deliver it to a nearby city airport where she will be waiting for you. The bell housing weighs 220 pounds and is split in the middle (each half weighs 110 lbs). It is up to you to decide if you can carry it and where you will put it in the aircraft.

During your preflight planning, you discover several NOTAM's for the airport. Apparently a telecommunications company has strung a temporary cable 1000 feet from the approach end of the runway. The cable is approximately 50 feet in the air, which means it protrudes through your normal VFR glide path. Also, there are several 300 ft cranes at the other end of the runway that are involved in the construction. They are not highly visible, and you are not certain of their exact location, so a normal climb-out may not clear them sufficiently.

Scenario Objective

The purpose of this lesson is to identify criteria of a stabilized approach, when a go around procedure is required, and introduce elements associated with maximum performance climbs and slips to landings. In addition, the student will practice airport traffic patterns, landings, and fundamental flight maneuvers.

Scenario Completion Standards

This lesson will be complete when the PT (a) meets the desired outcomes listed below, (b) can describe the criteria of a stabilized approach (c) identify when a go-around is required and promptly conduct that procedure, (d) is able to conduct normal checklist procedures with little input from the instructor, (e) is able to maintain directional control at all times during the takeoffs and landings, (f) is able to conduct forward and side slips with instructor guidance, (g) is able to maintain altitude ±250 feet, airspeed ±20 knots, heading ±30 degrees and roll out on headings within ±30 degrees while conducting airport traffic patterns, (h) is able to maintain airspeed ±20 knots during climbs and climbing turns.

Learning Objectives/Desired Outcome/Grade Sheet

	Desired Outcome	Describe	Explain	Practice	Perform	Manage/Decide	Not observed
Preflight Discussion							
Discuss lesson objective and completion standards	PRACTICE						
Maximum performance climbs	EXPLAIN						
Stabilized Approach	EXPLAIN						
Slips to a landing	EXPLAIN						
Normal and crosswind landings	EXPLAIN						
Judgment and decision making pertaining to go around	EXPLAIN						
Review							
Use of checklist	PRACTICE						
Power plant operations	PRACTICE						
Taxiing	PRACTICE						
Normal or crosswind takeoff and climb	PRACTICE						
Proper use of the radio for two-way communication	PRACTICE						
Effect and use of controls	PRACTICE						
Climbs and climbing turns	PRACTICE						
Straight and level flight	PRACTICE						
Turns	PRACTICE						
Descents with and without turns, using high and low drag configurations	PRACTICE						
Level off from climbs and descents	PRACTICE						
Normal or crosswind landings	PRACTICE						
Introduction							
Maximum performance climbs	DESCRIBE						
A. Best angle (V_X)	DESCRIBE						
B. Best rate (V_Y)	DESCRIBE						
Stabilized Approach	DESCRIBE						
Slips to a landing	DESCRIBE						
A. Forward	DESCRIBE						
B. Side	DESCRIBE						
Go around/Rejected landings	DESCRIBE						
Single-pilot Resource Management (SRM)							
Decision-making process	PRACTICE						
D. risk management	PRACTICE						
E. automation management	PRACTICE						
F. judgment	PRACTICE						
Factors affecting decision-making	PRACTICE						
C. personal minimums	PRACTICE						
D. hazardous attitudes	PRACTICE						
Use of resources	PRACTICE						
Situational awareness	PRACTICE						
Postflight Discussion							
Critique student performance	PRACTICE						

Instructor Information

Preflight Brief – Discuss with the student where the bell housing could be carried and how to secure it properly

Leg 1 Departure – 1st Destination

Ground Ops – monitor the student during their pre-flight; try to give as little input as possible. Quiz the student on aircraft/engine components.

Departing – Normal takeoff and cruise climb (appropriate target IAS) should be conducted for correlation with future V_Y climb comparisons.

Enroute to 1st Destination – Practice aero demo and fundamentals of flight as necessary to promote skill acquisition.

Destination Airport – Discuss the location of power lines and cranes. Reiterate challenges they present and how a forward slip could be used after clearing this obstacle. VFR pattern should be flown with a high final until clearing power line, then slip to normal glide path, so as to land in the normal touchdown zone. Landing should be to a full stop, with a taxi to the ramp to unload the parts (this will add to the realism). Provide scenario related questions for the student to contemplate—don't accept one-word answers—draw them out on their reasoning. This helps develop decision-making ability. For example: Do you think we should unload these parts and keep the engine running to save time?

During taxi-out-for-takeoff, discuss obstacles off departure end and the proper procedure used to clear them. Conduct a normal takeoff with a max angle climb at V_X due to the obstacles.

Practice normal and crosswind landings emphasizing the use of slips for crosswind and glide path corrections. Also emphasize the importance of a stabilized approach, recognition of the need for a go around, and proper go-around procedures.

Leg 2 – 1st Destination to Home

Depart – Simulate a situation which would require a max rate climb at V_Y. For example: You have to expedite your climb to 2100 ft back to home airport because a crop duster wants to beginning spraying a field below that altitude just south of the town. Point out the difference in climb rate at V_Y versus the cruise climb conducted out of home airport.

Enroute Home - Practice forward slips, side slips, and other maneuvers needing review.

Home Airport – Additional emphasis on slips, max performance climbs, and go-arounds as time permits.

Post flight debrief – Ask the student to identify some situations where they would use a forward slip and side slip. Ask them to identify some situations which would require a Go-around. Critique student's performance and assign next lesson's scenario.

Assignment for Lesson 6

Student Preparation – a trip to a small airport nearby

1. Review syllabus for contents of lesson.
2. Complete appropriate sections of the workbook.
3. Obtain a weather brief.
4. Conduct appropriate pre-flight procedures: weight and balance and performance.
5. Locate a lake on the sectional and look-up destination airport in your AFD. Make note of any necessary information for the flight.

FAA-H-8083-3, Pilot Operating Handbook, Standardization Manual

1. Maximum performance climbs
   A. Best angle (V_X)
   B. Best rate (V_Y)
1. Slips to landings
2. Stabilized Approach
3. Go around from rejected landing

Pre-solo/Solo – Lesson 6
Mission – Pancake Breakfast/fly-in Small Town Nearby
FLT Lesson 6 (Approximate lesson time 1.3 hours)

Dual - Airplane

Scenario

There is an EAA pancake breakfast/fly-in at the small town nearby airport today. You and your non-pilot friend decide to attend. Expect a lot of aircraft to be in the vicinity of this airport during the event. Just prior to the flight, your buddy, who is a big sail boat fan, asks you if it would be possible to over-fly the boat race that is taking place on a lake along the way. You don't see any problem accommodating his request.

Scenario Objective

The purpose of this lesson is to raise awareness of spins, recognize and recover from stalls, and practice steep turns. The student will also practice maneuvers listed as review.

Scenario Completion Standards

This lesson will be complete when the PT is able to (a) meet the desired outcome listed by the learning objectives listed below, (b) conduct normal checklist procedures without input from the instructor, (c) recognize when a stall is occurring and promptly conduct the proper recovery procedure, (d) limit loss of altitude during stall recovery to 250 feet, (e) maintain altitude ±250 feet, airspeed within ±20 knots, heading within ±30 degrees, and roll out on desired headings within ±30 degrees while practicing steep turns and review maneuvers.

Learning Objectives/Desired Outcome/Grade Sheet

	Desired Outcome	Describe	Explain	Practice	Perform	Manage/Decide	Not observed
Preflight Discussion							
Discuss lesson objective and completion standards	PRACTICE						
Steep turns	PRACTICE						
Stall entry, recognition and recovery procedures	EXPLAIN						
Spin awareness	EXPLAIN						
Review							
Use of checklist	PERFORM						
Power plant operations	PERFORM						
Ground maneuvering procedures	PRACTICE						
Proper use of the radio for two-way communication	PRACTICE						
Normal or crosswind takeoffs and climbouts	PRACTICE						
Climbs and climbing turns	PERFORM						
Straight and level flight	PERFORM						
Turns	PERFORM						
Descents with and without turns, using high and low drag configurations	PERFORM						
Slips to a landing	PERFORM						
A. Forward	PERFORM						
B. Side	PERFORM						
Collision avoidance procedures	PERFORM						
Wake turbulence avoidance procedures	PRACTICE						
Wind shear avoidance procedures	PRACTICE						
Airport traffic pattern entry and departure procedures	PERFORM						
Prelanding procedures	PERFORM						
Normal or crosswind landings	PERFORM						
Go arounds/Rejected landings	PERFORM						
After landing, engine shutdown, securing and postflight inspection	PERFORM						
Introduction							
Steep turns	DESCRIBE						
Stall recognition and recovery procedures: from straight flight and from turns (full and imminent)	DESCRIBE						
A. Power off	DESCRIBE						
B. Power on	DESCRIBE						
1. Takeoff	DESCRIBE						
2. Departure	DESCRIBE						
Single-pilot Resource Management (SRM)							
Decision-making process	PRACTICE						
A. risk management	PRACTICE						

B. automation management	PRACTICE						
C. judgment	PRACTICE						
Factors affecting decision-making	PRACTICE						
A. personal minimums	PRACTICE						
B. hazardous attitudes	PRACTICE						
Use of resources	PRACTICE						
Situational awareness	PRACTICE						
Postflight Discussion							
Critique student performance	PERFORM						

Instructor Information

Preflight brief – Discuss scenario with student. What are some considerations when operating around the small airport? Do you expect extra traffic in the pattern? How will you avoid this traffic? How is this going to change/affect your pattern entry and operation? What about the boat race--are there any special considerations there?

Leg 1 Departure to 1st Destination

Ground Ops – Allow student to do entire pre-flight without instructor guidance (this instills a sense of responsibility and "the need to know"). Ask questions to stimulate thought, such as: What would we do if the entire wing was covered with frost? What if the gear strut had only $^1/_2$ inch extension? Student should be able to start the aircraft and maneuver to the runway with little or no instructor guidance.

Departing Home – Conduct a normal/crosswind takeoff and VFR departure. Allow student to do all checklists and radio calls enroute to the practice area with little or no prompting as a means to emphasize the importance of learning them.

Area Work – Once established in the practice area in level flight, call out simulated traffic at 11:00 and 2:00 (obviously headed to the Fly-in as well). Ask the student how to obtain additional spacing on those aircraft. Suggest that slowing down is one method, and ask the student to slow down to minimum practical air speed. Encourage the student to fly slower and slower to experience approaching stall and full stall indications. Instruct student to recover by simply reducing angle of attack. Repeat maneuver as appropriate.

Continue toward area lake. Discuss other methods to gain spacing on traffic.

Steep Turns – When nearing area lake, your friend would like to take pictures for his website with a camera he brought. Ask questions to stimulate thought: Is there any maneuver that would allow your friend to take pictures without the wing being in the way? Demonstrate and practice steep turns. More questions: The camera your friend is using does not have a very good zoom capability..... What is the lowest altitude we could legally do this maneuver over the boats? Are you comfortable with that altitude? Why?

Power Off Stall – Pick a road or other distinguishable surface to set-up for a simulated approach and landing. Select an altitude that will allow for a stall and recovery above the MRA (1500 ft AGL or higher). Note: Minimum Reception Altitude (MRA) is the lowest altitude at which an intersection can be determined. At altitudes lower than the MRA, navigational signal coverage is not assured, and you may not be able to identify the intersection. The MRA does not assure obstacle clearance, only navigational signal reception. Enter downwind abeam the selected surface and conduct a normal approach and landing to that surface, adding flaps and configuring the aircraft for landing at the appropriate points. After turning a simulated final, add full flaps, enter a full power off stall and recover.

Practice stalls and other maneuvers as necessary to increase student proficiency, then proceed to small town airport.

Destination Airport – Remind student of potential traffic in the pattern. Conduct a normal pattern entry into airport. Ask questions to stimulate thought:
What radio calls should we make, and where?
What is a good altitude to over-fly?
Is there any way we could figure out which runway is in use without over-flying?
Which is Runway XX? How do you determine runways?
Do we use a left-hand pattern for both runways?
On downwind, tell the student that another aircraft just conducted a full stop landing and will have to back-taxi on the runway to get to the ramp. What should we do to our pattern? Conduct a full stop landing and taxi to the ramp completing all appropriate checklists. Emphasize “mission accomplished”—everything that happened is how it might really be! Get ready for some flap jacks!

Leg 2 – 1st Destination to Home

Departing 1st Destination – Conduct additional pattern work as necessary to increase student proficiency in pattern operations. Depart toward Practice Area when complete.

Power-on Stall – Maneuver into the practice area. Once established, simulate a thin cloud layer ahead. Should we go above it, or below it? If we go above it, how will we get into your home airport? Let’s say you choose to go above it—what airspeed will you get you above it in the least distance? Climb at V_X. Once established, encourage student to gradually increase climb angle until aircraft stalls. Recover as appropriate. Now tell student you have changed your mind – let’s go below it. But expedite descent because cloud layer is fast-approaching. Allow student to experience the Yellow Arc for post-flight discussion.

Continue inbound to Home Airport – Normal pattern entry with pattern practice as appropriate.

Taxi-back/Shutdown – Tell the student to “Secure the aircraft—I’ll see you inside.” Leave the student to do the post flight—a pilot has to be responsible. Go into the building, but then come-up with an excuse to return to aircraft (follow-up on student procedures.)

Post Flight Debrief – Have student critique performance, lessons learned, and areas for improvement. “How did you like that speed up in the Yellow Arc?”

Assignment for Lesson 7

Student Preparation – trip to Nearby City

1. Review syllabus description for this lesson.
2. Complete appropriate sections of Workbook.
3. Obtain a weather brief.
4. Complete a Performance Calculation including Weight and Balance.
5. Plot the scenario survey location on VFR sectional.

FAA-H-8083-3

1. Ground Reference Maneuvers
   A. Rectangular course
   B. Turns around a point
   C. “S” Turns across a road

Pre-solo/Solo – Lesson 7
Mission – Aerial Survey Flight
FLT Lesson 7 (Approximate lesson time 1.3 hours)

Dual – Airplane

Scenario

You are employed by an aerial survey company that uses on-board sensors to map property boundaries. This requires the pilot to fly the aircraft accurately over prominent landmarks at a precise altitude while correcting for winds. Some survey tasks require you to orbit over a specific landmark and maintain a constant radius from the landmark. There may be other survey aircraft working the same area, so it is important to be heads-up and prepared to take evasive action if necessary. A tough job—but the pay is good. Note: a commercial pilot certificate is typically required for this position; however, the pilot skills needed to do this job are the same flight skills a private pilot will need in traffic pattern operations.

Your job today is to survey a road intersection at a certain lat/long position (for example) and the borders of the section that surround that ground reference. Because of the equipment on board the aircraft, your fuel is somewhat limited, so plan to gas-up at an airport near the survey site between missions.

Scenario Objective

The purpose of this lesson is to introduce the student to the elements associated with ground reference maneuvers and practice review maneuvers with guidance from the instructor.

Scenario Completion Standards

This lesson will be complete when the PT is able to (a) meet the desired outcomes listed in the table below, (b) conduct normal checklist procedures without input from the instructor, (c) conduct the review maneuvers with little input from the instructor, (d) maintain directional control at all times during the takeoffs and landings, (e) conduct a stabilized approach with instructor guidance, (f) recognize and adjust for the effects of wind drift on the aircraft's flight path, (g) identify appropriate areas to conduct maneuvers at low altitudes, (h) maintain altitude ±250 feet, roll out heading ±20 degrees, bank angle ±10 degrees and airspeed ±10 knots on all flight maneuvers.

Learning Objectives/Desired Outcome/Grade Sheet

	Desired Outcome	Describe	Explain	Practice	Perform	Manage/Decide	Not observed
Preflight Discussion							
Discuss lesson objective and completion standards	PRACTICE						
Ground reference maneuvers	PRACTICE						
A. Rectangular course	PRACTICE						
B. Turns around a point	PRACTICE						
C. "S" Turns across a road	PRACTICE						
Review							
Use of checklist	PERFORM						
Crosswind takeoffs and climbouts	PRACTICE						
Steep turns	PRACTICE						
Stall recognition and recovery procedures: from straight flight and from turns (full or imminent)	PRACTICE						
Airport traffic pattern entry and departure procedures	PERFORM						
Crosswind landings	PERFORM						
Go arounds/Rejected landings	PRACTICE						
Introduction							
Ground reference maneuvers	PRACTICE						
A. Rectangular course	PRACTICE						
B. Turns around a point	PRACTICE						
C. "S" Turns across a road	PRACTICE						
Single-pilot Resource Management (SRM)							
Decision-making process	PRACTICE						
D. risk management	PRACTICE						
E. automation management	PRACTICE						
F. judgment	PRACTICE						
Factors affecting decision-making	PRACTICE						
C. personal minimums	PRACTICE						
D. hazardous attitudes	PRACTICE						
Use of resources	PRACTICE						
Situational awareness	PRACTICE						
Postflight Discussion							
Critique student performance	PERFORM						

Instructor Information

Preflight Brief – Discuss with the student how to verify fuel loads with less than full tanks, and techniques for navigating to the survey area. Verify their plotting of the survey location and discuss any problems they might have had.

Leg 1- Home to Location of Survey

Ground Ops – Student should be able to do all pre-flight and ground checklist procedures without assistance. Show how to use the GPS to create a user waypoint for survey area.

Depart – Normal takeoff and climb-out.

Enroute to Survey Area – Practice syllabus maneuvers previously introduced.

Once in the Survey Area – Identify ground reference and surrounding section boundaries. Introduce techniques for tracking the section lines around the target area (rectangular course), how to orbit directly over the survey point while maintaining a constant radius (turns around a point), and how to acquire multiple survey plots over a roadway (S-turn along a road). Challenge student to determine wind direction based on required corrections.

Ask student what fuel state would necessitate proceeding to nearby town.

Enroute to Nearby Town – When time and fuel conditions require, proceed to the nearby airport. Once established at cruise altitude, simulate a traffic avoidance maneuver requiring a steep turn. Once accomplished, allow student to practice several steep turn maneuvers for skill development, as necessary.

Nearby Town Airport – Allow student to initiate and execute proper pattern entry procedures and radio calls. Practice normal and crosswind landings emphasizing use of slips for crosswind and glide path corrections. Also emphasize importance of stabilized approach, recognition of the need for a go-around, and proper go-around procedures. Initial landing at the airport should be a full-stop/taxi back simulating the need for refuel. Simulate pulling up to a fuel pump, and discuss associated hazards.

Leg 2 – Nearby Town to Home

Departure – Simulate the need to climb immediately after takeoff to clear another area being surveyed just off the departure end of the runway. Task the student to choose the most appropriate climb (V_X or V_Y).

Enroute to Home – Practice maneuvers needing review as necessary. Task student to point out designated VFR recovery points. Approaching Carpet or Lagoon, simulate converging traffic and challenge student to take appropriate traffic avoidance measures.

Home Airport – Additional emphasis on lesson maneuvers, as time permits. While in the traffic pattern, correlate techniques practiced in the area (rectangular course, steep turns, etc) with VFR pattern techniques.

Post Flight Brief – Have student critique individual performance.

Assignment for Lesson 8

Student Preparation – flight to Town Close by

1. Review syllabus description for this lesson.
2. Complete appropriate sections of Workbook.
3. Obtain aircraft maintenance records or dispatch form, if used, and review Risk Assessment form.
4. Complete a Pilot Personal Minimums checklist. List what you think your personal minimums will be immediately after earning your Private Pilot Certificate.
5. Consider whether or not this flight is within your personal limitations and how other factors presented in this scenario might affect your GO/NO GO decision.

14 CFR Part 61, FAA-H-8083-3, Pilot's Operating Handbook

1. 14 CFR Part 61
   A. Subpart A - General
2. Emergency procedures as per Pilot's Operating Handbook

Pre-solo/Solo – Lesson 8
Mission – Flight to Have Dinner with a Friend
FLT Lesson 8 (Approximate lesson time 1.0 hours)

Dual – Visual Flight Training Device

Scenario

You have made plans to make a late afternoon flight to a city close by to meet a friend for dinner. Your friend has agreed to pick you up at the airport at 5:00 sharp, and must return to work no later than 8:00. Weather for the route is 4000 broken with isolated rain showers. When you look out the window, the sun is poking through the clouds here and there across the whole area, with some scattered areas of virga, and the winds are out of the south at 10 kts. There are no NOTAMS affecting your flight, but the Dispatch/Supervisor radio is out of service. The aircraft was not serviced after the last flight and there is only 15 gallons total. The fuel truck people have already gone home, so you can't get any additional fuel added at home:

Where will you get fuel on this flight?
How do you know you'll be able to get fuel there?

Scenario Objective

The purpose of this lesson is to introduce the student to the elements associated with ground reference maneuvers and practice review maneuvers with little guidance from the instructor.

Scenario Completion Standards

This lesson is complete when the PT is able to (a) meet the desired outcomes listed in the table below, (b) conduct normal checklist procedures without input from the instructor, (c) conduct the review maneuvers with little input from the instructor, (d) maintain directional control at all times during the takeoffs and landings, (e) conduct a stabilized approach with instructor guidance, (f) recognize and adjust for the effects of wind drift on the aircraft's flight path, (g) identify appropriate areas to conduct maneuvers at low altitudes, (h) maintain altitude ±250 feet, roll out heading ±20 degrees, bank angle ±10 degrees and airspeed ±10 knots on all flight maneuvers.

Learning Objectives/Desired Outcome/Grade Sheet

	Desired Outcome	Describe	Explain	Practice	Perform	Manage/Decide	Not observed
Preflight Discussion							
Discuss lesson objective and completion standards	EXPLAIN						
Ground reference maneuvers	EXPLAIN						
A. Rectangular course	EXPLAIN						
B. Turns around a point	EXPLAIN						
C. “S” Turns across a road	EXPLAIN						
Review							
Use of checklist	PERFORM						
Crosswind takeoffs and climbouts	PERFORM						
Steep turns	PRACTICE						
Stall recognition and recovery procedures: from straight flight and from turns (full or imminent)	PRACTICE						
Airport traffic pattern entry and departure procedures	PERFORM						
Crosswind landings	PERFORM						
Go arounds/Rejected landings	PRACTICE						
Introduction							
Ground reference maneuvers	PRACTICE						
A. Rectangular course	PRACTICE						
B. Turns around a point	PRACTICE						
C. “S” Turns across a road	PRACTICE						
Single-pilot Resource Management (SRM)							
Decision-making process	PRACTICE						
A. risk management	PRACTICE						
B. automation management	PRACTICE						
C. judgment	PRACTICE						
Factors affecting decision-making	PRACTICE						
A. personal minimums	PRACTICE						
B. hazardous attitudes	PRACTICE						
Use of resources	PRACTICE						
Situational awareness	PRACTICE						
Postflight Discussion							
Critique student performance	PERFORM						

Instructor Information

<u>Preflight Discussion</u> – Discuss Dispatch Risk Assessment with the student.

Ask student to identify the potential hazards of this flight, and how the risks associated with those hazards might be reduced or eliminated.
Things like: Late afternoon flight, what if it gets dark?
Are you concerned about the rain showers? How would you avoid

them at night?
Do you feel pressure to meet your friend at 5:00 “sharp”?
Is there a way you could reduce that pressure?
Can you handle the winds? Are those unusual winds for this area?
Are you happy with the gas situation? Does the fuel status present a risk?

Allow student to explain his/her Personal Minimums and whether or not the flight scenario is within those minimums.
Ask the student to explain how to use the Aircraft Checklist, and why he/she considers it a good tool to use (specifically the emergency/abnormal section). What portions are important to memorize and why?
Have student write down, from memory, the emergency action items for the following:

Engine Fire on Start
Electrical Fire in Flight
Engine Failure after V_R
Engine Failure in Flight
Emergency Descent

Encourage the student to identify other information that is important in an emergency but not included in the memory items of the checklist.

Leg 1—Departure-Destination

<u>Ground Ops</u>

Engine start—Engine backfires, but does not start. Another pilot starts waving at you frantically. You then notice smoke curling up from below the engine cowling. What will you do? Why? After executing the proper procedure, ask the student—now what? (Would you egress, stay in aircraft? How far away would you egress? Encourage student to take the scenario all the way to conclusion)

Prior to the next engine start, ask student what the approximate amperage draw will be with all the normal equipment on. Than after start, allow student to verify that prediction.

Engine run-up check—When you move ignition key to the Right position, rpm drops 225. Is this within limits? Which mag is malfunctioning? What are you going to do? Will the aircraft fly with the mag like this? What would happen if this mag got worse?
During check of Carb Heat, you get no rpm drop. What does this mean? Would you takeoff with this condition?

Pre-Takeoff—What do you look at during takeoff to ensure engine is running properly? Do you fixate on those gauges, or just crosscheck them? How often? What might the indications of engine failure be (consider both complete and partial failure)? What call-outs can we use to help us out?

Give Engine Low Oil Pressure immediately after brake release. (Hopefully student catches it and aborts—if not, give engine failure on climb out and let him/her deal with it.)

Enroute—Give student an abnormally high amp reading. Ask them to describe what this signifies. Than simulate a faint odor of burning insulation. Smoke appears to be coming from behind the circuit breaker panel. Ask student to evaluate what most likely is happening. What are the risks associated with this situation?
What will you do?
After taking appropriate checklist action, ask whether they would continue to destination or return home?
How will you navigate to the airport?
Will anybody know about your situation?
Would you consider an emergency landing on a wide open bean field?

After making appropriate decisions to handle the above situation, the engine suddenly quits—just a rapid rpm decrease to almost nothing. Now what? Have student explain his/her actions.
Discuss the most frequent causes of engine failure (fuel starvation is #1)
Allow student to take situation to a conclusion, including discussion of what to do after landing.. (Will you egress aircraft? How far will you move away? Will you stay with aircraft, or walk to farm? Any emergency/survival equipment available? Do you have your boots, mittens, hat, etc?)
The local TV station is first on the scene. What are you going to say to them?

Leg 2—Return

You are safe and sound, and delivered to the nearby airport. The FBO has arranged for another Warrior for you to fly back. (Preflight, ground ops, run-up checks, etc, are complete.)
Create the aura that time is critical—a realistic situation we often encounter. Ask student what systems/switches he/she considers the most important to check and ask them to set everything up without using the checklist. Then, prior to takeoff, have them review the checklist to see if they missed anything. Ask them to evaluate whether or not they feel comfortable not using the checklist?

Takeoff - Catastrophic Engine failure after V_R.
During post-flight debriefing : Ask student to evaluate his/her performance—did you do the right thing? If you had to do it all over again, would you do anything different? Why?
What are your priorities when something like this happens? (Save yourself first, than the aircraft, etc, etc)
What are some of the worst things you could envision happening in this situation (Like losing control of the aircraft, stall/spin, colliding with major obstacle, etc.)?
What pilot actions would prevent these bad things from happening?

If time permits: Partial power loss after takeoff (Mag failure, fuel contamination, induction ice, etc)

Depending on severity, student might land straight ahead, or maneuver back to runway. Once again during post-flight debriefing, ask student to evaluate his/her actions. Ask student to consider: What if engine operation had gotten worse—would your decision still be a good one?

Subsequent takeoff — Normal.

Enroute to Home Airport — Carburetor icing. Discuss indications and proper procedures.

Then, Low Voltage Light illuminates. Ask student to explain what this means, and appropriate actions. Will you continue home, or look for an intermediate airport? Why? Which do you consider the safest course of action?

While continuing to the selected airport, you suddenly hear a loud bang, followed by severe engine roughness with flames billowing from under the engine cowling. Sparks also appear in the area of the wing root. Ask student to evaluate what he/she thinks has happened, and what the correct procedures will be. What is the worst thing that could happen with this scenario?

After securing the engine, a glow is still apparent out the left side of the engine cowling. Guide student through the proper emergency descent procedures. Then ask questions like: Why are we using a steep bank angle? How low will you descend in the emergency descent? Would you do the same thing at night? Allow student to take situation to a conclusion and then self-evaluate performance.

Post flight Brief - Allow student to evaluate his/her performance, discuss lessons learned, and what he/she would do different in similar situations.

Assignment for Lesson 9

Student Preparation – trip to a town about 150 miles away

1. Review syllabus description for this lesson.
2. Complete appropriate sections of Workbook.
3. Obtain a weather brief.
4. Complete a performance calculation including weight and balance.
5. Complete a Preflight Risk Assessment worksheet.
6. Do some preliminary planning on how you would navigate from home to the destination. Plan to fly over nearby airport enroute.
7. Be prepared to lead a discussion on what you would do if the engine failed while cruising at 4500 ft.

FAA-H-8083-3, Pilot's Operating Handbook

1. Power off landings
2. Zero flap landings

Pre-solo/Solo – Lesson 9
Mission – Pickup Vaccine
FLT Lesson 9 (Approximate lesson time 1.3 hours)

Dual – Airplane

Scenario

You work for a veterinarian in a city about 150 miles away that owns a Piper Warrior. He has sent you to your home airport to pick up vaccine for West Nile disease and fly it back to him. The vaccine is temperature sensitive and it is critical that you deliver it to him within two hours after pickup. The flight up from veterinarian's home was uneventful, but the winds are forecast to increase for your return flight with light to moderate turbulence. Both your local airport and the veterinarian's airport are forecasting winds of 15kt with gusts to 25.

Scenario Objective

The purpose of this lesson is to review the listed maneuvers and procedures in an aircraft and introduce the elements associated with power-off and zero flap landings.

Scenario Completion Standards

This lesson is complete when the PT is able to (a) meet the desired outcomes listed in the table below, (b) conduct normal checklist procedures without input from the instructor, (c) identify abnormal and emergency procedures, (d) practice the proper corrective measures with little input from the instructor, (e) maintain directional control at all times during the takeoffs and landings, (b) conduct a stabilized approach with little input from the instructor, (g) accomplish power-off and zero flap landings with limited instructor guidance and touchdowns should be within 500 feet of the desired point, (h) maintain altitude ±200 feet, roll-out heading ±20 degrees, ±10 degrees of desired bank and airspeed ±10 knots during all other maneuvers.

Learning Objectives/Desired Outcome/Grade Sheet

	Desired Outcome	Describe	Explain	Practice	Perform	Manage/Decide	Not observed
Preflight Discussion							
Discuss lesson objective and completion standards	PERFORM						
Emergency procedures	PRACTICE						
Abnormal procedures	PRACTICE						
Power off landings	PERFORM						
Zero flap landings	PERFORM						
Review							
Normal or crosswind takeoffs	PERFORM						
Emergency procedures	PRACTICE						
A. Engine failures	PRACTICE						
B. Forced landings	PRACTICE						
C. Fires	PRACTICE						
D. Electrical power supply system malfunctions	PRACTICE						
E. Emergency descents	PRACTICE						
Aerodynamics demonstration	PRACTICE						
Steep turns	PRACTICE						
Stall recognition and recovery procedures: from straight flight and from turns (full or imminent)	PRACTICE						
Airport traffic pattern entry and departure procedure	PRACTICE						
Forward slips	PERFORM						
Prelanding procedures	PERFORM						
Stabilized Approach	PERFORM						
Go-around from rejected landing	PERFORM						
Normal or crosswind landings	PERFORM						
After landing, engine shutdown, securing and postflight inspection	PERFORM						
Introduction							
Power-off landings	PRACTICE						
Zero flap landings	PRACTICE						
Single-pilot Resource Management (SRM)							
Decision-making process	PRACTICE						
D. risk management	PRACTICE						
E. automation management	PRACTICE						
F. judgment	PRACTICE						
Factors affecting decision-making	PRACTICE						
C. personal minimums	PRACTICE						
D. hazardous attitudes	PRACTICE						
Use of resources	PRACTICE						
Situational awareness	PRACTICE						
Postflight Discussion							
Critique student performance	PERFORM						

Instructor Information

Leg 1 – Departure to Destination. (Student will land at an enroute airport due to engine failure)

Ground Ops – Let the student handle the entire ground ops without any assistance. This will enforce student's need to take charge and make decisions. While taxiing out, simulate a Low Voltage Light illuminated, and during run-up check a mag that drops 225 rpm. Also, during taxi, quarry student on location of the wind socks, and simulate a strong/gusty wind condition. Ask student how takeoff techniques should be modified for this condition.

Takeoff – No flap takeoff simulating gusty wind conditions.

Enroute – Have student climb to 4500 ft and provide assistance to get on-course to destination with a local airport as an intermediate check point. Once on-course, simulate strange aircraft noise/vibration, and ask student to slow down to a slow flight airspeed to evaluate the vibration. Ask student to make several shallow turns at this airspeed. Than have student slow even more to experience the indications of imminent stall. Once complete, continue on toward destination.

Approaching intermediate check point – Simulate indications of impending engine failure at 4500 ft. Assist student in evaluating situation and taking proper actions to land safely at intermediate check point. Take situation to conclusion, including a discussion of "Okay, you made it safely onto the runway—now what? (i.e. Aircraft is dead on the runway, now what are you going to do? Where might you get assistance? Can you reach anybody on the radio? Is there any guidance in the aircraft POH?
NOTE: As much as practical, let the student come-up with the solutions.

Subsequent takeoff from intermediate check point – Traffic permitting, practice another Power- off Landing requiring a slip, then introduce a Zero Flap Landing. Challenge the student to think of a situation which might require a Zero Flap Landing. Practice multiple patterns as time permits, with both stop-and-go's and go-around's.

Leg 2 – intermediate to home. (student will return to home airport for a new supply of vaccine)

Normal takeoff and departure. Once in the area, practice stalls, slow flight, steep turns, and aerodynamics demonstration in a maneuvers format. Challenge student to navigate to home without instructor assistance. Once established, simulate fuel starvation – allow student to handle ensuing power-off situation. If student follows appropriate procedures to re-establish fuel supply, engine power is regained. If appropriate steps are not followed, allow power off scenario to continue to setting up for an emergency landing.

Home Traffic Pattern – Practice normal, no-flap, and power-off landings as time permits.

After landing and clear of the runway– Simulate a situation where the left brake has failed. Allow student to experience the difficulty of taxiing with one brake inoperative and discuss the hazards associated with taxiing into a congested area with this situation. Ask student to analyze how he/she might handle this situation for real.

Post flight debrief – Allow student to critique performance and identify areas for improvement.

Assignment for Lesson 10

Student Preparation – a flight to nearby airport

1. Review syllabus description for this lesson.
2. Complete appropriate sections of Workbook.
3. Obtain a weather brief.
4. Complete a performance calculation including weight and balance.
5. Complete a Personal Minimums worksheet based on your current capabilities.
6. Be prepared to brief your instructor on the home departure procedures, practice area collision avoidance procedures, and enroute navigation techniques for a flight to the nearby airport. Also be prepared to discuss features of the airport and traffic pattern.

14 CFR Part 61

1. Subpart C - Student Pilots

Pre-solo/Solo – Lesson 10
Mission – Visit Potential Customer at Area Manufacturing Facility
FLT Lesson 10 (Approximate lesson time 1.3 hours)

Dual – Airplane

Scenario

You are flying to a neighboring manufacturing facility to meet with the company – a potential customer for your patented *tagnite* metal coating process. A division manager from the company has been visiting your shop and will ride with you to the neighboring manufacturing facility. Once at the facility, the CEO will meet you at the airport. Obviously, you wish to impress your passenger and the CEO with your professionalism – both in the air, and on the ground.

Scenario Objective

The purpose of this lesson is to apply knowledge learned in previous lessons and practice crosswind landings with little instructor input.

Scenario Completion Standards

This lesson is complete when the PT is able to (a) meet the desired outcomes listed in the table below, (b) identify and promptly conduct go around procedures, (c) conduct checklist procedures with no input from the instructor, (d) maintain altitude ±200 feet, roll out on headings within ±20 degrees, ±10 degrees of desired bank, airspeed ±10 knots, (e) maintain directional control at all times during the takeoffs and landings, (f) conduct a stabilized approach without instructor guidance, (g) accomplish landings with little instructor guidance and touchdowns should be within 500 feet of the desired point.

Learning Objectives/Desired Outcome/Grade Sheet

	Desired Outcome	Describe	Explain	Practice	Perform	Manage/Decide	Not observed
Preflight Discussion							
Discuss lesson objective and completion standards	PERFORM						
Review							
Use of checklist	PERFORM						
Ground maneuvering procedures	PERFORM						
Proper use of the radio for two-way communication	PERFORM						
Crosswind takeoffs and climbouts	PERFORM						
Maximum Performance Climbs	PERFORM						
A. Best angle (V_X)	PERFORM						
B. Best rate (V_Y)	PERFORM						
Collision avoidance procedures	PERFORM						
Wake turbulence avoidance procedures	PERFORM						
Wind shear avoidance procedures	PRACTICE						
Airport traffic pattern entry and departure procedures	PERFORM						
Prelanding procedures	PRACTICE						
Crosswind landings (with and without flaps)	PERFORM						
Power off landings	PERFORM						
After landing, engine shutdown, securing and postflight inspection	PERFORM						
Go arounds/Rejected landings	PRACTICE						
Single-pilot Resource Management (SRM)							
Decision-making process	PRACTICE						
A. risk management	PRACTICE						
B. automation management	PRACTICE						
C. judgment	PRACTICE						
Factors affecting decision-making	PRACTICE						
A. personal minimums	PRACTICE						
B. hazardous attitudes	PRACTICE						
Use of resources	PRACTICE						
Situational awareness	PRACTICE						
Postflight Discussion							
Critique student performance	PERFORM						

Instructor Information

Leg 1 – Departure to Destination

Ground Ops – Allow the student to conduct pre-flight, run-up, and taxi procedures without any instructor assistance. While taxiing from the ramp, simulate a situation with a fuel truck parked too close to the taxi line. Let student devise corrective action.

Takeoff – Normal takeoff. Once airborne, tower requests that you expedite climb to avoid a helicopter traveling East-West off the departure end of the runway. (should require climb at Vx, see if student realizes this

Enroute – Assist student in establishing initial nav leg to the destination airport. Have student point out landmarks for the primary choke points for VFR traffic returning to your home airport. Simulate a situation where Departure Control calls out opposite direction traffic at your altitude – allow student to decide what to do.

Destination Airport – Conduct standard pattern entry with normal landing to a full stop. Pull into ramp parking to simulate scenario completion. Allow student to critique performance – would Polaris employee be impressed?

Subsequent takeoff – Practice normal, no-flap, and power off landings. Emphasizing stabilized approach and proper decisions regarding go-arounds. If other aircraft are in the traffic pattern, simulate that one is a B-727 and ask student to demonstrate proper wake turbulence avoidance procedures. Simulate encounter with wind shear on short final.

Leg 2 – Destination to Departure

Normal takeoff and departure procedures. Challenge student to find his/her own way back to your local airport and follow normal traffic pattern entry procedures.

Traffic Pattern Local Airport – If conditions permit, simulate engine failure upon initial arrival into traffic pattern. Encourage student to simulate appropriate emergency radio calls. After landing, have student explain post-landing intentions following the power off landing. Conduct pattern work as necessary to increase student skill.

Post flight Brief – Enable student to critique performance and identify areas needing further improvement prior to first solo.

Assignment for Lesson 11

Student Preparation – a flight to Metropolitan Area

1. Review syllabus description for this maneuver.
2. Complete appropriate sections of the Workbook.
3. Bring CFR/AIM and highlighter to briefing.
4. Be prepared to lead a discussion on Student Pilot Limitations (IAW 14 CFR Part 61)

14 CFR Part 91

1. 14 CFR Part 91
   A. Subpart A - General
   B. Subpart B - Flight Rules
   C. Subpart C- Equipment, Instrument, and Certificate Requirements
   D. Subpart E - Maintenance, Preventative Maintenance and Alterations

Pre-solo/Solo – Lesson 11
Mission – Celebration Flight to Metropolitan Area
GND Lesson 11 (Approximate lesson time 1.5 hours)

Scenario

Congratulations – you just won a C-172 in Sporty's win a Skyhawk sweepstakes! You decide to use your new aircraft for a flight with three friends down to Minneapolis. One of your friends, Nathan, is a certified commercial pilot and has offered to operate as PIC for any phases of flight he might have to.

EQUIPMENT LIST

The following equipment list is a comprehensive fist of all Cessna equipment available for this airplane. A separate equipment list of items installed in your specific airplane is provided in your aircraft file. The following list and the specific list for your airplane have a similar order of listing.

This equipment list provides the following information:

An **item number** gives the identification number for the item. Each number is prefixed with a letter which identifies the **descriptive** grouping (example: A. Powerplant & Accessories) under which it is listed. Suffix letters identify the equipment as a required item, a standard item or an optional item. Suffix letters are as follows:

–R = required items of equipment for FAA certification

–s = standard equipment items

-0= optional equipment items replacing required or standard items

-A = optional equipment items which are in addition to required or standard items

A reference drawing column provides the drawing number for the item.

NOTE

If additional equipment is to be installed, it must be done in accordance with the reference drawing, accessory kit instructions, or a separate FAA approval.

Columns showing **weight (in pounds)** and **arm (in inches)** provide *the* weight arid center of gravity location for the equipment.

NOTE

Unless otherwise indicated, true values (not net change values) for the weight and arm are shown. Positive arms are distances aft of the airplane datum; negative arms are distances forward of the datum.

NOTE

Asterisks (•) after the item weight and arm indicate complete assembly installations. Some major components of the assembly are listed on the lines immediately following. The summation of these major components does not necessarily equal the complete assembly installation.

ITEM NO	EQUIPMENT LIST DESCRIPTION	REF DRAWING	WI LBS	ARM INS
	A. P1 wERPLAN T a ACCE SSORIE S			
A01-R	ENGINE, L YCOM ENG 0-320-H2A0 (INCLUDES ELECTRIC STARTER, vACUUM PUMP PAD, SPARK PLUGS & CAR131,RE TOR	0550333	269.5*	-19.7*
435-R	FIL TER. CARBUREI1R AIR	c294510 -033 1	0.5	- 2 6 . 3
409-R	ALTERNATOR, 28 VILT, 60 AMP (BELT DRI VE)	611503-0102.	10.7	- 2 9 . 0
317-R	OIL COOLER INSTALLATION	0550333 1	2.5s	- 2 . 5 *
	0 IL COOL ER	3599 A	2.1	- 2 . 5
421-A	011 FILTER 'INSTALLATION 1 SPIN-ON ELEMENT)	05J1060	2.5	- 6 . 5
	NET CHANGE			
433-R	p;:JP ELL ᶜiz ASSY. I F DEED PI TCH-LANOPLANE)	CIS1JJ1-2310	35.9	- 3 8 . 5 *
	PROPELLER (MCCAULEY)	ICI6J/D747551	*	- 3 9 . 1 -
	3.5 INCH PROP SPACER ADAPTOR IMZCAJLEY)	04515	30.1	35.4 -
433-0	PROP ELL ER ASSY. IF IXEu PI TCH-FLOATPLANE)	CL61001 -J35 7 1	3.6	38.6*
	PROP ZLL ER (MCCAULEY)	4E75/F198J 42	31.5	- 3 9 . 1
	3.5 INCH PRJP SPACER ADAPTOR (MCCAULEY)	04516	*	- 3 5 . 4
44I-R	SP INNER INSTALLATION, PROPELLER	05533 20	31.3	- 4 1 . 4 *
	SP INNER MIME	350[235-]0	3.6	- 4 3 . 1
	FRO SP TINIER BULKHE.10	0550321-4	2.0*	- 4 3 . 0 3
	AFT SP INNER BULKHEAD	0550321 -13	1.2	- 3 7 . 3
161-S	VACUUM SYSTEM INSTALLATION	05310 54	0.3	-2.7*
	CRY VACUUM PUMP	0431303-2131	0.4	- 6 . 3
	F IL T ER	1201375-2	3.)*	5 . 4
	VLC RP% GAUGE	C6685J9 -	1.3	1 6 . 7
	RELIEF VALVE-REGULATOR	3101	J.2	5 . J -
470-A	PRIMER SYSTEM, ENGINE THREE :-. YL I NDE R	0432301-34J1	0.1	1 2 . 0
A73-4	OIL QUICK ORA IN VAL VE I VET CrIANZIEI	0501056-1	0...	- -
		17)1215	0.3	
			J.)	
	Ls. LANOIN GEAR C. ALCE SSORIE S			
301-R	wHF EL, BRAKE & TIRE ASSY, 6.33)(6 MAI) 121			57.3*
	.11-FEL ASSY, MCCAULEY	0163018-3231		58.2
	pkAK E ASSY., ACCALLEY (LEFT)	C16 3305 -)131	4L.1	54.5
	BRAKE ASSY.. ⁴OCALLEᴸ V I It1S-1T)	0163331-0115	* 7.6	54.5
	7111E. 4-PLY 3LACKRALL (7 ACH)	0163032-0114	1.9	56.2
	TUBE (EACH)	C2320'51 -010 1	1.9	58.2 -
534-R	..HEEL E TIKE ASSY.. -L-.00X5 NOSE	C2J2J23-013 2	8.5	P.8* -
	„}EEL ASSY., 3COALLEY	C/63113 --)11 1	1.3	G'.8
		C163005-023 1	8.1*	
			2.4	

ITEM NO	EQUIPMENT LIST DESCRIPTION	REF DRAWING	WT LBS	ARM INS
	TIRE, 4-PLY 0LACKRALL	0262003-0 132	4. j	-6.8
	I UBE	C262.33-0101	K.2	-68
813-S	FAIRING INSTALLATICN, WHEEL (SET CF 3)	0541225-1	17.8*	47.1*
	'ICISE it HEEL FAIRING		4.0	-4.9
	MAIN ilHEEL FAIRING [EACH]		5.7	60.3
	C. ELECTRICAL SYSTEmS			
COI-R	BATTERY, 24 VUL I, ST ANDARC DUTY	1614001-0135	22-B	3.0
C01-0	NAT IEK Y. 24 VULT. HEAVY DUTY	0614031-0106	24.8	0,0
(.04-P	AL TERNATCR CCNTROL LNI 1 23 VOLT WITH HIGH	1611004-0101	0.4	3.5
	LDS. VOLTAGE SENSING			
COT-A	GRGUND SERVICE PLLG RECEPTACLE	0531064	2.7	-2.6
C16-U	hEA1 !NG SYSTEM, PE TOT !NE[CHANGE)	0422355	0.6	24.4
022-A	LIGHTS, INSTRUMENT PC51 {REQUIRES INSTALL-	0513394	0.5	16.5
	A TICN CF c34-C, DELUxE GLARESIIEELul			
C25-4	L foil , MAP (CCNTRCL).HEEL PIC, RcS E69-L)	0570087	0.2	21.5
C2[1]3-5	LIGHT, MAP & I NSTRLHEN1 PANEL FULD	3700149	0.3	32.3
	1 JOLRPOST ALIA 1E0)			
031-4	L I,,HT Sy COURTESY ENTRANCE (SET CF 21	052110 1	3.5	61.0
C4)-4	OETECTOR.S. NAvIwITICIN LI,',67 [SET uF 2)	0701013-1.	.1E,A.	- -
043-A	L t .,HT INSTALLATION, LmNIELA3H BEACON	3506003	2.1[1]1	104.2*
	3EACuN LIGHT UN FIN TIP	0621001-3102	3.4	243.0
	HASHER nwER SUPPLY	0594502-0132	0.8	205.8
	AESISTDR (01LMcCR I	CR95-6	4.3	208.1
C4C-A	LIGHT INSTALLATION. WING TIP STRCuE	053102 7	3.[1]0	43.3*
	FLASHER PCwER SURPL Y ISE (CF 2 IN wIN'S)	0622308-0102	2.3	47.0
	6 TRC8E LIGHT. RING TIP (SET CE 2)	C622006-0131	0.2	43.5
C49-5	LIGHT INSIAL LA I (CA, COIN/ MCUNTEC LANDING	0570312	1.9*	-27.1*
	LAMP. 250 %ATI (D.E.)	4553	0.8	-24.3
049-11	L 1.111S, ULAL COAL PCUNTED LANDING	0552141	3.2*	-2 3.0*
	LAMP, 250 WATT I0.1.1 (EACH)	4591	3.5	-29.3
	3. INSTRUMENTS			
001-ti	[MCA TL,R, AIRSPEED	1661064-0102	3.6	16.2
001-0	INOICAIOR, TRUE AIRSPEED	0513279	3.7	16.3
034-A	STATIC AIR ALTERNATE SOURCE	0501017	3.2	15.5

ITEM NCI	EQUIPMENT LIST DESCRIPTION	REF DRAWING	WI LBS	ARM INS
707-k	AL T /NETER (SENSI TIVE *i*	0651371-0171	1.0	14.0
007-1-1	A._ TimETR, SENSITIVE 150 FT. MARKINGS) I FEET AND 4ILL IBAk Sl	:-661.371 -313 *2*	1.3	14.0
11,U/-r/-c	4._ T !METER (SENSITIVE) *2UF* T. MARKINGS !FEET AND MILL IbAK 5)	C63102 *-J1U2*	1.)	14.0
01J-A	*A* T [NETER, 2ND UNIT INSTALLATION 10LIALI	20,31315	1.3	14.5
7L0-4-1	ENCOCING AL TIME TER (REuu IR ..- S RFLJCA TION OF REGULAR 41 TI4ETER }	J5J1049	3.0	14.0
116-A-2	EN CUO ING ALTIMETER. FEET C MI LL.I3AR 5 IRE- QUIRES RELOCATION OF REGULAR ALTIMETER)	0501049	3.0	14.0
016-4-3	4L T ETUDE ENCODER (BL MO, DOE S NOT R E0 U ER E INSTRUMENT PANEL MOUNTING)	0501059	1.5*	14.4*
019-4	AMMETER	5-1320-5	0.3	16.5
022-4	GAGE. CARBURETTR AIR TEMPERATURE	051.3339	1.0	14.0
025-S	CL OCK R ELECTRIC	C664548-0131	0.4	16.3
U28-K	*(/34Pass* MAGNETIC-INSTALLATION	0513262-1	0.4	14.0
033-[2]	IN STRIP :-.N T CLUSTER, LH & RH FUEL QUANTI TY	C669511-01)2	0.4	16.5
041-R	IN STRUM Z'N T CLUSTER. OIL PRESS, OIL TEMP.	C6695 12-013 2	0.5	16.5
049-1	IN 0 ICAT)1, ECONOMY MUNTDAE (EGT)	0501343 2	0.6	7,8
D64-5	GYRUS. ATTITUDE & DIRECTIONAL INDICATORS (NON-NAV-0-44 TIC I DIRECTIONAL INDICATOR ATTITUDE IN) ICA TOR	C661,375-0104 C661075-31)1	2.7 2.5	14.7 14.3
064-0	GYRO INSTALLATION FOR 300 NAY O MATIC DIRECTIONAL INDICATOR I ARC I ATI I TUOE INDICATOR	05)1)54-2 43763-0101 C661376-0131	6.94 3.3 2.5	13.4* 14.3 14.3
067-4	RFCuRDER INSTALLATION. FLIGHT 4DUR	0501052	0.5	0.3
002-S	GAGE, OUTSIDE AIR TEMPERATURE	C668507-31)1	0.1	23.6
0015-R	TACI-OME TFR INSTALLATION, ENGINE p EcoROpir, TACH INDICATOR FL EX I4LE TACH SHAFT	0506004 C668023 -0118 5-1635-10	1.00 0.7 3.5	12.1* 16.0 3.0
083-S-1	INDICATOR, TURN COORDINATOR, *28* VOLT ONLY	0661003-J5)5	1.3	15.3
7d8-S-2	EN DIC AT I4 , TURN COOR0 INA ToR , 10-30 V1LT	C661303-35)6	1.3	15.8
0.33-E1	IN ') ICAT11, TURN GOURD INA TF R (FOR USE WIVE NAV-3-44TM 230A AND 3004)	42320 -0023	1.3	14.6
091-S	IN 0 ICAT3R . VERTICAL SPEED	C661080-013 1	1.0	14.9
	E. C.BIN ACCOMMODATIONS			

CESSNA
MODEL 172N

HEM NO	EQUIPMENT LIST DESCRIPTION	REF DRAWING	WI LEIS	ARM *045*

SECTION 6
WEIGHT & BALANCE/
EQUIPMENT LIST

E02-S	AR 1 RESTS - 2ND R0,4 (SET OF 2)	0115034	1.5	72.5
E'05-	SEAT, ADJUSTABLE FORS C AFT PILOT	3514141	12.6	44.0
R E05-	SEAT, INF IN I TE AOJLSTABLE - PI LOT	0514142	23.0	41.5
-3	SEAT. ADJUSTABLE FORE C AFT- CO-PILOT	3314141	12.6	44.0
707-S	SEAT. INF 14 ITE 43JLSTA3LE - CO-PILOT	0514142	23.0	41.5
E07 'R	SF AT. REAR (ONE PIECE SACK CUSHION)	0514144	Z2.0	79.5
E)--S	SEAT. REAR (1W) PIECE SACK CUSHION)	0514143	*23.0*	79.5
E09-1	PILOT LAP BELT ASSY	5-2275-	1.0	31.0
c I5-R	SHIJUL DER HARNESS ASSY. PILOT	103 5-	0.6	37.0
E 15-S	SHOULDER HARNESS INERTIA REEL INSTALLATION	2275-231	*2.0*	*82.)*
E19-0	P [LOT & C(7-P 'LOT - REPLACES STD BELTS AND rARNESS DIET CHANGE)	35)1)46-1		
	BELT & SHOULDER ASSY - CU-PILOT		1.6	37.0
E23-S	REL T ASSY, ?NO R1I. (SET OF 2)	S-2275-3	2.)	70.0
E27-S	SE AT BELT & SHOULDER HARNESS ASSY	5-17746-39 S-	3.2	70.0
27-3	FOR 2ND Row SEATING	2275-6		
	DELUXE GL VESHIELD (NET CFi4NGE 1		1.0	21.0
c34-0	LEATI-E4 SEAT COVERING (NET CHANGE	0515034	2.0	62.0
E35-4-1	LE ATi-ER & VINYL •DR FABRIC COVER-NET CHANGE	CES-11.51	1.5	62.0
E35-A-2	WINCOW, *HINGED,* RH DOOR (NE *I* CHANGE)	CES-1 /5	2.3	47.3
E37-0	WINDOWS, OVERHEAD GAR IN TOP (NET CwAN.:',E)	1 05010	0.9	47.9
E39-A	VENTILATION SYST M, REAR SEAT (NOT CON-	75	1.7	60.0
.43-4	P ATA31_5 WITH 88-A-1 OR *E88-A-21*	051180)		
	BEVERAGE CUP HOLDER	07)0322	0.1	1 5 .
E49-A	HEADREST, 1ST ROW (tAT EACH)		0.7	0
E50-A	HEADREST, 2ND ROW (61 EACH)	0531723	0.7	4 7 .
=61-A	531 VISORS (SET OF *2)*	1215073-11	0.9	0
E65-S	141.·400r15, TENTED FRONT, SIDE E. REAR	1215373-11	0.0	3 6 .
E57-A	(NET CHANGE)	050004)		0
	BAGGAGE NET	0500267	0.5	3 2 .
E65-S	RINGS. CARGO TIE-006N I STO6ED)(USE AR .N AS		1.0	8 -
E71-A	INSTALLED WITH CARGO)	2315009		
	Co TOOLSw INSTALLATION, DUAL	05300 42	4.9	95.0
E85-4	00DDER Td r4 SYSTiM		1.9	- -
E37-A	CA .4 IN AIR LJNOI HONING SYSTEM-CHILLED AI k	0513335	..)3.54	
E38-A-1	COMPRHSSOR ASSEMBLY	0513293	*20.2*	12.4
	EVAPORATOR I L3CA TtO ABOVE AFT BAGGAGE	0501066	9.1	9.4
	CONDENS3R (LOCATED UNDER SIDE :USELAGE)		5.3	43.2*
	CA BIN AIR CIRCOLA TING FAN		10.0	- *29.0*
.238-4-2	A_L PURPOSE CONTROL HEEL, I\T CHANGE		NEGL	123.5
E39-t)	I-EAT (NG SYSTEM, C48IN C	05)1372	17.5	96.2
E43-R	CAt81.)4RE 13R AIR			130.0
	I INCLUDES E KH7 LST SYSTEM)	05503 33		•••• -
		05)6304		21.0

ITEM NOEM	EQUIPMENT LIST DESCRIPTION	REF DRAWING	WT LI35	ARM INS
	F. PLACAk3S, AARNINGS E KANOALS			
FOI-R	PLA'ARD, OPERATIONAL LIMITATIONS-LAY VFR	0505067	NEGL	- -
F01-U-1	PLALARC, OPERATIONAL LIMITATIONS-DAY NIGHT VFK	0505007	AEGL	- -
F31-0-2	PLACARG, OPERATIONAL LI*ITATICNS-DAY NIGHT VFK IFP	0505087	NEGL	- -
F01-0-3	PLALARD, OPERATILNAL LImITATIGNS-LAY VFR FLOATPLANE	0505087	NEGL	- -
F01-0-4	PLACARC, OPERATIONAL LIMITATIONS-DAY NIGHT %/FR FLOATPLANE	0505087	NEGL	- -
F01-0-5	PLACARG, OPERATIONAL LIMITAFICKS-0AY NIGHT VFR IFk FLuATPLANE	0505087	NEGL	- -
	NOTE THE *A6OVE* FLAC4RGS ARE INSTALLED ACCORDING TC AIRCRAFT ECo1PPENT			
F04-R	IMOILAIOR, ALGIBLE PKELKAIIC STALL WARNINO	0523112	0.2	28.5
F13-5	LOW VOLTAGE hARNING LIGHT, ALTERNAIR		NEGL	- -
F16-A	PILOT'S OPERATING HANDBOOK AND FAA APPROVED AIRPLANE FLIGHT MANUAL	01136-I3PH	0.5	- -
	G. AUXILIARY EOJIPMENT			
G07-A	RIAGS, AIRPLANE HEISIIN0 (CABIN TUN	0541115	0.9	49.1
613-A	CORROSION PROOHING, INTERNAL	05)0336	10.0	77.0
U16-A	SIAIIC JISCHARGEAS	0501048	0.4	143.2
U19-A	STABILIZER A6kASICK BLOIS	0500041	2.7	206.0
022-S	TON BAR (STONED)	0501119	1.6	95.0
625-S	PAINT, OVERALL EXTERIOR (MODIFIED POLY-URETHANE)	0504037	*12.4**	90.9*
	OVERALL BASE WHITE		11.6	90.5
	WASH PRIME		0.4	90.5
	LOLCR STRIPE		0.5	*102.2*
G25-A	OPTIONAL OVERALL PRIPECOATING	19504037	3.3	90.5
031-A	CABLES, CORROSION RESISTANT CONTROL (NEI CHANGE)	0500036	0.0	- -
055-A	FIRE EXTINGUISHER INSTALLAT1CN	0501011	3.0*	43.6*
	FIRE EXTINGuISHER	C421031-0101	2.6	44.0
	FIRE EXTINGUISHER PUNTING BRACKEI	0421001-0102	0.3	42.2
G58-A	STEPS A HANDLES, REFUELING ASSISTING	0513415	1.7	16.3

ITEM NO	EQUIPMENT LIST DESCRIPTION	REF DRAWING	WT LBS	ARM INS
G67-A	MURDER PEDAL EXTENSIONS, REMOVABLE - SET *01-2* ISTUNA61E - IhSTALLCO *ARM SHLWN)*	0701048	2.3	8.0
G88-A-1	wINTERIZATICN KIT 1NSTALLATIEN, ENGINE BREATHER TUBE INSULATION	0501008	1.8*	-22.7*
	TOO COWL INLET AIR COVERS (INSTALLED) ISTOwE0)	0552011	3.4	-13.8 -
		0552132-1.-2	1.3	32.0
G88-A-2	WINTERJZATICA KIT INSIL., *FLCATPLANE* ONLY	0552132-1,-2	0.3	95.0 -
	BREATHER TUBE INSULATION	*055201/*	t.3*	7.2* -
	COM. CLTLEY COVER (11 IINSTALLED) ISTOwEDI		0.4	12.0 -
			0.6	4.0
092-U	FUEL SYSTEM, EXTENDED RANGE KING TANKS. (NET CHANGE)	0501055	0.6 V.5	95.0 48.0
	H. AVIONICS & AUIOPLLCTS			
HOI-A	CESSNA 330 AOF INSTALLATICN CONSISTS OF	3910159-2	7.0*	21.0*
	RECEIVER WITH BPO (R-5-.6E)	41240-0101	2.3	12.1
	INDICATOR (IN-346A)	40980-1001	0.9	14.0
	SENSE ANTENNA INSTALLATION	0570400-632	0.Z	108.6
	LOOP ANTENNA INSTALLATICN	3960104-1	1.4	39.3
	RECEIVER MOUNT, WIRES AU mISC ITEMS		2.2	13.7
H04-A	OME INSTALLATION, NARCO	3910166-1	7.5*	111.5*
	RECEIVER (DME-190)	3312-400	4.9	11.3
	+CANTING BOX		0.6	11.3
	ANTENNA,	- -	0.2	86.1
H05-A	FOSTER R-NAV 511	3910203	3.4*	11.6*
	RECEIVER E MCUNT (511)		2.4	4.5
H07-A-1	CESSNA 400 OLIuESLCPE siNCLunes voRifts INDICATOR-NET CHANGE *FOR* VCR/LCC	3910157	4.4*	81.1*
	RECEIVER (R-4439)	42103-0000	2.1	117.0
	ANTENNA {LOCATED-UPPER wINOSHIEL01	1200098-2	0.2	30.0
	VUR/ILS INDICATOR IIN-386A)(INDICATOA	46860-2000	3.1	15.5
	NT NET CHANGE, ACTUAL NT IS 1.7 LBW			
H07-A-2	CESSNA 400 0LIDESLCPE IENCLUCES AUTCCOURSE VOR/ILS INJICATCR, WT NET CHANGE FOR VUR/LCC INOICATCRI	391015/	4.6*	78.2*
	RECEIVER (R-4438)			
	ANTENNA (LOCATEJ- AINOSHIEL0)	42120$_{00}$100-0000	2.1	117.3
	VOR/ILS iNOICATCR^{LPPE} (IN-^{R} 386AC/(INO/CATOR	46860-^{9}220^{2} 0	02 0..3	30.0 14.7

	EQUIPMENT LIST DESCRIPTION	REF DRAWING	WT LBS	ARM INS
	WT NET CHANGE, ACTUAL 117 iS 1.9 LEIS)			
akI-.41-1	PANTRONI PT-101 HF TRANSCEIVER 2ND UNIT	3913156-9	20.2*	88.8*
	TRANSCEIVER IVER (PANEL MOUNTED/	C582103-0102	4.2	10.4
	ANTENNA LEAD SEX	c58950z-0201	4.2	112.5
	HF POWER SUPPLY (REMOTE)	C582103-0301	8.5	114.4
	POWER C SIGNAL CABLES		2.5	41.0
	ANTENNA INSTALLATION, 351 N. LONG	3960117	0.3	144.4
H11-1-2	SUNAIR ASB-125 HE TRANSCEIVER' 21%0 UNIT	39L0158-1	22.0*	82.8*
	ANTENNA LCAO 8CX	99816	4.9	112.0
	POWER SUPPLY (REMOTE/	99683	8.5	114.0
	TRANSCEIVER (PANEL MOUNTED)	99681	4.6	10.4
	ANTENNA INSTALLATICN, 351 IN. LONG	3960117	0.3	144.4
	misC SWITCHES, wIRES AND ETC.	- -	3.7	57.5
H13-A	CESSNA 40C MARKER BEACON	3910164-1	2.3*	34.5*
	RECEIVER (R-40211	42410-5128	0.7	11.8
	ANTENNA, L SHAPED ROD	0770681-1	0.7	136.0
H16-A-1	CESSNA 3C0 TRANSPONDER	3910127-17	4.0*	25.8*
	TRANSCEIVER MT-359A)	41420-1128	2.7	11.1
	ANTENNA		0.3	1260
H16-A-2	CESSNA 400 TRANSPONDER IUSED FOR EXECia)	3910128-21	4.2*	25..1*
	TRANSCEIVER MT-4591)	41473-1128	2.9	11.1
	ANTENNA		0.3	126.0
H22-A-1	CESSNA 300 NAV/CUM. 72C CH, FIRST UNIT	3910183-4	15.3*	30.5*
	WITH VOR/LUC			
	RECE¯rER-TRANSCEIVER (R1-385A1	46660-1100	5.5	11.5
	VoR,...C. INDICATOR IIN-	46660-1030	1.6	14.5
	38511	3910186	7.0	52.6
	H34-A BASIC AVIONICS KIT		1.2	10.0
H22-A-2	MLILNI. WIRE C MISC HAkOwARE	3910183	15.5*	30.3*
	L'ESNA 300 NAV/COP, 720 CM. FIRST UNIT			
	WITH VER/LOC ALIOCCURSE INDICATOR	46660-1101	5.5	11.5
	RECEIVER-TRANSCEIVER (Rf-38541	46860-1200	1.B	14.5
	OR/LCC CENTERI INDICATER IIN-585AC1 (AUTCNATIC	3910186	7.0	52.6
	RADIAL NG)		1.2	10.D
	H34-A BASIC AVIONICS KIT			
H25-A-1	MOQNT, WIRING t MISC HARDwARE	3910183-6	9.3*	14.6*
	CESSNA 300 NAV/Cu0 720 CH CLM2ND UNIT			
	WITH VOR/LOC	46660-1101	5.5	11.5
	RECEIVER-TRANSCEIVER MT-385A1	46860-1000	1.6	14.5
	VOR/LCC INDICATOR (1N-385AI	3910185	1.0	37.5
	H37-A ANTENNA COUPLER KIT	3960111-1	1.2	10.0
1-15-4-1	40LNT, WIRING & MISC ITEMS	3910163	9.5*	14.6*
	CESSNA 3C0 NAV/CUM 720 CH CCM 2ND UNIT			

HEM NO	EQUIPMENT LIST DESCRIPTION	REF DRAWING	WT LBS	ARM INS
	wiTH VOR/LOC ALTOCCURSE INDICATOR			
	RECEiVER-TRANSCEIVER (RI-185A)	46660-1130	5.5	11.5
	VOR/LCC INDICATOR (IN-385AC)(AuTEMATIC	46860-1200	1.8	14.5
	RAJIAL CENTERING,			
	H37-A ANTENNA CURLER KIT	3910185	1.3	37.5
	mOLNT. WIRING C PESO ITEMS	3960111-1	1.2	10.0
H28-A-1	EMERGENCY LOCATOR TRANSMLTTER	0470419-3	3.5*	116.5*
	TRANSMITTER (U E M DPELI-6-1)	C569511-0117	3.3	116.4
H28-4-2	ANTENNA	0589511-0109	0.1	*122.0*
	EMERGENCY LOCATOR TRANSMITTER (USED IN	0470419-4	3.5*	116.5*
	CANADA)			
	TRANSMITTER (0 & M DMELT-6-1C)	0589511-0113	3.3	116.4
	ANTENNA	C589511-0109	0.1	122.0
H31-A-1	NAV-C-MATIC 200A	3910162-1	9.2*	51.0*
	CONTRCLLER-AMPLIFIER	3930144-6	1.6	13.1
	(URA COOROINATCR MET CHNG) (G-300A1	42320-0014	0.0	- -
	WING INSTALLATION (SERVO IS 3.9 LBS AT	0522632-1	6.1	68.1
	68.9 INCHES1(P4-495)			
H31-A-2	NAv-U-MATIC 300A (AF3951	3910163-1	10.4*	46.2*
	CONTROLLER-AMPLIFIER & MOUNT	CA-3951	1.8	131
	064-0 (OHO INSTALLATICN NET CHANGE	0501054	0.6	11..3
	088-0 TORN CCCPOINATCR NET CHANGE	42320-0028	0.0	- -
	RING INSTALLATICN ISERVC IS 3.9 L85 AT	0522632-1	6.1	68.1
	68.9 INCHESIIPA-4551			
	RELAY INSTALLATICN	3940151-1	0.4	4.0
H34-A	dAS1C AVIONICS KIT--AVAILABLE WITH 15T	3910186-2	7.0*	52.6*
	UNIT NAV/COm ONLY			
	RA010 COOLING INSTL.	3930206	1.1	10.2
	NOISE FILTER-AUDIL (ON ALTERNATOR)	3940148-1	0.1	-26.1
	CUM ANTENNA CABLE	3950122-3	0.4	21.8
	LIMN! ANTENNA CABLE	3950122-4	0.6	116.0
	OMNI ANTENNA INSTALLATION	3960102-10	0.8	220.8
	LH VHF COM ANTENNA	3060113-1	0.4	62.4
	CABIN *SPEAKER* ;ASTI.	3970123-5	1.2	37.9
	MIKE INSTL--HANOHELD	3970124-1	0.3	17.2
	HEACPHCNE INSTALLATICN	3970125-4	0.2	14.2
H37-4	AUDIO CONTROL PANEL INSTL	3970131-1	1.9	12.5
H55-4	ANTENNA E COUPLER KIT	3913185-2	1.0	37.5
	MIKE-HEACSET CLMIIC. INSTL (HEADSET STOwED)	3970112-1	0.3	13.0
H56-A	PADDED OW EA DaHRM NSHS EN NMIICREQuHRNES ' E8E9-001 RES	0596531-0131	1.1	- -
	E89-0 ALL PURPOSE CCNTRCL WHEEL			

ITEM NO	EQUIPMENT LIST DESCRIPTION	REF DRAWING	WT LBS	ARM INS
	J. SPECIAL CPTICN PACKAGES			
JOI-A	SAyHAI,K II EQUIPMENT CONSISTS CF ITEMS	0500513	25.5*	46.0*
001-0	TRUE AIRSPEED INO.(NET CHANGE)	0513279	0.1	16.7
CI6-0	HEATED PITOT SysfEm	0422355	0.6	24.4
E85-4	OLAL CCAIRCLS	0513335	4.9	12.4
L4C-A	NAv LIGHI DETECTORS	0701013	NEGL	- -
C31-A	COURTESY LIGHTS	352[101	1.5	61.0
(.43-A	FLASHING BEACON L1,-,HT	3506003	2.1	184.2
004-A	STATIC ALTERNATE AIR SOURCE	0501017	0.2	15.5
H28-4	EmERGENCV LOCATOR XmTR IELTI	473419	1.5	116.6
625-0	SKYHAWK 11 PAINT (AEI LHANGEI	0534035	.0.3	- -
H22-A-1	NAV/CUH 385A VCR/LCC	39/0183-4	15.3	30.5
J04-A	8.3V-PAC 1NSTALLAT1IN (SKyHAWK II ONLY)	3910161	20.3*	19.1*
H25-A	385A NAv/ccm vOR1tCC	- -	9.3	14.6
H01-A	3C3 ADF (546E1		7.0	21.0
HIE.-A-1	3C0 TRANSPONDER (RI-359)		4.3	26.1
J11-A	FLUAIPLANE FLSELAGE STRUCTURAL PLJ1FICA-TICN5 & FITTINGS (CPTICN C I	0510083	6.1	45.5
J13-6	FLO4TPLANE ClwiDELK V BRACE 1iNsTALLEDI ISTOAE01	0513003	1.1 1.1	26.2 95.0
315-A	FLGAIRLANE AILORCA-PLICOFR INTERCCNNECT	0560012	0.4	69.6
	FLOAIPLANE LNLY (INSIALLEC) (SICAED)		0.4	55.0
	ITEMS 310-A & J13-A ARE ALSO APPROVEC *FCR* LAKOPILANE OPERATICNS.			
J27-A	MODEL 8962033 FLOATS 1502 ATTACHMENTS NET CHANGE BETWEEN sTANGARC LANCING 6LAR (ITEM NOS. 801-R, 614-R, 810-S. AND 8IAKE & NOSE WHEEL STEERING SYSTEMS) AdLi FLCMPLANE KIT (ITEM No. J30-A-1) IS APPRCXIMATELY 155 LES. AI 58.3 IN. THE CORRECT VALUES of WT & Apm CHAA.E FOR FT 6 BALANCE C4LCULATICNS SHOLLD 6E OLIER*INC0 FROm THE ACTUAL INSTALLAIION.	EDU-36335	- -	- -
J30-A-I	FL[JAFPLANE EQUIPMENT KIT WITH PRCP CHANGE AND CORROSION PRUCFING CONSISTS cf--	0510083	21.7*	52.3*
433-0	PROPELLER, FLCATPLAKE, EXCHANGE	0550320	1.3	-41.4
F01-0-	PLACARD, FLOATPLANE LPERATILN	0505053	0.0	- -
+531-A	CAULEs, CCPRoSION RESIST, EXCH.	0531006	0.0	- -

ITEM NO	EQUIPMENT LIST DESCRIPTION	REF DRAWING	WT LBS	ARM INS
U13-A	CORR..J-51CA PRCUFING, INTERNAL	3500036	10.0	77.0
G0 7-A	RINGS, AIRPLANE HOISTING	0541115	1.1	49.1
G5E-4	STEP & H4NOLE, REFUELING	0513415	1.7	17.9
J13-A	FuSELAGE PCDIFICATILA ICPT C)	0510083	6.1	45.5
J13-A	COAL ,3C.K v-BRAZE [INSTALLED)	3513003	1.1	26.2
J15-4	INTERCONNECT SYSIcm, INSTALLED	0560012	3.4	69.6
	LOW[ASSY FLOATPLANE (NET CHG1	0652162	NEGL	- -
	FLuAIPLANE PLACAkC	3505385	NEGL	- -
J30-A-2	FLuATPLANE ECuIPMENI KIT WITH CCRPCSIUN pROLFING, v-BRACE ST0AE0 ANG AL PROP CHANGE	0501083	20.4*	62.5*
F01-0-	PLALARO, FLCATPLANE OPERATION	3515053	0.0	- -
.;31-A	CABLES, OCRROSICN RESIST, EXCH	0500036	0.0	- -
G13-A	CCHROSICA PRCOEN6 INTERNAL	3510136	lo.'-)	77.0
.07-A	RINGS, AIRPLANE HOISTING	0541115	1.1	49.1
G5R-A	STEP & HANDLE REFUELING	0513415	t.t	*11.8*
310-A	FUSELA,6 PCOEFICATIOA	0500083	6.1	45.5
J13-A	COwL DECK V-BRACE (STOwO01	0513003	1.1	95.0
J15-6	INTERCCANELT SYSTEM ISTOWE01	0560012	1.4	95.0
	COWL ASSY, FLOATPLANE (NET CH31	0552162	NEGL	- -
	FLUATPLANE PLACARC	0535385	NEGL	- -
130-A-3	FLOATPLANE EQUIpmENT KIT WITH PRCP CHANCE tAC CORROSION FROOF1N; CONSISTS OF--	0500363	11.7*	31.2*
633-0	PRuPELLE'?, FLOATPLANE, EXCHANGE	0550320	L.3	-41.4
FU/-0	PLACARD, FLOATPLANE OPERATIONS	3505053	0.0	- -
G07-A	RINGS, AIRPLANE HO/STING	0541115	1.1	49.1
G58-A	STEP & HANDLE, REFUELING	0513415	1.7	17.8
J10-A	FUSELAGE MUOIFICATICNS	0500344	6.1	45.5
J13-A	COWL DECK V-8RACE (ENSTALLEDI	0513303	1./	26.2
015-A	INTEACCNNECT SYSTEM (INSTALLED)	0560012	3.4	69.6
	CGWI. ASSY, FLOATPLANE (NET CHG1	0552162	NEGL	- -
	FLJATPLANE PLACARD	0505085	NIGL	- -
03,7-6-4	FLOATPLANE Ei.:01P4ENT KIT WITH NO PRCP CHANGE GP LURMCSION PROOFING (USED PRIPARILy IN *CANADA)*	0530063	10.4k	41.2*
7-A	RINGS, AIRPLANE HOISTING	3541115	1.1	49.1
658-A	STEP & HANDLE! REFUELING		1.7	17.8
010-A	FUSELAGE MCOLFICATICNS	0500383	6.1	45.5
013-A	COWL DECK Y-BRACE (INSTALL		1.1	*26.2*
J15-k	INT6ROCNNECT SYSTEM (STOWEOI	0560312	0.4	95.0
	COWL ASSY, FLOMPLAAE (NET CHU)	3552162	NEGL.	- -
	FLOATPLANE PLACARG	0505095	NEGL	- -

Scenario Objective

The purpose of this lesson is to introduce to the appropriate Federal Aviation Regulations Part 61 and 91 which apply to student pilot operations and complete the pre-solo written.

Scenario Completion Standards

The instructor will guide the student through the appropriate Federal Aviation Regulations Part 61 and 91 which apply to student pilot operations. This lesson will be complete when the student is able to (a) meet the desired outcomes listed below, (b) explain, through the use of the federal regulations, how to plan a safe solo local flight, (c) satisfactorily completes a written test on solo flight limitations. The written test will be corrected to 100% by the instructor.

Learning Objectives/Desired Outcome/Grading Sheet

	Desired Outcome	Describe	Explain	Practice	Perform	Manage/Decide	Not observed
14 CFR Part 61							
Subpart A - General	EXPLAIN						
A. Pilot certificates	EXPLAIN						
B. Narcotic drugs, marijuana, and depressant or stimulant drugs	EXPLAIN						
C. Medical certificates	EXPLAIN						
D. General limitations	EXPLAIN						
E. Logging of pilot time	EXPLAIN						
Subpart C - Student Pilots	EXPLAIN						
A. Requirements for solo flight	EXPLAIN						
B. General limitations	EXPLAIN						
C. Cross-country flight requirements - general	EXPLAIN						
14 CFR Part 91							
Subpart A - General	EXPLAIN						
A. Responsibility and authority of the pilot-in-command	EXPLAIN						
B. Careless or reckless operations	EXPLAIN						
C. Alcohol and drugs	EXPLAIN						
Subpart B - Flight Rules	EXPLAIN						
A. Preflight action	EXPLAIN						
B. Use of safety belts and shoulder harness	EXPLAIN						
C. Right-of-way rules	EXPLAIN						
D. Minimum safe altitudes	EXPLAIN						
E. Compliance with ATC clearance and instructions	EXPLAIN						
F. ATC light signals	EXPLAIN						
G. Operations in the vicinity of airports: controlled and uncontrolled	EXPLAIN						
H. Fuel requirements	EXPLAIN						
I. VFR weather minimums	EXPLAIN						
J. Special VFR clearances	EXPLAIN						
Subpart C- Equipment, Instrument and Certificate Requirements	EXPLAIN						
A. Instruments and equipment required	EXPLAIN						
B. Minimum equipment list	EXPLAIN						
Subpart E - Maintenance, Preventive Maintenance and Alterations	EXPLAIN						
A. General information	EXPLAIN						
B. Maintenance required	EXPLAIN						
Inspections							

Annual, 100 hours, progressive	EXPLAIN						
A. Location of maintenance records	EXPLAIN						
B. Altimeter system tests and inspections	EXPLAIN						
C. ATC transponder tests and inspections	EXPLAIN						
D. Aircraft and engine logbooks	EXPLAIN						
E. Supplemental type certificates	EXPLAIN						
F. Ferry permits	EXPLAIN						
G. Preventive maintenance	EXPLAIN						
H. Airworthiness directives	EXPLAIN						
I. Service bulletins	EXPLAIN						
Written Test							
A written test will be administered at this time and will include questions on the regulations that apply to student pilot operations and on flight characteristics and limitations of the aircraft the student is flying.	PERFORM						

Instructor Information

The following is a list of questions/problems the student might encounter in the above scenario. Let the student use the CFR's to find the answers to the following questions. Each group of questions has been supplied with the applicable CFR reference(s):

14 CFR 61.3
What certificates does your friend need to have on his possession to act as PIC during this flight?
As a student pilot, what certificates would you need?
If you were going to act as PIC, would your friend still need their certificates?

14 CFR 61.19, 61.23, and 61.53
How long is your current student pilot certificate good for?
What class of medical certificate do you have now?
How long is that good for?
What other class medical certificates are there and how long are they good for?
If your friend has a broken arm in a cast, can he still be the PIC for this flight?

14 CFR 61.25 and 61.29
You pilot friend Janelle recently got married and changed her last name, does she have to change her name on her PCL? – How would she go about that?
The night before today's flight your friend discovers his medical certificate is missing, what should he do?

14 CFR 61.87, 61.89, and 61.93
As a student pilot can you make the flight described above? Why or why not?
Assuming the above flight was solo, what would we – as student and instructor – need to do in order to make the flight?
Can you go in the C-172 if all your training is in the Warrior?
After we go through all the necessary training can your friends come along? Why or why not?
What are some other limitations you are subject to as a student pilot?
If you didn't have a cross country endorsement, how far could you have legally gone before having to turn around?

14 CFR 91.3 and 91.13
Who is responsible for anything that might happen on today's flight?
Can you act as PIC on today's flight? Why or why not?
If you did anyway, do you think you'd still be held accountable for anything that went wrong?
As a holder of an CPL, when are you acting as PIC?
What authority does acting as PIC give you?
If you acted as PIC for the flight described above with only your current pilot training, do you think that it'd be considered careless and reckless? Why or why not?
How do you define careless and reckless?

14 CFR 91.103 and 91.151
Before going on this flight, what pre-flight actions must be done?
What if it was just a local flight in the traffic pattern?
How much fuel should the aircraft have upon landing at MSP (FAA and locally established)?
What if it was a night flight?

14 CFR 91.403, 91.405, 91.409, 91.411, 91.413, and 91.417
Before going flying you want to make sure your new C-172 aircraft is airworthy, how are you going to go about this?
Who is responsible for maintaining this aircraft in an airworthy condition?
Where are you going to look to find all the necessary maintenance information?
What are you looking for (inspections and AD's)?
What are AD's?
Who issues them?
When do we have to accomplish them?
Are there any AD's for our C-172N? Where do we go to find out?
Are all AD's a one time compliance item?
What are service bulletins?
Who issues them?
If there is a service bulletin for our aircraft, what do we have to do?
Does this aircraft have to have an annual? What about a 100 hr, why?

How does an annual differ from a locally approved progressive maintenance program?
If we discover the annual was done a year and three days ago, can we still go?
What inspections besides the annual must be complied with for us to go?

14 CFR 43.3 and 91.417
On pre-flight you discover the tire on your aircraft has several bald spots and needs to be replaced, you're fairly certain you are capable of the task....
As the holder of an SPC, can you do this? If not, who can?
What other maintenance does not require an A&P?
After the tire is replaced, what must be entered into which log?

Thank God all that is done, ignoring any certification or aircraft airworthiness problems, you and your friends unwisely decide to hop in the aircraft and go flying...

14 CFR 91.107
If the PIC for the flight forgot to give a thorough pre-flight passenger brief, would they be violation of the CFR's?
During taxi, your friend Bill – in the backseat of the plane – is complaining about the safety restraint digging into his hip. He asks if he can take it off, what do you tell him?
When can the pilot remove their shoulder harness on this flight? Safety belt?

14 CFR 91.113, 91.119, and 91.123
Before takeoff that annoying Bill asks you if you can over fly his house in Grand Forks, what the lowest altitude you'll be able to fly over it?
On climb out ATC gives you an early turn which puts you right over Truck Stop, suddenly Joe points out a company warrior that is coming at you head on, what do you do?
If that aircraft was an Airship would your or his action been any different?
What are the other right of way rules you'll have to be aware of on this flight?

Good thing we avoided that mishap, you decide to continue on your way...

14 CFR 91.123, 91.126, and 91.127
When can you legally change frequencies from the departing tower freq?
If the tower controller yelled at you for changing course to avoid the other aircraft that obviously he didn't know about, what would you tell him?
Was it wrong to alter your course for the other aircraft without being instructed?
What other situations do you not have to comply with an ATC clearance?

14 CFR 91.155 and 91.157
Using the MSP sectional talk about the different types of airspace that the student would encounter on their flight, good lead in question:
Why do airspace and VFR weather minimums exist?
Use other sectionals to show different types of airspace and the same type(s) of airspace you just discussed, quiz the student using a few simple scenarios.
Examples of good scenario type questions might be:
If we were at this airport, what would be our weather minimums?
If we were at 12,500 ft here, what would be our weather minimums?
What if the visibility was 2sm at this Class D airport, could we still get in?
Show me another airport you could get a SVFR clearance into.

Believe it or not, you and your friends arrive without incident at Flying Could airport...the next two days are filled with fun and excitement

14 CFR 91.205 and 91.113
You arrive at the airport about three hours before your friends on Sunday in order to have ample time to prepare for the flight back. After you finish your cross-country planning, you start on the preflight and discover the landing light on your aircraft does not work...what are you going to do?
Using this scenario cover in detail, step-by-step, what you would do if the aircraft did not have an MEL, use the attached C-172R equipment list:

How would you handle the same situation if you were flying an aircraft that has an MEL (cover in detail what they should do if the aircraft does have an MEL, point out the advantage of an MEL)?

If the landing light was required what would you have to do in order to go on this flight?
What is the purpose of a ferry permit?
Where do you get one?

While you're waiting for your friends, a salesman comes up to you and offers you a deal on the latest wing/lift modification for your model Skyhawk. He tells you it only takes about an hour to install and it's fully STC'd, what does he mean by STC? When else would you need an STC?

14 CFR 61.14, 61.51, 61.16 and 91.17
Finally your friends arrive! You excuse yourself from the salesmen and walk over to them. You notice that Bill is staggering and only staying up because Joe is helping him walk. When you get closer you can smell the alcohol on Bill's breath. Joe is in a hurry to get back and prompts you to help him get Bill strapped in. "Don't worry", Joe says, "he'll pass out as soon as we get going." What do you tell him?

If Bill was the PIC on this flight, how long would he have to wait before he could go flying?

While you wait for Bill to sober up and Nathan reviews your flight planning, Joe starts to ask you about getting his pilot's Certificate. You know that Joe has had a problem in the past with a couple DUI's and marijuana possession. What do you tell him about the probability of getting his pilot's Certificate?
He laughs and says they shouldn't be that harsh on recreational smokers. Joe excuses himself saying he needs to go to the bathroom. You get suspicious when you see him bypass the men's room and proceed around the corner of the hanger. You follow to investigate and discover Joe stuffing a pipe full of weed. What are you going to do?
Since it's not yours, he pleads with you to let him take it, do you?

You and your pilot friend Nathan decide to leave your two ex-friends in Minneapolis. Hey, you were nice enough to secure them a ride to the Grey-hound station. Somewhere past Alexandria you alternator light comes on. You troubleshoot the problem but to no avail. The aircraft is only running on battery power. You and Nathan decide if you conserve your power you might have enough battery to still talk to Grand Forks Approach and Tower when you arrive. Unfortunately you were wrong, and your radio goes dead about 3 miles south of Truck stop. You had informed approach control of your problem and they had responded by telling you they would let tower know. Your final instruction was to enter at Truck stop.

91.125
If you receive a steady red light gun signal after entering truck stop, what will you do? Where will you circle?
What order of light-gun signals would you get if you were cleared by tower to do the following:

Enter the traffic pattern
Get clearance to land
Taxi off the runway to the ramp
14 CFR 61.56
When you get home, could you log the past weekend's flight?
If your friend Nathan was acting as PIC, could he log it?
What time does a pilot have to log?

Administer pre-solo written exam.

Assignment for Lesson 12

Student Preparation

1. Review syllabus description for this lesson.
2. Complete appropriate sections of the workbook.
3. Obtain a weather briefing and calculate necessary pre-flight planning.
4. Be prepared to lead a discussion on how to get from Bravo apron to the runway, and from the runway to Charlie ramp.

FAA-H-8083-3, AIM, 14 CFR Part 91, Safety Policies and Procedures

1. ATC clearances at airports with an operating control tower
2. Runway Incursions
3. Student pilot operations in the traffic pattern

Pre-solo/Solo – Lesson 12
Mission – First Solo
FLT Lesson 12 (Approximate lesson time 1.5 hours)

Dual/Solo – Airplane

Note: Supervised solo flight will be a minimum of 0.5 hours.

Scenario

There is no scenario for today's flight. Congratulations on making it to your FIRST SOLO!!! You have taken the first big step to becoming a certified pilot. Have fun and fly safe.

Scenario Objective

The purpose of this lesson is to apply previously learned elements to show that the student can conduct a safe solo flight in the airport traffic pattern. In addition, he/she shall conduct a SUPERVISED solo flight.

Scenario Completion Standards

This lesson is complete when the PT is able to (a) meet the desired outcomes listed in the table below, (b) can control the airplane as sole manipulator, exercise judgment, and apply aeronautical knowledge with the successful outcome of a maneuver or procedure never seriously in doubt, (c) will complete all maneuvers and procedures to the segment's completion standards, and (d) will accomplish the first supervised solo flight in the traffic pattern.

Learning Objectives/Desired Outcome/Grading Sheet

	Desired Outcome	Describe	Explain	Practice	Perform	Manage/Decide	Not observed
Preflight Discussion							
Discuss lesson objective and completion standards	PRACTICE						
Normal and crosswind landings	PRACTICE						
Single-pilot resource management (SRM)	MANAGE/ DECIDE						
Review							
Use of checklist	PERFORM						
Ground maneuvering procedures	PERFORM						
Proper use of the radio for two-way communication	PERFORM						
Normal or crosswind takeoff and climbouts	PERFORM						
Collision avoidance procedures	PERFORM						
Wake turbulence avoidance procedures	PERFORM						
Wind shear avoidance procedures	PERFORM						
Airport traffic patterns and prelanding procedures	PERFORM						
Go-around from rejected landing	PERFORM						
Normal or crosswind landings	PERFORM						
Power-off landing	PERFORM						
After landing procedures, engine shutdown, securing and postflight inspection	PERFORM						
Introduction							
Supervised solo flight	PRACTICE						
Postflight discussion							
Critique student performance	PERFORM						

Instructor Information

Review items as deemed necessary by the instructor.

Assignment for Lesson 13

Student Preparation

1. Review syllabus description for this lesson.
2. Complete appropriate sections of the workbook.
3. Obtain a weather briefing and calculate necessary pre-flight planning.
4. Be prepared to lead a discussion on how to get from Bravo apron to the runway, and from the runway to Charlie ramp

Post-solo – Lesson 13
Mission – Flight to Nearby Airport
FLT Lesson 13 (Approximate lesson time 1.3 hours)

Dual - Airplane

Scenario

You are an aircraft salesman who is taking a potential customer on a demonstration flight in the Piper Warrior. Your goal is to show the customer how easy the Warrior is to operate and also display some of its handling characteristics. You have decided to take him on a short cross country. During the flight to the nearby airport you will demonstrate basic aircraft handling maneuvers, to include the aerodynamics demonstration, and stall recognition and recovery. Upon reaching the airport, you plan to demonstrate both normal and power off landings. During the return trip you plan to demonstrate whatever the customer wishes to see. Obviously, you want to make a good impression on this customer—he's got big bucks and is eager to spend them. (NOTE: You should substitute your type training aircraft for Piper Warrior.)

Scenario Objective

The purpose of this lesson is to review the listed maneuvers in preparation for the evaluation flight.

Scenario Completion Standards

This lesson will be complete when the PT is able to (a) meet desired outcomes shown in the table below, (b) safely operate an airplane as pilot-in-command for local solo flight, (c) perform all maneuvers and procedures to meet or exceed standards outlined in the pre-solo segment completion standards, and (d) maintain altitude within ±150 feet, heading within ±20 degrees and airspeed within ±10 knots.

Learning Objectives/Desired Outcome/Grading Sheet

	Desired Outcome	Describe	Explain	Practice	Perform	Manage/Decide	Not observed
Preflight Discussion							
Discuss lesson objective and completion standards	PRACTICE						
Review							
Use of checklist	PERFORM						
Ground maneuvering procedures	PERFORM						
Proper use of the radio for two-way communication	PERFORM						
Normal or crosswind takeoff and climbouts	PERFORM						
Climbs and climbing turns	PERFORM						
Straight and level flight	PERFORM						
Turns	PERFORM						
Descents and descending turns	PERFORM						
Aerodynamics demonstration	PERFORM						
Stall recognition and recovery procedures: from straight flight and from turns (full and/or imminent)	PERFORM						
Emergency procedures	PRACTICE						
A. Forced landings	PRACTICE						
B. Fires	PRACTICE						
C. Electric power supply system malfunctions	PRACTICE						
Collision avoidance procedures	PRACTICE						
Wake turbulence avoidance procedures	PRACTICE						
Wind shear avoidance procedures	PRACTICE						
Airport traffic pattern entry and departure procedures	PRACTICE						
Prelanding procedures	PRACTICE						
Go around from rejected landings	PRACTICE						
Normal or crosswind landings (with or without flaps)	PRACTICE						
Power-off landing	PRACTICE						
After landing, engine shutdown, securing and postflight inspection	PRACTICE						
Single-pilot resource management (SRM)	MANAGE/ DECIDE						
Postflight discussion							
Critique student performance	PERFORM						

Instructor Information

Leg 1 – Departure to Destination

Ground Ops – Allow the student to conduct pre-flight, run-up, and taxi procedures without instructor assistance. Play the part of a potential customer and ask relevant questions at any time.

Takeoff – Normal. Again, as the customer, you might ask appropriate questions regarding takeoff capabilities, limitations, procedures, etc.

Enroute – Ask relevant questions about the aircraft, like:
Can we get to altitude any faster if we pitch from Vy to Vx?
What are you looking at when you set cruise power settings? How do I prevent over-leaning the engine?
Are there special departure procedures where you are going? How do you intend to find the airport?
How do you avoid all the aircraft that are returning to your home airport? Where would they be?

Once in the practice area, allow student to demonstrate the pre-briefed maneuvers.

As a potential customer, ask student to demonstrate proper reaction to an engine fire.

Desitnation Airport – Allow student to demonstrate traffic patterns as per scenario.

Leg 2 – Destination to Departure (Return)

Takeoff – Normal

Enroute - During climb-out, simulate electrical malfunction resulting in complete loss of all electrical equipment (including radio and nav equipment). Student must now return to local airport using pilotage only, and demonstrate radio failure procedures.

Traffic pattern local airport – Request Tower to provide light gun signals as appropriate. Again, play the customer and ask student to explain procedures to follow, including what to do after landing.

If time permits, additional pattern work may be accomplished to demonstrate Warrior capabilities, such as slips, no flap landings, etc.

After landing – Simulate partial brake failure (the left brake is totally inop.). Allow student to attempt taxi using only one brake. Ask student to explain what the best course of action would be with this situation.

Post flight Brief – Student should debrief the flight to potential customer, highlighting what went right and what went wrong. Customers appreciate an HONEST SALEMAN. Wish them luck on their stage 14!

Assignment for Lesson 14

Student Preparation

1. Review syllabus description for this lesson.
2. Complete appropriate sections of Workbook.
3. STUDY – applicable regulations and POH.

Post-solo – Lesson 14
Mission – Progress Assessment
FLT Lesson 14 (Approximate lesson times Oral Exam 0.5 hours Flight Test 1.5 hours)

Dual - Airplane

Scenario

There is no scenario for this progress assessment other than the problems/scenarios the chief pilot or check pilot might present you with. The key to successful progress assessment outcomes is to study and have confidence in your abilities. Your instructor would not have put you in for this progress assessment if he/she thought you weren't ready. Have fun and Good Luck!

Scenario Objective

The Chief Flight Instructor or his designee shall evaluate the student's ability to manage a local solo flight while operating an airplane safely as pilot-in-command.

Scenario Completion Standards

Oral Exam
This lesson will be complete when the PT is able to (a) correlate Safety Policies and Procedures and applicable regulations to student pilot solo flights (b) list and explain the v-speeds and emergency procedures, and (c) compute weight and balance calculations.

Learning Objectives/Desired Outcome/Grading Sheet

	Desired Outcome	Describe	Explain	Practice	Perform	Manage/Decide	Not observed
Oral Exam							
Discuss lesson objective and completion standards	PERFORM						
Safety policies and procedures	PERFORM						
Student pilot privileges and limitations	PERFORM						
14 CFR Part 91	PERFORM						
Certificates and documents	PERFORM						
V-speeds and emergency procedures	PERFORM						
Performance and limitations	PERFORM						
Logbook entries and certificate endorsements	PERFORM						
Aircraft weight and balance	PERFORM						

Flight Exam

This lesson will be complete when the PT is able to (a) operate within local safety policies and procedures, and applicable regulations and (b) perform all maneuvers and procedures to meet or exceed the following standards:

Display the knowledge and ability to operate the airplane as pilot-in-command for local solo flights.

The student will demonstrate satisfactory knowledge of 14 CFR Part 61 and 91 that are applicable to student pilots. The demonstration will include satisfactory completion of a written examination administered by the instructor who is to endorse the student's pilot certificate for solo flight. The written examination will include questions on applicable regulations, flight characteristics, and operational limitations of the make and model of airplane being utilized.

Acceptable performance guidelines for maneuvers and procedures in this segment are:

1 The student will perform the proper sequential procedures outlined in the checklist for preflight inspection and power plant operations.
2 The student will demonstrate adequate directional control, use proper control deflections for wind, and use a safe taxi speed while maneuvering on the ground. The student will also demonstrate the proper sequential procedures as outlined in the checklist for pre-takeoff procedures.
3 During normal and crosswind takeoffs, the student will maintain adequate directional control, use power properly, use proper control deflections and lift off at a safe airspeed.
4 While in a climb, the student will maintain airspeed within ±5 knots

and use proper corrections for left turning tendencies.

5 When in straight and level flight, the student will maintain altitude within ±150 feet, heading within ±15 degrees, and airspeed within ±10 knots.

6 The student will be able to establish appropriate bank attitudes for turns, while maintaining altitude within ±150.

7 The student will demonstrate proper use of power to establish a descent, while maintaining airspeed within ±10 knots.

8 During flight at various airspeeds and configurations, the student will maintain altitude within ±150 feet, heading within ±15 degrees, and airspeed within ±10 knots. While conducting flight at slow airspeeds, the student will maintain altitude within ±150 feet and heading within ±20 degrees.

9 The student will recognize indications of imminent and full stalls and take prompt positive control action for recovery. Directional control will be maintained within ±30 degrees of desired heading and altitude loss should not exceed 250 feet during stall recovery.

10 The student will demonstrate proper use of the radio without instructor assistance.

11 During ground reference maneuvers, the student will fly a predetermined ground track, understand the effects of wind, correct for wind drift and maintain altitude within ±150 feet, airspeed ±10 knots, and maximum bank of 45 degrees.

12 During emergencies, the student will show increasing proficiency in following the manufacturer's published recommended procedures while maintaining safe control of the airplane.

13 The student will maintain continuous vigilance for other aircraft with extra precautions taken in areas of congested traffic. The student will identify conditions and locations in which wing tip vortices and wind shear may be encountered and adjust the flight path to avoid these areas.

14 When operating in the traffic pattern, the student will use proper traffic pattern entry and departure procedures. The student will maintain the recommended traffic pattern altitude within ±150 feet, recommended airspeed within ±5 knots and correct for wind drift. The student will also demonstrate proper sequential procedures as outlined in the checklist for pre-landing and landing procedures.

15 When executing go-arounds, the student will maintain safe control of the aircraft at all times while following the manufacturer's recommended procedures.

16 During normal and crosswind landings, the student will make smooth, timely, and correct control application during the final approach and transition from approach to landing rollout. He/she will touch down smoothly at approximate stalling speed, at or within 500' beyond a specified point, with no appreciable drift, and the airplane longitudinal axis aligned with the runway centerline. The

student will maintain directional control, increasing aileron deflection into the wind, as necessary, during the after landing roll.
17 The student will follow proper sequential procedures outlined in the checklist for after landing, engine shutdown and securing.

Learning Objectives/Desired Outcome/Grading Sheet

	Desired Outcome	Describe	Explain	Practice	Perform	Manage/Decide	Not observed
Preflight inspection							
Interior and exterior	PERFORM						
Flight Test							
Use of checklist	PERFORM						
Power plant operations	PERFORM						
Ground maneuvering procedures	PERFORM						
Proper use of the radio for two-way communication	PERFORM						
Normal or crosswind takeoffs and climbout	PERFORM						
Climbs and climbing turns	PERFORM						
Straight and level flight	PERFORM						
Turns	PERFORM						
Descents and descending turns	PERFORM						
Aerodynamics demonstration	PERFORM						
Stall recognition and recovery procedures: from straight flight and from turns (full and/or imminent)	PERFORM						
Emergency procedures	PERFORM						
A. Forced landings	PERFORM						
B. Fires	PERFORM						
C. Electric power supply system malfunctions	PERFORM						
Collision avoidance procedures	PERFORM						
Wake turbulence avoidance procedures	PERFORM						
Wind shear avoidance procedures	PERFORM						
Airport traffic pattern entry and departure procedures	PERFORM						
Pre-landing procedures	PERFORM						
Go around from rejected landings	PERFORM						
Normal or crosswind landings (with or without flaps)	PERFORM						
Power-off landing	PERFORM						
After landing, engine shutdown, securing and postflight inspection	PERFORM						
Single-pilot resource management (SRM)	MANAGE/ DECIDE						
Postflight Discussion							
Critique student performance	PERFORM						

Assignment for Lesson 15

Student Preparation

1. Review syllabus for contents of lesson.
2. Complete appropriate sections of the workbook.
3. Obtain a weather brief and conduct appropriate pre-flight procedures: weight and balance, and performance.
4. Compute takeoff and landing data for short field and soft field takeoffs and landings.
5. Plot Temporary Flight Restriction (TFR) on your VFR sectional map.

FAA-H-8083-3, Pilots Operating Handbook

1 Short-field takeoffs and maximum performance climbs
2 Short-field approaches and landings
3 Soft-field takeoff and climb
4 Soft-field approach and landing

Cross Country – Lesson 15
Mission – Cross Country Flight
FLT Lesson 15 (Approximate lesson time 1.3 hours)

Dual – Airplane

Scenario

You and your friend (use instructor's weight for preflight planning) are going over to a neighboring town for a company soft ball game. However, when you obtain your weather briefing for the day's flight the briefer informs you of the following NOTAM's:

ND... FLIGHT RESTRICTIONS GRAND FORKS, NORTH DAKOTA, PURSUANT TO TITLE 14, SECTION 91.141 OF THE CODE OF FEDERAL REGULATIONS, AIRCRAFT FLIGHT OPERATIONS ARE PROHIBITED WITHIN THE FOLLOWING AREA(S) UNLESS OTHERWISE AUTHORIZED BY ATC. WITHIN A 3 NMR OF 475331N/0965554W OR THE GFK101012.5 UP TO BUT NOT INCLUDING 3000 FT AGL EFFECTIVE 0605310200 UTC UNTIL 0610310600 UTC

CKN 06/005 CKN 13/31 CLSD FOR CNSTRCTN WEF 0605310000-

0610011200 GFK 06/002 GFK RWY 17L THR DSPLCD 2400

> Note: You should to use a weather briefing for your local airport and a nearby town rather than Grand Forks, ND and Crookston, MN. This lesson uses Grand Forks, Crookston, and the example weather briefing throughout the lesson. You may use it or use it as a guide building your own scenario.

Scenario Objective

The purpose of this lesson is to introduce the elements associated with short-field and soft-field takeoffs and landings. In addition, the student will perform maneuvers listed as review.

Scenario Completion Standards

This lesson will be complete when the PT is able to (a) meet the desired outcomes listed below, (b) identify and promptly conduct go around procedures, (c) maintain directional control at all times during the takeoffs and landings, (d) conduct a stabilized approach, (e) accomplish short-field and soft-field operations with instructor guidance and touchdowns should be within 500 feet of the desired point, (f) accomplish normal and maximum performance climbs, and (g) maintain altitude within ±150 feet, heading within ±15 degrees and airspeed within ±10 knots during review maneuvers.

Learning Objectives/Desired Outcome/Grading Sheet

	Desired Outcome	Describe	Explain	Practice	Perform	Manage/Decide	Not observed
Preflight Discussion							
Discuss lesson objective and completion standards	PERFORM						
Soft-field takeoff and landings	PERFORM						
Short field takeoff and maximum performance climbs and landings	PERFORM						
Review							
Normal or crosswind takeoffs and climbouts	PERFORM						
Flight at various airspeeds and configurations from cruise to slow flight	PERFORM						
Stall recognition and recovery procedures: full and imminent	PERFORM						
Ground reference maneuvers	PERFORM						
Stabilized approach	PERFORM						
Normal or crosswind landings	PERFORM						
After landing procedures engine shutdown, securing and postflight inspection	PERFORM						
Introduction							
Soft-field takeoff and climb	PRACTICE						
Soft-field approach and landing	PRACTICE						
Short-field takeoffs and maximum performance climbs	PRACTICE						
Short-field approaches and landings	PRACTICE						
Single-pilot resource management (SRM)	MANAGE/ DECIDE						
Postflight Discussion							
Critique student performance, preview next lesson and give study assignment	PERFORM						

Instructor Information

NOTE: To make the short/soft field experience as realistic as possible, select an airport with grass runways.

Preflight Brief – Discuss the scenario with the student. Use effective questioning to get the student thinking:

Where is this TFR and how will it affect your route of flight?
How will the NOTAM for GFK Rwy 17 affect your takeoff?
What type of takeoff should be used out of GFK?
How could we minimize the risks of this situation?
What is our estimated takeoff distance?
How will the NOTAM in CKN affect our flight?
Will you be able to land at CKN?

Leg 1 GFK – CKN

Ground Ops – Ask the student if there is any way to use the GPS to help avoid the TFR? Show them user waypoint function.

Departing GFK – Demonstrate a short field takeoff for the simulated displaced threshold on Rwy 17L. Ask questions to stimulate thought, such as: how should we position the aircraft on the runway. After takeoff follow normal departure procedures.

Enroute to CKN – have the student enter the practice area following normal procedures; ensure vigilance about avoiding the TFR. Once in practice area, practice maneuvers listed in the syllabus as necessary to enhance student skill.

Crookston Airport – Conduct a normal pattern entry into Crookston. Demonstrate a soft field approach and landing to one of the grass runways. Ask questions to stimulate Aeronautical Decision Making, such as: What concerns should we have when operating on the grass? How do we want to position our controls on rollout? How will the grass affect braking efficiency? If time permits, taxi to the ramp to emphasize “mission accomplished”. Complete necessary checklists.

Leg 2 CKN – GFK

Departing CKN – Taxi to appropriate grass runway for takeoff. Demonstrate a soft field takeoff -- include the student in your decision making and thought process. Ask questions to stimulate thought, such as: Should we stop on the grass runway? Where should we do our run up? Perform pattern work at Crookston as necessary to practice soft field takeoffs and landings.

Enroute to GFK – Ask questions to stimulate thought, such as: How are we going to avoid that TFR? How wide a berth should we give it? Should we fly direct to GFK from CKN? Make the student alter course around the TFR on the way to GFK. Who could we talk to in order to find out if the TFR is still active?

Grand Forks Airport – Demonstrate a Short Field landing (remember there is a NOTAM closing the last 2400 ft of the runway). Ask questions to stimulate thought, such as: Where should we plan to touch down? Where should my aim point be? What aircraft configuration should I use? After touchdown, how should I brake? Practice short field takeoffs and landings as necessary to increase student skill.

Assignment for Lesson 16

Student Preparation

1. Review syllabus description for this lesson.
2. Complete appropriate sections of Workbook.
3. Review FAA Airplane Flying Handbook, Chap 9, "Flight by Reference to Instruments".
4. Be prepared to lead a discussion on how you would handle the aircraft in the event of an unintentional flight into IMC.

FAA-H-8083-3, FAA-H-8083-25, and FAA-H-8083-15, Pilots Operating Handbook

1. Basic Instrument Maneuvers
   - A. Straight and level
   - B. Constant airspeed climbs
   - C. Constant airspeed descents
   - D. Turns to headings
   - E. Unusual flight attitudes
   - F. Radio communications, navigation systems/facilities, and radar services
2. Emergency Procedures
   - A. Emergency operations in clouds
     - 1 Vacuum system failure
     - 2 Executing a 180 degree turn in clouds
     - 3 Emergency descent through clouds
     - 4 Recovery from a spiral dive
   - B. Inadvertent flight into icing conditions

Cross Country – Lesson 16
Mission – Practice Cross Country
FLT Lesson 16 (Approximate lesson time 1.0 hours)

Dual – Flight Training Device

Scenario

You are conducting a solo flight to a nearby airport to visit your mother that is living in the nearby city's assisted living home and to practice VFR patterns. Current local weather is reported as 3500 BKN 5miles visibility with winds light and variable. Scattered rain showers have been reported in the vicinity.

Scenario Objective

The purpose of this lesson is to introduce maneuvering solely by reference to flight instruments, unusual attitudes, use of radio aids, and ATC directives and emergency procedures applicable to instrument flight to facilitate aeronautical decision making and situational awareness.

Scenario Completion Standards

This practice flight instruction lesson is complete when the PT is able to meet the desired outcomes listed below and (a) with instructor guidance use radio aids for orientation; (b) track and bracket radials and bearings; (c) identify and practice proper corrective actions to emergency procedures; and (d) maintain altitude within ±200 feet, heading within ±30 degrees, and airspeed within ±10 knots.

Learning Objectives/Desired Outcome/Grading Sheet

	Desired Outcome	Describe	Explain	Practice	Perform	Manage/Decide	Not observed
Preflight Discussion							
Discuss lesson objective and completion standards	PERFORM						
Basic instrument maneuvers	EXPLAIN						
Navigation systems/facilities and radar services	EXPLAIN						
Risk assessment	EXPLAIN						
Emergency procedures	EXPLAIN						
Introduction							
IFR ATC Procedures and Communications	PRACTICE						
Basic Instrument Maneuvers	PRACTICE						
A. Straight and level flight	PRACTICE						
B. Turns to headings	PRACTICE						
C. Straight, constant airspeed climbs and descents	PRACTICE						
D. Climbing and descending turns	PRACTICE						
E. VOR navigation procedures	PRACTICE						
F. GPS navigation procedures	PRACTICE						
G. ADF orientation and homing	PRACTICE						
H. DME	PRACTICE						
Emergency procedures	PRACTICE						
A. 180 degrees turn in clouds	PRACTICE						
B. Emergency climbs and descents	PRACTICE						
C. Recovery from unusual flight attitudes	PRACTICE						
D. Inadvertent flight into icing conditions	PRACTICE						
E. Wind shear	PRACTICE						
F. Radar vectors	PRACTICE						
Single-pilot resource management (SRM)	MANAGE/ DECIDE						
Postflight Discussion							
Critique student performance	PERFORM						

Instructor Information

Preflight Instruction – Ask the student some basic instrument questions to determine level of knowledge
Such as: Explain how to verify proper operation of the flight instruments immediately after engine start-up.
Explain basic instrument markings and normal flight parameters.
Explain what your reaction would be to an inadvertent flight into IMC.
Cover scan techniques and proper recovery procedures from nose low and nose high unusual attitudes.

Leg 1 Departure to Destination

Ground Ops – Discuss how to verify proper instrument operation and how to tune and identify appropriate VOR and NDB frequencies. On taxi out, fail each instrument individually to provide an understanding of what each instrument looks like when it malfunctions.

Takeoff – Normal

Departure – During climb-out, instruct student to intercept the VOR 120R and track outbound to the 20 DME fix. Student should continue to fly the aircraft using outside and inside references. Discuss bracketing and tracking techniques.

After Level-off – Simulate a realistic situation that might cause inadvertent flight into IMC (such as “scud running”, flight below an indefinite ceiling, rain/snow showers, etc), and instruct the student on the basic instrument maneuvers required by the syllabus. Once the student has transitioned to instrument flight, ask him/her to consider how to expeditiously get out of this situation. For example: You were flying below the bases of the clouds and inadvertently entered IMC. You know that there is clear air slightly below your present altitude, as well as behind you. What are you going to do? Student should be encouraged to go through the decision process, with only limited assistance from the instructor.

Unusual Attitude – Ideally, the student will put himself/herself into an unusual attitude simply because of limited instrument proficiency. This would be a realistic method to introduce proper recovery procedures. Another realistic option would be to distract the student (retrieving a pencil that has been dropped, digging for the checklist that has slid under the seat, programming the GPS, searching for a plotter in his/her flight bag, etc).

ADF orientation and homing – Advise the student that he/she has now departed IMC, but due to the previous weather encounter, is now disoriented with limited VFR references to key off of (which may be true). Ask student to go through the procedures for tuning, identifying, and homing to the NDB.

Enroute – Have student tune in ASOS. Simulate marginal VFR or IFR conditions at destination necessitating a divert back home. Allow student to use GPS for initial navigation to local airport.

Leg 2 Diversion from Planned Destination

Enroute Home – provide the following ATIS information: ***Local airport Information Tango, winds 170 @ 10 knots, sky condition 900 broken, visibility 3 miles light rain and mist. Temp 7º. Dew point 0º. An arriving Regional Jet reported light rime icing in descent between 3000 and 5000 feet. Clear above 6000 ft.***

Challenge student: What are you going to do? Student should determine that field is below VFR and that icing is probable between 3000 and 5000 feet. Assist student in consideration of all the available options: Climb or descend? Continue home or divert? Special VFR? What is the primary threat—IMC conditions, the ice, or diverting to an unfamiliar airport with unknown weather conditions possible? Can Tower, Approach Control, or the experienced instructor provide additional information?

Regardless of the options the student comes up with, create a situation requiring the student to continue home under Special VFR with vectors to a visual straight-in.

Post-flight Discussion – Allow student to critique performance. This is a good opportunity to discuss the dangers of inadvertent flight into IMC and the high accident rate associated with this. Ask the student to describe his/her comfort level when flying on the instruments as a means to drive home the importance of avoiding these conditions. Ask the student if he/she considers inadvertent flight into IMC a “business as usual” situation, or time to take emergency precautions—like seeking assistance, and/or declaring an emergency. Assign next lesson’s scenario.

Assignment for Lesson 17

1. Review syllabus for contents of lesson.
2. Complete appropriate sections of the workbook.
3. Obtain a weather brief.
4. Conduct appropriate pre-flight procedures: weight and balance and performance.
5. Complete a risk assessment for today's flight. What are the hazards?
6. Be prepared to lead a discussion on how you would use the VOR to navigate to the practice area and the nearby airport.

FAA-H-8083-3, FAA-H-8083-25, AC 61-84 and Pilots Operating Handbook

1. The elements related to airplane performance and the adverse effects of exceeding the limitations
2. The effects of atmospheric conditions on airplane performance
3. Computing the following information using the pilots operating handbook
   A. Takeoff distance
   B. Rate of climb (maximum)
   C. Time, fuel, and distance to climb
   D. Cruise performance
   E. Range profile
   F. Endurance profile
   G. Landing distance

Cross Country – Lesson 17
Mission – Cross Country Flight
FLT Lesson 17 (Approximate lesson time 1.3 hours with .8 instrument)

Dual – Airplane

Scenario

You have an important business meeting at a nearby airport today. Your boss has advised that if you don't attend this meeting, the company will miss an opportunity to make a lot of money. So there is no question about it—you have to be there. A series of recent torrential rains have left most of the rivers and streams in the local area near or at flood stage. Due to this fact, there are numerous road closures and impassable bridges which would significantly lengthen the driving time to the destination. Therefore, as a newly certificated pilot, you elect to fly. You arrange for a taxi to pick you up at the airport at a specific time for the meeting in town. The weather for today looks to be marginal VFR, but the forecasts call for improving conditions. The following are METAR reports for some of the airports in the surrounding area:

KDVL 102315Z 01020G24KT 3SM FEW001 BKN020 OVC027 16/18 A3028
KGFK 102253Z 35014KT 9SM FEW013 OVC029 17/19 A3024 RMK AO2
SNE07 SLP260 P0000 T10721094=
KGFK 102243Z 35013KT 10SM SCT013 OVC029 17/19 A3024 RMK AO2
SNE07 P0000= (SPECI)
KGFK 102233Z 35013KT 10SM BKN013 OVC027 17/19 A3023 RMK AO2
KRDR 102255Z 35016KT 6SM BLSN BKN011 OVC025 17/19 A3024
RMK SLP260 LSR16=
KRDR 102212Z 35018KT 4SM BR -RA OVC015 17/20 A3022= (SPECI)
KRDR 102155Z 35018KT 3SM BR -RA OVC013 17/20 A3021 RMK
SLP251 LSR16=

Note: The above METAR is just an example. Use appropriate METAR for you local area airports.

Scenario Objective

The purpose of this lesson is to review maneuvering solely by reference to flight instruments, ATC directives and emergency procedures applicable to instrument flight to facilitate aeronautical decision making and situational awareness in an airplane. In addition, the student will practice takeoffs and landings.

Scenario Completion Standards

This practice flight instruction lesson is complete when the PT is able to (a) meet the desired outcomes listed below, (b) identify and practice proper corrective actions to emergency procedures with little input from the instructor, (c) maintain altitude within ±150 feet, heading within ±20 degrees, and airspeed within ±10

knots with little input from the instructor, (d) maintain directional control at all times during takeoffs and landings, (e) conduct a stabilized approach, and (f) perform short-field and soft-field operations with touchdowns at or within 400 feet of the desired point with little input from the instructor.

Learning Objectives/Desired Outcome/Grading Sheet

	Desired Outcome	Describe	Explain	Practice	Perform	Manage/Decide	Not observed
Preflight Discussion							
Discuss lesson objective and completion standards	PERFORM						
Review areas as necessary	PRACTICE						
Review							
IFR ATC Procedures and Communications	PRACTICE						
Basic instrument maneuvers	PRACTICE						
A. Straight and level flight	PRACTICE						
B. Turns to headings	PRACTICE						
C. Straight, constant airspeed climbs and descents	PRACTICE						
D. Climbing and descending turns	PRACTICE						
E. VOR navigation procedures	PRACTICE						
F. GPS navigation procedures	PRACTICE						
Emergency procedures	PRACTICE						
A. Recoveries from unusual flight attitudes	PRACTICE						
Soft-field takeoff and climb	PERFORM						
Stabilized approach	PERFORM						
Soft-field approach and landing	PERFORM						
Short-field takeoffs and maximum performance climbs	PERFORM						
Short-field approaches and landings	PERFORM						
Single-pilot resource management (SRM)	MANAGE/ DECIDE						
Postflight Discussion							
Critique student performance	PERFORM						

Instructor Information

Preflight Brief – Discuss lesson scenario. Have student evaluate and suggest ways to manage the risks. Ask questions to stimulate thought, such as: Can this flight be done legally? Can this flight be done safely? How will the ceilings and visibility affect your normal procedures? Ask them how they will find an small airport identifier.

Leg 1 Departure to Destination

Ground Ops – With minimal instructor assistance, have the student tune, identify, and set-up the appropriate NAVAIDs for the flight.
Depart – Explain that water from the recent flooding has rendered much of the runway useless. Select a point where the water begins (i.e. A-4 Taxiway). Hopefully, the student will choose to do a short field takeoff. Fly a normal departure procedure.

Enroute – When nearing the practice area, explain to the student that there is a cloud layer ahead and they will have to start a descent to get below it. As they continue into the practice area, make comments such as: “It’s getting hard to see very far ahead;” “The visibility is definitely getting worse;” and “I can’t see the ground anymore.” At this point put the hood on the student and tell them they just entered the clouds. Let the student come up with a solution. Hopefully they elect to do a 180 degree emergency turn. Practice flight by reference to the instruments and unusual attitudes as necessary to increase student understanding and skill. For unusual attitudes, have the student put their head down and respond to your basic flight instructions. Talk them into an unusual attitude. This will give the student a chance to experience illusions.

Destination Airport – Explain to the student that it looks like mud was left on the runway from the retreating flood waters. Ask questions to stimulate thought, such as: Do you think we should land there? How can we figure out if the runway surface is usable? What type of landing should we do? Execute a soft field landing and taxi to the ramp completing all necessary checklists for completion of the scenario.

Leg 2 Destination to Home

Departing Destination – Practice short and soft field takeoffs and landings as necessary to increase student skill and understanding.

Enroute to Home – Ask questions to stimulate thought, such as: How can we figure out what the weather is like at Home? If Home was reporting 2 SM visibility, could we still land there? What type of clearance would we have to get? Who would we get that clearance from?

Home Airport – Practice short and soft field takeoffs and landings as necessary to increase student skill and understanding.

Post Flight Brief – Allow student to critique their own performance. Have them discuss any illusions they might have felt during unusual attitudes. Stress that the instruments are their best source of information during IMC operations. Assign next lesson's scenario.

Assignment for Lesson 18

Student Preparation

1. Review syllabus.
2. Complete appropriate sections of the workbook
3. Compute the short field takeoff ground roll and distance to clear a 50 ft obstacle at Home with the reported weather conditions. Assume full fuel load, plus you and your instructor.
4. Compute the short field landing distance and ground roll of the Warrior at the scenario destination airport. Assume fuel at tabs, plus you and your instructor.
5. Research the NTSB accident data base for an incident involving either a short or soft runway. Be prepared to lead a discussion of this accident. NTSB Website = http://www.ntsb.gov/NTSB/query.asp

AC 00-6, AC 00-45E

1. Weather
   - A. METARS
   - B. TAFs
   - C. Area Forecasts
   - D. Winds Aloft
   - E. Winds and Temperature Aloft Chart
   - F. Radar Summary Chart
   - G. Weather Depiction Chart
   - H. Significant Weather Prognostic Chart
   - I. Surface Analysis Chart
   - J. Convective Outlook Chart
   - K. PIREP's
   - L. SIGMET's and AIRMET's
   - M. AWOS, ASOS, and ATIS Reports
   - N. Wind Shear Reports

Cross Country – Lesson 18

Mission – Deliver Diphtheria Vaccine to Small Nearby Airport
FLT Lesson 18 (Approx. lesson time 1.5 hours with .8 instrument)

Dual – Airplane

Scenario

You are a bush pilot in Alaska. Today you are hauling a load of diphtheria vaccine into Red Dog, a native village in the Alaska bush. Red Dog has two runways—one is gravel (in the summer) or ice (in the winter), or mud (during break-up). The other is grass (in the summer) or snow (winter) and short (1500'), and normally only used by bush aircraft or when strong winds prevent using the longer runway. (use a nearby airport that is similar and will simulate Red Dog.) The weather is marginal VFR for your entire flight with unreported wind conditions. The native population is in dire need of the vaccine—it's your job to get it there.

Scenario Objective

The purpose of this lesson is to introduce use of radio aids during instrument flight in an airplane. In addition, the student will practice maneuvers listed as review.

Scenario Completion Standards

This lesson will be complete when the student is able to (a) meet the desired outcomes listed below, (b) use radio aids for orientation with little input from the instructor, (c) track and bracket radials with little input from the instructor, (d) identify and practice proper corrective actions to emergency procedures without instructor guidance, (e) maintain altitude within ±150 feet, heading within ±15 degrees, and airspeed within ±10 knots without instructor guidance, (f) maintain directional control at all times during takeoffs and landings, and (g) conduct a stabilized approach, (h) perform short-field and soft-field operations, with touchdowns at or within 300 feet of the desired point, without instructor guidance.

Learning Objectives/Desired Outcome/Grading Sheet

	Desired Outcome	Describe	Explain	Practice	Perform	Manage/Decide	Not observed
Preflight							
Discuss lesson objective and completion standards	PERFORM						
Review areas as necessary	PRACTICE						
Review							
Basic instrument maneuvers and ATC directions	PRACTICE						
1 Straight and level flight	PRACTICE						
2 Turns to headings	PRACTICE						
3 Straight, constant airspeed climbs and descents	PRACTICE						
4 Climbing and descending turns	PRACTICE						
5 VOR navigation procedures	PRACTICE						
6 GPS navigation procedures	PRACTICE						
Emergency procedures	PRACTICE						
1. Recoveries from unusual flight attitudes	PRACTICE						
Soft-field takeoff and climb	PERFORM						
Stabilized approach	PERFORM						
Soft-field approach and landing	PERFORM						
Short-field takeoffs and maximum performance climbs	PERFORM						
Short-field approaches	PERFORM						
Single-pilot resource management (SRM)	MANAGE/ DECIDE						
Postflight Discussion							
Critique student performance	PERFORM						

Instructor Information

Preflight Discussion – Allow student to brief the performance calculations for the Airplane. Correlate computed distances with known runway reference points.

Leg 1 Departure to XXX (Red Dog)

Ground Ops – Simulate situation where aircraft is parked in a pool of mud. How is the student going to get it out of the parking area? Challenge student to select appropriate navigation aids to find Red Dog. (Red Dog is not a surveyed airport; therefore, it does not have a GPS database identifier.)

Short Field Takeoff – Tell student, “You are operating off a hard surfaced runway, but only 1000 feet of solid runway is available because the rest is breaking-up due to frost heaves, potholes, and major bumps.” Instructor should point out a distinct reference in front of the aircraft where the solid runway ends (i.e. C1 taxiway). This puts the need for a short field takeoff in proper perspective.

En-route to Red Dog (XXX) – Simulate deteriorating weather requiring descent to lower altitude and greater reliance on radio navigation. Marginal weather conditions require greater reliance on basic attitude instrument flying – practice BAIF maneuvers as per syllabus. Note: Basic Attitude Instrument Flying (BAIF) – controlling the aircraft sole by reference to the flight instruments. Simulate a situation requiring a 180 degree turn to exit deteriorating weather. In the turn, call out what appears to be high terrain or some other obstruction requiring a steeper turn to avoid. This may result in a situation requiring an unusual attitude recovery. (If not, create a distraction that does.)

Red Dog (XXX) – If the grass runway is useable, create a situation that makes it the only runway available. Simulate that the last half of the runway (the part on the other side of the intersecting paved runway) is still wet from break-up and will not support the weight of the aircraft. Challenge the student to decide what to do—hopefully the choice will be a short field landing on the available runway. After landing, taxi to the ramp and simulate delivery of vaccine.

Leg 2 XXX (Red Dog) to Home

Departing XXX – Depending on condition of the grass runway, XXX presents an excellent opportunity to experience the effects of a “real” soft field takeoff and/or landing. Practice both short and soft field takeoffs and landings as appropriate.

Return to Home – Accomplish any syllabus maneuvers requiring further review. Simulate the same marginal weather conditions for the return trip. After practicing maneuvers, challenge student to descend and level off at appropriate altitude to avoid simulated weather at 1000 AGL feet. Challenge the student to "Take me home!" Let the student figure out "how" (navigation, traffic avoidance, etc). Accomplish any syllabus maneuvers requiring further review.

Home Airport – If traffic conditions and the Tower will permit, have student fly a lower than standard downwind altitude (simulating low VFR weather conditions). This forces student to consider how pattern must be modified to accommodate non-standard conditions. Ask the student to pick a definable point on the runway as the desired short field touchdown point. Also ask for a prediction on where the aircraft will come to a stop. This forces student to analyze both aircraft and pilot capabilities. After landing, ask student whether or not he/she met those predictions, and if not, why.

Post-flight Discussion – Allow student to lead the debrief on lesson performance and what they learned. Assign scenario for next lesson.

Assignment for Lesson 19

Student Preparation

1. Review syllabus for contents of lesson.
2. Complete appropriate sections of the workbook.
3. Obtain a weather brief.
4. Conduct appropriate pre-flight procedures: weight and balance and performance.
5. Complete a risk assessment for today's flight.
6. Be prepared to lead a discussion on student pilot privileges and limitations, and the unique features of the airport you will be soloing to.

FAA-H-8083-3, AIM, 14 CFR Part 91, Safety Policies and Procedures

1. ATC clearances at airports with an operating control tower
2. Runway Incursions
3. Local student pilot operations

Cross Country – Lesson 19
Mission – Solo Flight in Local Area
FLT Lesson 19 (Approximate lesson time 1.3 hours)

Solo – Airplane

Scenario

You will be conducting a solo flight today to another airport. Your mission is to practice the appropriate maneuvers listed in the syllabus, operate safely within the local area, and execute a landing at an airport other than your home airport. That is already a “realistic scenario.” Have Fun!

Scenario Objective

The purpose of this lesson is for the student to manage elements associated with a local solo flight while practicing the maneuvers listed as review.

Scenario Completion Standards

This lesson will be complete when the student is able to (a) meet the desired outcomes listed below and (b) safely conducts a local solo flight. The flight instructor will conduct a postflight discussion to ensure that lesson content and objectives have been met.

Learning Objectives/Desired Outcome/Grading Sheet

	Desired Outcome	Describe	Explain	Practice	Perform	Manage/Decide	Not observed
Preflight Discussion							
Discuss lesson objective and completion standards	PERFORM						
Review							
Preflight preparation	PERFORM						
Preflight procedures	PERFORM						
Airport operations	PERFORM						
Normal and crosswind takeoffs and climbouts	PERFORM						
Flight at various airspeeds and configurations from cruise to slow flight	PERFORM						
Stall recognition and recovery procedures: from straight flight and from turns (full and/or imminent).	PERFORM						
Steep turns	PERFORM						
Ground reference maneuvers	PERFORM						
A. Rectangular course	PERFORM						
B. Turns around a point	PERFORM						
C. "S" turns across a road	PERFORM						
Emergency operations	PERFORM						
A. Emergency descent	PERFORM						
B. Emergency approach and landing	PERFORM						
Airport traffic patterns and prelanding procedures	PERFORM						
Normal and crosswind landings	PERFORM						
Go-arounds/Rejected landings	PERFORM						
After landing, engine shutdown, securing and postflight inspection	PERFORM						
Single-pilot resource management (SRM)	MANAGE/ DECIDE						
Postflight Discussion							
Critique student performance	PERFORM						

Instructor Information

Preflight Brief – Have student lead a discussion on student pilot privileges and limitations. Also quiz them on unique features of their solo destination and any operational considerations.

Post flight Brief –Good questions to ask are:

Did your flight go as planned?

Anything happen that you didn't expect?

How did you handle that situation?
Would you handle that situation any differently next time?
What did you learn?
Did you have fun?

Assignment for Lesson 20

Student Preparation

1. Review syllabus for contents of lesson.
2. Complete appropriate sections of the workbook.
3. Review airplane POH, Performance Section
4. Search the NTSB accident data base for three accidents attributable to poor performance calculations. Be prepared to lead a discussion on these accidents. NTSB Website = http://www.ntsb.gov/NTSB/query.asp

14 CFR Parts 71, 91; Navigation Charts; AIM; Airport Facility Directory

1. Notices to Airmen

Airspace classes including their boundaries, pilot certification, and airplane equipment requirements for the following

A. Class A
B. Class B
C. Class C
D. Class D
E. Class E
F. Class G

2 Special use airspace and other airspace areas

3 Recognition, avoidance and operational restrictions of hazardous terrain features in the geographical area where a cross-country flight will be flown (CFIT)

Cross Country – Lesson 20

Mission – Cross Country Flight from Cheyenne, WY to Aspen, CO
GND Lesson 20 (Approximate lesson time 1.5 hours)

Scenario

You are conducting a flight from Cheyenne, Wyoming to Aspen, Colorado. Straight leg distance between the two airports is 300NM. Takeoff from Cheyenne is RWY 30 with a field elevation of 5350 ft. Winds are calm. OAT 85 deg F and a sea level pressure of 29.89. There are high mountains to the southwest en-route to Aspen that require you to climb to 8500 ft within 40 NM.

Assume the temperatures are 20º above standard during your climb with winds forecast to be 180/10.

Aspen, Colorado is located in a narrow valley surrounded by high mountains, with peaks to 11,000 ft. You plan to follow Windy Pass to the airport, with a max elevation of 8000 ft. Aspen has a 7000 ft runway with a field elevation of 7800 ft. OAT is 70 deg F with winds 200/15, and a pressure sea level pressure of 29.78. Plan to land RWY 15.

The aircraft is loaded with full fuel, 20 pounds of baggage, plus you and one passenger (170lbs). Use actual aircraft weight for planning purposes.

Scenario Objective

The purpose of this lesson is to introduce the student to airplane performance.

Scenario Completion Standards

The instructor will guide the PT through the elements associated with aircraft performance. This lesson will be complete when the student is able to (a) meet the desired outcomes listed below, (b) explain the dangers of exceeding limitations of the aircraft, (c) explain the effects of atmospheric conditions on performance, and (d) compute aircraft performance.

Learning Objectives/Desired Outcome/Grading Sheet

	Desired Outcome	Describe	Explain	Practice	Perform	Manage/Decide	Not observed
Aircraft Performance							
The elements related to airplane performance and the adverse effects of exceeding the limitations	EXPLAIN						
The effects of atmospheric conditions on airplane performance	EXPLAIN						
Computing the following information using the pilots operating handbook	EXPLAIN						
A. Takeoff distance	PRACTICE						
B. Rate of climb (maximum)	PRACTICE						
C. Time, fuel, and distance to climb	PRACTICE						
D. Cruise performance	PRACTICE						
E. Range profile	PRACTICE						
F. Endurance profile	PRACTICE						
G. Landing distance	PRACTICE						
Single-pilot resource management (SRM)	MANAGE/ DECIDE						
Postflight Discussion							
Critique student performance	PERFORM						

Instructor Information

Walk the student through the appropriate performance charts. Compare aircraft performance from these two high elevation airports with normal home airport performance.

Challenge student to consider how reduced performance will “look and feel” in the actual aircraft, and how reaction to emergencies and unusual situations might need to be altered. For example, during takeoff the engine will feel “sick” because it is producing significantly less power than normal. In addition, even a minor malfunction, like magneto failure, may have serious consequences. If something happens that necessitates return for landing (even when not an emergency), anticipate a significantly longer time to reach pattern altitude. Even routine events will not occur like you are used to.

Allow the student to summarize the NTSB accident reports associated with poor performance planning. Ask him/her to pin point poor pilot decisions, and how these pitfalls might be avoided.

Ask student whether he/she would make this flight based on the calculated performance.

Ask if there are any ways that the associated risks could be diminished.

Assignment for Lesson 21

Student Preparation

1. Review syllabus for lesson content.
2. Complete appropriate sections of the workbook.
3. Gather necessary supplies for cross country planning.

14 CFR 43, 61 and 91, Pilots Operating Handbook

1. Certificate and documents
   - A. Private pilot certificate privileges and limitations
   - B. Medical certificate class and duration
   - C. Pilot logbook and flight records
   - D. Aircraft certificates and documents

2. Airworthiness Requirements
   - A. Required instruments and equipment
   - B. Determining airworthiness with and without a Minimum Equipment List
   - C. Special flight permit
   - D. Maintenance requirements and records

Cross Country – Lesson 21
Mission – Cross Country Flight to Two Destinations
GND Lesson 21 (Approximate lesson time 2.5 hours)

Scenario

You and two friends, John and Sarah, will be traveling from your local airport today to several destinations around northern part of a neighboring state. You will be renting a Piper PA-28-161 from the local FBO on the field.

You plan to depart home around 11:00 a.m. and fly to an airport about 100 miles away to have lunch with John's parents. After lunch, which will take approximately 3 hours, you and Sarah will continue on your trip to third location about 75 miles south for some late afternoon and evening shopping. After having dinner with Sarah and her sister, you will then return home by yourself at night.

Leg Information:
Leg 1 Home to 1st Destination: Depart Home at 11:00 am local time.

Leg 2 1st Destination to 2nd Destination: Depart 1st Destination at 15:00 local time.

Leg 3 2nd Destination to Home: Depart 2nd Destination at 21:20 local time.

Weight and Balance Information:
Use actual airplane data for planning purposes
John weighs 170 lbs and has 35 lbs of baggage
Sarah weighs 120 lbs and has 40 lbs of baggage
Your bag weighs 25 lbs

Aircraft Information:
Assume the following information has been extracted from the appropriate log
Today's date is 7/27/06
Piper PA-28-161 built in 1996
Last 100 was 1555.3, current tach time is 1659.6
Last Annual inspection was 9/02/05
Last transponder was 12/05/04
Last Pitot Static was 10/03/03
Last VOR Check was 4/07/06
ELT was temporarily removed on 7/17/06 due to an "unreliable signal"
Placard in cockpit reads "NO ELT"
Aircraft does not have a MEL

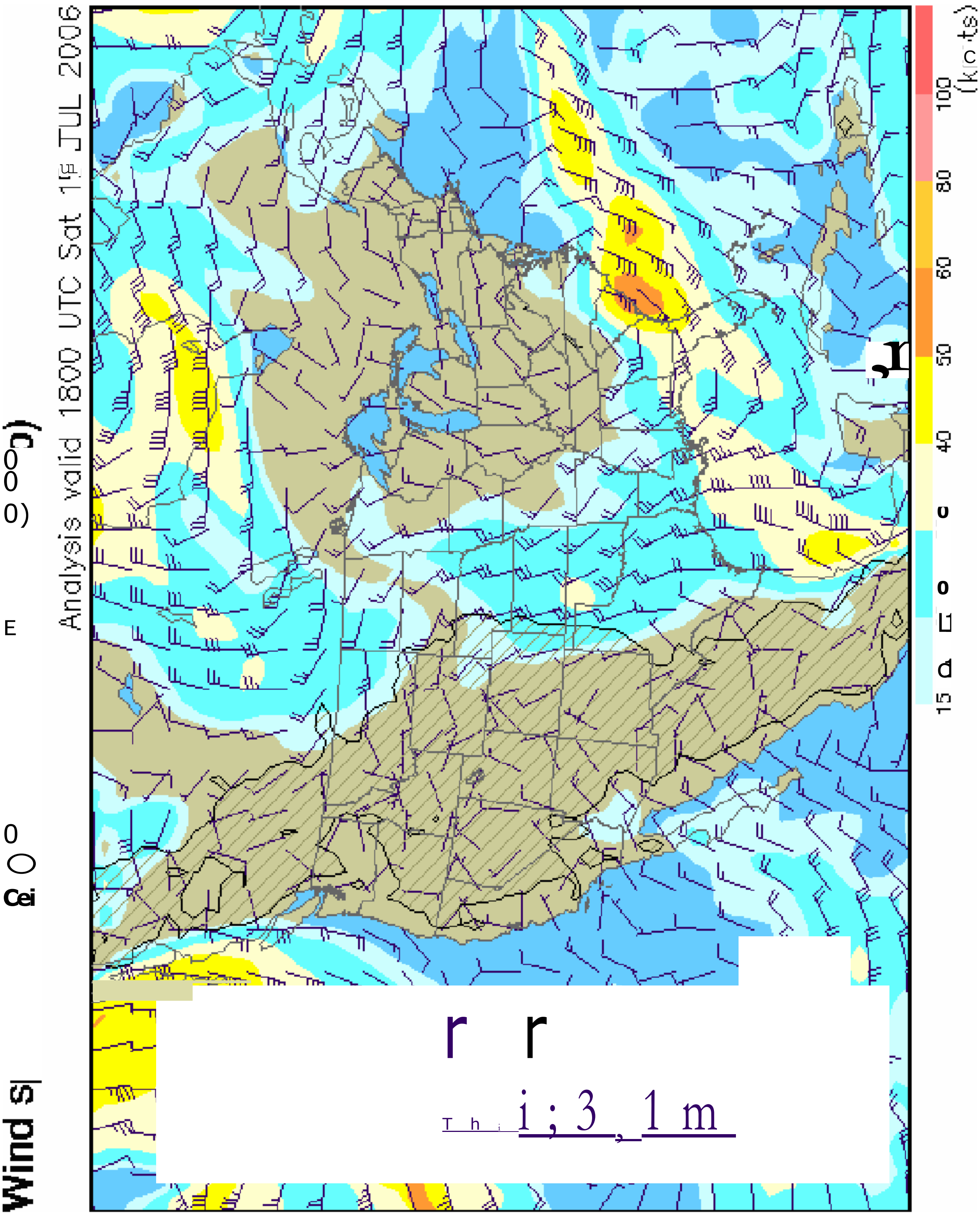
Pilot Information:
Received Private SES Rating on 4/04/05
2nd Class medical issued 6/14/05

Recent flight experience (log book entries) is as follows:

Date	Route	Land	AC type	AC ID	Total	Description
12/2/05	GFK-GFK	1	PA28	N22CD	1.2 hrs	Took Bob Flying
2/9/06	GFK-STP	1	SR20	N789F	1.8 hrs	Business Trip to MSP
2/14/06	STP-GFK	1N	SR20	N789F	2.0 hrs	Return Trip – fast airplane
2/27/06	GFK-GFK	3	C152	N224G	1.5 hrs	Fun Flight with Wife
3/5/06	GFK-GFK	2	C152	N224G	1.4 hrs	Fun Flight with Joe
5/9/06	CKN-CKN	2	C172	N45213	1.2 hrs	C172 checkout @ CKN
5/19/06	CKN-CKN	1	PA28	N222ND	1.1 hrs	PA28 Checkout @ CKN
6/6/06	GFK-STP	1	SR20	N789F	1.8 hrs	Business trip to Cities
6/14/06	STP-GFK	1	SR20	N789F	1.9 hrs	Return trip – nasty turblnc

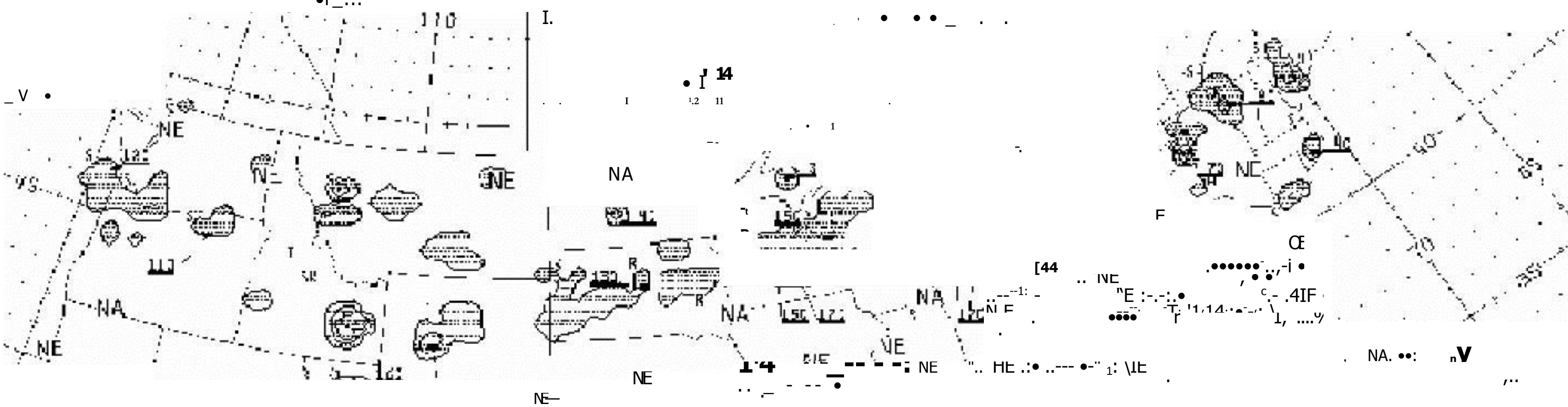
Weather Information:
******** Surface Observations ********
METAR KRDR 151855Z 27008KT 7SM SCT200 19/13 A3027 RMK SLP271
no reports available for XCH
METAR KGFK 151853Z 28006KT 10SM FEW250 19/13 A3028 RMK AO2 SLP273
T10941128
METAR KCKN 151855Z AUTO 27006KT 10SM CLR 18/11 A3026 RMK AO2
METAR KCKN 151915Z AUTO 27007KT 10SM CLR 18/11 A3025 RMK AO2
METAR KTVF 151855Z AUTO 28007KT 10SM FEW003 FEW022 BKN031 19/12
A3025 RMK AO1
METAR KTVF 151915Z AUTO 27008KT 10SM SCT019 BKN023 BKN029 19/12
A3024 RMK AO1
METAR KFSE 151855Z AUTO 29010KT 10SM -RA OVC029 17/13 A3022 RMK AO2
METAR KFSE 151915Z AUTO 30010KT 10SM -RA OVC029 18/13 A3021 RMK AO2
METAR KBJI 151855Z AUTO 27012KT 10SM OVC033 19/14 A3021 RMK AO1
METAR KBJI 151915Z AUTO 26012KT 10SM OVC033 19/14 A3020 RMK AO1
METAR KDTL 151854Z AUTO 32011KT 3SM -RA BKN07 OVC012 17/15 A3025 RMK AO2
WS01270/30KT
METAR KDTL 151914Z AUTO 31010G15KT 2 1/2SM -RA BKN007 OVC012 M07/M11 A3024
RMK
METAR KJKJ 151855Z AUTO 32010KT 10SM OVC044 M07/M11 A3029 RMK AO2
METAR KJKJ 151915Z AUTO 31010KT 10SM SCT033 OVC042 17/11 A3028 RMK AO2
METAR KFAR 151853Z 30011KT 10SM OVC060 M07/M12 A3030 RMK AO2
SLP280 T01720117
******** Terminal Forecasts ********
TAF KRDR 151818 28009KT 9999 FEW020 SCT200 QNH3009INS
BECMG 0304 32010G20KT 9999 SCT030 OVC050 600504 QNH3011INS
BECMG 0506 34010G15KT 9999 BKN020 OVC030 600205 QNH3015INS
BECMG 1617 31012KT 9999 FEW020 BKN030 600304 QNH3026INS TM05/21Z
TM12/11Z
TAF KGFK 151724Z 111818 28007KT P6SM SCT200
FM0600 34015G21KT 6SM -RA OVC035

FM1300 35012G18KT P6SM SCT250
TAF KBJI 151724Z 111818 28010KT P6SM BKN030
FM2200 29007KT P6SM SCT200
FM0800 34012G17KT P6SM -RA OVC020
FM1500 34012KT P6SM SCT250
TAF KFAR 151724Z 111818 30009KT P6SM SCT200 TEMPO 2123 BKN030
FM0800 34015G21KT 6SM -RA OVC045
FM1500 35013G18KT P6SM SCT250
******** FA Synopsis and VFR Clouds/Weather ********
CHIC FA 111045
SYNOPSIS AND VFR CLDS/WX
SYNOPSIS VALID UNTIL 150500
CLDS/WX VALID UNTIL 152300...OTLK VALID 152300-150500
ND SD NE KS MN IA MO WI LM LS MI LH IL IN KY
.
SEE AIRMET SIERRA FOR IFR CONDS AND MTN OBSCN.
TS IMPLY SEV OR GTR TURB SEV ICE LLWS AND IFR CONDS.
NON MSL HGTS DENOTED BY AGL OR CIG.
.
SYNOPSIS...LOW PRES SYS SERN AL/SWRN GA WITH CDFNT EXTDG SWWD
INTO GLFMEX MOVG EWD. RIDGE OF HIGH PRES FROM ROCKIES INTO PLNS.
BY 05Z...CDFNT WILL CURVE FROM LOW OVR SERN SD ACRS SRN SD AND
NERN WY INTO CNTRL MT.
.
ND
CIGS BKN-SCT015-025 BKN030-050. TOPS 100. ISOL -SHRA. BECMG 2023
CIGS BKN-SCT030-050. OTLK...VFR.
.
MN
AGL SCT-BKN015-025 BKN030-050. TOPS 100. ISOL -SHRA. BECMG 2023
CIGS BKN030-050. OTLK...MVFR CIGS.
.
WI MI LS LM LH
CIGS BKN-SCT015-025 BKN030-050. TOPS 100. WDLY SCT -SHSN.
OTLK...MVFR CIGS SHSN.
******** FD Winds Aloft Forecast ********
DATA BASED ON 111200Z REQUESTED
VALID 121200Z FOR USE 0600-1700Z. TEMPS NEG ABV 24000 ALTITUDE
FT 3000 6000 9000 12000 18000 24000 30000 34000 39000
GFK 3636 0138-14 0144-14 3649-20 3670-30 3694-39 860750 369954 358654



127 Version – 1.0

17222 'SAT 15 . JUL 21506 RACIAR 5-.,IMHARY



L EGE ND . . . - i_.- • • 1 Vhf

FI.REC. r.r.- -ECM FRET●● '.." :●● ' -I ● .--,. NE .•1 ' •• :•:' - _.•

COATDU 9'.2 AT IATEF;NI TT E k;]-3-5 -●.-....: ● : ,. NA "'-● . .

TIPS 1?1.2,-- MES 717.."•-,- ' '... LJEAT-IER UA H il UPS . ••.... te . l,

FIEF: 'e. - g -- DCF RFTD TO? 'CEP '11;1 TE ;111 I "'. .. •_.- ,..,_...__.

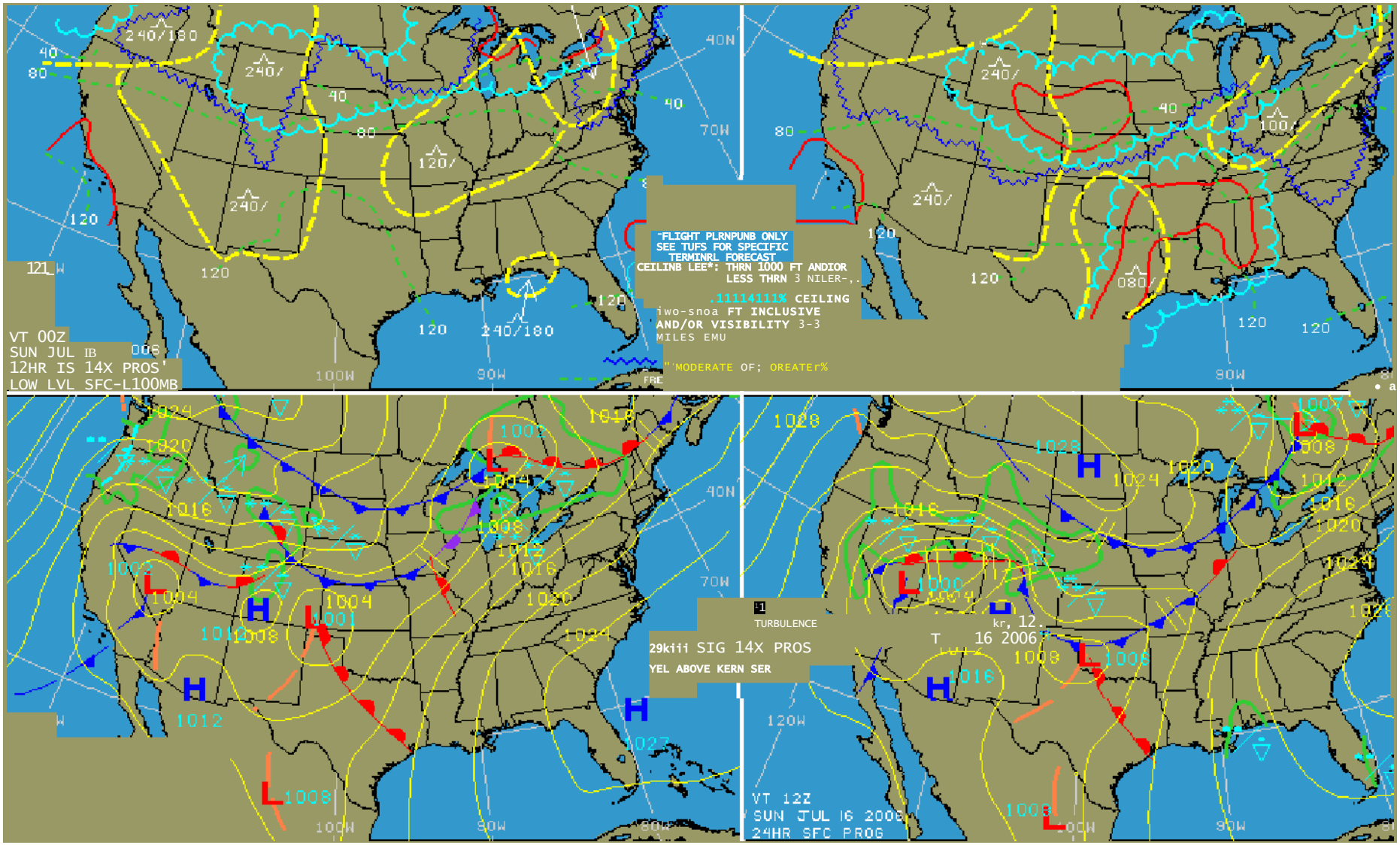
ULM- - fir_EAS ii.:r.E--pErrig:15 .. • .. NONE . - : tr.2 1:IE'T qr C1.61E %CE -. .-J● I cii.

Y.' . •-..1- _ 1 • T '.,..'" E . _J--'1722Z 'SAT 15 . JUL 2006 RADAR SI MMARY ID1.7....:•

I 141 IT - - EE L L S--P11 C!!:'.; WI "II 5 PEEII 'Ir.

1:1-.-'... yri .:___ _ i -4,

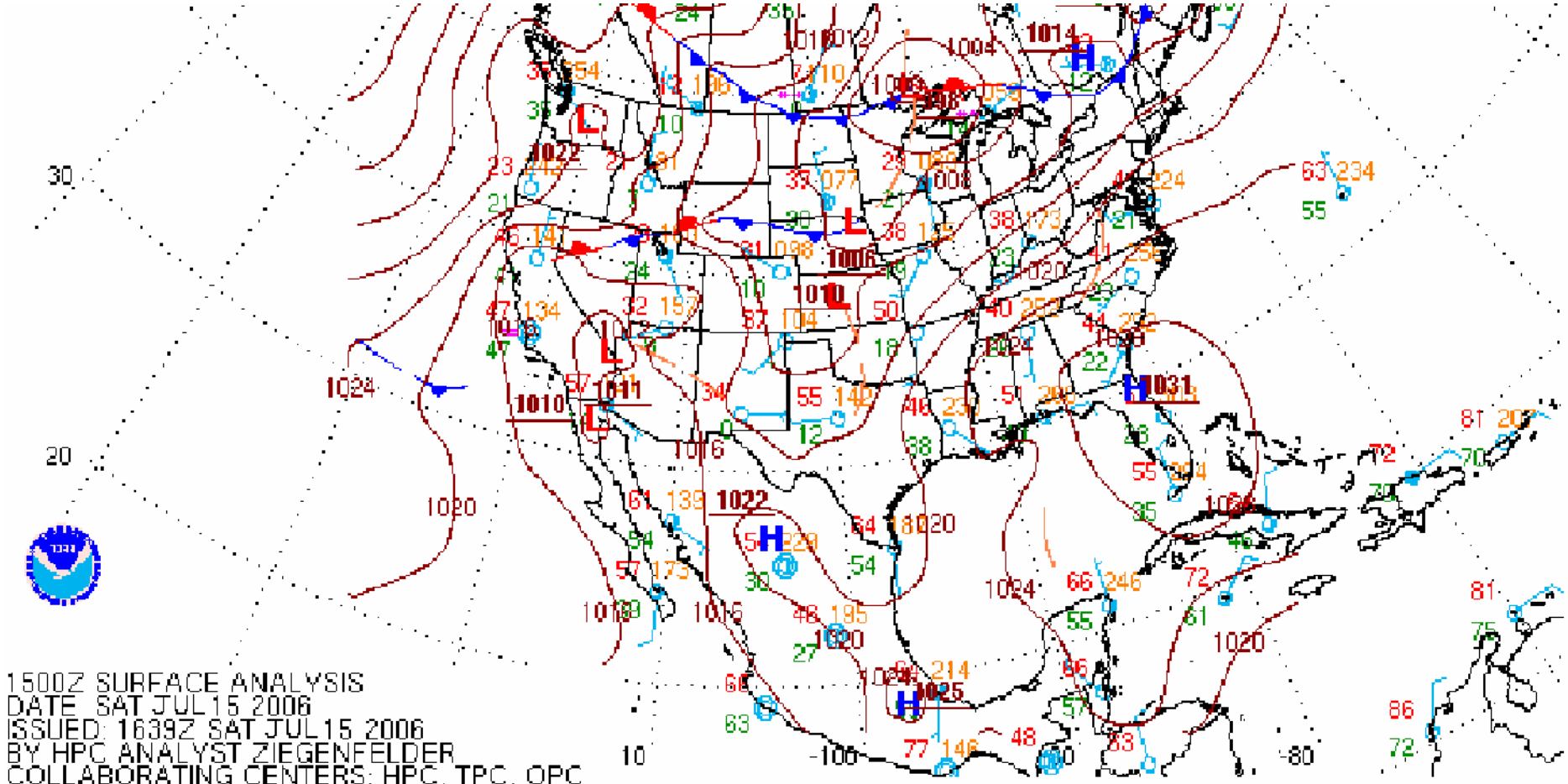
...1_1-• glqp AREA CF PRE EIPITOT.U11 I ".. 1 _. - -"......... . ..,..."


VT 00Z
SUN JUL IB 006
12HR IS 14X PROS'
LOW LVL SFC-L100MB
-FLIGHT PLRNPUNB ONLY
SEE TUFS FOR SPECIFIC
TERMINRL FORECAST
CEILINB LEE*: THRN 1000 FT ANDIOR
LESS THRN 3 NILER-,.
.11114111% CEILING
iwo-snoa FT INCLUSIVE
AND/OR VISIBILITY 3-3
MILES EMU
"MODERATE OF; OREATER%
TURBULENCE
29kiii SIG 14X PROS
YEL ABOVE KERN SER
kr, 12.
16 2006
VT 12Z
SUN JUL I6 2006
24HR SFC PROG
LEVEL 1_01414_.L SFC-LIOOMB

TSTMS IMPLY EOBSIBLE I/
BVR CC BREATER TURBO SYR
ICING RNO LLHB_,,4

120

VT 00Z
SUN JUL 16 20:\[16]PL[i.]
R SFrP Rnri


30
20
10
-100
-80
1500Z SURFACE ANALYSIS
DATE: SAT JUL 15 2006
ISSUED: 1639Z SAT JUL 15 2006
BY HPC ANALYST ZIEGENFELDER
COLLABORATING CENTERS: HPC, TPC, OPC

ion – 1.0

********** Pilot Reports **********
BIS UA /OV BIS090003/TM 1810/FLUNKN/TP UNKN/RM BASES 3 EAST 010 RGGD (ATCT VIA IDS4)

BJI UA /OV BJI315001/TM 1837/FLUNKN/TP E135/SK OVC008

BJI UA /OV BJI315001/TM 1813/FLUNKN/TP GLEX/SK OVC008

********** Radar Summaries **********
MBX 1835 PPINA AUTO

MPX 1835 AREA 4S 250/104 96/110 59W MT 160 133/46 C3122
AUTO
^MM22111 NK1112221 OJ11121

DLH 1835 PPINE AUTO

BIS 1835 CELL TSR+ 298/8 D3
AREA 6SW++ 242/19 48/10 21W
AUTO
^MM5

MVX 1835 PPINE AUTO

FSD 1835 PPINA AUTO

ABR 1835 AREA 6R+ 314/22 185/22 29W
AREA 7S- 218/99 133/94 40W MT 140 141/99
AUTO
^MM3 NK1 OM1111 PK111111 QL1
********** SIGMETs **********
current report not available

********** Convective SIGMET **********
MKCC WST 141855
CONVECTIVE SIGMET...NONE
OUTLOOK VALID 142055-150055
TS ARE NOT EXPD.
PDS

********** Center Weather Advisory **********
current report not available

********** AIRMETs **********
CHIT WA 141445
AIRMET TANGO UPDT 3 FOR TURB VALID UNTIL 142100
.
.
AIRMET TURB...ND SD NE MN IA WI LM LS MI LH
FROM 80NW INL TO YQT TO 20NW SSM TO YVV TO 30SE ECK TO DLL TO 70SW RAP TO 50NNW ISN TO 80NW INL
OCNL MOD TURB BTN FL220 AND FL410 DUE TO WIND SHEAR ASSOC WITH JTST. CONDS CONTG BYD 21Z THRU 03Z.
.
….
CHIZ WA 151445

AIRMET ZULU UPDT 2 FOR ICE AND FRZLVL VALID UNTIL 152100
.
AIRMET ICE...ND SD NE MN
FROM FAR TO FSD TO ONL TO 70SW RAP TO 80SW DIK TO FAR
OCNL MOD RIME/MXD ICGICIP BTN FRZLVL AND 300. FRZLVL 160-
300 THRUT. CONDS ENDG 18-21Z.

CHIS WA 151445
.
AIRMET IFR CONDS AND MTN OBSC...ND SD NE MN
FROM MSP TO GPZ TO 50SE INL TO DLH TO MSP
CONL CIG BLW 10 AND VIS BLW 3SM DUE TO BR AND RA CONDS ENDG 18-21Z

******** NOTAMs ********
!CARF 04/084 ZMP CARF NR. 157 ON TWA STATIONARY RESERVATION
WITHIN AN AREA BNDD BY DLH051/104 DLH068/091 SAW034/017 SAW016/046
FL200-FL250 WEF 0602142030-0602150030

!GFK 05/008 GFK TOWER 1153 (320 AGL) 9.3 E LGTS OTS (ASR 1230313)
TIL 0602162359
!TVF 07/008 TVF 31 ILS OTS WEF 0607141600-0607142300
!TVF 06/017 TVF 3/21 CLSD TO ACR MORE THAN 9 PAX
!PNM 11/106 5C3 AP CLSD
!BJI 06/101 BJI 7/25 CLSD WEF 0607152100-0607172300
!GFK 07/044 1A2 TOWER 2148 (944 AGL) 6.2 S LGTS OTS (ASR 1038760)
TIL 0602242359
!GFK 07/041 5N8 TOWER 1227 (319 AGL) 4.8 ENE LGTS OTS (ASR 1226078)
TIL 0602232359
!GFK 10/033 3H4 ABN CMSND

Note: you should replace the information about with information appropriate to you local area.

Scenario Objective

The purpose of this lesson is to introduce the PT the elements associated with the procurement and analysis of aviation weather reports and forecasts, national airspace system, VFR cross-country planning, certificates and documents applicable to private pilots, and airworthiness requirements.

Scenario Completion Standards

This lesson will be complete when the student is able to (a) meet the desired outcomes listed below, (b) interpret aviation weather reports and forecasts, (c) identify and explain the requirements to operate within the different airspace structures, (d) explain how the elements of certificate and documents pertain to VFR flight, (e) explain how the elements of airworthiness requirements pertain to VFR flight, and (f) plan a VFR cross-country flight with instructor guidance.

Learning Objectives/Desired Outcome/Grading Sheet

	Desired Outcome	Describe	Explain	Practice	Perform	Manage /Decide	Not observed
Weather							
Metars	PRACTICE						
TAFs	PRACTICE						
Area Forecasts	PRACTICE						
Winds Aloft	PRACTICE						
Winds and Temperature Aloft Chart	PRACTICE						
Radar Summary Chart	PRACTICE						
Weather Depiction Chart	PRACTICE						
Significant Weather Prognostic Chart	PRACTICE						
Surface Analysis Chart	PRACTICE						
Convective Outlook Chart	PRACTICE						
PIREP‘s	PRACTICE						
SIGMET‘s and AIRMET‘s	PRACTICE						
AWOS, ASOS, and ATIS Reports	PRACTICE						
Wind shear reports	PRACTICE						
National airspace system							
Controlled/Uncontrolled Airspace	EXPLAIN						
Special use airspace	EXPLAIN						
Other airspace areas	EXPLAIN						
VFR cross-country planning							
Route selection	PRACTICE						
Implications of aircraft loading	PRACTICE						
Go/no-go decision making	PRACTICE						
Altitude selection	PRACTICE						
Completion of navigation log	PRACTICE						
How to plan for alternatives if the planned flight cannot be completed or delays are encountered.	PRACTICE						
Certificate and documents							
Private pilot certificate privileges and limitations	EXPLAIN						
Medical certificate class and duration	EXPLAIN						
Pilot logbook and flight records	EXPLAIN						
Aircraft certificates and documents	EXPLAIN						
Airworthiness Requirements							
Required instruments and equipment	EXPLAIN						
Determining airworthiness with and without a minimum Equipment List	EXPLAIN						
Special flight permit	EXPLAIN						
Maintenance requirements and records	EXPLAIN						
Single-pilot resource management (SRM)	MANAGE/ DECIDE						
Postflight Discussion							
Critique student performance	PERFORM						

Instructor Information

National Airspace System: Bring a variety of sectionals to the briefing in order to quiz the student on how to identify the different types of airspace and their associated operating requirements and weather minimums. Be sure to use several questions in scenario form to stimulate thought, such as:
“If I wanted to over fly this airspace, what altitude would I do it at?”
“Would I have to talk to anybody?”
“Would I need any special equipment to over fly this airspace?”
Certificates and Documents: Use the above pilot information to talk about this pilot’s ability to go on this flight. Ask questions such as:
“According to this information, can you act as PIC on this flight? Why or why not”
“What would you have to do in order to act as PIC on this flight?”
“You haven’t flown a Warrior in a while; is that going to be a problem?”
“If you, the pilot, wanted to share the costs of this flight, how could you go about it?”
“Which costs could be shared? With whom?”
“What if Sarah offers to pay for the whole flight, is that allowed?”
“If you look at your logbook it says you took a business trip to the cities, can you charge your company for the cost of the airplane?”
“Could you get paid travel time as a private pilot in that scenario?”

Airworthiness Requirements: Use the aircraft information provided to lead the student through airworthiness determination. If the aircraft is not airworthy, make the student determine what they would do to correct the problem. Also, tell the student on leg 2 the_____broke. Have them correct the problem using the MEL. Then have them correct the same problem using 91.213. It’s important to go through the process, don’t just talk about it.

Weather and Cross Country Planning: Use the weather information in the scenario packet to plan the first leg of the proposed trip (Home to nearby airport). Use the weather products provided in the scenario to demonstrate to the student how to extract information necessary for planning a cross country. Have the student select the proper route and altitude and execute a proper Go/No Go decision. Be sure to have the student identify any risks associated with the flight and a solution to minimize those risks.

Assignment for Lesson 22

Student Preparation

1. Review syllabus description for this lesson.
2. Complete appropriate sections of the workbook.
3. Obtain a weather brief for route assigned by instructor.
4. Complete a risk assessment for today's flight.
5. Complete necessary X-C planning for your assigned route.
6. Be prepared to explain/identify your GO/NO GO decision, fuel requirements for the flight, alternates available, and any NOTAM's affecting your route.
7. Plan VFR cross-country as assigned by the instructor.
8. Review items as deemed necessary by the instructor.

Cross Country – Lesson 22

Mission – Cross Country Flight to Shoot SBT Video
FLT Lesson 22 (Approx. lesson time 2.5 hours with .4 instrument)

Dual – Airplane

Scenario

You and your instructor have been selected by a nationally known training materials producer and training provider to take part in a new training video they will be releasing early next year. The video is titled *Using Scenario Based Training to Teach Cross Country Procedures*. The film director has instructed you as the "the star student" to ignore the production crew completely and react with your instructor in a normal manner. In other words, film crew's presence on the flight should be transparent to you, and you don't have to memorize any lines. However, the camera equipment and production crew will add some additional limitations to your flight planning.

First, a camera technician, 145 lbs, and the director 158 lbs, will be coming with you for today's flight. They will sit in the back of the plane and run the camera equipment which will be placed in the following locations:

Camera 1 (right-side dash camera): 5 lbs, located at 48.8" aft of datum

Camera 2 (left-side dash camera): 5 lbs, located at 45.6" aft of datum

Camera 3 (back-seat camera): 5 lbs, located in the back seat with 2 passengers

Recording Equipment: 28 lbs, located in rear baggage compartment Also, for recording purposes, the director would like you to plan at least one leg at *best power,* and at least one leg at *best economy* power settings. Because of limitations of the recording media, the camera technician will have to change tapes at some point during the flight. Therefore, the director asks you to taxi to the ramp and shut down the aircraft at one of your destinations. If you need fuel, this would be a great time to get it.

Scenario Objective

The purpose of this lesson is to introduce use of radio aids during instrument flight in an airplane. In addition, the student will practice maneuvers listed as review.

Scenario Completion Standards

This lesson will be complete when the student is able to (a) meet the desired outcomes listed below, (b) use radio aids for orientation with little input from the instructor, (c) track and bracket radials with little input from the instructor, (d) identify and practice proper corrective actions to emergency procedures without instructor guidance, (e) maintain altitude within ±150 feet, heading within ±15 degrees, and airspeed within ±10 knots without instructor guidance, (f) maintain

directional control at all times during takeoffs and landings, (g) conduct a stabilized approach, (h) perform short-field and soft-field operations, with touchdowns at or within 300 feet of the desired point, without instructor guidance.

Learning Objectives/Desired Outcome/Grading Sheet

	Desired Outcome	Describe	Explain	Practice	Perform	Manage/Decide	Not observed
Preflight Discussion							
Discuss lesson objective and completion standards	PERFORM						
Review areas as necessary	PERFORM						
Risk assessment	PRACTICE						
Preflight planning and preparation	PRACTICE						
Use of aircraft performance charts pertaining to cross-country flight	PRACTICE						
Aircraft weight and balance computation	PRACTICE						
Procurement and analysis of aeronautical weather reports and forecasts	PRACTICE						
Discuss weather and make a GO/NO GO decision	PRACTICE						
Airport facility directory	PRACTICE						
Notices to Airman	PRACTICE						
Filing a VFR flight plan	PRACTICE						
National Airspace System	PRACTICE						
Recognition, avoidance and operational restrictions of hazardous terrain features in the geographical area where the cross-country flight will be flown (CFIT)	PRACTICE						
Diversion	PRACTICE						
Lost procedures	PRACTICE						
Review							
Control and maneuvering solely by reference to flight instruments, including straight and level flight, turns, descents, climbs, use of radio aids, and ATC directives	PERFORM						
Takeoff, approach and landing procedures, including short-field, soft-field, and crosswind takeoffs, approaches, and landings	PERFORM						
Climbs at best angle and best rate	PERFORM						
Stabilized approach	PERFORM						
Introduction							
Dual cross-country flight which is to include landings at three airports	PRACTICE						
A. Use of radio aids during instrument flight	PRACTICE						
B. Opening and closing a flight plan	PRACTICE						

C. Traffic pattern procedures that include area departure, area arrival, entry into the traffic pattern, and approach	PRACTICE						
D. Use of aeronautical charts for VFR navigation using pilotage and dead reckoning with the aid of a magnetic compass	PRACTICE						
E. Procedures and operating practices for collision avoidance, wake turbulence precautions, and wind shear avoidance	PRACTICE						
F. Procedures for operating the instruments and equipment installed in the aircraft to be flown, including recognition and use of the proper operational procedures and indications	PRACTICE						
G. Use of radios for VFR navigation and two-way communications	PRACTICE						
H. Emergency procedures	PRACTICE						
I. Diversion	PRACTICE						
1. Recognition of critical weather situations and estimating visibility in flight	PRACTICE						
H. Lost Procedures	PRACTICE						
1. VOR cross check	PRACTICE						
2. GPS	PRACTICE						
I. Descent planning	PRACTICE						
Single-pilot resource management (SRM)	MANAGE/ DECIDE						
Postflight Discussion							
Critique student performance	PERFORM						

Instructor Information

Pre-flight discussion: discuss the scenario with the student. Have them explain their GO/NO GO decision, how the extra weight in the above scenario affected their fuel/cross-country planning, and any fuel stops they might need. Without the student's knowledge, calculate actual aircraft weight and balance and associated performance, and alter dispatch form to reflect actual route. Student's planned route will be different from the actual route flown.

Ground Ops: Introduce programming a flight plan into the GPS. Student should be able to complete all other tasks without instructor guidance.

Leg 1 – (suggest Home Airport and Nearby Airport):

Departing Home: Soft field takeoff with climb to cruise altitude. Assist student in opening flight plan on departure.

Cruise: Review pilotage, dead-reckoning, and keeping up with flight log. (Instructors can cover-up the GPS using the MSG button.)

Descent: Introduce descent planning and airport arrival procedures.

Pattern: Practice short field landings and takeoffs. When complete, taxi off runway to close flight plan and open plan for next leg.

Leg 2

Ground Ops: Inform the student that weather has moved in and there is now a low overcast layer reported at 2500 ft AGL. Ask questions to stimulate thought, such as:

How will this affect our flight?
What can we do to get more weather information?
How can we find out what the weather will be at our destination?
What will be our new cruise altitude?

Departure: Have student execute a short field takeoff and climb. Let student decide when and how to open their flight plan. Give as little instructor input as necessary.

Cruise: Student should level-off at the appropriate cruise altitude based on simulated low weather. If the student climbs too high, put the hood on them. You can also use the aircraft's sun visor to limit the student's view, as vertical visibility would be limited by an overcast layer. When half-way into leg one, begin to hint that the weather is deteriorating. Make comments such as: "The visibility is getting worse" or "Boy, that overhead cloud layer appears to be getting closer." Let the student choose which action to take. If student does not take a

corrective action, and continues at their present altitude and course, put the hood on them (simulating inadvertent entry into IMC). After student has chosen a corrective action, challenge them to come up with a heading that will take them to their destination and an ETA which will put them over the airport. Cover up the GPS screen using the MSG button and have the student fly their calculated heading for the time they specified.

Lost Procedure: When the student reaches their planned ETA, let them take the hood off and try to find their position. Guide them through the lost procedure process. Let them work from simple to complex: Challenge them to identify their position using the map before using any other available navigation aids (VOR, GPS, ect).

Descent and Patter Work: After the student identifies their position, have them enter the pattern and execute a soft-field landing. If this is the destination where the student planned to get fuel, taxi to the ramp and guide them through the process. Hopefully the student will initiate action to close the flight plan. Allow the student to decide on his or her own that this must be accomplished. Only prompt when getting close to Search and Rescue time.

<u>Leg 3 – (suggest XXX - YYY with instructor directed divert to ZZZ)</u>
NOTE: If you plan other than the suggested route, it's important to pick a route that has an approved airport available for diversion.

Ground Ops: Ask questions to stimulate thought, such as:

What can we do while the FBO refuels our aircraft?
How long should we wait to sump fuel?
Should we do an entire aircraft preflight or just "takeoff"?

Departure: Execute a soft-field takeoff and climb. Have student climb to cruise altitude and open the flight plan with little or no instructor guidance.

Diversion to unplanned airport: About half-way into this leg, begin to simulate engine roughness. Make popping sounds and simulate power loss by pulling back the throttle a couple hundred RPM's every few minutes. Try to let the student come up with a solution to the problem. Ask questions to stimulate thought, such as:

Can we trouble shoot this problem?
Should we continue on our course?
What are our available alternates?
Should we declare an emergency?
If so, how would we do that?

Have the student plan a diversion to unplanned airport (or other suitable airport). Guide them through the problem and their decision making process. Ask appropriate questions to stimulate thought.

Arrival at unplanned airport: Once on the ground, have the student taxi to the ramp and shut down. Hopefully the student will identify the need to close their flight plan and complete other post flight responsibilities. Give them time to make these decisions. Emphasize PERSONAL RESPONSIBILITY.

Leg 4 – (suggest return to home)

Ground Ops: Give the student time to re-plan to home airport. Tell the student that because weather is moving in, time demands that they be off the ground within 30 minutes. Let the student re-plan with as little guidance as possible. Continue to rush the student until in the air...put as much time pressure on them as possible. Tell them their passengers can't afford to get stuck in Detroit Lakes. Force them to file their flight plan in the air. Record any mistakes they make. If the mistakes aren't hazardous to the flight, do not correct them.

Departure: Execute a normal takeoff and climb. Have the student climb to altitude and file their flight plan with Flight Service in the air. If they have trouble with the radio phraseology, provide assistance as necessary.

Cruise: This leg's navigation can be done by any means the student deems necessary. Try to get them to use all available resources. Ask questions to stimulate thought, such as:

Since we have no designated checkpoints how can we keep track of our flight progress?
What is our best navigation source to use for this flight?
How can we back-up this navigation source?

Teach student how to keep-up with location/create a flight log in cruise flight. Make sure they are comparing the time they filed with their actual route time.

Descent and Arrival: Let the student execute proper arrival and descent procedures into home airport. Student should be able to successfully enter the pattern and land at home. Give the student time to realize they need to close their flight plan.

Post brief: Ask the student how they think the time pressure affected their performance. Show student the list of mistakes you recorded on the last leg, and have them identify the ones they felt were attributed to this pressure. Have them identify areas where they did well and the areas that need improvement throughout the entire flight.

Assignment for Lesson 23

Student Preparation

1. Review syllabus for contents of lesson.
2. Complete appropriate sections of the workbook.
3. Obtain a weather briefing and complete necessary pre-flight planning.

FAA-H-8083-3, AIM, 14 CFR Part 91, Safety Policies and Procedures

1. ATC clearances at airports with an operating control tower
2. Runway Incursions
3. Local student pilot operations

Cross Country – Lesson 23

Mission – Romantic Dinner in Nearby Town and Dessert in Another Town
FLT Lesson 23 (Approx. lesson time 1.5 hours with .8 instrument)

Night Dual – Airplane

Scenario

You have decided to take your “significant other” on a special date! This date includes a moonlit flight over your date’s house, followed by a landing at a nearby town for a romantic dinner at a fancy restaurant, and then to another restaurant for dessert. Your date’s house lies approximately 2 miles south of town; so the plan is take-off, fly over the house, and then proceed to the nearby town.

Scenario Objective

The purpose of this lesson is to introduce the student to the fundamentals of night operations.

Scenario Completion Standards

This lesson will be complete when the student is able to (a) meet the desired outcomes listed below, (b) perform preflight actions at night, (c) conduct maneuvers at night, (d) maintain directional control at all times during takeoffs and landings, and (e) identify and correct for night illusions with instructor guidance.

Learning Objectives/Desired Outcome/Grading Sheet

	Desired Outcome	Describe	Explain	Practice	Perform	Manage/Decide	Not observed
Preflight Discussion							
Discuss lesson objective and completion standards	PERFORM						
Night Illusions	EXPLAIN						
Required aircraft equipment	EXPLAIN						
Airport and navigation lighting	EXPLAIN						
Introduction							
Night flight preflight actions	PERFORM						
Ground maneuvering	PRACTICE						
Normal and crosswind takeoffs	PRACTICE						
Flight at various airspeeds and configurations from cruise to slow flight	PRACTICE						
Stall recognition and recovery procedures; power on/power off, full and imminent	PRACTICE						
Steep turns	PRACTICE						
Normal and crosswind landings	PRACTICE						
Single-pilot resource management (SRM)	MANAGE/ DECIDE						
Postflight Discussion							
Critique student performance	PERFORM						

Instructor Information

Group Ops – Guide the student through the preflight discussion items listed in the syllabus. Ask questions to stimulate thought, such as:
How long should we wait to let our eyes adapt to the night?
What do you think will be the greatest difference between night and day flying?
What illusions should we watch out for?
If we spot another aircraft, and only see a red light on their wing, what does that mean?
Who has the right-of-way?

<u>Leg 1</u>

Preflight: Discuss and demonstrate with the student the differences between a night and day preflight. Ask questions to stimulate thought, such as: Should we check the lights any different than we do during the day? What color flashlight do you think would be best to use? Why?

Ground Maneuvering: Discuss and demonstrate with the student the proper taxi procedures at night. Ask questions to stimulate thought, such as:
Should we taxi with our landing light on the whole time? Why?
What should we do if an aircraft pulls off the runway in front of us with their landing light on? Why?

Departure Home: Execute a normal takeoff and climb.

Enroute: Perform all maneuvers listed in the syllabus after entering the practice area. Attempt to identify location of date's home. For steep turns, tell the student that their date would like to take pictures of their house but the wing is in the way. Be sure to ask the student to compare their visual cues during the day, versus their visual cues at night. Discuss how individual maneuvers differ at night (compared to day).

Destination Airport: Student should enter the pattern with little instructor guidance. Ask questions to stimulate thought, such as:
How can we identify the airport?
If the light near the windsock was burned out, how could we figure out which runway to use?
If the runway lights are too bright, how do we turn them down?
Conduct a full stop landing and taxi to the ramp completing all necessary checklists for validation of scenario.

<u>Leg 2</u>

Depart 1st Destination: Conduct a normal takeoff. Practice landings in the patterns as necessary to increase student proficiency, then depart for home.

Enroute Home: Ask questions to stimulate thought, such as:
If we lost our engine right now, what would you do?
Is it better to land in an unlit area, or a lighted area? What do you think of night flying?

Home Airport: Student should enter the pattern with little or no instructor assistance. Encourage them to make the decisions. Practice landings as necessary to increase student understanding.

Assignment for Lesson 24

Student Preparation

1. Review syllabus description for this lesson.
2. Complete appropriate sections of the workbook.
3. Obtain a weather brief for route assigned by instructor.
4. Complete a risk assessment for today's flight.
5. Complete necessary X-C planning for your assigned route.
6. Be prepared to explain/identify your GO/NO GO decision, fuel requirements, alternates available, and any NOTAM's affecting your route.
7. Identify three night illusions you might experience during tonight's flight. Be ready to explain when and how they might occur (for example: on final at ????).
8. Plan VFR cross-country as assigned by the instructor.

Cross Country – Lesson 24
Mission – First Freight Job
FLT Lesson 24 (Approx. lesson time 1.5 hours with .8 instrument)

Night/Dual – Airplane

Scenario

Congratulations, your are now a commercial pilot. After years of hard work, you got your first pilot job – flying freight at night for a company based out of Grand Forks. Your route tonight will take you as follows:

Leg 1 – Grand Forks to Fargo (KFAR) –deliver 75 lbs of cargo to FAR, pickup 55 lbs

Leg 2 – Fargo, ND (KFAR) to Alexandria, MN (KAXN) – drop-off 20 lbs of cargo at AXN, pickup 30 lbs

Leg 3 – Alexandria (KAXN) to Detroit Lakes, MN (KDTL) – drop-off 25 lbs of cargo at DTL, pick up 50 lbs

Leg 4 – Detroit Lakes (KDTL) to Grand Forks – drop-off remaining cargo

Note: Change these airports to your local area.

In order to avoid any delays that may be caused by re-fueling, you should plan the trip with as little or no fuel stops as possible. Your boss has made it clear to you that he has taken a big chance hiring such a low-time pilot. Being that this is your first flight alone, you really want to impress him with your on-time performance and piloting skill.

It is up to you to decide where to put any cargo you will carry during this flight. It is very important to calculate weight and balance for each leg because the FAA recently fined the company for flying three aircraft overweight. The fines led to three of your fellow pilots losing their jobs. Also, the company's dispatch frequency is 123.50; any delays or changes in the original flight-plan should be reported to the company over this frequency.

Scenario Objective

The purpose of this lesson is to introduce the step-by-step procedures for planning and conducting cross-country flights at night. In addition, the student will practice maneuvers listed as review.

Scenario Completion Standards

This lesson will be complete when the student is able to (a) meet the desired outcomes listed below, (b) plan and conduct a VFR cross-country at night with little input from the instructor, (b) follow correct procedures during all phases of the flight, (c) determine groundspeeds within ±10 knots and ETA's accurate to within ±10 minutes, (d) practice use of radio navigation, pilotage, and dead reckoning procedures with little input from the instructor, (e) perform the flight safely and expeditiously, with emphasis on risk assessment, and (f) review maneuvers without input from the instructor.

Learning Objectives/Desired Outcome/Grading Sheet

	Desired Outcome	Describe	Explain	Practice	Perform	Manage/Decide	Not observed
Preflight Discussion							
Discuss lesson objective and completion standards	PERFORM						
Review areas as necessary	PERFORM						
Risk assessment	MANAGE/ DECIDE						
Preflight planning and preparation	PRACTICE						
Use of aircraft performance charts pertaining to cross-country flight	PRACTICE						
Aircraft weight and balance computation	PRACTICE						
Procurement and analysis of aeronautical weather reports and forecasts	PRACTICE						
Discuss weather and make a GO/NO GO decision.	PRACTICE						
Airport facility Directory	PRACTICE						
Notices to Airman	PRACTICE						
Filing a VFR flight plan	PRACTICE						
National Airspace System	PRACTICE						
Recognition, avoidance and operational restrictions of hazardous terrain features in the geographical area where the cross-country flight will be flown (CFIT)	PRACTICE						
Diversion	PRACTICE						
Lost Procedures	PRACTICE						
Review							
Control and maneuvering solely by reference to flight instruments, including straight and level flight, turns, descents, climbs, use of radio aids, and ATC directives	PERFORM						
Takeoff, approach and landing procedures, including short-field, soft-field, and crosswind takeoffs, approaches, and landings	PERFORM						
Climbs at best angle and best rate	PERFORM						
Introduction							
Night cross-country flight of more than 100 NM with a landing at an airport other than the departure airport.	PRACTICE						
A. Traffic pattern procedures that include area departure, area arrival, entry into the traffic pattern, and approach	PRACTICE						

B. Use of aeronautical charts for VFR navigation using pilotage and dead reckoning with the aid of a magnetic compass	PRACTICE						
C. Procedures and operating practices for collision avoidance, wake turbulence precautions, and wind shear avoidance	PRACTICE						
D. Procedures for operating the instruments and equipment installed in the aircraft to be flown, including recognition and use of the proper operational procedures and indications	PRACTICE						
E. Use of radios for VFR navigation and two-way communications	PRACTICE						
F. Emergency procedures	PRACTICE						
G. Diversion	PRACTICE						
1. Recognition of critical weather situations and estimating visibility in flight	PRACTICE						
H. Lost Procedures	PRACTICE						
1. VOR cross check	PRACTICE						
2. GPS	PRACTICE						
Single-pilot resource management (SRM)	MANAGE/ DECIDE						
Postflight Discussion							
Critique student performance	PERFORM						

Instructor Information

NOTE: All the information on specific airports should be changed to your local environment.

Pre-flight discussion: Discuss the lesson scenario. Have student explain their GO/NO GO decision and the three illusions they might encounter on tonight's flight. Be sure they are very specific as to why and where they will occur. Calculate actual weight and balance and associated performance. Alter dispatch form to reflect actual route that will be flown. ***Student's planned route will be different from the actual route flown.***

Ground Ops: Student should be able to complete all tasks without instructor guidance. Be sure student programs flight plan into the GPS. Ask questions to stimulate thought, such as:

There is a lot of traffic out tonight, is there anything we can do to help us avoid the other aircraft?

Introduce the student to flight following and the benefits it affords. Provide assistance on the radio as necessary.

Leg 1 – suggest GFK to FAR:

Departing GFK: Soft field takeoff with normal climb to cruise altitude.

Cruise: Student should demonstrate his/her ability to maneuver on course, identify and record checkpoints, and open flight plan without instructor assistance.

Descent: Student should demonstrate his/her ability to communicate with ATC, adequately plan a proper descent, and arrive and locate the airport with no instructor guidance.

Pattern: Short field landing. Pick two points on the runway where your simulated short field airport begins and ends. Challenge the student to pick proper aim and touchdown points. Practice landings and takeoffs as necessary to increase student proficiency.

Leg 2 – suggest FAR to AXN

Departing FAR: Short field takeoff. Inform the student they have a 200 ft obstacle, and that their altitude needs to be above 3000 ft before proceeding over the town of Fargo due to noise abatement procedures. Student should elect to do a Vx climb to 3000 ft.

Cruise: Wait for the student to open and/or close their flight plan if they have not done so already. Student should demonstrate his/her ability to maneuver on course, identify and record checkpoints, and open and close their flight plans with no instructor guidance.

Divert to DTL: After being handed off from Fargo and/or approximately 45 miles from Alexandria, inform the student that you see flashes of lightning in the distance. Ask questions to stimulate thought, such as:

Do you think it's a good idea to continue towards what might be a thunderstorm?

How can we find out if there is hazardous weather near Alexandria?

What frequency will we use and who will we call?

Student should elect to get an in-flight weather brief from either flight watch or the nearest FSS. Guide them through the process and have them practice the actual radio calls by dialing in the appropriate frequencies but not keying the mike. As the instructor, you will play ATC and give the student the following weather info:

Convective SIGMET has been issued for central Minnesota, Southeastern North Dakota, and Northeastern South Dakota. A line of thunderstorms extending from 10 miles north of Alexandria, Minnesota to 10 miles south of Watertown, South Dakota is moving east at 30 Knots. The line of storms is predicted to produce heavy rain and lighting and large hail in excess of $^{3}/_{4}$ inch in diameter. Low Level Wind Shear with gusts up to 50 knots is expected in and around the line of storms.

Alexandria Automated station reporting wind southwesterly at 15 knots gust 28. visibility 7 miles in light rain, temperature 20 dew point 24, altimeter two niner - eight niner, lighting distant west southwest

(pause for effect)
Also...
Radar shows a line of thunderstorms well established approximately 20 miles southwest of Alexandria moving east with areas of light to moderate precipitation surrounding the location. Echo tops in the last half-hour moving toward Alexandria have increased from low-levels up to Flight Level two-five-zero

Anything else I can get you?

Answer any questions student may have...

Ask questions to stimulate thought, such as:

Do you think it would be safe to continue on to Alexandria?
Which destination makes the most sense for us to go to?
Do we have enough fuel to get there?
What other things should we consider?

Student should elect to go towards Detroit Lakes and be able to successfully alter their course to get there. Challenge the student to alter their flight plan with FSS. Initially let the student use all available means of navigation. After student has successfully amended their flight plan take away all navigational aids. Challenge to student to find Detroit Lakes using nothing but their map. If student becomes lost, have them start lost procedures.

Descent and Pattern at DTL: student should be able to plan a descent and enter the pattern at DTL with no instructor guidance. Pretend to be another aircraft and say over the intercom: "***Aircraft arriving at Detroit Lakes be advised that recent flooding has left the runway surface covered in sticky mud. Runway's usable, but is no longer a hard surface."*** Student should elect to do a soft-field landing. Practice takeoffs and landing as necessary to increase student proficiency. Have student taxi to the ramp and shutdown the engine when finished.

Leg 3 – (suggest DTL to GFK)

Ground Ops: Tell the student that the company has made an error in their dispatch planning. Rather than taking on 50 lbs of cargo in DTL, you will be taking on 150 lbs of cargo. It is up to them to decide if they can carry it and where. Remind them they never unloaded the cargo destined for Alexandria. Force student to quickly recalculate their weight and balance.

Departing DTL: Student should elect to do a soft-field takeoff due to the runway condition. Execute normal climb out.

Cruise: Student should demonstrate his/her ability to maneuver on course, identify and record checkpoints, and open and close their flight plans with no instructor guidance.

Basic Instrument/Lost procedure: After established in cruise, take control of the aircraft and have the student get the hood from the backseat. While student is reaching for the hood, cover the GPS screen using the MSG button and take away all nav aids. Also, spin the DG approximately 30 or more degrees right or left, but turn the aircraft to the heading the student was originally flying (this will have the student flying an incorrect heading towards their destination; the goal is to get them totally lost). After the student puts on the hood, have the student fly the heading that they think will take them to their destination for approximately 20 to 30 minutes. For further challenge, have the student change airspeeds in level flight while holding cruise altitude.

Lost Procedure: Have the student remove their hood and challenge them to execute the proper lost procedure. Work simple to complex: initially have the student try to locate their position using only their map. Let them confirm their position using a VOR crosscheck and finally the GPS. Student should be able to successfully identify the position of Grand Forks and navigate towards it. Ask questions to stimulate thought, such as:

Do we need to update our flight plan?
Has our time back to Grand Forks been altered?

Descent and Arrival: Student should be able to properly plan their descent into Grand Forks with no instructor input. Practice different takeoffs and landings as necessary to increase student proficiency.

Assignment for Lesson 25

Student Preparation

1. Review syllabus for contents of lesson.
2. Complete appropriate sections of the workbook.
3. Obtain a weather briefing and complete necessary pre-flight planning.
4. Complete a risk assessment for the day's flight and be prepared to lead a discussion on it.
5. Complete XC planning for the next scenario using the most recent weather and be prepared to lead a discussion on your planning.

FAA-H-8083-3, AIM, 14 CFR Part 91

1. Review items as deemed necessary by the instructor

Cross Country – Lesson 25
Mission – Real Estate Tycoon's Trip
FLT Lesson 25 (Approx. lesson time 1.3 hours)

Dual – Airplane

Scenario

You are a real estate tycoon with a very important meeting in city half way across the state. The purpose of the meeting is to negotiate the acquisition of a 50-unit apartment complex. If you negotiate well, your company stands to make a lot of money. Due to the time sensitive nature of the deal, you choose to fly your new airplane to destination so as to be the "first buyer on-scene".

Scenario Objective

The purpose of this lesson is to review the listed maneuvers in preparation for progress check on next flight.

Scenario Completion Standards

This lesson will be complete when the student is able to (a) meet the desired outcomes listed below, (b) perform all maneuvers and procedures to meet or exceed standards outlined in the cross-country segment of training.

Learning Objectives/Desired Outcome/Grading Sheet

	Desired Outcome	Describe	Explain	Practice	Perform	Manage/Decide	Not observed
Preflight Discussion							
Discuss lesson objective and completion standards	PERFORM						
Review areas as necessary	PERFORM						
Review							
VFR cross-country procedures	PERFORM						
Lost procedures/diversion	PERFORM						
Soft-field takeoff and climb	PERFORM						
Soft-field approach and landing	PERFORM						
Short-field takeoffs and maximum performance climbs	PERFORM						
Short-field approaches and landings	PERFORM						
Stalls	PERFORM						
Steep turns	PERFORM						
Slow flight	PERFORM						
Ground reference maneuvers	PERFORM						
Emergency operations	PERFORM/ MANAGE/ DECIDE						
Single-pilot resource management (SRM)	MANAGE/ DECIDE						
Postflight Discussion							
Critique student performance	PERFORM						

Instructor Information

Pre-flight Brief: Review the student's cross-country planning to the destination airport. Have them explain their GO/NO GO decision; where they got their weather information; how they chose their cruise altitude and power setting; any risks or hazardous on the flight; and any NOTAM's affecting their flight.

Ground Ops: Student should be able to complete all tasks with no instructor guidance. If student gets confused or forgets to do something, let them work it out as long as it is within the constraints of safety.

Leg 1

Soft Field Takeoff: Tell the student that it snowed last night and airport personnel have not plowed the runway yet. There is approximately 1" to 2" inches of light fluffy snow on the runway. Student should elect to do a soft field takeoff.

Climb: Student should demonstrate the ability to navigate and maneuver the aircraft on course. Allow the student to initially use all available means (GPS, VOR, etc.). Once on course, take away all navigation aids in order to effectively evaluate their pilotage and dead reckoning skills. Have student simulate opening their flight plan by selecting the proper frequency and going through the appropriate radio calls. Student should not key the mike, you will act as the FSS. Once in the practice area, ask questions to stimulate thought and further evaluate their abilities to successfully navigate to airport, such as:

What is our Groundspeed?

What will be our ETA or ETE to the destination?

After we reach the destination, how much flight time will we have left?

Evaluate the accuracy of student's answers by using the GPS GS and ETE readouts.

BAIF: Have the student put on view limiting device and tell them they just entered the clouds. Student should elect to do a 180 degree turn without being prompted. Practice basic instrument flying maneuvers as per the PTS in order to evaluate student's skills.

Lost Procedure: Take the view limiting device off the student and have them start lost procedures working simple to complex (map only to navigation aids). Student should be able to locate their position using their map. After they identify their position, let them use navigational aids in order to verify their location.

Steep turns, slow flight, and stalls: Student should be able to set-up for and execute all maneuvers with no instructor input while maintaining this segment's completion standards.

Emergency Operations: Tell student the engine is on fire. Student should execute the appropriate checklist from memory. After they complete memory items, tell them the fire is still burning and is getting worse. Student should elect to do an emergency descent. Give them an airspeed at which the fire will be extinguished. After reaching that airspeed, student should level off, attain best glide speed, pick an emergency field or other suitable landing area, maneuver the aircraft for a simulated landing in that area, and complete all appropriate checklist items with no instructor input.

Ground Reference Maneuvers: Student should set-up for and execute all ground reference maneuvers listed in the Private Pilot PTS while maintaining this segment's completion standards with no instructor input.

Diversion: After student has completed the Ground Reference Maneuvers, have them start back to the home airport. Once student selects home airport ATIS, turn down the volume and provide the following information:

[Home airport name] information Bravo at (applicable Zulu time), Wind 350 at 12, visibility 1 sm, Overcast 400 ft in light rain, altimeter setting (appropriate setting), landing and departing runways 35L and 35R, ILS approach runway 35L is in use, arrive on initial contact you have Bravo (for example)

Student should elect to divert to the nearest airport.

Entry and Pattern at diversion airport: Student should enter the pattern correctly at airport with no instructor input. Tell the student it looks like much of the runway has been rendered unusable. Suggest the following limitation: runway starts at the first center line stripe and ends at the halfway point. Student should elect to do a short field landing. Have student pick appropriate touchdown and aim point.

NOTE: airport is an east/west runway. Therefore, if strong crosswinds exist, have student execute *normal* X-wind landing and consider completing other landings at home.

Practice landings and takeoffs at diversion airport as required.

Leg 2

Takeoff and climb: If previous landing was a short field, student should elect to do a short field takeoff automatically due to length of runway available. If student does not elect to do a short field, tell them a construction crew has placed a 200 ft tall crane off the end of the runway. Student should then elect to do a short field takeoff.

Arrival and Pattern work at Home: Student should be able to navigate to home airport with no instructor input. Practice takeoffs and landings as necessary in order to increase student proficiency.

Post brief: Have student critique their own performance. Provide guidance for up-coming stage check.

Assignment for Lesson 26

Student Preparation

1. Review syllabus for contents of lesson.
2. Complete appropriate sections of the workbook.
3. STUDY – applicable regulations.
4. Call stage check pilot to set-up a time and location for stage check.
5. Review items as deemed necessary by the instructor.

Cross Country – Lesson 26
Mission – Cross Country Progress Check
FLT Lesson 26 (Approx. lesson time ORAL EXAM 1.8 hours FLIGHT TEST 1.5 hours with .2 instrument)

Cross Country/Progress Check – Airplane

Scenario

There is no scenario for this stage check other than the problems/scenarios the stage check pilot might present you with. The key to successful stage check outcomes is to study and have confidence in your abilities. Your instructor would not have put you in for this stage check if he/she thought you weren't ready. Have fun and Good Luck!

Scenario Objective

The Chief Flight Instructor or his designee shall evaluate the student's ability to (a) manage the elements associated with a day solo cross-country flight, (b) explain selected tasks from the Private Pilot PTS, and (c) conduct flight maneuvers and procedures covered in cross-country segment.

Scenario Completion Standards

Oral Exam
This lesson is complete when the student is able to (a) meet the desired outcomes listed below, (b) plan a VFR cross-country within Federal Regulations, Safety Policies and Procedures, and the aircraft capabilities, and (c) explain selected tasks from the Private Pilot PTS.

Flight Exam
This lesson is complete when the student is able to (a) meet the desired outcomes listed below, (b) manage a VFR cross-country as pilot-in-command while maintaining their altitude within ±200 feet and heading within ±15 degrees, (c) perform radio navigation, pilotage and dead reckoning, (d) conduct flight maneuvers and procedures while maintaining altitude within ±150 feet, heading within ±15 degrees and airspeed ±10 knots, (e) maintain directional control at all times during takeoffs and landings, and
(f) perform landings with touchdowns at or within 250 feet of the desired point.

Learning Objectives/Desired Outcome/Grading Sheet

	Desired Outcome	Describe	Explain	Practice	Perform	Manage/Decide	Not observed
Oral Exam							
Safety Policies and Procedures	PERFORM						
Certificates and documents	PERFORM						
Performance and limitations	PERFORM						
Weight and balance	PERFORM						
Federal Aviation Regulations	PERFORM						
Airworthiness requirements	PERFORM						
VFR cross-country flight planning	PERFORM						
National Airspace System	PERFORM						
Weather information	PERFORM						
Airport and runway markings	PERFORM						
Operations of systems	PERFORM						
Spin Awareness	PERFORM						
Emergency operations	PERFORM						
Personal minimums	MANAGE/ DECIDE						
Preflight Discussion							
Discuss lesson objective and completion standards	PERFORM						
Flight Test							
VFR cross-country procedures	PERFORM						
Lost procedures/diversion	PERFORM						
Soft-field takeoff and climb	PERFORM						
Soft-field approach and landing	PERFORM						
Short-field takeoffs and maximum performance climbs	PERFORM						
Short-field approaches and landings	PERFORM						
Stalls	PERFORM						
Steep turns	PERFORM						
Slow flight	PERFORM						
Ground reference maneuvers	PERFORM						
Flight by reference to instruments	PERFORM						
Emergency operations	PERFORM MANAGE/ DECIDE						
Postflight Discussion							
Critique student performance	PERFORM						

Instructor Information

The PT should contact the evaluator/examiner to obtain the scenario and flight planning assignment.

Assignment for Lesson 27

Student Preparation

1. Review syllabus description for this lesson.
2. Review student pilot limitations and applicable regulations affecting solo X-C operations
3. Complete appropriate sections of the workbook.
4. Obtain a weather brief for route assigned by instructor.
5. Complete a risk assessment for today's flight.
6. Complete necessary X-C planning for your assigned route.
7. Be prepared to explain/identify your GO/NO GO decision, fuel requirements, alternates available, and any NOTAM's affecting your route Assign VFR cross-country route for lesson 27.
8. Review items as deemed necessary by the instructor

Cross Country – Lesson 27
Mission – Day VFR Solo/Cross Country
FLT Lesson 27 (Approx. lesson time 3.0 hours)

Solo/Cross Country – Airplane

Scenario

You will be conducting a solo cross-country flight of at least 150 nautical miles with landings at a minimum of three points, one of which must a straight line distance of more than 50 nautical miles from the original point of departure. Your mission is to complete the necessary pre-flight planning for your assigned route, navigate safely and efficiently to all your assigned points, and return to you home airport as close as possible to your ETA. That is already a “realistic scenario.” Have Fun and Fly Safe!

Scenario Objective

The purpose of this lesson is for the student to conduct a solo day VFR cross-country flight.

Scenario Completion Standards

This lesson will be complete when the student is able to (a) meet the desired outcomes listed below, (b) safely complete the planned cross-country flight. The student’s flight instructor will conduct a postflight discussion and review the flight log to determine the lesson content and objectives have been met.

Learning Objectives/Desired Outcome/Grading Sheet

	Desired Outcome	Describe	Explain	Practice	Perform	Manage/Decide	Not observed
Preflight Discussion							
Discuss lesson objective and completion standards	PERFORM						
Preflight planning and preparation	PERFORM						
Aircraft weight and balance computation							
Review							
Cross-country flight of at least 150 nautical miles with landings at a minimum of three points, one of which must be at least a straight-line distance of more than 50 nautical miles from the original point of departure. One segment of the flight must also consist of a straight-line distance of at least 50 nautical miles between the takeoff and landing locations.	PERFORM/ MANAGE/ DECIDE						
A. Area departure and arrival procedures	PERFORM						
B. Use of aeronautical charts for VFR navigation using pilotage and dead reckoning with the aid of a magnetic compass	PERFORM						
C. Radio navigation, communication, and Radar Services	PERFORM						
Single-pilot resource management (SRM)	MANAGE/ DECIDE						
Postflight Discussion							
Critique student performance	PERFORM						

Instructor Information

Preflight Brief – Have student lead a discussion on student pilot privileges and limitations and regulations applicable to solo X-C operations. Have them explain their GO/NO GO decision, any NOTAM's affecting their route, unique features of any of their destinations, and any fuel stops they might need.

Post flight Brief –Good questions to ask are:

Did your flight go as planned?
Anything happen that you didn't expect?
How did you handle that situation?
Would you handle that situation any differently next time? How?
What did you learn?
Did you have fun?

Assignment for Lesson 28

Student Preparation

1. Review syllabus for contents of lesson.
2. Complete appropriate sections of the workbook.
3. Obtain a weather brief.
4. Conduct appropriate pre-flight procedures: weight and balance and performance.
5. Complete a risk assessment for today's flight.
6. Be prepared to lead a discussion on student pilot privileges and limitations, and the unique features of the airport you will be soloing to.
7. Review items as deemed necessary by the instructor.

Cross Country – Lesson 28
Mission – Practical Test Review Flight
FLT Lesson 28 (Approx. lesson time 1.3 hours)

Dual – Airplane

Scenario

This lesson is a review lesson. Therefore, all scenarios incorporated on this lesson will be assigned by your instructor.

Scenario Objective

The purpose of this lesson is to evaluate the student's ability to perform maneuvers and procedures.

Scenario Completion Standards

This lesson will be complete when the student is able to (a) meet the desired outcomes listed below, (b) perform the designated maneuvers and procedures in accordance with the current FAA Private Pilot Practical Test Standards.

Learning Objectives/Desired Outcome/Grading Sheet

	Desired Outcome	Describe	Explain	Practice	Perform	Manage/Decide	Not observed
Preflight Discussion							
Discuss lesson objective and completion standards	PERFORM						
Review							
Areas listed in the current FAA Private Pilot Practical Test Standards.	PERFORM/ MANAGE/DECIDE						
Single-pilot resource management (SRM)	MANAGE/ DECIDE						
Postflight Discussion							
Critique student performance	PERFORM						

Instructor Information

This lesson is a chance for you to practice constructing lessons which incorporate SBT. Use scenarios throughout the flight to effectively evaluate the student's ability to make decisions and safely operate the aircraft. Have Fun and Be Creative!!

Assignment for Lesson 29

Student Preparation

1. Review syllabus description for this lesson.
2. Complete appropriate sections of the workbook.
3. Review materials as deemed appropriate by instructor
4. Review items as deemed necessary by the instructor.

Cross Country – Lesson 29

Mission – Practical Test Review

GRN Lesson 29 (Approx. lesson time 1.3 hours)

Scenario

This lesson is a review lesson. Therefore, all scenarios incorporated on this lesson will be designed by your instructor to review the practical and emphasis any areas the instructor feels appropriate.

Scenario Objective

The purpose of this lesson is to evaluate the student's competency for the Private Pilot practical test in a single engine land airplane.

Scenario Completion Standards

This lesson will be complete when the student is able to (a) meet the desired outcomes listed below, and (b) explain tasks applicable to the current FAA Private Pilot Practical Test Standards.

Learning Objectives/Desired Outcome/Grading Sheet

	Desired Outcome	Describe	Explain	Practice	Perform	Manage/Decide	Not observed
Preflight Discussion							
Discuss lesson objective and completion standards	PERFORM						
Review							
Areas listed in the current FAA Private Pilot Practical Test Standards	PERFORM						
Single-pilot resource management (SRM)	MANAGE/ DECIDE						
Postflight Discussion							
Critique student performance	PERFORM						

Instructor Information

This lesson is a chance for you to practice constructing lessons which incorporate SBT. Use scenarios to quiz the student as necessary in order to effectively prepare them for their final stage check. Have Fun and Be Creative!!

Assignment for Lesson 30

Student Preparation

1. Review syllabus for contents of lesson.
2. Complete appropriate sections of the workbook.
3. STUDY – applicable regulations.
4. Call stage check pilot to set-up a time and location for stage check.

Oral and Flight Test – Lesson 30

Mission – FAA Private Pilot Practical Test

FLT Lesson 30 (Approximate lesson time - Oral 1.8 hours – Flight 1.5 hours with .2 instruments)

Dual/Evaluation – **Airplane**

Scenario

There is no scenario for this practical test other than the problems/scenarios the examiner pilot might present you with. The key to successful practical test outcomes is to study and have confidence in your abilities. Your instructor would not have put you in for this practical test if he/she thought you weren't ready. Have fun and Good Luck!

Scenario Objective

The objective of this lesson it to demonstrate a knowledge and skill level that meets or exceeds the minimum performance standards for a Private Pilot Certificate with an airplane category and single-engine land class rating, as outlined in the current FAA Private Pilot Practical Test Standards.

Scenario Completion Standards

The FAA Inspector, Designated Pilot Examiner, of check pilot (if the pilot school has self examining authority) shall evaluate if the PT has acquired the knowledge and skill level appropriate for a Private Pilot Certificate with an airplane single engine land rating.

Learning Objectives/Desired Outcome/Grading Sheet

	Desired Outcome	Describe	Explain	Practice	Perform	Manage/Decide	Not observed
Oral Exam							
Items listed in the pilot operations of the Private Pilot Practical Test Standards	PERFORM/ MANAGE/DECIDE						
Preflight Discussion							
Discuss lesson objective and completion standards	PERFORM						
Flight Test							
Maneuvers and procedures listed in the pilot operations of the Private Pilot Practical Test Standards	PERFORM/ MANAGE/DECIDE						
Postflight Discussion							
Critique student performance	PERFORM						

Instructor Information

The PT should contact the evaluator/examiner to obtain the scenario and flight planning assignment.

Appendix A

Grading Rubric

JUDGMENT ASSESSMENT MATRIX

PRIVATE PILOT
For Airplane Single-Engine
Land and Sea

	Private Pilot - (Single-Engine) Area Of Operation & Subtask	Worst Course Of Action						Okay Course Of Action						Best Course Of Action					
		Action of Pilot-In-Training Is The Worst Decision Given The Dynamics Of The Flight Environment						Action of Pilot-In-Training Is Satisfactory Given The Dynamics Of The Flight Environment						Action of Pilot-In-Training Is The Best Decision Given The Dynamics Of The Flight Environment					
		Judgment Based Upon The Following SRM Tenets						Judgment Based Upon The Following SRM Tenets						Judgment Based Upon The Following SRM Tenets					
		Task Management (TM)	Risk Management (RM)	Automation Management (AM)	Aeronautical Decision Making (ADM)	Controlled Flight Into Terrain Awareness (CFIT)	Situational Awareness (SA)	Task Management (TM)	Risk Management (RM)	Automation Management (AM)	Aeronautical Decision Making (ADM)	Controlled Flight Into Terrain Awareness (CFIT)	Situational Awareness (SA)	Task Management (TM)	Risk Management (RM)	Automation Management (AM)	Aeronautical Decision Making (ADM)	Controlled Flight Into Terrain Awareness (CFIT)	Situational Awareness (SA)
I.	Preflight Preparation	TM	RM	AM	ADM	CFIT	SA	TM	RM	AM	ADM	CFIT	SA	TM	RM	AM	ADM	CFIT	SA
II.	Preflight Procedures	TM	RM	AM	ADM	CFIT	SA	TM	RM	AM	ADM	CFIT	SA	TM	RM	AM	ADM	CFIT	SA
IV.	Airport Operations	TM	RM	AM	ADM	CFIT	SA	TM	RM	AM	ADM	CFIT	SA	TM	RM	AM	ADM	CFIT	SA
IV.	Takeoffs, Landings, & Go-Arounds	TM	RM	AM	ADM	CFIT	SA	TM	RM	AM	ADM	CFIT	SA	TM	RM	AM	ADM	CFIT	SA

V.	**Performance Maneuvers**	TM	RM	AM	ADM	CFIT	SA	TM	RM	AM	ADM	CFIT	SA	TM	RM	AM	ADM	CFIT	SA
VI.	**Ground Reference Maneuvers**	TM	RM	AM	ADM	CFIT	SA	TM	RM	AM	ADM	CFIT	SA	TM	RM	AM	ADM	CFIT	SA
VII.	**Navigation**	TM	RM	AM	ADM	CFIT	SA	TM	RM	AM	ADM	CFIT	SA	TM	RM	AM	ADM	CFIT	SA
VIII.	**Slow Flight & Stalls**	TM	RM	AM	ADM	CFIT	SA	TM	RM	AM	ADM	CFIT	SA	TM	RM	AM	ADM	CFIT	SA
IX.	**Instrument Maneuvers**	TM	RM	AM	ADM	CFIT	SA	TM	RM	AM	ADM	CFIT	SA	TM	RM	AM	ADM	CFIT	SA
X.	**Emergency Operations**	TM	RM	AM	ADM	CFIT	SA	TM	RM	AM	ADM	CFIT	SA	TM	RM	AM	ADM	CFIT	SA
XI.	**Night Operations**	TM	RM	AM	ADM	CFIT	SA	TM	RM	AM	ADM	CFIT	SA	TM	RM	AM	ADM	CFIT	SA
XII.	**Postflight Procedures**		RM	AM	ADM	CFIT	SA	TM	RM	AM	ADM	CFIT	SA	TM	RM	AM	ADM	CFIT	SA

Directions

1) The purpose of this assessment is to measure single pilot resource management and judgment skills in applicants during Private Pilot check rides.

2) The applicant can take one of three courses of action. For each area of operation in the Private Pilot PTS, the pilot can either take the worst course, okay course, or the best course of action for the task being evaluated. The examiner should judge the use of SRM for each of the six SRM tenets.

3) For each Area of Operation, circle the acronym under the SRM tenet for the course of action that best describes the applicant's decision during that of the check ride. In order to pass this assessment, all decisions made by the applicant should be in either the okay course or best course of action. For each wrong course of action, discuss which course of action would have been more appropriate by using the form on the back.

SRM Tenets Definitions

Task Management (TM) -

Task management is to prioritize and select the most appropriate tasks or series of tasks to ensure the successful completion of the flight.

Risk Management (RM) -

Risk Management is the part of the decision making process which relies on situational awareness, problem recognition, and good judgment to reduce risks associated with each flight.

Automation Management (AM) -

The demonstrated ability to understand and operate (or) when not to use the automated systems including but not limited to the GPS or the autopilot within the aircraft.

Aeronautical Decision Making (ADM) -

ADM is a systematic approach to the mental process used by pilots to consistently determine the best course of action in response to a given set of circumstances.

Controlled Flight Into Terrain Awareness (CFIT) -

During each phase of flight, the Pilot-In-Training should demonstrate good awareness of relation to obstacles including terrain.

Situation Awareness (SA) -

Situational Awareness is the accurate perception and understanding of all the factors and conditions within the four fundamental risk elements that affect safety before, during, and after the flight.

PTS Parameters - Reference FAA-S-8081-14AS

Please Describe Below What Incorrect Action The PT Took For Each Area of Operation or Task

Private Pilot Area Of Operation & Subtask

I.	**Preflight Preparation**		
A.	Certificates and Documents	Refer to Private Pilot PTS 1-1	
B.	Airworthiness Requirements	Refer to Private Pilot PTS 1-1	
C.	Weather Information	Refer to Private Pilot PTS 1-2	
D.	Cross-Country Flight Planning	Refer to Private Pilot PTS 1-2	
E.	National Airspace System	Refer to Private Pilot PTS 1-3	
F.	Performance and Limitations	Refer to Private Pilot PTS 1-3	
G.	Operation of Systems	Refer to Private Pilot PTS 1-4	
H.	Water and Seaplane Characteristics	Refer to Private Pilot PTS 1-4	
I.	Seaplane Bases, Maritime Rules	Refer to Private Pilot PTS 1-5	
J.	Aeromedical Factors	Refer to Private Pilot PTS 1-5	

II.	**Preflight Procedures**		

A.	Preflight Inspection	Refer to Private Pilot PTS 1-6	
B.	Cockpit Management	Refer to Private Pilot PTS 1-6	
C.	Engine Starting	Refer to Private Pilot PTS 1-6	
D.	Taxiing	Refer to Private Pilot PTS 1-7	
E.	Taxiing & Sailing	Refer to Private Pilot PTS 1-7	
F.	Before Takeoff Check	Refer to Private Pilot PTS 1-8	
III.	**Airport Operations**		
A.	Radio Communication & ATC Light Signals	Refer to Private Pilot PTS 1-9	
B.	Traffic Patterns	Maintain traffic pattern altitude (+/- 100 Feet) & airspeed (+/- 10 Knots)	
C.	Runway & Taxiway Signs, Markings, & Lighting	Refer to Private Pilot PTS 1-9	
IV.	**Takeoffs, Landings, & Go-Arounds**		
A.	Normal and Crosswind Takeoff & Climb	Maintains takeoff power and Vy (+10/-5 Knots)	
B.	Normal and Crosswind Approach & Landing	Stabilized approach (+10/-5 Knots) Touches down at or within 400'	
C.	Soft-Field Takeoff and Climb	Maintains takeoff power Vx or Vy (+10/-5 Knots)	
D.	Soft-Field Takeoff Approach & Landing	Recommended airspeed or 1.3 Vso (+10/-5 Knots)	
E.	Short-Field Takeoff	Pitch Attitude Vx +10/-5 Then Vy (+10/-5 Knots)	
F.	Short-Field Approach and Landing	Stabilized approach (+10/-5 Knots) Touches down at or within 200'	
G.	Glassy Water Takeoff and Climb	Maintains takeoff power Vy (+10/-5 Knots)	
H.	Glassy Water Approach and Landing	Maintains Approach speed +10/-5 Knots	

I.	Rough Water Takeoff and Climb	Maintains takeoff power Vy (+10/-5 Knots)	
J.	Rough Water Approach and Landing	Maintains recommended approach airspeed or 1.3 Vso (+10/-5 Knots)	
K.	Forward Slip to a Landing	Touches down at approximate stalling speed at or within 400'	
G.	Go-Around/Rejected Landing	Maintains takeoff power Vy (+10/-5 Knots)	
V.	**Performance Maneuvers**		
A.	Steep Turns	Maintains altitude (+/- 100'), (+/- 10 Knots), (+/- 5° Bank), (+/- 10 Heading)	
VI.	**Ground Reference Maneuvers**		
A.	Rectangular Course	Maintains altitude (+/- 100'), airspeed (+/- 10 Knots)	
B.	S-Turns	Maintains altitude (+/- 100'), airspeed (+/- 10 Knots)	
C.	Turns Around a Point	Maintains altitude (+/- 100'), airspeed (+/- 10 Knots)	
VII.	**Navigation**		
A.	Pilotage and Dead Reckoning	Maintains altitude (+/- 200'), headings (+/- 15°)	
B.	Navigation Systems and Radar Services	Maintains altitude (+/- 200'), headings (+/- 15°)	
C.	Diversion	Maintains altitude (+/- 200'), headings (+/- 15°)	
D.	Lost Procedures	Refer to Private Pilot PTS 1-25	
VIII.	**Slow Flight & Stalls**		
A.	Maneuvering During Slow Flight	Altitude (+/- 100'), heading (+/-10°), airspeed (+10/-0 Knots), Bank (+/10°)	
B.	Power-Off Stalls	Heading (+/- 10°) in straight flight - not to exceed 20° in turn, (+/- 10° bank)	
C.	Power-On Stalls	Heading (+/- 10°) in straight flight - not to exceed 20° in turn, (+/- 10° bank)	

D.	Spin Awareness	Refer to Private Pilot PTS 1-26	
IX.	**Instrument Maneuvers**		
A.	Straight-and-Level Flight	Maintains altitude (+/- 200'), Heading (+/- 20°), Airspeed (+/- 10 Knots)	
B.	Constant Airspeed Climbs	Levels off at altitude (+/- 200'), Heading (+/- 20°), Airspeed (+/- 10 Knots)	
C.	Constant Airspeed Descents	Levels off at altitude (+/- 200'), Heading (+/- 20°), Airspeed (+/- 10 Knots)	
D.	Turns to Headings	Maintains altitude (+/- 200'), Heading (+/- 10°), Airspeed (+/- 10 Knots)	
F.	Recovery from Unusual Flight Attitudes	Refer to Private Pilot PTS 1-30	
	Radio Communications, Navigation Systems	Maintains altitude (+/- 200'), Heading (+/- 20°), Airspeed (+/- 10 Knots)	
X.	**Emergency Operations**		
A.	Emergency Approach & Landing	Maintains best glide airspeed (+/- 10 Knots)	
B.	Systems & Equipment Malfunctions	Refer to Private Pilot PTS 1-33	
C.	Emergency Equipment & Survival Gear	Refer to Private Pilot PTS 1-33	
XI.	**Night Operations**		
A.	Night Preparation	Refer to Private Pilot PTS 1-34	
XII.	**Postflight Procedures**		
A.	After Landing, Parking and Securing	Refer to Private Pilot PTS 1-35	
B.	Anchoring	Refer to Private Pilot PTS 1-35	
C.	Docking and Mooring	Refer to Private Pilot PTS 1-35	
D.	Ramping/Beaching	Refer to Private Pilot PTS 1-36	