SPORTY'S®

***WHAT YOU SHOULD KNOW*® SERIES**

PTS STUDY GUIDE

Sport Pilot
Practical Test Standards
for
Airplane Single-Engine Land
Cross-Referenced
to
Sporty's Interactive Video Course

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Table of Contents

Preface

Sporty's *What You Should Know*® Complete Flight Training video course has been designed to completely prepare you to become a Sport Pilot.

The subject matter is presented in a logical sequence that parallels the flight instruction you will be receiving. This sequence is also the best way to prepare for the FAA computerized knowledge exam. This book is not a substitute for the videos, but a supplement to help you completely prepare for your knowledge test, oral and practical exams, and to become a better pilot.

This study guide is arranged into two major sections.

The first section contains the Sport Pilot Practical Test Standards for Airplane Single-Engine Land with a video cross-reference. This section is intended to be used as a review prior to your oral and practical exams. It also may be used as a supplemental index to the videos. It relates the various elements of the PTS to the appropriate Sporty's video volumes and segments for further review.

The second section contains supplemental material that you should study after watching each video volume. This information will support the subjects presented by the related videos and will provide reinforcing notes or may be used as a quick reference.

This study guide *is not* intended to stand alone. It is a part of the total training package supplied with Sporty's *What You Should Know* Complete Flight Training Video course.

Best of luck with your studies and welcome to your new adventure.

Sporty's Academy, Staff
November, 2011
Batavia, Ohio

Conventions Used in This Manual

The Sport Pilot Practical Test Standards (PTS) with Video Cross-Reference contains the text of the PTS with references to information that may be found in Sporty's *Complete* Flight Training Course on video for each element. The cross-reference will appear in the following format:

- A number indicating the video volume will be followed by a period and number indicating the segment within the video. For example, 3.1 would indicate to refer to Segment 1 of Video Volume 3 from the course.

Appendices within this study guide and the AFM/POH for your airplane are also referenced.

The PTS includes tasks and elements which are specific to both the Airplane Single-Engine Land (ASEL) and the Airplane Single-Engine Sea (ASES) ratings. The information for both is included for completeness, but the items specific to the ASES rating are not cross-referenced.

FAA References Used in This Manual

Many of the references below were used by the FAA in preparing the PTS. Most of the references listed are books and may be purchased from Sporty's by calling 1.800.SPORTYS (776.7897) from the USA or by logging on to sportys.com.

14 CFR Part 43 Maintenance, Preventive Maintenance, Rebuilding, and Alteration
14 CFR Part 61 Certification: Pilots, Flight Instructors, and Ground Instructors
14 CFR Part 67 Medical Standards and Certification
14 CFR Part 71 Designation of class A, B, C, D, and E airspace
14 CFR Part 91 General Operating and Flight Rules
NTSB Part 830 Notification and Reporting of Aircraft Accidents and Incidents
FAA-H-8083-1 Aircraft Weight and Balance Handbook
FAA-H-8083-3 Airplane Flying Handbook
FAA-H-8083-25 Pilot's Handbook of Aeronautical Knowledge
AC 00-2 Advisory Circular Checklist
AC 00-6 Aviation Weather
AC 00-45 Aviation Weather Services
AC 60-22 Aeronautical Decision Making
AC 60-28 English Language Skill Standards Required by 14 CFR parts 61, 63, and 65
AC 61-65 Certification: Pilots and Flight Instructors and Ground Instructors
AC 61-67 Stall Spin Awareness Training
AC 61-84 Role of Preflight Preparation
AC 61-134 General Aviation Controlled Flight into Terrain Awareness
AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook
AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook
AC 67-2 Medical Handbook for Pilots
AC 90-23 Aircraft Wake Turbulence
AC 90-48 Pilots' Role in Collision Avoidance
AC 90-66 Recommended Standard Traffic Patterns and Practices of Aeronautical Operations at Airports Without Operating Control Towers
AC 91-13 Cold Weather Operation of Aircraft
AC 91-55 Reduction of Electrical Systems Failure Following Engine Starting
AC 91-73 Part 91 and Part 135 Single-Pilot Procedures During Taxi Operations
AC 120-51 Crew Resource Management Training
AIM Aeronautical Information Manual
A/FD Airport/Facility Directory
NOTAMs Notices to Airmen
AFM/POH FAA-Approved Flight Manual/Pilot Operating Handbook
Aeronautical Navigation Charts

Section 1 – Sport Pilot Practical Test Standards for Airplane Single-Engine Land with Video Cross-Reference

I. AREA OF OPERATION: PREFLIGHT PREPARATION

Video Volume.Segment

A. TASK: CERTIFICATES AND DOCUMENTS (ASEL AND ASES)

Objective. To determine that the applicant exhibits knowledge of the elements related to certificates and documents by:

1. Explaining—
   a. certificate privileges, limitations, and currency experience requirements. 5.4, 5.5
   b. medical eligibility. 3.22, 5.5
   c. pilot logbook or flight records. 5.5
2. Locating and explaining—
   a. airworthiness and registration certificates. 1.13, 5.5
   b. operating limitations, placards, instrument markings, and flight training supplement. 1.13, 5.5
   c. weight and balance data and/or equipment list, as applicable. 3.18, 5.5, 5.10

B. TASK: AIRWORTHINESS REQUIREMENTS (ASEL AND ASES)

Objective. To determine that the applicant exhibits knowledge of the elements related to airworthiness requirements by:

1. Explaining—
   a. required instruments and equipment for sport pilot privileges. ..... Appendix A
   b. procedures and limitations for determining if an aircraft, with inoperative instruments and/or equipment, is airworthy or in a condition for safe operation. ..... Appendix A
2. Explaining—
   a. airworthiness directives/safety directives (as applicable to the aircraft brought for flight test.) ..... Appendix A
   b. maintenance/inspection requirements and appropriate record keeping. 5.5

C. TASK: WEATHER INFORMATION (ASEL AND ASES)

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to real time weather information appropriate to the specific category/class aircraft by consulting the weather reports, charts, and forecasts from aeronautical weather reporting sources. ..... 3.9, 3.10, 3.11, 3.12, 4.9, 5.8, Appendix B
2. Makes a competent "go/no-go" decision based on available weather information. 1.2
3. Describes the importance of avoiding adverse weather and inadvertent entry into instrument meteorological conditions (IMC). ..... Appendix D
4. Explains courses of action to safely exit from an inadvertent IMC encounter. ..... Appendix D

D. TASK: CROSS-COUNTRY FLIGHT PLANNING (ASEL AND ASES)

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to cross-country flight planning appropriate to the category/class aircraft. 4.11, 5.All
2. Uses appropriate and current aeronautical charts. 4.5
3. Properly identifies airspace, obstructions, and terrain features. 4.5, 5.3
4. Selects easily identifiable en route checkpoints, as appropriate. 4.5, 4.6
5. Selects most favorable altitudes considering weather conditions and equipment capabilities. 4.5, 5.5
6. Computes headings, flight time, and fuel requirements. 4.6, 5.5
7. Selects appropriate navigation system/facilities and communication frequencies, if so equipped. 4.6
8. Applies pertinent information from NOTAMs, A/FD, and other flight publications. 4.5
9. Completes a navigation log, and simulates filing a VFR flight plan. 4.6, 5.1, 5.11, 5.12

E. TASK: NATIONAL AIRSPACE SYSTEM (ASEL AND ASES)

Objective. To determine that the applicant exhibits knowledge of the elements related to the National Airspace System by explaining:

1. Sport pilot privileges applicable to the following classes of airspace:
   a. Class B ..... 4.8, PTS Study Guide Page 2-12
   b. Class C ..... 4.8, PTS Study Guide Page 2-12
   c. Class D ..... 4.8, PTS Study Guide Page 2-12
   d. Class E ..... 4.8, PTS Study Guide Page 2-12
   e. Class G ..... 4.8, PTS Study Guide Page 2-12
2. Special use and other airspace areas. ..... 4.8, PTS Study Guide Page 2-11
3. Temporary flight restrictions (TFRs). 4.8

F. Task: Operation Of Systems (ASEL and ASES) **Video Volume.Segment**

Objective. To determine that the applicant exhibits knowledge of the elements related to the operation of systems on the light-sport aircraft provided for the flight test by explaining at least three (3) of the following systems, if applicable:

1. Primary flight controls and trim 1.4, 1.6
2. Flaps and lift-enhancing devices 1.4, 1.6
3. Water rudders ..... ASES Only
4. Powerplant and propeller 1.6, 1.7, 1.8, 1.9, 1.10, 1.14, 2.3
5. Landing gear, brakes, and steering 1.17
6. Fuel, oil, and hydraulic 1.6, 1.7, 1.8, 1.10
7. Electrical 1.6, 1.7, 1.10
8. Avionics ..... 1.23, AFM/POH
9. Pitot-static, vacuum/pressure, and associated flight instruments 1.6, 2.6, 3.7, 3.13

G. Task: Aeromedical Factors (ASEL and ASES)

Objective. To determine that the applicant exhibits knowledge of the elements related to aeromedical factors by explaining:

1. The effects of alcohol, drugs, and over-the-counter medications. 3.23, 5.5
2. The symptoms, causes, effects, and corrective actions of at least three (3) of the following—
   a. hypoxia 3.22
   b. hyperventilation 3.22
   c. middle ear and sinus problems 3.23
   d. spatial disorientation 3.22
   e. motion sickness ..... Appendix C
   f. carbon monoxide poisoning 3.22
   g. stress and fatigue 3.23
   h. dehydration ..... Appendix C
   i. hypothermia ..... Appendix C

H. Task: Water And Seaplane Characteristics (ASES)

Objective. To determine that the applicant exhibits knowledge of the elements related to water and seaplane characteristics by explaining:

1. The characteristics of a water surface as affected by features, such as— ..... ASES Only
   a. size and location. ..... ASES Only
   b. protected and unprotected areas. ..... ASES Only
   c. surface wind. ..... ASES Only
   d. direction and strength of water current. ..... ASES Only
   e. floating and partially submerged debris. ..... ASES Only
   f. sandbars, islands, and shoals. ..... ASES Only
   g. vessel traffic and wakes. ..... ASES Only
   h. other features peculiar to the area. ..... ASES Only
2. Float and hull construction, and their effect on seaplane performance, as applicable. ..... ASES Only
3. Causes of porpoising and skipping, and the pilot action required to prevent or correct these occurrences. ..... ASES Only

I. Task: Seaplane Bases, Maritime Rules, And Aids To Marine Navigation (ASES)

Objective. To determine that the applicant exhibits knowledge of the elements related to seaplane bases, maritime rules, and aids to marine navigation by explaining:

1. How to locate and identify seaplane bases on charts or in directories. ..... ASES Only
2. Operating restrictions at seaplane bases, if applicable. ..... ASES Only
3. Right-of-way, steering, and sailing rules pertinent to seaplane operation. ..... ASES Only
4. Marine navigation aids, such as buoys, beacons, lights, and sound signals. ..... ASES Only

J. Task: Performance And Limitations (ASEL and ASES)

Objective. To determine the applicant:

1. Exhibits knowledge of the elements related to performance and limitations by explaining the use of charts, tables, and data if appropriate, to determine performance and the adverse effects of exceeding limitations. 3.18, 4.1, 5.10
2. Exhibits knowledge of the principles of weight and balance by explaining weight and balance terms and the effect of weight and balance on airplane performance. 3.18, 5.10
3. Determines if weight and center of gravity will remain within limits during all phases of flight. 5.10
4. Describes the effects of atmospheric conditions on the airplane's performance. 2.3, 3.7, 3.8, 4.1
5. Determines whether the computed performance is within the airplane's capabilities and operating limitations. 4.1, 5.10

K. Task: Principles Of Flight (ASEL and ASES) **Video Volume.Segment**

Objective. To determine the applicant exhibits knowledge of basic aerodynamics and principles of flight including:

1. Forces acting on an airplane in various flight maneuvers.....1.4, 1.22, 1.24, 2.5, 2.7, 3.3, 3.16, 3.18
2. Airplane stability and controllability. 3.18
3. Torque effect. 2.5
4. Wingtip vortices and precautions to be taken. 2.5, 2.13
5. Loads and load factors. 2.9, 3.3
6. Angle of attack, stalls and stall recovery, including flight situations in which unintentional stalls may occur.....1.24, 1.25, 2.5, 2.7, 2.9, 3.3
7. Effects and use of primary and secondary flight controls including the purpose of each control and proper technique for use.....1.4, 1.5, 1.6, 1.22

II. AREA OF OPERATION: PREFLIGHT PROCEDURES

NOTE: For single-seat applicants, the examiner shall select at least TASKs A, C, and D.

Video Volume.Segment

A. TASK: PREFLIGHT INSPECTION (ASEL AND ASES)

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to preflight inspection. This shall include which items must be inspected, the reasons for checking each item, and how to detect possible defects. 1.10, 1.13, 5.13
2. Inspects the airplane with reference to an appropriate checklist. ..... 1.13, AFM/POH
3. Verifies the airplane is in condition for safe flight. 1.12, 1.13

B. TASK: COCKPIT MANAGEMENT (ASEL AND ASES)

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to efficient cockpit management procedures, and related safety factors. 5.13
2. Organizes and arranges material and equipment in a manner that makes the items readily available. 5.13
3. Briefs occupant on the use of safety belts, shoulder harnesses, and any other required safety equipment, doors, and emergency procedures. 1.14, 5.13

C. TASK: ENGINE STARTING (ASEL AND ASES)

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to recommended engine starting procedures. This shall include pull starting, hand propping safety, and starting under various atmospheric conditions, if applicable. 1.14, 5.13
2. Demonstrates awareness of other persons and property during start. 1.14
3. Positions the airplane properly considering structures, surface conditions, other aircraft, and the safety of nearby persons and property. 1.14
4. Accomplishes the correct starting procedure. ..... 1.14, AFM/POH
5. Completes the appropriate checklist. ..... 1.14, AFM/POH

D. TASK: TAXIING (ASEL)

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to safe taxi procedures. 1.17, 5.13
2. Performs a brake check if applicable, immediately after the airplane begins moving. 1.17
3. Positions the flight controls properly for the existing wind conditions. 1.17, 1.18, 5.13
4. Safely controls airplane direction and speed. 1.17, 5.13
5. Complies with airport markings, signals, clearances, and instructions. 3.15
6. Taxis so as to avoid other aircraft and hazards. 1.17, 5.13

E. TASK: TAXIING AND SAILING (ASES)

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to water taxiing and sailing procedures. ..... ASES Only
2. Positions the flight controls properly for the existing wind conditions. ..... ASES Only
3. Plans and follows the most favorable course while taxiing or sailing, considering wind, water current, water conditions, and maritime regulations ..... ASES Only
4. Uses the appropriate idle, plow, or step taxi technique. ..... ASES Only
5. Uses flight controls, flaps, doors, water rudder, and power correctly so as to follow the desired course while sailing ..... ASES Only
6. Prevents and corrects for porpoising and skipping. ..... ASES Only
7. Avoids other aircraft, vessels, and hazards. ..... ASES Only
8. Complies with seaplane base signs, signals, and clearances. ..... ASES Only

F. TASK: BEFORE TAKEOFF CHECK (ASEL AND ASES)

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to the before takeoff check, including the reasons for checking each item and how to detect malfunctions. 1.17, 5.13
2. Positions the airplane properly considering other aircraft/vessels, wind, and surface conditions. 1.17
3. Divides attention inside and outside the cockpit. 5.13
4. Accomplishes the before takeoff checklist and ensures the airplane is in safe operating condition. ..... 1.17, 5.13, AFM/POH
5. Reviews takeoff performance, such as airspeeds, takeoff distances, departure, and emergency procedures. 5.13
6. Avoids runway incursions and/or ensures no conflict with traffic prior to taxiing into takeoff position. 1.19, 1.21
7. Completes the appropriate checklist. ..... 1.17, 5.13, AFM/POH

III. AREA OF OPERATION: AIRPORT AND SEAPLANE BASE OPERATIONS

A. TASK: RADIO COMMUNICATIONS (ASEL AND ASES)

NOTE: If the aircraft is not radio equipped, this TASK shall be tested orally for procedures ONLY. Exception: Single-seat applicants must be radio equipped.

Video Volume.Segment

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to radio communications at airports without operating control towers. 1.15, 5.13
2. Selects appropriate frequencies. 1.15, 5.8
3. Transmits using recommended phraseology. 1.15, 1.16, 1.20, 3.19
4. Acknowledges radio communications. 1.15, 1.20

B. TASK: TRAFFIC PATTERNS (ASEL AND ASES)

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to traffic patterns and shall include procedures at airports with CTAF, prevention of runway incursions, collision avoidance, wake turbulence avoidance, and wind shear... 1.17, 2.11, 2.13, 5.13
2. Complies with proper local traffic pattern procedures. 1.17, 2.11
3. Maintains proper spacing from other aircraft. 5.13
4. Corrects for wind drift to maintain the proper ground track. 2.1, 2.11, 2.13
5. Maintains orientation with the runway/landing area in use. 2.11
6. Maintains traffic pattern altitude, ±100 feet, and the appropriate airspeed, ±10 knots, if applicable. 5.13

C. TASK: AIRPORT/SEAPLANE BASE, RUNWAY, AND TAXIWAY SIGNS, MARKINGS AND LIGHTING (ASEL AND ASES)

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to airport/seaplane base, runway, and taxiway operations with emphasis on runway incursion avoidance. 1.17, 3.15, 4.2
2. Properly identifies and interprets airport/seaplane base, runway, and taxiway signs, markings, and lighting. 1.17, 3.15, 4.2, 4.4

IV. AREA OF OPERATION: TAKEOFFS, LANDINGS, AND GO-AROUNDS

Video Volume.Segment

NOTE: For single-seat applicants, the examiner shall select all TASKS.

A. TASK: NORMAL AND CROSSWIND TAKEOFF AND CLIMB (ASEL AND ASES)

NOTE: If a crosswind condition does not exist, the applicant's knowledge of crosswind elements shall be evaluated through oral testing.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to a normal/crosswind takeoff and climb and rejected takeoff procedures. 1.19, 2.13, 5.13
2. Clears the area and positions the flight controls appropriately for the existing wind conditions. 1.18, 1.19, 2.13, 5.13
3. Retracts the water rudders as appropriate, and establishes and maintains the most efficient planing/lift-off attitude, and corrects for porpoising and skipping. (ASES) ASES Only
4. Lifts off at the recommended airspeed and/or attitude, and climbs at that airspeed/climb attitude (+10/−5 knots) 1.19, 1.21, 5.13
5. Retracts flaps after a positive rate of climb is established and maintains takeoff power to a safe maneuvering altitude. 5.13
6. Maintains directional control and proper wind-drift correction throughout the takeoff and climb. 1.19, 1.21, 2.13, 5.13

B. TASK: NORMAL AND CROSSWIND APPROACH AND LANDING (ASEL AND ASES)

NOTE: If a crosswind condition does not exist, the applicant's knowledge of crosswind elements shall be evaluated through oral testing.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to a normal and crosswind approach and landing. 2.11, 2.13, 5.13
2. Adequately surveys the intended landing area. (ASES) ASES Only
3. Considers the wind conditions, landing surface, obstructions, and selects a suitable touchdown point. 1.18, 2.11
4. Establishes the recommended approach and landing configuration and approach airspeed/attitude, adjusting pitch attitude and power as required. 2.11, 2.13
5. Maintains a stabilized approach and recommended airspeed, or in its absence, not more than 1.3 V_{S0}, +10/−5 knots, and/or appropriate approach attitude, with wind gust factor applied. 2.11, 5.13
6. Contacts the water at the proper pitch attitude. (ASES) ASES Only
7. Touches down smoothly at approximate stalling speed/attitude. (ASEL) 2.11
8. Touches down at or within 400 feet beyond a specified point, with no drift, and with the airplane's longitudinal axis aligned with and over the runway center/landing path. 2.11, 2.13, 5.13
9. Maintains crosswind correction and directional control throughout the approach and landing sequence. 2.11, 2.13

C. TASK: SOFT-FIELD TAKEOFF AND CLIMB (ASEL)

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to a soft-field takeoff and climb. 4.3, 5.13
2. Positions the flight controls for existing wind conditions and to maximize lift as quickly as possible. 1.18, 2.13, 4.3
3. Clears the area; taxis onto the takeoff surface at a speed consistent with safety without stopping while advancing the throttle smoothly to takeoff power. 4.3, 5.13
4. Establishes and maintains a pitch attitude that will transfer the weight of the airplane from the wheels to the wings as rapidly as possible. 4.3, 5.13
5. Lifts off at the lowest possible airspeed and remains in ground effect while accelerating to V_X or V_Y, as appropriate. 4.3, 5.13
6. Establishes a pitch attitude for V_X or V_Y, as appropriate and maintains selected airspeed +10/−5 knots, during the climb. 4.3
7. Retracts flaps, if appropriate, after clear of any obstacles or as recommended by the manufacturer. 4.3
8. Maintains takeoff power to a safe maneuvering altitude. 1.19, 5.13
9. Maintains directional control and proper wind-drift correction throughout the takeoff and climb. 1.19, 1.21, 2.13

D. TASK: SOFT-FIELD APPROACH AND LANDING (ASEL)

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to a soft-field approach and landing. 4.3, 5.13
2. Considers the wind conditions, landing surface, and obstructions, and selects the most suitable touchdown area. 1.18, 2.11
3. Establishes the recommended approach and landing configuration, and airspeed/attitude; adjusts pitch attitude and power as required. 4.3
4. Maintains a stabilized approach and recommended airspeed, or in its absence, not more than 1.3 V_{S0}, +10/−5 knots, and/or appropriate approach attitude. 4.3
5. Touches down softly. 4.3
6. Maintains crosswind correction and directional control throughout the approach and landing sequence. 2.11, 2.13
7. Maintains proper position of the flight controls and sufficient speed to taxi on the soft surface. 4.3

E. TASK: SHORT-FIELD (CONFINED AREA—ASES) TAKEOFF AND MAXIMUM PERFORMANCE CLIMB (ASEL AND ASES) **Video Volume.Segment**

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to a short-field (Confined Area-ASES) takeoff and maximum performance climb. 4.3, 5.13
2. Positions the flight controls for the existing wind conditions; sets the flaps, if applicable, as recommended. 1.18, 2.13, 4.3
3. Clears the area; taxis into takeoff position utilizing maximum available takeoff area and aligns the airplane on the runway center/takeoff path. 4.3
4. Selects an appropriate take-off path for the existing conditions. (ASES) ..... ASES Only
5. Applies brakes (if appropriate) while advancing the throttle. 4.3
6. Establishes and maintains the most efficient planing/lift-off attitude and corrects for porpoising and skipping. (ASES) ..... ASES Only
7. Lifts off at the recommended airspeed/attitude, and accelerates to the recommended obstacle clearance airspeed/attitude or V_X 4.3, 5.13
8. Establishes a pitch attitude that will maintain the recommended obstacle clearance airspeed, or V_X +10/−5 knots, until the obstacle is cleared, or until the airplane is 50 feet above the surface. 4.3, 5.13
9. After clearing the obstacle, establishes the pitch attitude for V_Y accelerates to V_Y, and maintains V_Y, +10/−5 knots, during the climb. 4.3, 5.13
10. Retracts the flaps after clear of any obstacles or as recommended by manufacturer. 4.3
11. Maintains takeoff power to a safe maneuvering altitude. 1.19, 5.13
12. Maintains directional control and proper wind-drift correction throughout the takeoff and climb. 1.19, 1.21, 2.13

F. TASK: SHORT-FIELD (CONFINED AREA—ASES) APPROACH AND LANDING (ASEL AND ASES)

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to a short-field (Confined Area—ASES) approach and landing. 4.3, 5.13
2. Adequately surveys the intended landing area. (ASES) ..... ASES Only
3. Considers the wind conditions, landing surface, obstructions, and selects the most suitable touchdown point. 1.18, 2.11
4. Establishes the recommended approach and landing configuration and airspeed/attitude; adjusts pitch attitude and power as required. 4.3
5. Maintains a stabilized approach and the recommended approach airspeed/attitude, or in its absence not more than 1.3 V_{S0}, +10/−5 knots. 4.3
6. Selects the proper landing path, contacts the water at the minimum safe airspeed with the proper pitch attitude for the surface conditions. (ASES) ..... ASES Only
7. Touches down smoothly at minimum control airspeed. (ASEL) 4.3
8. Touches down at or within 200 feet beyond a specified point. 4.3, 5.13
9. Maintains crosswind correction and directional control throughout the approach and landing sequence. 2.11, 2.13
10. Applies brakes if equipped (ASEL), or elevator control (ASES) as necessary, to stop in the shortest distance consistent with safety. 4.3

G. TASK: GLASSY WATER TAKEOFF AND CLIMB (ASES)

NOTE: If glassy water condition does not exist, the applicant shall be evaluated by simulating the TASK.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to glassy water takeoff and climb. ..... ASES Only
2. Positions the flight controls and flaps for the existing conditions. ..... ASES Only
3. Clears the area; selects an appropriate takeoff path considering surface hazards and/or vessels and surface conditions. ..... ASES Only
4. Retracts the water rudders as appropriate; advances the throttle smoothly to takeoff power. ..... ASES Only
5. Establishes and maintains an appropriate planing attitude, directional control, and corrects for porpoising, skipping, and increases in water drag. ..... ASES Only
6. Utilizes appropriate techniques to lift seaplane from the water considering surface conditions. ..... ASES Only
7. Establishes proper attitude/airspeed and accelerates to V_Y, +10/−5 knots during the climb. ..... ASES Only
8. Retracts the flaps after a positive rate of climb is established. ..... ASES Only
9. Maintains takeoff power to a safe maneuvering altitude. ..... ASES Only
10. Maintains directional control and proper wind-drift correction throughout takeoff and climb. ..... ASES Only

H. TASK: GLASSY WATER APPROACH AND LANDING (ASES)

NOTE: If glassy water condition does not exist, the applicant shall be evaluated by simulating the TASK.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to glassy water approach and landing. ..... ASES Only
2. Adequately surveys the intended landing area. ..... ASES Only
3. Considers the wind conditions, water depth, hazards, surrounding terrain, and other watercraft. ..... ASES Only
4. Selects the most suitable approach path and touchdown area. ..... ASES Only
5. Establishes the recommended approach and landing configuration, airspeed/attitude, and adjusts pitch attitude and power as required. ..... ASES Only
6. Maintains a stabilized approach and the recommended approach airspeed, +10/−5 knots and/or attitude and maintains a touchdown pitch attitude and descent rate from the last altitude reference until touchdown. ..... ASES Only
7. Makes smooth, timely, and correct power and control adjustments to maintain proper pitch attitude and rate of descent to touchdown. ..... ASES Only
8. Contacts the water in the proper pitch attitude and slows to idle taxi speed. ..... ASES Only
9. Maintains crosswind correction and directional control throughout the approach and landing sequence. ..... ASES Only

I. TASK: ROUGH WATER TAKEOFF AND CLIMB (ASES)

NOTE: If rough water condition does not exist, the applicant shall be evaluated by simulating the TASK.

Video Volume.Segment

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to rough water takeoff and climb. ASES Only
2. Positions the flight controls and flaps for the existing conditions. ASES Only
3. Clears the area; selects an appropriate takeoff path considering wind, swells, surface hazards, and/or vessels. ASES Only
4. Retracts the water rudders as appropriate; advances the throttle smoothly to takeoff power. ASES Only
5. Establishes and maintains an appropriate planing attitude, directional control, and corrects for porpoising, skipping, or excessive bouncing. ASES Only
6. Lifts off at minimum airspeed and accelerates to V_Y, +10/−5 knots before leaving ground effect. ASES Only
7. Retracts the flaps after a positive rate of climb is established. ASES Only
8. Maintains takeoff power to a safe maneuvering altitude. ASES Only
9. Maintains directional control and proper wind-drift correction throughout takeoff and climb. ASES Only

J. TASK: ROUGH WATER APPROACH AND LANDING (ASES)

NOTE: If rough water condition does not exist, the applicant shall be evaluated by simulating the TASK.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to rough water approach and landing. ASES Only
2. Adequately surveys the intended landing area. ASES Only
3. Considers the wind conditions, water, depth, hazards, surrounding terrain, and other watercraft. ASES Only
4. Selects the most suitable approach path and touchdown area. ASES Only
5. Establishes the recommended approach and landing configuration and airspeed/attitude, and adjusts pitch attitude and power as required. ASES Only
6. Maintains a stabilized approach and the recommended approach airspeed and/or attitude, or in its absence not more than 1.3 V_{S0} +10/−5 knots with wind gust factor applied. ASES Only
7. Makes smooth, timely, and correct power and control inputs during the roundout and touch down. ASES Only
8. Contacts the water in the proper pitch attitude and at the proper airspeed, considering the type of rough water. ASES Only
9. Maintains crosswind correction and directional control throughout the approach and landing sequence. ASES Only

K. TASK: FORWARD SLIP TO A LANDING (ASEL AND ASES)

NOTE: This TASK applies to airplanes capable of performing slips.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to forward slip to a landing. 2.13, 5.13
2. Considers the wind conditions, landing surface, obstructions, and selects the most suitable touchdown point. 1.18, 2.11
3. Establishes the slipping attitude at the point from which a landing can be made using the recommended approach and landing configuration and airspeed; adjusts pitch attitude and power as required. 2.13
4. Maintains a ground track aligned with the runway center/landing path and an airspeed/attitude, which results in minimum float during the roundout. 2.13
5. Makes smooth, timely, and correct control application during the recovery from the slip, the roundout, and the touchdown. 2.13
6. Touches down smoothly at the approximate stalling speed, at or within 400 feet beyond a specified point. 2.13
7. Maintains crosswind correction and directional control throughout the approach and landing sequence. 2.11, 2.13

L. TASK: GO-AROUND/REJECTED LANDING (ASEL AND ASES)

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to a go-around/rejected landing. 2.13, 5.13
2. Makes a timely decision to discontinue the approach to landing. 2.13
3. Applies takeoff power immediately and transitions to climb pitch attitude for V_Y, and maintains V_Y +10/−5 knots and/or the appropriate pitch attitude. 2.13
4. Retracts the flaps as appropriate. 2.13
5. Maneuvers to the side of the runway/landing area to clear and avoid conflicting traffic, if appropriate. 5.13
6. Maintains takeoff power to a safe maneuvering altitude. 1.19, 5.13
7. Maintains directional control and proper wind-drift correction throughout the climb. 1.19, 1.21, 2.13

V. AREA OF OPERATION: PERFORMANCE MANEUVER

Video Volume.Segment

A. TASK: STEEP TURNS (ASEL AND ASES)

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to steep turns. 3.3, 5.13
2. Establishes the manufacturer's recommended airspeed or if one is not stated, a safe airspeed not to exceed V_A. 3.3, 5.13
3. Rolls into a coordinated 360° turn; maintains a 45° bank. 3.3, 5.13
4. Performs the task in the opposite direction, as specified by the examiner.
5. Divides attention between airplane control and orientation. 3.3
6. Maintains the entry altitude, ±100 feet, airspeed, ±10 knots, bank, ±5°; and rolls out on the entry heading, ±10° 5.13

VI. AREA OF OPERATION: GROUND REFERENCE MANEUVERS

NOTE: The examiner shall select at least one ground reference maneuver.

NOTE: For single-seat applicants, the examiner shall select at least one ground reference maneuver.

Video Volume.Segment

A. TASK: RECTANGULAR COURSE (ASEL AND ASES)

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to a rectangular course. 1.18, 2.1, 5.13
2. Selects a suitable reference area and emergency landing area. 2.1
3. Plans the maneuver so as to not descend below a minimum altitude of 600 feet above the ground at an appropriate distance from the selected reference area, 45° to the downwind leg. 2.1
4. Applies adequate wind-drift correction during straight-and-turning flight to maintain a constant ground track around the rectangular reference area. 2.1
5. Divides attention between airplane control and the ground track while maintaining coordinated flight. 2.1, 5.13
6. Maintains altitude, ±100 feet; maintains airspeed, ±10 knots.

B. TASK: S-TURNS (ASEL AND ASES)

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to S-turns. 1.18, 3.1, 5.13
2. Selects a suitable ground reference line and emergency landing area. 2.1, 3.1
3. Plans the maneuver so as to not descend below a minimum altitude of 600 feet above the ground perpendicular to the selected reference line. 2.1, 3.1
4. Applies adequate wind-drift correction to track a constant radius turn on each side of the selected reference line. 3.1
5. Reverses the direction of turn directly over the selected reference line. 3.1
6. Divides attention between airplane control, orientation and the ground track while maintaining coordinated flight. 2.1, 5.13
7. Maintains altitude, ±100 feet; maintains airspeed, ±10 knots.

C. TASK: TURNS AROUND A POINT (ASEL AND ASES)

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to turns around a point. 3.1, 5.13
2. Selects an appropriate reference point based on wind direction and emergency landing areas. 2.1, 3.1
3. Plans the maneuver so as not to descend below a minimum altitude of 600 feet above ground level at an appropriate distance from the reference point. 2.1, 3.1
4. Applies adequate wind-drift correction to track a constant radius turn around the selected reference point. 3.1
5. Divides attention between airplane control and the ground track while maintaining coordinated flight. 2.1, 5.13
6. Exits at the point of entry heading ±15°.
7. Maintains altitude, ±100 feet; maintains airspeed, ±10 knots.

VII. AREA OF OPERATION: NAVIGATION

Video Volume.Segment

A. TASK: PILOTAGE AND DEAD RECKONING (ASEL AND ASES)

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to pilotage and dead reckoning, as appropriate. 4.6, 5.1, 5.13
2. Follows the preplanned course by reference to landmarks. 4.7, 5.1, 5.13
3. Identifies landmarks by relating surface features to chart symbols. 4.5, 5.1, 5.13
4. Verifies the airplane's position within 3 nautical miles of the flight-planned route. 5.1, 5.13
5. Determines there is sufficient fuel to complete the flight. If not, develops an alternate plan. 5.9, 5.13
6. Maintains the appropriate altitude, ±200 feet and headings, ±15°. 5.13

B. TASK: DIVERSION (ASEL AND ASES)

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to diversion. 5.13
2. Selects an appropriate alternate airport, or landing area and route. 5.13
3. Determines there is sufficient fuel to fly to the alternate airport or landing area. 5.13
4. Maintains the appropriate altitude, ±200 feet and headings, ±15°.

C. TASK: LOST PROCEDURES (ASEL AND ASES)

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to lost procedures. 5.13
2. Selects an appropriate course of action. 5.13
3. Maintains an appropriate heading and climbs, if necessary. 5.13
4. Identifies prominent landmarks. 5.13
5. Uses navigation systems/facilities and or contacts an ATC facility for assistance, as appropriate. 5.9, 5.13

VIII. AREA OF OPERATION: SLOW FLIGHT AND STALLS

A. TASK: MANEUVERING DURING SLOW FLIGHT (ASEL AND ASES) **Video Volume.Segment**

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to maneuvering during slow flight.....1.24, 5.13
2. Selects an entry altitude consistent with safety, which allows the TASK to be completed no lower than 1,000 feet AGL.
3. Establishes and maintains an airspeed at which any further increase in angle of attack, increase in load factor, or reduction in power, would result in an immediate stall.
4. Accomplishes coordinated straight-and-level flight, turns, climbs, and descents with landing gear extended and retracted as appropriate, and various flap configurations, if appropriate, specified by the examiner. 1.24
5. Divides attention between airplane control and orientation.
6. Maintains the specified altitude, ±100 feet; specified heading, ±10°; airspeed, +10/–0 knots and specified angle of bank, ±10°. 5.13

B. TASK: POWER-OFF STALLS (ASEL AND ASES)

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to power-off stalls. 1.24, 2.9, 2.10, 5.13
2. Selects an entry altitude consistent with safety, which allows the TASK to be completed no lower than 1,000 feet AGL. 2.9, 5.13
3. Establishes a stabilized descent in the approach or landing configuration, as specified by the examiner. 2.9
4. Transitions smoothly from the approach or landing attitude to a pitch attitude that will induce a stall. 1.24, 2.9
5. Maintains a specified heading, ±10°, in straight flight; maintains a specified angle of bank not to exceed 20°, ±10°; in turning flight, while inducing the stall. 2.9, 5.13
6. Recognizes and recovers promptly after the stall occurs by simultaneously reducing the angle of attack, increasing power to maximum allowable, and leveling the wings to return to a straight-and-level flight attitude with a minimum loss of altitude appropriate for the airplane. 1.24, 2.9, 5.13
7. Retracts the flaps to the recommended setting, after a positive rate-of-climb is establishes. (ASES) (*ASES may refer to landing gear though it is missing from this item in the FAA PTS-Ed*).....2.9
8. Accelerates to V_X or V_Y speed and/or the appropriate pitch attitude before the final flap retraction; returns to the altitude, heading, and airspeed/appropriate pitch attitude specified by the examiner. 2.9

C. TASK: POWER-ON STALLS (ASEL AND ASES)

NOTE: In some high performance airplanes, the power setting may have to be reduced below the practical test standards guideline power setting to prevent excessively high pitch attitudes (greater than 30° nose up).

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to power-on stalls.....1.24, 2.9, 2.10, 5.13
2. Selects an entry altitude consistent with safety, which allows the TASK to be completed no lower than 1,000 feet AGL. 2.9, 5.13
3. Establishes the takeoff or departure configuration. Sets power to no less than 65 percent available power. 2.9
4. Transitions smoothly from the takeoff or departure attitude to the pitch attitude that will induce a stall. 2.9
5. Maintains a specified heading, ±10°, in straight flight; maintains a specified angle of bank not to exceed 20°, ±10°, in turning flight, while inducing the stall. 2.9, 5.13
6. Recognizes and recovers promptly after the stall occurs by simultaneously reducing the angle of attack, increasing power as appropriate, and leveling the wings to return to a straight-and-level flight attitude with a minimum loss of altitude appropriate for the airplane. 2.9, 5.13
7. Retracts the flaps to the recommended setting; after a positive rate of climb is established. 2.9
8. Accelerates to V_X or V_Y speed and/or the appropriate pitch attitude before the final flap retraction; returns to the altitude, heading, and airspeed/pitch attitude specified by the examiner. 2.9

D. TASK: SPIN AWARENESS (ASEL AND ASES) (ORAL ONLY)

Objective. To determine that the applicant exhibits knowledge of the elements related to spin awareness by explaining:

1. Aerodynamic factors that cause spins. 2.10
2. Flight situations where unintentional spins may occur. 2.10
3. Procedures for avoidance and recovery from unintentional spins. 2.10

IX. AREA OF OPERATION: EMERGENCY OPERATIONS

NOTE: For single-seat applicants, the examiner shall select TASK A.

Video Volume.Segment

A. TASK: EMERGENCY APPROACH AND LANDING (SIMULATED) (ASEL AND ASES)

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to emergency approach and landing procedures.....3.5, 5.13
2. Analyzes the situation and selects an appropriate course of action.
3. Establishes and maintains the recommended best-glide airspeed ±10 knots.....3.5, 5.13
4. Selects a suitable landing area. 3.5, 5.13
5. Plans and follows a flight pattern to the selected landing area considering altitude, wind, terrain, and obstructions.....3.5, 5.13
6. Prepares for landing or go-around, as specified by the examiner.

B. TASK: SYSTEMS AND EQUIPMENT MALFUNCTIONS (ASEL AND ASES)

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to system and equipment malfunctions appropriate to the airplane provided for the practical test.....5.13
2. Evaluates the situation and takes appropriate action for simulated emergencies appropriate to the airplane provided for the practical test for at least three (3) of the following— 5.13
   a. partial or complete power loss 3.5, 5.13
   b. engine roughness or overheat.....AFM/POH
   c. carburetor or induction icing.....1.11, 5.13
   d. loss of oil pressure 5.13
   e. fuel starvation.....5.13
   f. electrical malfunction.....AFM/POH
   g. vacuum/pressure and associated flight instrument malfunctions.....AFM/POH
   h. pitot/static.....3.5
   i. flap malfunction .....AFM/POH
   j. inoperative trim.....AFM/POH
   k. inadvertent door or window opening .....AFM/POH
   l. smoke/fire/engine compartment fire .....AFM/POH
   m. flight control malfunction .....AFM/POH
   n. ballistic recovery system malfunction, if applicable.....AFM/POH
   o. any other emergency appropriate to the airplane.....3.5, AFM/POH
3. Follows the appropriate checklist or procedure. .....AFM/POH

C. TASK: EMERGENCY EQUIPMENT AND SURVIVAL GEAR (ASEL AND ASES)

NOTE: This TASK shall be evaluated orally.

Objective. To determine that the applicant exhibits knowledge of the elements related to emergency equipment appropriate to the following environmental conditions:

1. Mountain terrain.....5.13, AFM/POH, Appendix E
2. Large bodies of water.....5.13, AFM/POH, Appendix E
3. Desert conditions .....5.13, AFM/POH, Appendix E
4. Extreme temperature changes.....5.13, AFM/POH, Appendix E

X. AREA OF OPERATION: POSTFLIGHT PROCEDURES

NOTE: The examiner shall select Task A and for ASES applicants at least one other TASK.

NOTE: For single-seat applicants, the examiner shall select at least TASK A and all other TASKs as applicable.

Video Volume.Segment

A. TASK: AFTER LANDING, PARKING, AND SECURING (ASEL AND ASES)

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to after landing, parking, and securing procedures. 2.11, 5.13
2. Maintains directional control after touchdown while decelerating to an appropriate speed.
3. Observes runway hold lines and other surface control markings. 3.15
4. Parks in an appropriate area, considering the safety of nearby persons and property. 5.13
5. Follows the appropriate procedure for engine shutdown. ..... 2.11, 5.13, AFM/POH
6. Completes the appropriate checklist. ..... 2.11, 5.13, AFM/POH
7. Conducts an appropriate postflight inspection and secures the aircraft. ..... 2.11, AFM/POH

B. TASK: ANCHORING (ASES)

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to anchoring. ..... ASES Only
2. Selects a suitable area for anchoring, considering seaplane movement, water depth, tide, wind, and weather changes. ..... ASES Only
3. Uses an adequate number of anchors and lines of sufficient strength and length to ensure the seaplane's security. ..... ASES Only

C. TASK: DOCKING AND MOORING (ASES)

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to docking and mooring. ..... ASES Only
2. Approaches the dock or mooring buoy in the proper direction considering speed, hazards, wind, and water current. ..... ASES Only
3. Ensures seaplane security. ..... ASES Only

D. TASK: RAMPING/BEACHING (ASES)

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to ramping/beaching. ..... ASES Only
2. Approaches the ramp/beach, considering persons and property in the proper attitude and direction, at a safe speed, considering water depth, tide, current, and wind. ..... ASES Only
3. Ramps/beaches and secures the seaplane in a manner that will protect it from the harmful effect of wind, waves, and changes in water level. ..... ASES Only

Supplemental PTS Information

The following information is from the Sport Pilot Practical Test Standards and may be useful in your preparation.

General Information

The Flight Standards Service of the Federal Aviation Administration (FAA) has developed the practical test book as the standard that shall be used by FAA inspectors and designated pilot examiners (DPEs) when conducting sport pilot practical tests or proficiency checks.

The word "examiner" is used throughout the standards to denote either the FAA inspector or an FAA designated pilot examiner who conducts an official practical test or proficiency check. When an examiner conducts a proficiency check they are acting in the capacity of an authorized instructor.

A proficiency check is an evaluation of aeronautical knowledge and flight proficiency IAW Title 14 of the Code of Federal Regulations (14 CFR) part 61, section 61.321 or 61.419. A proficiency check must be administered using the appropriate practical test standard (PTS) for the category of aircraft when a pilot adds new category/class privileges. Upon successful completion of the proficiency check the authorized instructor will endorse the applicant's logbook indicating the added category/class of equipment that the applicant is authorized to operate. When an examiner conducts a proficiency check they are acting in the capacity of an authorized instructor.

DPEs must have designation authority to conduct sport pilot initial evaluations (Sport Pilot Examiner (SPE)) per FAA Order 8710.7, Sport Pilot Examiner's Handbook.

Authorized instructors must use this PTS when preparing applicants for practical tests or proficiency checks and when conducting proficiency checks. Applicants should be familiar with this book and refer to these standards during their training.

Information considered directive in nature is described in this practical test book in terms, such as "shall" and "must" indicating the actions are mandatory. Guidance information is described in terms, such as "should" and "may" indicating the actions are desirable or permissive, but not mandatory.

Practical Test Book Description

Areas of Operation are phases of the practical test or proficiency check arranged in a logical sequence within each standard. They begin with Preflight Preparation and end with Postflight Procedures. The examiner may conduct the practical test or proficiency check in any sequence that will result in a complete and efficient test. An authorized instructor may conduct a proficiency check in any sequence that will result in a complete and efficient test. However, the ground portion of the practical test or proficiency check shall be accomplished before the flight portion.

Tasks are specific knowledge areas, flight procedures, or maneuvers appropriate to an Area of Operation. The abbreviation(s) within parentheses immediately following a Task refer to the appropriate class of aircraft. The meaning of each abbreviation is as follows:

ASEL Airplane—Single-Engine Land

ASES Airplane—Single-Engine Sea

NOTE: When administering a test based on section 1 of this PTS the Tasks appropriate to the class airplane (ASEL and ASES) used for the test must be included in the plan of action. The absence of a class indicates the Task is for all classes.

Note is used to emphasize special considerations required in the Area of Operation or Task.

The **Objective** lists the important elements that must be satisfactorily performed to demonstrate competency in a Task. The Objective includes:

1. specifically what the applicant should be able to do;
2. the conditions under which the Task is to be performed;
3. acceptable performance standards; and
4. safety considerations, when applicable.

Abbreviations

14 CFR	Title 14 of the Code of Federal Regulations	FAA	Federal Aviation Administration
AC	Advisory Circular	FSDO	Flight Standards District Office
ADM	Aeronautical Decision Making	GPO	Government Printing Office
AFD	Airport Facility Directory	IMC	Instrument Meteorological Conditions
AFM	Airplane Flight Manual	METAR	Aviation Routine Weather Report
AFSS	Automated Flight Service Station	NOTAM	Notice to Airmen
AGL	Above Ground Level	NTSB	National Transportation Safety Board
AIM	Aeronautical Information Manual	POH	Pilot Operating Handbook
ASEL	Airplane Single Engine Land	PPC	Powered Parachute
ASES	Airplane Single Engine Sea	PTS	Practical Test Standard
ASOS	Automated Surface Observing System	RPM	Revolutions Per Minute
ATC	Air Traffic Control	SS	Single-seat
ATIS	Automatic Terminal Information Service	SUA	Special Use Airspace
AWOS	Automated Weather Observing System	TAF	Terminal Aviation Forecast
CFIT	Controlled Flight into Terrain	TFR	Temporary Flight Restrictions
CRM	Cockpit Resource Management	VFR	Visual Flight Rules
CTAF	Common Traffic Advisory Frequency	WSC	Weight Shift Control
FA	Area Weather Forecast		

Use of the Practical Test Standards

The FAA requires that all sport pilot practical tests and proficiency checks be conducted in accordance with the appropriate sport pilot practical test standards and the policies set forth in this Introduction. Applicants must be evaluated in ALL Tasks included in each Area of Operation of the appropriate practical test standard, unless otherwise noted.

An applicant, who holds at least a Sport Pilot Certificate seeking additional aircraft category/class privileges at the sport pilot level, must be evaluated in all the Areas of Operation and Tasks listed in the PTS.

In preparation for each practical test or proficiency check, the examiner or authorized instructor shall develop a written "plan of action." The "plan of action" shall include all Tasks in each Area of Operation, unless noted otherwise. If the elements in one Task have already been evaluated in another Task, they need not be repeated.

For example, the "plan of action" need not include evaluating the applicant on complying with markings at the end of the flight, if that element was sufficiently observed at the beginning of the flight. Any Task selected for evaluation during a practical test or proficiency check shall be evaluated in its entirety. Exception: examiners evaluating single-seat applicants from the ground shall evaluate only those Task elements that can be accurately assessed from the ground.

The examiner or authorized instructor is not required to follow the precise order in which the Areas of Operation and Tasks appear in this book. The examiner or authorized instructor may change the sequence or combine Tasks with similar Objectives to have an orderly and efficient flow of the practical test or proficiency check events.

The examiner's or authorized instructor's "plan of action" shall include the order and combination of Tasks to be demonstrated by the applicant in a manner that will result in an efficient and valid test.

The examiner or authorized instructor is expected to use good judgment in the performance of simulated emergency procedures. The use of the safest means for simulation is expected. Consideration must be given to local conditions, both meteorological and topographical, at the time of the test, as well as the applicant's workload, and the condition of the aircraft used during the practical test or proficiency check. If the procedure being evaluated would jeopardize safety, it is expected that the applicant will simulate that portion of the maneuver.

Special Emphasis Areas

Examiners and authorized instructors shall place special emphasis upon areas of aircraft operations considered critical to flight safety. Among these are:

1. positive aircraft control;
2. procedures for positive exchange of flight controls;
3. stall and spin awareness (if appropriate);
4. collision avoidance;
5. wake turbulence and low level wind shear avoidance;
6. runway incursion avoidance;
7. controlled flight into terrain (CFIT);
8. aeronautical decision making/risk management;
9. checklist usage;
10. spatial disorientation;
11. temporary flight restrictions (TFR);
12. special use airspace (SUA);
13. aviation security; and
14. other areas deemed appropriate to any phase of the practical test or proficiency check.

Although these areas may not be specifically addressed under each Task, they are essential to flight safety and will be evaluated during the practical test or proficiency check. In all instances, the applicant's actions will be evaluated in accordance to the standards of the Tasks and the ability to use good judgment with reference to the special emphasis areas listed above.

Sport Pilot—Practical Test Prerequisites (Initial)

An applicant for a Sport Pilot Certificate is required by 14 CFR part 61 to:

1. be at least 17 years of age (or 16 if applying to operate a glider or balloon);
2. be able to read, speak, write, and understand the English language. If there is a doubt, use AC 60-28, English Language Skill Standards;
3. have passed the appropriate sport pilot knowledge test since the beginning of the 24th month before the month in which he or she takes a practical test;
4. have satisfactorily accomplished the required training and obtained the aeronautical experience prescribed;
5. possess a current and valid U.S. driver's license or a valid Airman Medical Certificate issued under 14 CFR part 67;
6. have an endorsement from an authorized instructor certifying that the applicant has received and logged training time within 60 days preceding the date of application in preparation for the practical test, and is prepared for the practical test; and
7. have an endorsement certifying that the applicant has demonstrated satisfactory knowledge of the subject areas in which the applicant was deficient on the airman knowledge test.

Sport Pilot—Practical Test Prerequisites (Registered Ultra-Light Pilots)

If you are a registered ultra-light pilot with an FAA-recognized ultra-light organization on or before September 1, 2004, and you want to apply for a Sport Pilot Certificate, then you must, not later than January 31, 2007 (14 CFR part 61, section 61.329):

1. meet the eligibility requirements in 14 CFR part 61, sections 61.305 and 61.23, but not the aeronautical knowledge requirements specified in section 61.309, the flight proficiency requirements specified in section 61.311, and the aeronautical experience requirements specified in section 61.313;
2. pass the knowledge test for a Sport Pilot Certificate specified in 14 CFR part 61, section 61.307;
3. pass the practical test for a Sport Pilot Certificate specified in 14 CFR part 61, section 61.307;
4. provide the FAA with a certified copy of your ultra-light pilot records from an FAA-recognized ultra-light organization, and those records must—
    a. document that you are a registered ultra-light pilot with that FAA-recognized ultra-light organization; and
    b. indicate that you are recognized to operate each category and class of aircraft for which you seek sport pilot privileges.

Sport Pilot—Additional Privileges

If you hold a Sport Pilot Certificate or higher and seek to operate an additional category or class of light-sport aircraft (14 CFR part 61, section 61.321), you must:

1. receive a logbook endorsement from the authorized instructor who trained you on the applicable aeronautical knowledge areas specified in 14 CFR part 61, section 61.309 and areas of operation specified in section 61.311. The endorsement certifies you have met the aeronautical knowledge and flight proficiency requirements for the additional light-sport aircraft privileges you seek;
2. successfully complete a proficiency check from an authorized instructor other than the one who trained you on the aeronautical knowledge areas and areas of operation specified in 14 CFR part 61, sections 61.309 and 61.311 for the additional light-sport aircraft privilege you seek;
3. complete an application for those privileges on a form in a manner acceptable to the FAA and present this application to the authorized instructor who conducted the proficiency check specified in above paragraph;
4. receive a logbook endorsement from the instructor who conducted the proficiency check specified in 2 above, certifying you are proficient in the applicable areas of operation and aeronautical knowledge areas and that you are authorized for the additional category and class light-sport aircraft privilege.

Aircraft and Equipment Required for the Practical Test / Proficiency Check

The applicant for a Sport Pilot Certificate is required in accordance with

14 CFR part 61, section 61.45, to provide an aircraft that has a current airworthiness certificate and is in a condition for safe flight, for use during the practical test or proficiency check. This section further requires that the aircraft must:

1. be of U.S., foreign or military registry of the same category, class, and type, if applicable, for the certificate or privileges for which the applicant is applying;
2. have fully functioning dual controls, except as provided for in 14 CFR part 61, section 61.45(c), (e), and (f); and
3. be capable of performing all Areas of Operation appropriate to the privileges sought and have no operating limitations, which prohibit its use in any of the Areas of Operation, required for the practical test or proficiency check.
4. have an altitude, airspeed, and a heading indicating system, as appropriate, for all tasks that require demonstration of skill within an altitude/airspeed/heading tolerance.

The aircraft utilized for sport pilot practical tests and proficiency checks must be a light-sport aircraft as defined in 14 CFR part 1.

Single-Seat Aircraft Practical Test

Applicants for a Sport Pilot Certificate may elect to take their test in a single-seat aircraft. The FAA established in 14 CFR part 61, section 61.45(f) specific requirements to allow a practical test for a Sport Pilot Certificate only. This provision does not allow a practical test for a Recreational Pilot Certificate or higher to be conducted in a light-sport aircraft that has a single-pilot seat.

With certain limitations, the practical test for a Sport Pilot Certificate may be conducted from the ground by an examiner. The examiner must agree to conduct the practical test in a single-seat aircraft and must ensure that the practical test is conducted in accordance with the sport pilot practical test standards for single-seat aircraft. **Knowledge of all Tasks applicable to their category/class of aircraft will be evaluated orally.** Single-seat sport pilots shall demonstrate competency in those specific Tasks identified by a Note in the Area of Operation for a single-seat practical test and any other Tasks selected by the examiner. Examiners evaluating single-seat applicants from the ground shall evaluate only those Task elements that can be accurately assessed from the ground.

The examiner **must maintain radio contact** with the applicant and be in a position to observe the operation of the aircraft while evaluating the proficiency of the applicant from the ground.

Sport pilots taking the practical test in a single-seat aircraft will have the limitation, "No passenger carriage and flight in a single-pilot seat aircraft only" placed on their pilot certificate, per 61.45(f)(3), limiting their operations to a single-seat light-sport aircraft and no passenger carriage will be authorized.

Only an examiner is authorized to remove this limitation when the sport pilot takes a complete practical test in a two-place light-sport aircraft. This practical test may be conducted in the same or additional category of aircraft.

Upon successful completion of the practical test, the limitation will be removed, and the sport pilot is authorized to act as pilot in command in all categories of light-sport aircraft that he or she has a make and model endorsement within a set of aircraft to operate. The limitation can also be removed if the sport pilot completes the certification requirements in an aircraft with a minimum of two places, for a higher certificate or rating.

Single-Seat Aircraft Proficiency Check

Sport pilot proficiency checks may be preformed in a single-seat aircraft. The FAA believes it is appropriate for an instructor to perform a proficiency check for an additional category/class privilege to a Sport Pilot Certificate or higher, in accordance with 14 CFR part 61, section 61.321, using a single-seat light-sport aircraft, providing the authorized instructor is an examiner. When an examiner conducts a proficiency check they are acting in the capacity of an authorized instructor.

The authorized instructor must agree to conduct the practical test in a single seat light-sport aircraft and must ensure that the proficiency check is conducted in accordance with the sport pilot practical test standards for single-seat aircraft. Knowledge of all Tasks applicable to the category or class of aircraft will be evaluated orally. Those pilots seeking sport pilot privileges in a single-seat light-sport aircraft shall demonstrate competency in those specific Tasks identified by a Note in the Area of Operation for a single-seat proficiency check and any other Tasks selected by the authorized instructor. Authorized instructors evaluating single-seat applicants from the ground shall evaluate only those Task elements that can be accurately assessed from the ground.

The authorized instructor must have radio contact and be in a position to observe the operation of the light-sport aircraft and evaluate the proficiency of the applicant from the ground.

On successful completion of a proficiency check, the authorized instructor will issue an endorsement with the following limitation "No passenger carriage and flight in a single-pilot seat aircraft only (add category/class/make and model)" limiting his or her operations to a single-seat aircraft in this category, class, make, and model. The authorized instructor must sign this endorsement with his or her flight instructor and examiner number.

This limitation can be removed by successfully completing a proficiency check, accomplishing the additional Tasks identified in the practical test standards in a two-place light-sport aircraft in that specific category and class, in accordance with 14 CFR part 61, section 61.321. This proficiency check must be conducted in the same category and class of light-sport aircraft. Upon successful completion of the proficiency check, the applicant will be given an endorsement for the aircraft privilege sought.

Those recreational pilots or higher exercising sport pilot privileges will be required to have an endorsement for only the category and/or class of light-sport aircraft they are now authorized to act as pilot in command. A sport pilot will be required to have an endorsement for the category, class, make, and model within a set of aircraft in which he or she is now authorized to act as pilot in command.

Flight Instructor Responsibility

An appropriately rated flight instructor is responsible for training the sport pilot applicant to acceptable standards in **ALL** subject matter areas, procedures, and maneuvers included in the Tasks within each Area of Operation in the appropriate sport pilot practical test standard.

Because of the impact of their teaching activities in developing safe, proficient pilots, flight instructors should exhibit a high level of knowledge, skill, and the ability to impart that knowledge and skill to students.

Throughout the applicant's training, the flight instructor is responsible for emphasizing the performance of effective visual scanning and collision avoidance procedures.

Examiner Responsibility

The examiner conducting the practical test or authorized instructor conducting the proficiency check is responsible for determining that the applicant meets the acceptable standards of knowledge and skill of each Task within each appropriate Area of Operation. Since there is no formal division between the "oral" and "skill" portions of the practical test or proficiency check, this oral portion becomes an ongoing process throughout the test. Oral questioning, to determine the applicant's knowledge of Tasks and related safety factors, should be used judiciously at all times, especially during the flight portion of the practical test or proficiency check. Examiners and authorized instructors shall test to the greatest extent practicable the applicant's correlative abilities rather than mere rote enumeration of facts throughout the practical test or proficiency check.

If the examiner or authorized instructor determines that a Task is incomplete, or the outcome uncertain, the examiner may require the applicant to repeat that Task, or portions of that Task. This provision has been made in the interest of fairness and does not mean that instruction, practice, or the repeating of an unsatisfactory Task is permitted during the certification process. When practical, the remaining Tasks of the practical test or proficiency check phase should be completed before repeating the questionable Task.

The examiner or authorized instructor shall use scenarios when applicable to determine that the applicant can use good risk management procedures in making aeronautical decisions. Examples of Tasks where scenarios would be advantageous are weather analysis, performance planning, and runway/landing area selection.

Throughout the flight portion of the practical test or proficiency check, the examiner or authorized instructor shall evaluate the applicant's knowledge and practical incorporation of special emphasis areas.

Initial Check-Sport Pilot-Satisfactory Performance

Satisfactory performance of Tasks to meet the requirements for sport pilot certification are based on the applicant's ability to safely:

1. perform the Tasks specified in the Areas of Operation for the certificate or privileges sought within the approved standards;
2. demonstrate mastery of the aircraft with the successful outcome of each Task performed never seriously in doubt;
3. demonstrate satisfactory proficiency and competency within the approved standards;
4. demonstrate sound judgment in aeronautical decision making/risk management; and
5. demonstrate single-pilot competence in an aircraft with a single pilot station (if applicable).

Initial Check-Sport Pilot-Unsatisfactory Performance

The tolerances represent the performance expected in good flying conditions. If, in the judgment of the examiner, the applicant does not meet the standards of performance of any Task performed, the associated Area of Operation is failed and therefore, the practical test is failed.

The examiner or applicant may discontinue the test at any time when the failure of an Area of Operation makes the applicant ineligible for the certificate. **The test may be continued ONLY with the consent of the applicant.**

If the test is discontinued, the applicant is entitled credit for only those Areas of Operation and their associated Tasks satisfactorily performed. However, during the retest, and at the discretion of the examiner, any Task may be re-evaluated, including those previously passed.

The following are typical areas of unsatisfactory performance and grounds for disqualification.

1. Any action or lack of action by the applicant that requires corrective intervention by the examiner to maintain safe flight.
2. Failure to use proper and effective visual scanning techniques to clear the area before and while performing maneuvers.
3. Consistently exceeding tolerances stated in the Objectives.
4. Failure to take prompt corrective action when tolerances are exceeded.

When a Notice of Disapproval is issued, the examiner shall record the applicant's unsatisfactory performance in terms of the Area of Operation and specific Task(s) not meeting the standard appropriate to the practical test conducted. The Area(s) of Operation/Task(s) not tested and the number of practical test failures shall also be recorded. If the applicant fails the practical test because of a special emphasis area, the Notice of Disapproval shall indicate the associated Task. For example, Section 1, VIII. Area of Operation: Slow Flight and Stalls (ASEL and ASES), Task A: Maneuvering During Slow Flight, failure to use proper collision avoidance procedures.

Proficiency Check-Sport Pilot-Satisfactory Performance When Adding an Additional Category/Class

Satisfactory performance of Tasks to add category/class privileges is based on the applicant's ability to safely:

1. perform the Tasks specified in the Areas of Operation for the certificate or privileges sought within the approved standards;
2. demonstrate mastery of the aircraft with the successful outcome of each Task performed never seriously in doubt;
3. demonstrate satisfactory proficiency and competency within the approved standards;
4. demonstrate sound judgment in aeronautical decision making/risk management; and
5. demonstrate single-pilot competence.

When an applicant is adding a category/class privileges to his or her Sport Pilot Certificate, the authorized instructor, upon satisfactory completion of the proficiency check, shall endorse the applicant's logbook indicating that the applicant is qualified to operate the additional sport pilot category/class of aircraft. The authorized instructor shall forward FAA Form 8710-11 to Airman Registry within 10 days.

Proficiency Check-Sport Pilot-Unsatisfactory Performance When Adding an Additional Category/Class

When the applicant's performance does not meet the standards in the PTS, the examiner or authorized instructor conducting the proficiency check shall annotate the unsatisfactory performance on the FAA Form 8710-11 and forward it to Airman Registry within 10 days. A Notice of Disapproval will **NOT** be issued in this instance; rather, the applicant should be provided with a list of the Areas of Operation and the specific Tasks not meeting the standard, so that the applicant may receive additional training.

When the applicant receives the additional training in the Areas of Operation and the specific Task(s) found deficient during the proficiency check, the recommending instructor shall endorse the applicant's logbook indicating that the applicant has received additional instruction and has been found competent to pass the proficiency check. The applicant shall complete a new FAA Form 8710-11, and the recommending instructor shall endorse the application. The authorized instructor, other than the one who provided the additional training, shall evaluate the applicant on all TaskS required by the PTS. When the applicant successfully accomplishes a complete proficiency check, the authorized instructor, shall forward the FAA Form 8710-11 to Airman Registry within 10 days and endorse the applicant's logbook indicating the airman's additional category/class privileges.

Single-Pilot Resource Management

Single-Pilot Resource Management refers to the effective use of ALL available resources: human resources, hardware, and information. It is similar to Crew Resource Management (CRM) procedures that are being emphasized in multi-crewmember operations except that only one crewmember (the pilot) is involved. Human resources "… includes all other groups routinely working with the pilot who are involved in decisions that are required to operate a flight safely. These groups include, but are not limited to: dispatchers, weather briefer, maintenance personnel, and air traffic controllers." Single-pilot Resource Management is not a single Task; it is a set of skill competencies that must be evident in all Tasks in this practical test standard as applied to single- pilot operation.

Applicant's Use of Checklists

Throughout the practical test or proficiency check, the applicant is evaluated on the use of an appropriate checklist (if specified by the manufacturer.) Proper use is dependent on the specific Task being evaluated. The situation may be such that the use of the checklist, while accomplishing elements of an Objective, would be either unsafe or impractical. In this case, a review of the checklist after the elements have been accomplished would be appropriate. Division of attention and proper visual scanning should be considered when using a checklist.

Use of Distractions During Practical Tests or Proficiency Checks

Numerous studies indicate that many accidents have occurred when the pilot has been distracted during critical phases of flight. To evaluate the applicant's ability to utilize proper control technique while dividing attention both inside and/or outside the cockpit, the examiner or authorized instructor shall cause realistic distractions during the flight portion of the practical test or proficiency check to evaluate the applicant's ability to divide attention while maintaining safe flight.

Positive Exchange of Flight Controls

During flight there must always be a clear understanding between the pilots, of who has control of the aircraft. Prior to flight, a briefing should be conducted that includes the procedure for the exchange of flight controls. A positive three-step process in the exchange of flight controls between pilots is a proven procedure and one that is strongly recommended.

When one pilot wishes to give the other pilot control of the aircraft, he or she will say, "You have the flight controls." The other pilot acknowledges immediately by saying, "I have the flight controls." The first pilot says again, "You have the flight controls." When control is returned to the first pilot, follow the same procedure. A visual check is recommended to verify that the exchange has occurred. There should never be any doubt as to who is flying the aircraft.

Letter of Discontinuance

When a practical test is discontinued for reasons other than unsatisfactory performance (i.e., equipment failure, weather, or illness) FAA Form 8710-11, and, if applicable, the Airman Knowledge Test Report, shall be returned to the applicant. The examiner at that time shall prepare, sign, and issue a Letter of Discontinuance to the applicant. The Letter of Discontinuance should identify the Areas of Operation and their associated Tasks of the practical test that were successfully completed. The applicant shall be advised that the Letter of Discontinuance shall be presented to the examiner when the practical test is resumed, and made part of the certification file.

Aeronautical Decision Making and Risk Management

The examiner or authorized instructor shall evaluate the applicant's ability throughout the practical test or proficiency check to use good aeronautical decision making procedures in order to evaluate risks. The examiner or authorized instructor shall accomplish this requirement by developing scenarios that incorporate as many Tasks as possible to evaluate the applicants risk management in making safe aeronautical decisions. For example, the examiner or authorized instructor may develop a scenario that incorporates weather decisions and performance planning.

Applicant's Practical Test Checklist

APPOINTMENT WITH EXAMINER:

EXAMINER'S NAME_____

LOCATION _____

DATE/TIME _____

ACCEPTABLE AIRCRAFT

- ❑ Aircraft Documents: Airworthiness Certificate, Registration Certificate, and Operating Limitations
- ❑ Aircraft Maintenance Records: Logbook Record of Inspections/Airworthiness Directives/Safety Directives
- ❑ Pilot's Operating Handbook or FAA-Approved Flight Manual or Manufacturer's Operating Instructions

PERSONAL EQUIPMENT

- ❑ Current Aeronautical Charts
- ❑ Flight Logs
- ❑ Current AFD and Appropriate Publications

PERSONAL RECORDS

- ❑ Identification - Photo/Signature ID
- ❑ Pilot Certificate
- ❑ Medical Certificate or Driver's License
- ❑ Completed FAA Form 8710-11, Application for an Airman Certificate and/or Rating - Sport Pilot
- ❑ Airman Knowledge Test Report
- ❑ Logbook with Instructor's Endorsement
- ❑ FAA Form 8060-5, Notice of Disapproval (if applicable)
- ❑ Examiner's Fee (if applicable)
- ❑ Letter of Discontinuance (if applicable)

Examiner's Practical Test Checklist

APPLICANT'S NAME_____

LOCATION_____

DATE/TIME_____

I. PREFLIGHT PREPARATION

- ❑ A. Certificates and Documents (ASEL and ASES)
- ❑ B. Airworthiness Requirements (ASEL and ASES)
- ❑ C. Weather Information (ASEL and ASES)
- ❑ D. Cross-Country Flight Planning (ASEL and ASES)
- ❑ E. National Airspace System (ASEL and ASES)
- ❑ F. Operation of Systems (ASEL and ASES)
- ❑ G. Aeromedical Factors (ASEL and ASES)
- ❑ H. Water and Seaplane Characteristics (ASES)
- ❑ I. Seaplane Bases, Maritime Rules, and Aids to Marine Navigation (ASES)
- ❑ J. Performance and Limitations (ASEL and ASES)
- ❑ K. Principles of Flight (ASEL and ASES)

II. PREFLIGHT PROCEDURES

- ❑ A. Preflight Inspection (ASEL and ASES)
- ❑ B. Cockpit Management (ASEL and ASES)
- ❑ C. Engine Starting (ASEL and ASES)
- ❑ D. Taxiing (ASEL)
- ❑ E. Taxiing and Sailing (ASES)
- ❑ F. Before Takeoff Check (ASEL and ASES)

III. AIRPORT AND SEAPLANE BASE OPERATIONS

- ❑ A. Radio Communications (ASEL and ASES)
- ❑ B. Traffic Patterns (ASEL and ASES)
- ❑ C. Airport/Seaplane Base, Runway, and Taxiway Signs, Markings, and Lighting (ASEL and ASES)

IV. TAKEOFFS, LANDINGS, AND GO-AROUNDS

- ❑ A. Normal and Crosswind Takeoff and Climb (ASEL and ASES)
- ❑ B. Normal and Crosswind Approach and Landing (ASEL and ASES)
- ❑ C. Soft-Field Takeoff and Climb (ASEL)
- ❑ D. Soft-Field Approach and Landing (ASEL)
- ❑ E. Short-Field (Confined Area—ASES) Takeoff and Maximum Performance Climb (ASEL and ASES)
- ❑ F. Short-Field (Confined Area—ASES) Approach and Landing (ASEL and ASES)
- ❑ G. Glassy Water Takeoff and Climb (ASES)
- ❑ H. Glassy Water Approach and Landing (ASES)
- ❑ I. Rough Water Takeoff and Climb (ASES)
- ❑ J. Rough Water Approach and Landing (ASES)
- ❑ K. Forward Slip to a Landing (ASEL and ASES)
- ❑ L. Go-Around/Rejected Landing (ASEL and ASES)

V. PERFORMANCE MANEUVER

- ❑ A. Steep Turns (ASEL and ASES)

VI. GROUND REFERENCE MANEUVERS

- ❑ A. Rectangular Course (ASEL and ASES)
- ❑ B. S-Turns (ASEL and ASES)
- ❑ C. Turns Around a Point (ASEL and ASES)

VII. NAVIGATION

- ❑ A. Pilotage and Dead Reckoning (ASEL and ASES)
- ❑ B. Diversion (ASEL and ASES)
- ❑ C. Lost Procedures (ASEL and ASES)

VIII. SLOW FLIGHT AND STALLS

- ❑ A. Maneuvering During Slow Flight (ASEL and ASES)
- ❑ B. Power-Off Stalls (ASEL and ASES)
- ❑ C. Power-On Stalls (ASEL and ASES)
- ❑ D. Spin Awareness (ASEL and ASES)

IX. EMERGENCY OPERATIONS

- ❑ A. Emergency Approach and Landing (Simulated) (ASEL and ASES)
- ❑ B. Systems and Equipment Malfunctions (ASEL and ASES)
- ❑ C. Emergency Equipment and Survival Gear (ASEL and ASES)

X. POSTFLIGHT PROCEDURES

- ❑ A. After Landing, Parking, and Securing (ASEL and ASES)
- ❑ B. Anchoring (ASES)
- ❑ C. Docking and Mooring (ASES)
- ❑ D. Ramping/Beaching (ASES)

Section 2 – Sport Pilot Video Study Guide

The following pages should be used as reinforcing material while reviewing the various video volumes.

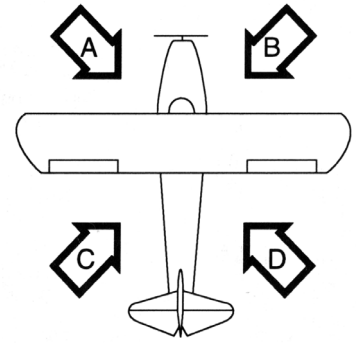
Please remember that these notes cannot serve as a substitute for the instruction contained in the video. They are intended to reinforce essential material from the *What You Should Know* Video Series and will assist you in learning these subjects.

Volume 1 – Your First Few Hours

Aerodynamics

1) Taxiing
   a) The figure below shows crosswinds at "A," "B," "C," and "D:"

Crosswinds on an Airplane



   b) The pictured crosswinds should be addressed with the control inputs noted below:

Pictured Crosswind	Aileron Positions	Tricycle Gear Elevator Position	Tricycle Gear Control Yoke or Stick Position	Conventional Gear Elevator Position	Conventional Gear Control Yoke or Stick Position
A--Left, quartering headwind	Left aileron up, right aileron down	Elevator neutral	Left and neutral	Elevator neutral or slightly up	Left and neutral or slightly back
B--Right, quartering headwind	Right aileron up, left aileron down	Elevator neutral	Right and neutral	Elevator neutral or slightly up	Right and neutral or slightly back
C--Left, quartering tailwind	Left aileron down, right aileron up	Elevator down	Right and forward	Elevator down	Right and forward
D--Right, quartering tailwind	Right aileron down, left aileron up	Elevator down	Left and forward	Elevator down	Left and forward

   c) Remember these guidelines:
      i) Turn the ailerons away from a quartering tailwind when taxiing.
      ii) Turn the ailerons into a quartering headwind when taxiing.
      iii) Quartering tailwinds are critical since they can cause high wing airplanes to flip over on their back.
      iv) Keep the elevator neutral in a headwind in a tricycle-gear airplane; elevator up in a headwind in a tailwheel airplane.
      v) Keep the elevator down in a tailwind in a tricycle-gear or a tailwheel airplane.

Engines/Preflight

1) If the recommended octane is not available for an aircraft, do not use a fuel that has a lower-than-specified fuel rating. Instead, use the next higher octane aviation gasoline.

2) After starting an aircraft engine, adjust to recommended warm-up settings and then check engine gauge indications.

3) It is extremely important that a competent pilot be at the controls in the cockpit when hand propping an airplane engine.

Federal Aviation Regulations

1) A pilot must have a photo identification in his physical possession or readily accessible in the aircraft when exercising the privileges of a pilot certificate.

2) The photo identification must be one of the following:
   a) Valid U.S. driver's license.
   b) U.S. issued federal or state identification card.
   c) U.S. Armed Forces' identification card.
   d) Official passport.
   e) Credential that authorizes unescorted access to a security identification display area at an airport regulated under 49 CFR part 1542.
   f) Other form of identification that the Administrator finds acceptable.

Volume 2 – Practicing Landings

Engines/Preflight

1) The basic purpose of adjusting the fuel/air mixture at altitude is to decrease the fuel flow in order to compensate for decreased air density.
   a) The fuel/air mixture may become excessively lean if a descent is made to a lower altitude without readjusting the mixture.
   b) If, during the run-up at a high-elevation airport, a pilot notes a slight engine roughness that is not affected by the magneto check but grows worse during the carb heat check, better results may be obtained with a leaner fuel mixture.
   c) Oil temperature gauges that have exceeded their normal operating range may indicate a fuel mixture set too lean, too much power, detonation, or a low oil level.
2) The operating principle of float-type carburetors is based on the difference in air pressure at the venturi throat and the air inlet.
3) If **detonation** occurs during climb-out, lower the nose slightly to increase airspeed and cooling.
4) A pilot can avoid engine overheating by increasing airspeed, enriching the mixture, or reducing power.
5) Excessively high engine temperatures will cause loss of power, excessive oil consumption, and possible permanent internal engine damage.

Aerodynamics

1) A positively stable airplane will tend to pitch nosedown when power is reduced and controls are not adjusted. This is due to a number of factors.
   a) The airplane will tend to seek out the speed for which it is trimmed.
      i) In airplanes with a rear mounted horizontal stabilizer (or stabilator), the nose "stays up" due to a downward force produced by air flowing over the horizontal stabilizer, a feature inherent in that design.
      ii) With less power, the airplane will slow down.
      iii) The slower speed produces less airflow over the horizontal stabilizer.
      iv) The decreased airflow reduces the downward force on the horizontal stabilizer.
      v) The reduced downward force allows the nose to pitch down.
      vi) The nosedown pitch will tend to stabilize at an attitude that will attain the trimmed speed.
   b) In airplanes with a low horizontal stabilizer, a portion of the downward force on this surface is related to the airflow created by the air pushed over the surface by the propeller. The velocity of this air may be greater than the velocity of the airplane moving through the surrounding air under certain flight conditions. This additional airflow is not apparent in T-tail aircraft where the horizontal surface is above the "prop blast".
   c) An additional downward force may be created by the downwash of airflow from the top of the wings in airplanes with a low horizontal stabilizer. This is not apparent in T-tail aircraft.
   d) This phenomenon is also the subject of an FAA knowledge test question. The most correct answer for this question indicates that this also occurs because the downwash on the elevators from the propeller slipstream is reduced, decreasing elevator effectiveness.
2) **Torque** effect is greatest in a single-engine airplane at low airspeed, high power, and high angle of attack.
3) The indicated airspeed at which a given airplane stalls does not change with altitude as long as its weight, load factor, and configuration remain the same.
4) With regard to **wingtip vortices**, a light, quartering tailwind requires maximum caution on takeoff or landing because wind moves the vortices down the runway.

Volume 3 – Your First Solo

Aerodynamics

1) The amount of excess load that can be imposed on the wing of an airplane depends upon the **speed** of the airplane.
2) Upon encountering severe turbulence, a pilot should attempt to maintain a level flight attitude that will keep the airplane at or below **maneuvering speed**.
3) The most important rule to remember in the event of a power failure after becoming airborne is to immediately establish the proper gliding attitude and airspeed. Fly the airplane!

Weather Theory

1) Clouds, fog, or dew will always form when water vapor condenses.
2) **Evaporation** and **sublimation** are processes by which moisture is added to unsaturated air.
3) Fog
   a) Advection fog and **upslope fog** depend upon wind in order to exist.
   b) Low level turbulence can occur and icing can become hazardous in **steam fog**.

Weather Data

1) **Aviation Routine Weather Report**, or **METAR** report, is an actual observation taken from the surface of the airport every hour. If rapid changes occur in the weather, special report observations are taken. METARs will contain any of the following information that is pertinent to the observation:
   a) Type of Report -- METAR or SPECI (special).
   b) Station Designator -- ICAO identifier.
   c) Time of Report -- Reported in UTC.
   d) Wind Information -- Direction in tens of degrees from true north and wind speed in knots.
   e) Visibility -- Reported in statute miles; may also include Runway Visual Range (RVR) for a particular runway in feet.
   f) Weather and Obstructions to Visibility.
   g) Sky Condition -- Height of ceiling and other layers, and amount of coverage of layers.
   h) Temperature and Dew Point -- Reported in degrees Celsius.
   i) Altimeter Setting -- Given in inches of mercury.
   j) Remarks -- Any significant data not reported above.
2) The hourly METAR for KJFK airport in New York is decoded for you below:

METAR –Aviation Routine Weather Report

METAR KINK 121845Z 11012G18KT 15SM SKC 25/17 A3000
METAR KBOI 121854Z 13004KT 30SM SCT150 17/6 A3015
METAR KLAX 121852Z 25004KT 6SM BR SCT007 SCT250 16/15 A2991
SPECI KMDW 121856Z 32005KT 1 1/2SM RA OVC007 17/16 A2980 RMK RAB35
SPECI KJFK 121853Z 18004KT 1/2SM FG R04R/2200FT OVC005 20/18 A3006

   a) The full KJFK report reads:
      i) Special observation; 12th day of the month; time of observation 1853 (Zulu); wind direction 180° true, velocity 4 knots; 1/2 statute mile visibility in fog; runway 4 right visual range is 2,200 feet; ceiling 500 feet overcast; temperature 20°C, dew point 18°C; altimeter setting 30.06 inches.

3) Utilize **Terminal Aerodrome Forecasts** for information regarding expected weather at the time of arrival at your destination. Terminal Aerodrome Forecasts, or **TAF**s, predict weather conditions expected within 5 statute miles (SM) of the airport or "aerodrome". Use of the code "VC" (vicinity) applies to weather conditions expected to occur from between 5 to 10 SM from the airport. TAFs are issued four times daily and usually cover a 24-hour or 30-hour period.

4) The **Terminal Aerodrome Forecast** for KSHV can be read below:

TAF – Terminal Aerodrome Forecast

KSHV 191722Z 1918/2018 11006KT P6SM SCT040 BKN070 OVC250
FM192100 10005KT P6SM VCTS SCT025CB BKN060 OVC250
TEMPO 1921/1924 VRB15G20KT 5SM -TSRA SCT025CB BKN060
FM200000 12005KT P6SM SCT040 SCT250
PROB30 2012/2018 5SM TSRA BKN020CB=

a) The complete KSHV TAF reads: "**191722Z**" the first 2-digit pair represents the day of the month (in this case, the 19th), the next 4 digits indicate that the forecast was issued at **1722Z**. "1918/2018" indicates that the TAF is valid from **18**00Z on the **19**th through **18**00Z on the 20th. The weather then begins; wind **110**° true at **06 K**no**T**s, visibility **P**lus (greater than) than **6 S**tatute **M**iles with a **SC**a**T**tered layer of clouds at (**0**)**4**,**0**00 and a (**0**)**7**,**0**00 foot **B**ro**K**e**N** ceiling with an **OV**er**C**ast layer at **25**,**0**00 feet. **F**ro**M** (after) **2100**Z on the **19**th, the wind is expected to be **100**° at **5 K**no**T**s, visibility **P**lus (greater than) **6 S**tatute **M**iles with **T**hunder**S**torms in the **V**i**C**inity (5-10 statute miles) of the airport. A layer of **SC**a**T**tered **C**umulonim**B**us clouds is expected at (**0**)**25**00 feet with a **B**ro**K**e**N** ceiling of (**0**)**60**00 feet and an **OV**er**C**ast layer above at **25**,**0**00 feet. **TEMPO**rarily (generally less than an hour total and less than half of the forecast time period) between **21**00Z and **24**00Z on the **19**th, the winds are expected to be **V**a**R**i**B**le in direction at **15 G**usting to **20 K**no**T**s with **5 S**tatute **M**iles visibility in light (**-**) **T**hunder**S**torms and **RA**in. A layer of **SC**a**T**tered **C**umulonim**B**us clouds is expected at (**0**)**25**00 feet with a **B**ro**K**e**N** ceiling of (**0**)**60**00 feet during the temporary period. **F**ro**M 0000**Z on the **20**th, wind **120**° at **5 K**no**T**s, visibility **P**lus (greater than) than **6 S**tatute **M**iles with a **SC**a**T**tered layer of clouds at (**0**)**4**,**0**00 and another **SC**a**T**tered layer at **25**,**0**00 feet. There is a **30**% **PROB**ability that between **12**00Z and **18**00Z on the **20**th, the visibility will be **5 S**tatute **M**iles in **T**hunder**S**torms with **RA**in and a ceiling of (**0**)**2**,**0**00 feet **B**ro**K**e**N** with **C**umulonim**B**us clouds. "**=**" signifies the end of the forecast data.

5) **Weather Depiction Charts** are valuable for determining general weather conditions for flight planning. Weather Depiction Charts are computer prepared from METARs to give a broad overview of observed weather at the valid time of the chart.

6) **Radar Summary Charts** show lines and areas of precipitation and thunderstorms. Weather radar cannot detect ceilings, fog, or clouds.

7) Weather Briefings

a) When requesting a briefing, you should identify yourself as a pilot, that you are flying VFR, and give clear and concise facts about your flight:

i) Aircraft identification or pilot's name
ii) Aircraft type
iii) Departure point
iv) Proposed time of departure
v) Flight altitude(s)
vi) Route of flight
vii) Destination
viii) Estimated time en route (ETE)

b) A complete weather briefing calls for a **standard briefing**. If no preliminary weather information has been received, request a standard briefing.

c) To supplement mass disseminated data, request an **abbreviated briefing**.

i) To update a previous weather briefing, request an abbreviated briefing.

d) An **outlook briefing** should be requested when the estimated time of departure is six or more hours away.

Aircraft Instruments

1) Prior to takeoff, the altimeter should be set to the current local altimeter setting, if available, or the known elevation of the departure airport.
   a) Altimeter setting is the value to which the barometric pressure scale of the altimeter is set so the altimeter indicates true altitude at field elevation.
   b) Pressure levels are raised on warm days and the indicated altitude is lower than true altitude.
      i) This is referring to a vertical raising of the pressure levels, NOT an increase in pressure.
2) If the static vents become clogged, the altimeter and vertical speed indicator will become inoperative while the airspeed indicator will be inoperative in the sense that it is no longer accurate after you change altitudes. If the pitot tube becomes clogged, the airspeed indicator alone will become inoperative.

Aeromedical

1) Large accumulations of **carbon monoxide** in the human body result in loss of muscle power and can lead to unconsciousness. Susceptibility to carbon monoxide poisoning increases as altitude increases.

Federal Aviation Regulations

Certification Categories vs. Classes

Type of Certification	Category Examples	Class Examples
With respect to the certification of **Airmen**	Airplane, Rotorcraft, Glider, Lighter-Than-Air, Powered-Lift	Single-Engine Land, Single-Engine Sea, Multiengine Land, Multiengine Sea
With respect to the certification of **Aircraft**	Normal, Utility, Acrobatic	Airplane, Helicopter, Glider, Hot Air Balloon

Collision Avoidance

1) Prior to starting each maneuver, pilots should visually scan the entire area for collision avoidance.
2) Haze causes all traffic and terrain features to appear to be farther away than their actual distance.

Light Signals

Color and Type of Signal	On the Ground	In Flight
STEADY GREEN	Cleared for takeoff	Cleared to land
FLASHING GREEN	Cleared to taxi	Return for landing (to be followed by steady green at proper time)
STEADY RED	Stop	Give way to other aircraft and continue circling
FLASHING RED	Taxi clear of landing area (runway) in use	Airport unsafe--do not land
FLASHING WHITE	Return to starting point on airport	
ALTERNATING RED & GREEN	General Warning Signal--Exercise Extreme Caution	

Volume 4 – Sport Pilot Performance

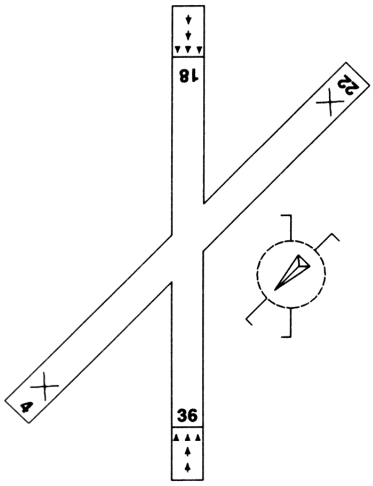
Airport Lighting & Marking

1) An airport's rotating beacon operating during daylight hours indicates that weather in **Class B, C, & D airspace** and **Class E airspace designated for an airport** is below basic VFR weather minimums.

2) At airports without an operating control tower, a segmented circle, if installed, is designed to provide traffic pattern information. Unless otherwise indicated, the traffic pattern will be flown using turns to the left. If there is a variation to the normal left-hand traffic pattern, traffic pattern indicators will be used to indicate direction of turns.

3) The Airport Diagram to the right illustrates runway orientation and shows a segmented circle with a tetrahedron wind indicator.

Airport Diagram



   a) The segmented circle indicates that there is right hand traffic for Runway 18 and there is left hand traffic for Runway 36. Runway 4-22 is closed as indicated by the "X" at the approach end of each runway. Runways 18 and 36 have displaced thresholds. The "threshold" is the beginning of the runway available and suitable for the landing of the aircraft. A "displaced threshold" is not at the beginning of the runway pavement, but located down the runway.

Collision Avoidance

1) During climbs and descents anywhere, the pilot should execute gentle banks, left and right, to permit continuous scanning of the airspace.

2) Most aircraft are required to have an approved anti-collision light system (the flashing red light, or approved strobe light). An aircraft equipped with such lights may not be operated unless the system is lighted.

3) Radar controllers give the position of traffic in reference to the configuration of a 12 hour clock. 12 o'clock is straight ahead, 3 o'clock is off the right wingtip, 6 o'clock is off the tail, and 9 o'clock is off the left wingtip.

Publications

1) The Common Traffic Advisory Frequency (CTAF) may be a tower frequency (while the tower is not in operation), an **FSS frequency, UNICOM,** or **MULTICOM**.

   a) UNICOM is a non-government communication facility to provide airport information at certain airports. Unless otherwise indicated, 122.8 is the standard Unicom frequency.

   b) MULTICOM is a mobile service to conduct activities by or directed from private aircraft, standard frequency is 122.9 for airports with no control tower, FSS, or UNICOM and is 122.95 for those with a control tower or FSS.

2) The correct method of stating 4,500 feet MSL to ATC is "Four Thousand Five Hundred."

3) If flying HAWK N666CB, the proper phraseology for initial contact with McAlester FSS is "McAlester Radio, Hawk Six Six Six Charlie Bravo, receiving Ardmore VORTAC, over."4) FAA Advisory Circulars contain information of a non-regulatory nature, but of interest to pilots.

   a) Advisory Circulars containing matter covering the subject of Airmen are issued under subject number **60**.

   b) Advisory Circulars containing matter covering the subject of Airspace are issued under subject number **70**.

   c) Advisory Circulars containing matter covering the subjects of Air Traffic Control and General Operating Rules are issued under subject number **90**.

5) A VFR flight plan should be closed at the completion of the flight at the destination airport by notifying the nearest FSS.

   a) If more than one cruising altitude is intended on a flight, enter the initial cruising altitude on your flight plan.

   b) For a VFR day flight, enter the name of destination airport if no stopover for more than 1 hour is anticipated.

   c) List the amount of usable fuel on board expressed in time.

Weather Theory

1) Friction between the wind and the surface results in wind at 5,000 feet AGL to be southwesterly when the surface wind is southerly.

2) Icing
   a) Conditions necessary for structural icing to form are:
      i) Visible moisture.
      ii) Temperature below freezing at the point of impact.
   b) Aircraft structural ice is most likely to have the highest accumulation rate in freezing rain.

3) Stability
   a) Warming from below will decrease the stability of an air mass.

4) Clouds
   a) The suffix nimbus, used in naming clouds, means a rain cloud.
   b) Cumulonimbus clouds have the greatest turbulence.
   c) Moist, stable air flowing upslope can be expected to produce stratus type clouds.
   d) An unstable air mass forced upward will produce clouds with considerable vertical development and associated turbulence.

5) Thunderstorms are obscured by massive cloud layers when a convective SIGMET forecasts embedded thunderstorms.

6) Possible mountain wave turbulence can be anticipated when winds of 40 knots or greater blow across a mountain ridge, and air is stable.

Weather Data

1) A **PIREP** is a Pilot Weather Report. An example of a PIREP is shown and explained below:

PIREP – Pilot Weather Report

UA/OV KOKC-KTUL/TM 1800/FL120/TP BE90/SK BKN018-TOP055/OVC072-TOP089/ CLR ABV/TA M7/WV 08021/TB LGT 055-072/IC LGT-MOD RIME 072-089

   a) This is a (UA) PIREP from an aircraft (/OV KOKC-KTUL) between Oklahoma City and Tulsa at (/TM 1800) 1800 UTC, altitude (/FL 120) 12,000 feet MSL, type of aircraft (/TP BE90) is a Beech 90. The aircraft reports (/SK BKN018-TOP055/OVC072-TOP089/CLR ABV) bases of broken clouds at 1,800 MSL with tops of that layer at 5,500 feet MSL, base of a second layer of clouds which are overcast is at 7,200 feet MSL, tops at 8,900 MSL, clear above. The temperature is (/TA M7) minus 7° Celsius, and the wind is (/WV 08021) 080° at 21 knots. This aircraft reported (/TB LGT 055-072) light turbulence existed between 5,500 feet MSL and 7,200 feet MSL along with (/IC LGT-MOD RIME 072-089) light to moderate rime icing between 7,200 feet MSL and 8,900 feet MSL.

Aircraft Performance

1) Propeller efficiency is directly related to the amount of air it accelerates. In other words, less air, less propulsion.
   a) High density altitude reduces propeller efficiency because the propeller exerts less force at high density altitudes than at low density altitudes.

2) Fewer air molecules at a given level in the atmosphere due to warmer than standard temperatures, lower than standard pressures, or higher humidity, will cause density altitude to be higher.

Aerodynamics

1) V_{FE} represents maximum flap extended speed.
2) V_{NO} is defined as the maximum structural cruising speed.
3) V_{NE} means the never exceed speed.
4) V_A is defined as design maneuvering speed.
5) V_S is the stalling speed or minimum steady flight speed at which the airplane is controllable.
6) V_{S0} is the stalling speed or minimum steady flight speed in the landing configuration.
7) V_X provides the greatest gain in altitude in the shortest distance (best angle of climb).
8) V_Y is used to gain the most altitude in a given period of time (best rate of climb).
9) V_H is the maximum speed in level flight with maximum continuous power.

Volume 5 – Your Sport Pilot Test

Federal Aviation Regulations

1) For all flights away from the vicinity of an airport, preflight action shall include an alternate course of action if the flight cannot be completed as planned. Regulations specifically require the pilot in command to determine runway lengths at airports of intended use and the aircraft's takeoff and landing distance data.

2) The speed limit below 10,000 feet MSL is **250** knots (288 mph). Beneath the lateral limits of **Class B airspace** and in a VFR (Visual Flight Rules) corridor through **Class B airspace** the speed limit is **200** knots (230 mph). The speeds referred to are indicated airspeeds (IAS).

3) Flight over a densely populated area is normally prohibited when operating a restricted category civil aircraft.
   a) No person may operate an aircraft that has an experimental certificate along a congested airway (unless otherwise specifically authorized).

Navigation

1) Tabulations of parachute jump areas in the U.S. are contained in the Airport/Facility Directory (A/FD).

2) An A/FD listing for an airport including "**VHF/DF**" indicates FAA facilities located at the airport have Very High Frequency Direction Finding equipment. The VHF/DF equipment shows the magnetic direction of the aircraft from the ground station each time the aircraft transmits. This capability is used to locate lost aircraft.

3) To use VHF/DF facilities for assistance in locating an aircraft's position, the aircraft must have a VHF transmitter and receiver.

Airspace

> **NOTE:** *A Sport Pilot may not act as pilot in command in any airspace which requires communication with air traffic control without an appropriate endorsement nor in airspace above 10,000' MSL or 2,000' AGL (whichever is higher). The following material concerning airspace is presented in order to provide a* ***complete*** *understanding of the* ***entire*** *National Airspace System.*

1) There are four broad divisions of airspace. They are **Controlled, Uncontrolled, Special Use,** and **Other** airspace.

2) **Controlled** airspace is supported by air navigation aids, ground to air communication, and air traffic control services. **Controlled** airspace consists of **Class A, B, C, D,** and **E** airspace.

3) The United States does not have any airspace equivalent to the International Civil Aviation Organization's (ICAO) Class F.

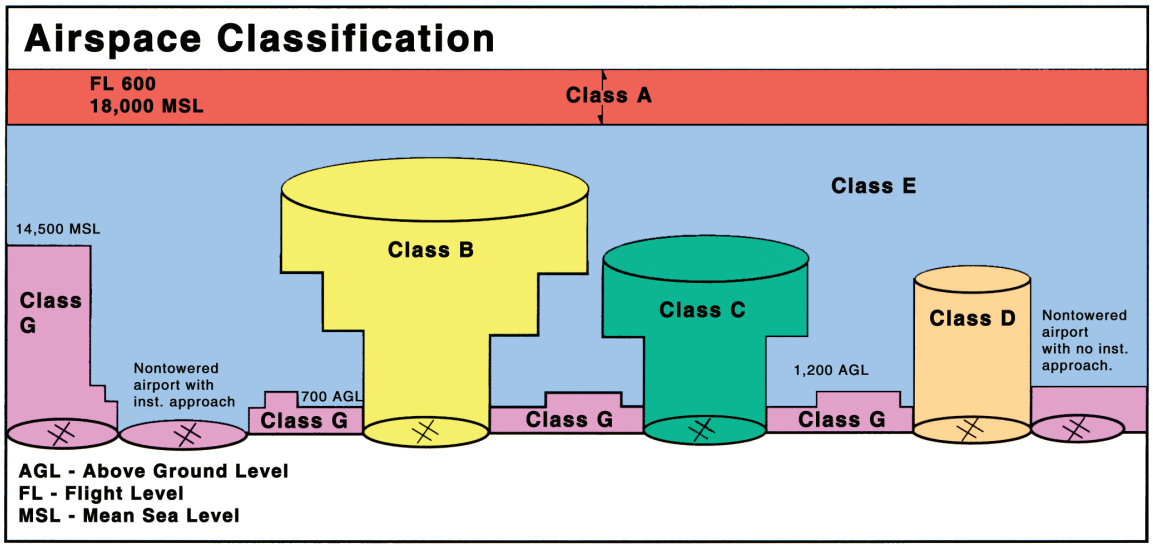
4) **Class G** is uncontrolled airspace where ATC has neither the authority nor the responsibility for controlling aircraft.

5) **Special Use Airspace** consists of Prohibited, Restricted, Warning, Military Operations, Alert, and Controlled Firing Areas.
   a) **Prohibited Areas** specifically prohibit aircraft flight.
   b) **Restricted Areas** are defined as airspace where aircraft flight is subject to restrictions.
      i) Pilots may fly through a restricted area with the controlling agency's authorization.
   c) **Warning Areas** are in international airspace. Activities in Warning Areas may be hazardous to non-participating aircraft.
      i) Unusual, often invisible hazards such as aerial gunnery or guided missiles over international waters may exist in Warning Areas.
   d) **Military Operations Areas** (MOAs) are segments of airspace defined by vertical and lateral limits used to segregate military training activities from aircraft operating under IFR.
      i) High-density military training activities may exist in MOAs.
      ii) When operating under VFR in a MOA, a pilot should exercise extreme caution when military activity is being conducted.
   e) **Alert Areas** are depicted on charts to warn pilots of a high volume of pilot training or other unusual aerial activity.
      i) Responsibility for collision avoidance in an alert area rests with **all pilots**.
   f) **Controlled Firing Areas** have activities that, if not controlled, would be hazardous to non-participating aircraft.
      i) Activities are suspended immediately when spotter aircraft, radar, or ground lookout positions indicate an aircraft might be approaching the area.

6) **Other Airspace** designations <u>are not airspace classifications</u> but could be <u>within</u> any of the classes of airspace.
   a) An **Airport Advisory Area** is the area within 10 statute miles of an airport where an FSS is located and a control tower is not operating.
      i) Prior to entering an Airport Advisory Area, a pilot should contact the local FSS for airport and traffic advisories.
   b) **Military Training Routes** (MTRs) are mutually developed by the FAA and the Department of Defense.
      i) MTRs designated "IR" indicate a route to be flown IFR regardless of weather. "VR" routes are to be flown VFR and only with a visibility and ceiling greater than 5 miles and 3000 feet, respectively.
      ii) A 3-digit number identifies a route used above 1,500 feet AGL, and a 4-digit number identifies a route used below 1,500 AGL.
   c) **Terminal Radar Service Areas** (TRSAs) are established to provide radar separation of participating VFR aircraft and all aircraft operating under Instrument Flight Rules.
      i) Stage III service in the terminal radar program provides sequencing and separation for participating VFR aircraft. Participation is not mandatory.
      ii) Prior to entering a **TRSA**, a pilot should contact approach control on the appropriate frequency if radar traffic information is desired.
      iii) **TRSA**s are depicted on charts with a <u>solid black line</u>.
      iv) **TRSA**s, as entities, <u>are not</u> an airspace class.

7) Transponders
   a) An operable transponder with Mode C (an encoding altimeter) is required:
      i) In **Class A, B,** and **C** airspace.
      ii) Within 30 miles of a **Class B** primary airport from the surface upward to 10,000 ft. MSL, with certain exceptions.
      iii) In all airspace above the ceiling and within the lateral boundaries of a **Class B** or **Class C** airspace area designated for an airport upward to 10,000 ft. MSL.
      iv) In all airspace of the 48 contiguous states and the District of Columbia at and above 10,000 feet MSL, excluding the airspace at and below 2,500 feet above the surface.

Controlled and Uncontrolled Airspace Classifications



Airspace	Class A	Class B	Class C	Class D	Class E	Class G
Entry Requirements	IFR clearance	ATC clearance	Prior two-way communications	Prior two-way communications	None	None
Minimum Pilot Qualifications	Instrument Rating	Private or Student certification. Local restrictions apply	Student certificate	Student certificate	Student certificate	Student certificate
Two-Way Radio Communications	Yes	Yes	Yes	Yes	Not required	Not required
Special VFR Allowed	No	Yes	Yes	Yes	Yes	N/A
VFR Visibility Minimum	N/A	3 statute miles	3 statute miles	3 statute miles	3 statute miles*	1 statute mile**
VFR Minimum Distance from Clouds	N/A	Clear of clouds	500' below, 1,000' above, 2,000' horizontal	500' below, 1,000' above, 2,000' horizontal	500' below,* 1,000' above, 2,000' horizontal	Clear of clouds**
VFR Aircraft Separation	N/A	All	IFR aircraft	Runway Operations	None	None
Traffic Advisories	Yes	Yes	Yes	Workload permitting	Workload permitting	Workload permitting
Airport Application	N/A	•Radar •Instrument Approaches •Weather •Control Tower •High Density	•Radar •Instrument Approaches •Weather •Control Tower	•Instrument Approaches •Weather •Control Tower	•Instrument Approaches •Weather	

*Only true below 10,000 feet.
**Only true during day at or below 1,200 feet AGL (see 14 CFR part 91).

Section 3 – Appendices and Supplemental Material

Appendix A – Airworthiness Requirements for VFR Flight

1) Special Light Sport Aircraft (S-LSA airplanes) must meet the equipment requirements defined in ASTM F 2245, the Standard Specification for Design and Performance of a Light Sport Airplane. This standard requires the following:
   a) Airspeed indicator.
   b) Altimeter.
   c) Fuel quantity indicator.
   d) Tachometer (RPM).
   e) Engine "kill" switch.
   f) Engine instruments that the engine manufacturer requires.
   g) If an electrical system is installed it must include a master switch and devices to protect the system from overload (fuses or circuit breakers).
   h) The electric wiring must be the appropriate size.
   i) The battery installation must be secure and the battery containers must be vented outside of the airplane.
   j) There must be a seat belt and harness for each occupant and adequate means to restrain the baggage.

2) The following instruments and equipment are required by 14 CFR § 91.205 for a flight in an airplane under day VFR conditions for powered civil aircraft with standard category U.S. airworthiness certificates:
   a) Airspeed indicator.
   b) Altimeter.
   c) Magnetic direction indicator.
   d) Tachometer for each engine.
   e) Oil pressure gauge for each engine using a pressure system.
   f) Temperature gauge for each liquid-cooled engine.
   g) Oil temperature gauge for each air-cooled engine.
   h) Manifold pressure gauge for each altitude engine.
   i) Fuel gauge indicating the quantity of fuel in each tank.
   j) Landing gear position indicator, if the aircraft has a retractable landing gear.
   k) For small civil airplanes certificated after March 11, 1996, an approved aviation red or aviation white anticollision light system.
   l) If the aircraft is operated for hire over water and beyond power-off gliding distance from shore, approved flotation gear readily available to each occupant and at least one pyrotechnic signaling device.
   m) An approved safety belt with an approved metal-to-metal latching device for each occupant 2 years of age or older.
   n) For small civil airplanes manufactured after July 18, 1978, an approved shoulder harness for each front seat.
   o) An emergency locator transmitter, if required by 14 CFR Section 91.207.
   p) For normal, utility, and acrobatic category airplanes with a seating configuration, excluding pilot seats, of 9 or less, manufactured after December 12, 1986, a shoulder harness for all forward or aft facing seats. Seats facing other directions must afford the same level of protection.

2) The following instruments and equipment are required for a flight in an airplane under night VFR conditions:
   a) All equipment and instruments required for day VFR.
   b) Approved position lights.
   c) An approved aviation red or aviation white anticollision light system.
   d) If the aircraft is operated for hire, one electric landing light.
   e) An adequate source of electrical energy for all installed electrical and radio equipment.
   f) One spare set of fuses, or three spare fuses of each kind required, that are accessible to the pilot in flight.

3) When an airplane has inoperative equipment, the pilot's required actions will differ depending on whether or not the aircraft has an approved Minimum Equipment List (MEL) and letter of authorization.
   a) The letter of authorization is issued by the FAA Flight Standards district office having jurisdiction over the area in which the operator is located and authorizes operation of the aircraft under the MEL. The MEL and the letter of authorization constitute a supplemental type certificate for the aircraft and must be in the airplane.
   b) If an airplane has an approved MEL, the aircraft must be operated in accordance with the provisions of the MEL.
4) If no Minimum Equipment List is available and the airplane is small and not turbine powered, the pilot may elect to conduct the operation with the inoperative equipment under certain conditions.
   a) The inoperative instruments and equipment must not:
      i) Be required by the airworthiness regulations under which the aircraft was type certificated.
      ii) Be indicated as required on the aircraft's equipment list, or on the Kinds of Operations Equipment List for the kind of flight operation being conducted.
      iii) Be required by 14 CFR § 91.205 or any other rule for the specific kind of flight operation being conducted.
      iv) Be required to be operational by an airworthiness directive.
      v) Constitute a hazard to the aircraft as determined by a pilot, who is certificated and appropriately rated under 14 CFR Part 61, or by a person, who is certificated and appropriately rated to perform maintenance on the aircraft.
   b) The inoperative instruments and equipment must be handled in one of the following ways:
      i) It must be removed from the aircraft, the cockpit control placarded, and the maintenance recorded in accordance with applicable regulations.
      ii) It must be deactivated and placarded "Inoperative." If deactivation of the inoperative instrument or equipment involves maintenance, it must be accomplished and recorded in accordance with applicable regulations.
      iii) Though generally required for VFR operations, operation of the aircraft may continue to a location where repairs or replacement can be made for the failure of any light of the anticollision light system.
5) A special flight permit may be issued for an aircraft that may not currently meet applicable airworthiness requirements but is capable of safe flight, for the following purposes:
   a) Flying the aircraft to a base where repairs, alterations, or maintenance are to be performed, or to a point of storage.
   b) Delivering or exporting the aircraft.
   c) Production flight testing new production aircraft.
   d) Evacuating aircraft from areas of impending danger.
   e) Conducting customer demonstration flights in new production aircraft that have satisfactorily completed production flight tests.
6) A special flight permit may also be issued to authorize the operation of an aircraft at a weight in excess of its maximum certificated takeoff weight for flight beyond the normal range over water, or over land areas where adequate landing facilities or appropriate fuel is not available. The excess weight that may be authorized under this paragraph is limited to the additional fuel, fuel-carrying facilities, and navigation equipment necessary for the flight.
7) The issuance of a special flight permit requires an applicant to submit a statement in a manner acceptable to the FAA Administrator with the following information:
   a) The purpose of the flight.
   b) The proposed itinerary.
   c) The crew required to operate the aircraft and its equipment.
   d) The ways, if any, in which the aircraft does not comply with the applicable airworthiness requirements.
   e) Any restriction the applicant considers necessary for safe operation of the aircraft.
   f) Any other information considered necessary by the Administrator for the purpose of prescribing operating limitations.

8) The Administrator may make, or require the applicant to make appropriate inspections or tests necessary for safety.

9) Airworthiness Directives (ADs) are regulatory notices issued by the FAA requiring the correction or prevention of an unsafe condition found in a *certified* aircraft, aircraft engine, propeller, or appliance.
   a) The unsafe condition may be the result of a design defect, a maintenance issue, or other causes.
   b) 14 CFR Part 39 defines the authority and responsibility of the FAA Administrator with regard to ADs.
   c) ADs must be complied with unless a specific exemption is received from the Administrator.
   d) The aircraft owner or operator is responsible for ensuring compliance with applicable ADs.

10) ADs may be divided into two categories:
   a) Those of an emergency nature requiring immediate compliance.
   b) Those of a less urgent nature requiring compliance within a specified period of time.

11) The regulations require that a record be maintained showing the current status of the applicable ADs. This record must include:
   a) The method of compliance.
   b) The signature and certificate number of the repair station or mechanic who performed the work.
   c) This record is typically found in the aircraft logbooks.

12) A summary of the valid Airworthiness Directives is available from the FAA.

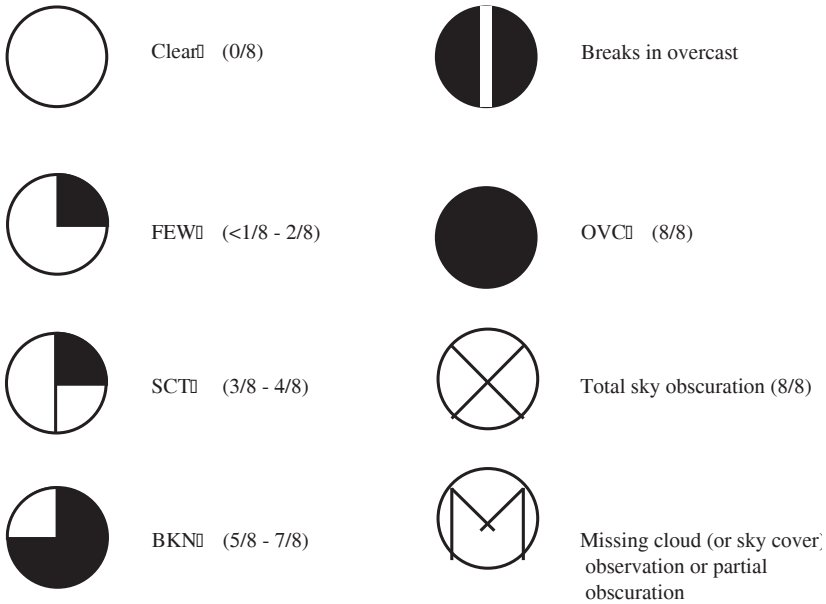
13) Safety Directives (SDs) are similar to ADs but are issued by *special light-sport aircraft* manufacturers to correct conditions that may adversely affect safety of flight for aircraft that are already in service.
   a) 14 CFR § 91.327(a)(4) requires compliance with all Safety Directives.
   b) 14 CFR § 91.327(a)(4) allows the owner or operator to utilize an alternative method of compliance approved by the manufacturer or obtain an FAA waiver under certain conditions.

14) Aircraft having a special airworthiness certificate in the light-sport category are subject to the following operating limitations:
   a) May not be used for compensation or hire except to tow a glider or unpowered ultralight or to conduct flight training.
   b) The aircraft must be maintained by an appropriately rated repairman, mechanic, or repair station including completion of a condition inspection every 12 calendar months and compliance with applicable ADs and/or SDs.
   c) Modifications after the aircraft's date of manufacture must meet applicable consensus standards and be authorized by either the manufacturer or a person acceptable to the FAA. The maintenance and inspection procedures used for the modification must approved by the manufacturer or a person acceptable to the FAA.
   d) When used to tow a glider or unpowered ultralight or to conduct flight training for compensation or hire, the aircraft must have been inspected and approved for return to service by an appropriately rated repairman, mechanic, or repair station within the preceding 100 hours of time in service (unless the original airworthiness certificate was issued within that time period).
   e) The aircraft must be operated in accordance with its operating instructions, including any provisions for necessary operating equipment specified in the aircraft's equipment list.
   f) Passengers must be advised of the special nature of the aircraft and that the aircraft does not meet the airworthiness requirements for an aircraft issued a standard airworthiness certificate.
   g) The FAA may prescribe additional limitations that it considers necessary.

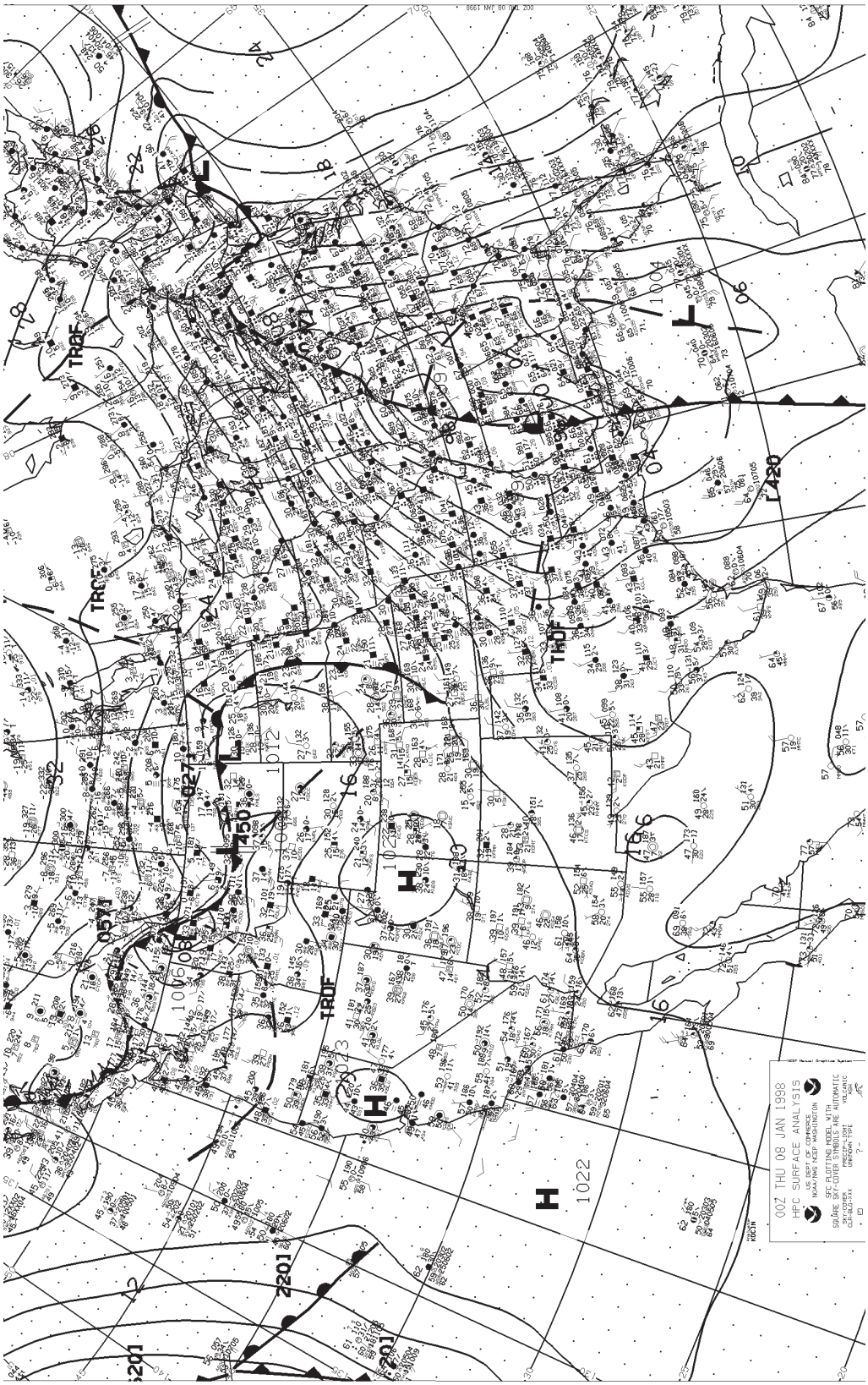
Appendix B – Additional Weather Information

1) Surface Analysis Chart
   a) The surface analysis chart is a computer-generated chart, with frontal analysis by forecasters from the Hydrometeorolgical Prediction Center (HPC) in Camp Springs, Maryland.
   b) It is transmitted every 3 hours and covers the contiguous 48 states and adjacent areas.
   c) The surface analysis chart provides a ready means of locating pressure systems and fronts and it gives an overview of winds, temperatures, and dew point temperatures at chart time.
   d) Keep in mind that this chart is historical in nature and shows the conditions at the time the chart was created.
   e) Use the surface analysis chart in conjunction with other information to give a more complete weather picture.

Sky Cover Symbols



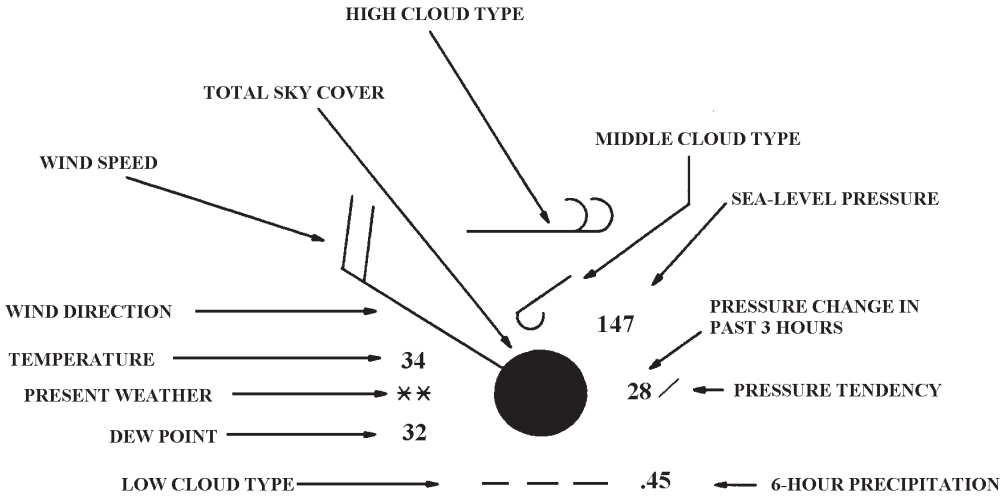
Surface Analysis Chart



Symbols on Surface Analysis Chart

Color	Symbol	Description
Blue	H	High Pressure Center
Red	L	Low Pressure Center
Blue		Cold Front
Red		Warm Front
Red/Blue		Stationary Front
Purple		Occluded Front
Blue		Cold Frontogenesis
Red		Warm Frontogenesis
Red/Blue		Stationary Frontogenesis
Blue		Cold Frontolysis
Red		Warm Frontolysis
Red/Blue		Stationary Frontolysis
Purple		Occluded Frontolysis
Purple		Squall Line
Brown		Dryline
Brown		Trough
Yellow		Ridge

Station Model and Explanation



1. **Total sky cover: Overcast.**
2. **Temperature: 34 degrees F, Dew Point: 32 degrees F.**
3. **Wind: From the northwest at 20 knots (relative to true north).**

Examples of wind direction and speed

4. **Present Weather: Continuous light snow.**
5. **Predominate low, middle, high cloud reported: Strato fractus or cumulus fractus of bad weather, altocumulus in patches, and dense cirrus.**
6. **Sea-level pressure: 1,014.7 millibars (mbs).**
   NOTE: Pressure is always shown in three digits to nearest tenth of an mb. For 1,000 mbs or greater, prefix a "10" to the three digits. For less than 1,000 mbs, prefix a "9" to the three digits.
7. **Pressure change in the past 3 hours: Increased steadily or unsteadily by 2.8 mbs. The actual change is in tenths of a mb.**
8. **6 - hour precipitation in hundredths of an inch: 45 hundredths of an inch.**

Type of Front

Code Figures	Descriptions
0	Quasi-stationary at surface
2	Warm front at surface
4	Cold front at surface
6	Occlusion
7	Instability line

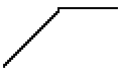
Intensity of Front

Code Figures	Descriptions
0	No specification
1	Weak, decreasing
2	Weak, little, or no change
3	Weak, increasing
4	Moderate, decreasing
5	Moderate, little, or no change
6	Moderate, increasing
7	Strong, decreasing
8	Strong, little, or no change
9	Strong, increasing

Character of Front

Code Figures	Descriptions
0	No specification
5	Forming or existence expected
6	Quasi-stationary
7	With waves
8	Diffuse

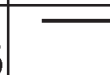
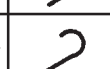
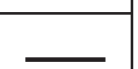
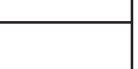
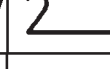
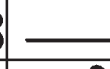
Pressure Tendencies

Description of Characteristic			
Primary Requirements	**Additional Requirements**	**Graphic**	**Code Figure**
Higher Atmospheric pressure now higher than 3 hours ago.	Increasing, then decreasing		0
	Increasing, then steady; or Increasing, then increasing more slowly		1
	Increasing; steadily or unsteadily		2
	Decreasing; or steady, then increasing; or Increasing, then increasing more rapidly		3
	Increasing, then decreasing		0
Same Atmospheric pressure now same as 3 hours ago.	Steady		4
	Decreasing, then increasing		5
Lower Atmospheric pressure now lower than 3 hours ago.	Decreasing, then increasing		5
	Decreasing, then steady; or Decreasing, then decreasing more slowly		6
	Decreasing; steadily or unsteadily		7
	Steady; or increasing, then decreasing; or Decreasing, then decreasing more rapidly		8

Present Weather Symbols

	0	1	2	3	4	5	6	7	8	9
00	Cloud development NOT observed or NOT observable during past hour.	Clouds generally dissolving or becoming less developed during past hour.	State of the sky on the whole unchanged during past hour.	Clouds generally forming or developing during past hour.	Visibility reduced by smoke.	Visibility reduced by haze.	Widespread dust in suspension in the air, NOT raised by the wind at time of observation.	Dust or sand raised by wind at time of observation.	Well developed dust devil(s) within past hour.	Dust storm or sandstorm within sight of or at station during past hour.
10	Light fog.	Patches of shallow fog at station, NOT deeper than 6 feet on land.	More or less continuous shallow fog at station, NOT deeper than 6 feet on land.	Lightning visible, no thunder heard.	Precipitation within sight, NOT reaching the ground.	Precipitation within sight, reaching the ground but distant from station.	Precipitation within sight, reaching the ground near to but NOT at station.	Thunder heard, but no precipitation at the station.	Squall(s) within sight during past hour.	Funnel cloud(s) within sight during past hour.
20	Drizzle (NOT freezing and NOT falling as showers) during past hour, but NOT at time of observation.	Rain (NOT freezing and NOT falling as showers) during past hour, but NOT at time of observation.	Snow (NOT falling as showers) during past hour, but NOT at time of observation.	Rain and snow (NOT falling as showers) during past hour, but NOT at time of observation.	Freezing drizzle or freezing rain (NOT falling as showers) during past hour, but NOT at time of observation.	Showers of rain during past hour, but NOT at time of observation.	Showers of snow, or of rain and snow, during past hour, but NOT at time of observation.	Showers of hail, or of hail and rain, during past hour, but NOT at time of observation.	Fog during past hour, but NOT at time of observation	Thunderstorm (with or without precipitation) during past hour, but NOT at time of observation.
30	Slight or moderate dust storm or sandstorm, has decreased during past hour.	Slight or moderate dust storm or sandstorm, no appreciable change during past hour.	Slight or moderate dust storm or sandstorm, has increased during past hour.	Severe dust storm or sandstorm, has decreased during past hour.	Severe dust storm or sandstorm, no appreciable change during past hour.	Severe dust storm or sandstorm, has increased during past hour.	Slight or moderate drifting snow, generally low.	Heavy drifting snow, generally low.	Slight or moderate drifting snow, generally high.	Heavy drifting snow, generally high.
40	Fog at distance at time of observation, but NOT at station during past hour.	Fog in patches.	Fog, sky discernible, has become thinner during past hour.	Fog, sky NOT discernible, has become thinner during past hour.	Fog, sky discernible, no appreciable change during past hour.	Fog, sky NOT discernible, no appreciable change during past hour.	Fog, sky discernible, has begun or become thicker during past hour.	Fog, sky NOT discernible, has begun or become thicker during past hour.	Fog, depositing rime, sky discernible.	Fog, depositing rime, sky NOT discernible.
50	Intermittent drizzle (NOT freezing), slight at time of observation.	Continuous drizzle (NOT freezing), slight at time of observation.	Intermittent drizzle (NOT freezing), moderate at time of observation.	Continuous drizzle (NOT freezing), moderate at time of observation.	Intermittent drizzle (NOT freezing), thick at time of observation.	Continuous drizzle (NOT freezing), thick at time of observation.	Slight freezing drizzle.	Moderate or thick freezing drizzle.	Drizzle and rain, slight.	Drizzle and rain, moderate or heavy.
60	Intermittent rain, (NOT freezing), slight at time of observation.	Continuous rain, (NOT freezing), slight at time of observation.	Intermittent rain, (NOT freezing), moderate at time of observation.	Continuous rain, (NOT freezing), moderate at time of observation.	Intermittent rain, (NOT freezing), heavy at time of observation.	Continuous rain, (NOT freezing), heavy at time of observation.	Slight freezing rain.	Moderate or heavy freezing rain.	Rain or drizzle and snow, slight.	Rain or drizzle and snow, moderate or heavy.
70	Intermittent fall of snowflakes, slight at time of observation.	Continuous fall of snowflakes, slight at time of observation.	Intermittent fall of snowflakes, moderate at time of observation.	Continuous fall of snowflakes, moderate at time of observation.	Intermittent fall of snowflakes, heavy at time of observation.	Continuous fall of snowflakes, heavy at time of observation.	Ice needles (with or without fog).	Granular snow (with or without fog).	Isolated starlike snow crystals (with or without fog).	Ice pellets (sleet, U.S. definition).
80	Slight rain shower(s).	Moderate or heavy rain shower(s).	Violent rain shower(s).	Slight shower(s) of rain and snow mixed.	Moderate or heavy shower(s) of rain and snow mixed.	Slight snow shower(s).	Moderate or heavy snow shower(s).	Slight shower(s) of soft or small hail with or without rain, or rain and snow mixed.	Moderate or heavy shower(s) of soft or small hail, with or without rain, or rain and snow mixed.	Slight shower(s) of hail, with or without rain, or rain and snow mixed, NOT associated with thunder.
90	Moderate or heavy shower(s) of hail, with or without rain, or rain and snow mixed, NOT associated with thunder.	Slight rain at time of observation, thunderstorm during past hour, but NOT at time of observation.	Moderate or heavy rain at time of observation, thunderstorm during past hour, but NOT at time of observation.	Slight snow or rain and snow mixed or hail at time of observation, thunderstorm during past hour, but NOT at time of observation.	Moderate or heavy snow, or rain and snow mixed or hail at time of observation, thunderstorm during past hour, but NOT at time of observation.	Slight or moderate thunderstorm without hail, but with rain and/or snow at time of observation.	Slight or moderate thunderstorm with hail at time of observation.	Heavy thunderstorm, without hail, but with rain and/or snow at time of observation.	Thunderstorm, combined with dust storm or sandstorm at time of observation.	Heavy thunderstorm, with hail at time of observation.

Cloud Symbols

CLOUD ABBREVIATION		C_L	DESCRIPTION (Abridged from W.M.O. Code)		C_M	DESCRIPTION (Abridged from W.M.O. Code)		C_H	DESCRIPTION (Abridged from W.M.O. Code)
St or Fs - Stratus or Fractostratus	1		Cu, fair weather, little vertical development and flattened	1		Thin As (most of cloud layer is semitransparent)	1		Filaments of Ci, or "mares tails," scattered and not increasing
Ci - Cirrus	2		Cu, considerable development, towering with or without other Cu or Sc bases at same level	2		Thick As, greater part sufficiently dense to hide sun (or moon), or Ns	2		Dense Ci in patches or twisted sheaves, usually not increasing, sometimes like remains of Cb; or towers tufts
Cs - Cirrostratus	3		Cb with tops lacking clearcut outlines, but distinctly not cirroform or anvil shaped; with or without Cu, Sc, or St	3		Thin Ac, mostly semitransparent; cloud elements not changing much at a single level	3		Dense Ci, often anvil shaped derived from or associated Cb
Cc - Cirrocumulus	4		Sc formed by spreading out of Cu; Cu often present also	4		Thin Ac in patches; cloud elements continually changing and/or occurring at more than one level	4		Ci, often hook shaped gradually spreading over the sky and usually thickening as a whole
Ac - Altocumulus	5		Sc not formed by spreading out of Cu	5		Thin Ac in bands or in a layer gradually spreading over sky and usually thickening as a whole	5		Ci and Cs, often in converging bands or Cs alone; generally overspreading and growing denser; the continuous layer not reaching 45 altitude
As - Altostratus	6		St or Fs or both, but no Fs of bad weather	6		Ac formed by the spreading out of Cu	6		Ci and Cs, often in converging bands or Cs alone; generally overspreading and growing denser; the continuous layer exceeding 45 altitude
Sc - Stratocumulus	7		Fs and/or Fc of bad weather (scud)	7		Double-layered Ac, or a thick layer of Ac, not increasing; or Ac with As and/or Ns	7		Veil of Cs covering the entire sky
Ns - Nimbostratus Cu or Fc - Cumulus or Fractocumulus	8		Cu and Sc (not formed by spreading out of Cu) with bases at different levels	8		Ac in the form of Cu-shaped tufts or Ac with turrets	8		Cs not increasing and not covering the entire sky
Cb - Cumulonimbus	9		Cb having a clearly fibrous (cirroform) top, often anvil shaped, with or without Cu, Sc, St, or scud	9		Ac of chaotic sky, usually at different levels; patches of dense Ci are usually present	9		Cc alone or Cc with some Ci or Cs but the Cc being the main cirroform cloud

2) Automated Weather Observing System (AWOS) / Automated Surface Observing System (ASOS) / Automated Weather Sensor System (AWSS).
   a) These systems can provide up to the minute automated weather observations without the need for human intervention.
   b) The systems vary in capability with AWOS systems tending to be the least sophisticated. AWSS systems are the latest systems and provide data similar to ASOS installations.
   c) The weather information gathered by these systems may be disseminated via a radio or telephone recording. The information may also be used to produce an automated METAR for the station which is disseminated via the aviation weather system.
   d) Weather forecasters use the data produced by these systems to refine weather forecasts.

Appendix C – Additional Aeromedical Factors

1) **Motion sickness** is caused by continued stimulation of the inner ear, which controls the sense of balance.
2) Motion sickness symptoms are progressive. Pilots or passengers may experience:
   a) A loss of appetite.
   b) Saliva collecting in the mouth.
   c) Perspiration.
   d) Nausea / vomiting.
   e) Disorientation.
   f) Headaches.
3) If allowed to become severe, a pilot could become incapacitated by motion sickness.
4) When suffering from motion sickness:
   a) Open the air vents.
   b) Loosen clothing.
   c) Use oxygen if available.
   d) Try to focus on things outside of the airplane toward the horizon and minimize head movements.
   e) Terminate the flight as soon as practical.
5) A pilot should not use drugs intended to prevent motion sickness as they might have detrimental side effects.
6) **Dehydration** occurs when the human body does not get or retain the fluid it requires.
7) Dehydration symptoms include:
   a) A feeling of thirst.
   b) Dryness of the mouth, eyes, nose, and/or skin.
   c) Headache.
   d) Dizziness.
   e) Sleepiness.
   f) Cramps.
   g) Fatigue.
8) Prolonged dehydration can impair judgment and may lead to debilitating conditions.
9) Being in a hot and dry climate, breathing dry air or oxygen at altitude, being sick or sunburned, wearing improper clothing for hot conditions, eating salty foods, and the intake of diuretics such as drinks with caffeine or alcohol may contribute to the severity of dehydration.
10) Avoid dehydration while flying by drinking plenty of water, avoiding foods and drinks which promote the condition, and being dressed for the weather conditions.
11) **Hypothermia** is a potentially life-threatening condition in which the body cannot generate heat as fast as it is being lost allowing the deep body temperature to fall below 95º F.

12) Symptoms of possible hypothermia include:
    a) Confusion.
    b) Slurred speech.
    c) Uncoordinated movements / lack of physical control / weakness .
    d) Shivering.
    e) Altered vision.
    f) Withdrawn or bizarre behavior.
13) Heat loss resulting in hypothermia can be highly accelerated by wind chill with the open flight decks found on some LSAs.
14) A precursor symptom of exposure to wind chill that could eventually result in hypothermia is cold hands or feet. This cold feeling progesses to other parts of the body until the entire body feels cold.
15) Hypothermia can lead to unconsciousness and death.
16) Dressing warm and/or aircraft heating systems to help the pilot remain warm during flight will help prevent hypothermia. Motorcycle gloves and socks that run off the aircraft electric system may be useful in keeping warm in an open LSA.
17) In the event of a forced landing in cold temperatures, an appropriate survival kit will be a useful deterrent to hypothermia for the pilot of any type of aircraft.

Appendix D – Procedures for Handling Inadvertent Flight into Instrument Meteorological Conditions (IMC)

1) As a sport pilot, you are not required to receive any instruction in handling an aircraft solely by reference to instruments.
    a) IMC avoidance must be your primary objective!
        i) Your preflight analysis and decisions on the weather along with keeping up to date with changes while in flight are critical for this avoidance.
    b) A precautionary landing is more likely to have a positive outcome than flight in IMC by an untrained pilot.
    c) Per the FAA's Airplane Flying Handbook, "Accident statistics show that the pilot who has not been trained in attitude instrument flying, or one whose instrument skills have eroded, will lose control of the airplane in about 10 minutes once forced to rely solely on instrument reference."
        i) A more thorough treatment of this subject is available in the FAA's Airplane Flying Handbook and Instrument Flying Handbook.
        ii) While a careful review of these texts and this appendix may improve your chances of surviving an inadvertent IMC encounter, none are sufficient to make it safe or legal to intentionally enter IMC.
    d) Avoid flight into IMC as the outcome will likely not be positive!

2) If IMC is encountered, the steps necessary for surviving are:
   a) Recognition and acceptance of the seriousness of the situation and the need for immediate remedial action.
      i) As a sport pilot, you are in IMC conditions anytime you are unable to maintain airplane attitude control by reference to the natural horizon, regardless of the circumstances or the prevailing weather conditions.
      ii) You are, in effect, in IMC anytime you are unable to navigate or establish geographical position by visual reference to landmarks on the surface.
      iii) These situations must be accepted as a genuine emergency, requiring appropriate action.
   b) Maintaining control of the airplane.
      i) You must understand that your primary concern is to keep the wings level. Good bank control has the effect of making pitch control much easier. Use your attitude indicator!
      ii) Remember that control pressures cannot be felt with a tight grip. Use a light touch on the controls.
      iii) You must disregard the "seat of your pants" and believe what your attitude indicator is telling you about your aircraft's attitude.
   c) Obtaining the appropriate assistance in getting the airplane safely on the ground.
      i) If equipped, squawk 7700 on your transponder and call for help on your radio after tuning it to 121.50. Declare an emergency!

3) To improve your chances at emergency airplane attitude control, do the following:
   a) Trim the airplane with the elevator trim so that it will maintain hands-off level flight at your cruise airspeed.
   b) Do not over control the airplane. Keep your touch on the controls light and make all attitude changes smooth and small, yet with positive pressure.
   c) Use of any available aid in attitude control such as an autopilot or wing leveler.

4) If you must maneuver to return to VFR conditions, do so with great caution.
   a) When a turn must be made, use the smallest practical bank angle, in any case no more than a 10° bank angle.
      i) It may be helpful to turn a few degrees and then return to level flight if a large change in heading must be made.
      ii) Repeat the process until the desired heading is reached.
   b) If a climb is necessary, you should raise the miniature airplane on the attitude indicator no more than one bar width and apply power. Use proper rudder control to prevent disturbances in the yaw and roll axes.
   c) If a descent must be made, reduce the power slightly on your properly trimmed airplane and allow the pitch to decrease slightly to compensate for the loss of thrust. The pitch attitude should not exceed one bar width below level flight.
   d) You should avoid combining a climb or descent with a turn. This can increase the risk of control loss.
   e) If you are getting assistance from air traffic control after declaring an emergency, do not allow the controller to rush you during your maneuver. You are the pilot-in-command and responsible for the outcome of the flight.

5) Get the aircraft to visual conditions and land as soon as practicable.

Appendix E – Emergency and Survival Equipment

There are a number of emergency and survival products that may be available in your airplane. Items such as the Emergency Locator Transmitter are required by the regulations. Other products may include fire extinguishers, emergency flotation gear, equipment to protect you from the elements, or any number of other supplies. Regardless of the type of equipment on board, you should be familiar with its operation. Refer to the documentation supplied with the equipment for its operating instructions, servicing requirements, and safe storage methods.

The type of emergency and survival equipment you should carry will be highly dependent on the environment in which you will be flying. In general, you will want an aviation fire extinguisher and a small first aid kit onboard at all times. An emergency strobe light and flashlight with adequate batteries are also good to keep onboard. You should carry a mobile telephone with you while flying for use after an emergency landing. Review the lists below for a few environmental and terrain influenced basics. Flying over remote locations may require additional equipment including signalling, fire starting, water purification, and shelter options.

1) Cold weather
   a) Coats, hats, and gloves.
   b) Blankets or sleeping bags.
2) Hot weather
   a) Water.
   b) Sun protection.
3) Over water
   a) Personal flotation device (inflatable is preferred).
   b) Inflatable raft and drinking water for extended over water flights.
4) Mountainous terrain
   a) Clothing appropriate for the season and elevation.
   b) Other gear for the appropriate temperatures as listed above.
5) Desert conditions
   a) Water.
   b) Sun protection including appropriate clothing and head covering.

Appendix F – Instructor Certification for Sport Pilot Knowledge Test

NOTE: The endorsement below is representative of that required by 14 CFR Part 61.35 and 61.307(a) and MUST BE made in the applicant's logbook.

INSTRUCTOR CERTIFICATION
SPORT PILOT KNOWLEDGE TEST

I certify I have reviewed the home study curriculum of (First name, MI, Last name) on the required training of § 61.309. I have determined he/she is prepared for the Sport Pilot knowledge test.

Date: _____

Signed: _____

Certificate #: _____

Expires: _____