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# The Pilot's Manual

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# Instrument Rating Syllabus

## Sixth Edition

A Flight & Ground Training Course for  
the Instrument Rating based on

**The Pilot's Manual: Instrument Flying  
Meets Part 61 and 141 Requirements**

by Jackie Spanitz

**Includes Appendix  
for using an ATD as a  
loggable training device.**



**Aviation Supplies & Academics, Inc.**  
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7005 132nd Place SE, Newcastle, Washington 98059-3153

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**ASA-PM-S-I6-PD**

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# About This Syllabus

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## **Course Objective:**

The objective of this syllabus is for the student to gain the necessary aeronautical skill, knowledge and experience to meet the requirements of an Instrument Rating with an Airplane category and a Single-Engine Land class rating.

## **Prerequisites:**

The student must be able to read, speak, write, and understand the English language, meet the physical standards for a third-class medical certificate, and possess either a Private Pilot or Commercial Pilot certificate with an Airplane category and Single-Engine Land class rating.

## **Experience Requirements for an Instrument Rating Include:**

35 hours of instrument experience for §141 (40 hours for §61 programs, 15 hours of which must be with an Instrument Instructor)

50 hours cross-country PIC (§61 programs)

30 hours of ground training (no minimum time is specified for §61 programs)

## **Instrument Rating Course:**

The Instrument Rating is made up of 2 requirements: Aeronautical Skill and Aeronautical Knowledge. This syllabus is written to satisfy 14 CFR §141 requirements. With the addition of 5 instrument training flight hours and 50 hours cross-country PIC experience, this syllabus will be equally effective for 14 CFR §61 programs. The syllabus is organized into five Stages, with five Modules in each Stage. Each stage must be completed in \_\_\_\_ days, not to be more than 90 days. Each Module contains both a flight and ground lesson. This presents an integrated flight training process and will promote easier learning and a more efficient flight training program. Ideally, the ground lesson will be completed prior to the flight.

## **Testing Procedures:**

Each module contains a reading assignment associated with the ground training program. The review questions following each chapter will test the student's understanding of the material covered throughout the ground lesson, and must be answered prior to moving on to the next module. A Stage Exam is included with each stage, testing the student on both the ground and flight training material covered throughout the stage. This exam must be passed with a minimum score of 80%, and reconciled to 100%, in order to proceed to the next Stage.

*It is essential that the objective of each module be accomplished before moving on to the next module. Instructors are responsible for ensuring the completion standards have been. It may require multiple meetings and/or flights for the student to complete all tasks to the defined standards.*

## **Minimum Requirements:**

The time necessary for the syllabus to qualify for §141 operations includes meeting 35 hours of instruction experience (40 hours for §61 programs, 15 of which must be with an Instrument Instructor), and 30 hours of ground instruction. This is a *minimum* time—many factors play into the finishing flight time: frequency of flying, cooperative weather, airplane and instructor scheduling, and lapses in the flight training process. It is recommended the student fly at least twice a week. This type of schedule produces the most efficient training, and cuts down on review time. If there is a lapse in between flights, it may be necessary to review maneuvers; use the optional review flights accompanying each Stage for this purpose (this will allow the student to continue following the syllabus, which is necessary for a 141 program). Students are also encouraged to maintain training proficiency with a Aviation Training Device (ATD). See Appendix 6 for details on integrating this technology into the training curriculum. The student should feel comfortable performing each task in all previous modules before progressing to the next stage. If student exceeds more than \_\_\_\_ hours of the minimum 141 recommended time allotted per module, the chief flight instructor must be informed.

Note: Although there is no requirement for instrument solo flight, it is suggested the student perform IFR procedures with a safety pilot for additional practice. See 14 CFR § 91.109 for Safety Pilot requirements.

## Aviation Training Devices

The Federal Aviation Administration has formally recognized the potential of computer-based training devices for use in general aviation instrument flight training curricula. A qualified Aviation Training Device (ATD) is highly beneficial when used under the guidance of an authorized instructor to obtain the aeronautical knowledge and skills required for an instrument rating. See Appendix 6 for details on implementing ATDs into an integrated flight and ground training instrument curriculum.

Although federal aviation regulations require only 35 hours of instrument flight training for an instrument rating, the national average training time is closer to 65 hours. ATDs are superb instructional tools, taking the teaching process out of a hostile environment (the training airplane) and putting it on the computer. All aspects of the training curriculum should be taught to some performance level on the ground before demonstrating competence in the airplane. This positive transfer of learning will greatly reduce the flying hours spent working on earning the instrument rating.

### Required Materials for the Instrument Rating Course:

- *Ground School* (#ASA-PM-2)
- *Instrument Flying* (#ASA-PM-3)
- ASA FAR/AIM (#ASA-FR-AM-BK, updated annually)

### Recommended Materials for the Instrument Rating Course:

- FAA Instrument Airman Certification Standards (referred to as ACS; replaces PTS) (#ASA-ACS-8)
- *ASA Instrument Rating Test Prep* book (#ASA-TP-I), Prepware software (#ASA-TW-I), or Virtual Test Prep DVD Ground School (#ASA-VTP-I)
- *ASA Instrument Oral Exam Guide* (#ASA-OEG-I)
- ASA Flight computer (E6-B or CX-2 Pathfinder)
- ASA Instrument Plotter (#ASA-CP-IFR)
- View limiting device such as Jiffyhood (#ASA-H2G), or Overcasters (#ASA-OVC)
- ASA Flightlogs for cross-country flights (#ASA-FP)
- Low Altitude Enroute Chart for local area
- Sectional for local area
- Chart Supplements (previously Airport/Facility Directory)

The syllabus uses *The Pilot's Manual: Instrument Flying* for the ground training program. The review following each chapter should be finished with the assigned reading. This text contains an index which will help pinpoint the material for the subject you are working on. ASA's *Instrument Rating Test Prep* is recommended to enhance the program. The prep will ensure the student is completely prepared for the FAA Knowledge Exam upon completion of the course. Instructors using this syllabus must ensure current Airman Certification Standards are upheld and the procedures outlined in the *Instrument Flying Handbook* (FAA-H-8083-15) are maintained at all times.

If you have any comments or questions on how to best use this syllabus, please call ASA at 1-800-ASA-2-FLY. We will be happy to provide suggestions on how to tailor this syllabus to specifically meet your training needs. Note to Instructors: Answers to the Stage Exams are available to instructors by calling 1-800-ASA-2-FLY, or you can fax your request on letterhead to 1-425-235-0128.

# Instrument Rating Minimum Course Hours

## For Part 141, Appendix C Compliance

These times are for student/instructor guidance only. They are a suggested time schedule which will ensure minimum flight and ground training compliance with 14 CFR §141. To follow a §61 curriculum, add 5 hours of instrument training, for a total of 40 hours. Also, §61 instrument rating applicants are required to have 50 hours cross-country PIC time.

**Note: Ground Instruction should include classroom discussion, and pre- and post-flight briefings.**

**The stage exams may not be credited for more than 5 hours of the 30 hours of required ground training, and the stage checks may not be credited for more than 5 hours of the required 35 hours of flight training.**

Page		Ground Instruction	Dual Instrument Flight	Dual Instrument Cross-Country	Done ✓
01	<b>Stage 1</b>				
02	Module 1	1.5	1.5		
03	Module 2	1.0	1.0		
04	Module 3	1.0	1.0		
05	Module 4	1.0	1.0		
06	Module 5	1.5 + Stage Exam	1.5 + Stage Check		
07	* Review	1.5	1.5		
08	<b>Stage 2</b>				
09	Module 1	1.5	1.5		
10	Module 2	1.0	1.0		
11	Module 3	1.0	1.0		
12	Module 4	1.0	1.0		
13	Module 5	1.5 + Stage Exam	1.5 + Stage Check		
14	* Review	1.5	1.5		
15	<b>Stage 3</b>				
16	Module 1	1.5	1.5		
17	Module 2	1.0	1.0		
18	Module 3	1.0	1.0		
19	Module 4	1.0	1.0		
20	Module 5	1.5 + Stage Exam	1.5 + Stage Check		
21	* Review	1.5	1.5		
22	<b>Stage 4</b>				
23	Module 1	1.5	1.5		
24	Module 2	1.0	1.0		
25	Module 3	1.0	1.0		
26	Module 4	1.5	1.5		
27	Module 5	1.5 + Stage Exam	1.5 + Stage Check		
28	* Review	1.5	1.5		
29	<b>Stage 5</b>				
30	Module 1	1.5	2.0	2.0	
31	Module 2	1.0	2.0	2.0	
32	Module 3	1.5	3.5	3.5	
33	Module 4	1.0	1.5		
34	Module 5	1.5 + Stage Exam	1.5 + Stage Check		
35	* Review	1.5	1.5		
	<b>TOTALS</b>	30.0 + Stage Exams	35.0 + Stage Checks	7.5	
<p>* Reviews are not necessary to meet §141 compliance, and are not counted in the TOTALS for the program. They are optional, and should be used if the student is not ready to move on to the next module.</p>					

# Part 141 Appendix C Compliance

These are the aeronautical knowledge subjects and flight tasks required for §141 compliance and where they are covered within this syllabus.

<b>Part 141 Appendix C — Ground Training</b>		<b>Covered in Syllabus</b>
<b>1</b>	Applicable Federal Aviation Regulations for IFR flight operations	Stage 3, Module 2
<b>2</b>	Appropriate information in the Aeronautical Information Manual	Stage 3, Module 2
<b>3</b>	Air traffic control system and procedures for instrument flight operations	Stage 3, Module 3
<b>4</b>	IFR navigation and approaches by use of navigation systems	Stage 2, all Modules
<b>5</b>	Use of IFR en route and instrument approach procedure charts	Stage 4, Module 1
<b>6</b>	Procurements and use of aviation weather reports and forecasts, and the elements of forecasting weather trends on the basis of that information and personal observation of weather conditions	Stage 3, Module 4
<b>7</b>	Safe and efficient operation of aircraft under instrument flight rules and conditions	Stage 5, Modules 1, 2, 3
<b>8</b>	Recognition of critical weather situations and windshear avoidance	Stage 2, Module 4 Stage 3, Modules 4 and 5 Stage 5, Module 2
<b>9</b>	Aeronautical decision making and judgment	Stage 3, Module 3
<b>10</b>	Crew resource management, to include crew communication and coordination	Stage 3, Module 3

<b>Part 141 Appendix C — Flight Training</b>		<b>Covered in Syllabus</b>
35 hours of instrument training		Stages 1-5, all modules
Dual instruction from an instrument instructor that includes one cross-country flight in airplane single-engine land		Stage 5 Modules 1, 2, 3
One dual cross-country at least 250 NM along airways or ATC-directed routing with one segment of the flight consisting of at least a straight-line distance of 100 NM between airports and includes (1) An instrument approach at each airport, (2) 3 different kinds of approaches with the use of navigation systems		Stage 5 Module 3

# Enrollment Certificate

This is to certify that

\_\_\_\_\_  
*Student Name*

is enrolled in the Federal Aviation Administration approved  
**Instrument Rating Course**, conducted by

\_\_\_\_\_  
*School and Certificate Number*

\_\_\_\_\_  
*Chief Instructor*

\_\_\_\_\_  
*Date of Enrollment*

# Graduation Certificate

This is to certify that

\_\_\_\_\_  
*Pilot Name and Number*

has satisfactorily completed each required stage of the approved  
course of training including the tests for those stages, and has  
received \_\_\_\_\_ hours of cross-country training.

\_\_\_\_\_ has graduated from the  
Federal Aviation Administration approved **Instrument Rating  
Course** conducted by

\_\_\_\_\_  
*School and Certificate Number*

\_\_\_\_\_  
*Chief Instructor*

\_\_\_\_\_  
*Date of Graduation*

# Stage 1

## Instrument Flight

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### Objective

The objective of Stage 1 is for the student to become proficient in, and have an understanding of the following:



### Ground Training

- Course objective
- School requirements, procedures, regulations
- Grading criteria
- Instrument scan techniques
- IFR Instruments
- Straight-and-level flight
- Straight climb and descent
- Turning
- Unusual flight attitudes
- Normal instrument flight on a partial panel
- Training maneuvers used for instrument flight



### Flight Training

- Flight training process
- Training airplane
- Instrument preflight
- Aircraft systems related to IFR operations
- Instrument cockpit check
- Flight by reference to instruments:
  - straight-and-level flight
  - change of airspeed
  - constant airspeed climbs and descents
  - rate climbs and descents
  - timed turns to magnetic compass headings
  - Steep Turns
  - recovery from unusual flight attitudes
- Loss of gyro attitude and/or heading indicators
- Checking instruments and equipment post flight

**Note:** The patterns used in this Stage can be found in *Instrument Flying*, Chapter 9.

### Completion Standards

Stage 1 is complete when the student achieves the objective of each lesson, and can list or describe the correct process or reference for accomplishing elements, exercises and activities. Student shall score at least 80% on the Stage 1 Exam, and all deficient areas shall be reconciled to 100%.

# Stage 1 / **Module 1**

**Minimum 141 Requirements:** Dual, Instrument  
1.5 hours flight  
1.5 hours ground instruction



## **Ground Training**

### **Objective:**

For the student to have an understanding of the Instrument Rating course, and instrument scanning techniques.

### **Content:**

- Review of course and objectives
- School requirements, procedures, regulations
- Grading criteria, expectations of student
- Review objective of Stage 1

### *Instrument scanning technique*

- Selective radial scan
- Basic T-scan
- Other scans

### **Completion Standards:**

This lesson is complete when the student has successfully completed all review questions following the assigned reading.

### **Assignment:**

*Instrument Flying*, Introduction and Chapters 1 and 2



This lesson may be completed using ATD Lesson 1.  
*See Appendix 6.*



## **Flight Training**

### **Objective:**

For the student to be introduced to the Instrument Rating course and become familiarized with the training airplane, instrument preflight, and straight-and-level instrument flight.

### **Content:**

- Discussion of flight training process
- Introduction to the training airplane
- Instrument preflight inspection and aircraft documents
- Use of checklists
- Normal takeoff
- Instrument scan
- Straight-and-level flight
- Pattern A (see Chapter 9, *Instrument Flying*)
- Pattern B (see Chapter 9, *Instrument Flying*)
- Pattern C (see Chapter 9, *Instrument Flying*)
- Radar vectors, VOR approach (demonstrated)
- Postflight

### **Completion Standards:**

This lesson is complete when the student can conduct an efficient instrument preflight and scan, and can maintain altitude within 200 feet, airspeed within 20 knots, and heading within 20 degrees, while performing the maneuvers listed in the content of this module.

### **Recommended Reading:**

*Instrument Flying*

Stage 1 / **Module 1**

**Date of Completion:** \_\_\_\_\_

**Signature:** \_\_\_\_\_

**Time Flown:** \_\_\_\_\_

**Aircraft** \_\_\_\_\_ **ATD** \_\_\_\_\_ **Other** \_\_\_\_\_

# Stage 1 / **Module 2**

**Minimum 141 Requirements:** Dual, Instrument  
1.0 hours flight  
1.0 hours ground instruction



## Ground Training

### Objective:

For the student to gain an understanding of the aircraft instruments used in instrument flight, and the concept of flying straight-and-level under instrument conditions.

### Content:

#### *Instruments*

- Attitude indicator
- Power indicators
- Airspeed indicator
- Heading indicator
- Altimeter
- Vertical speed indicator
- Turn coordinator and turn indicator
- Magnetic compass
- Clock
- Pitot-static system
- Gyroscopes
- Preflight checks of flight instruments
- PFD (if training aircraft warrants)

#### *Straight-and-level flight*

- Control instruments
- Performance instruments
- 3 fundamentals of instrument flying
- Trimming
- Cruise speeds vs. pitch attitudes
- Maintaining heading
- Maintaining altitude
- Recovering from slightly unusual attitudes
- Coping with a faulty attitude indicator
- Power vs. speed
- Changing configuration

### Completion Standards:

This lesson is complete when the student has successfully completed all review questions following the assigned reading.

### Assignment:

*Instrument Flying*, Chapters 3 and 4



## Flight Training

### Objective:

For the student to become acquainted with the aircraft systems related to IFR operations, the instrument cockpit check, and to become proficient in flight by reference to instruments while maintaining changes of airspeed, and constant airspeed climbs and descents.

### Content:

- Discussion of aircraft systems related to IFR operations
- Instrument cockpit check and preflight
- Normal takeoff
- Instrument scan
- Straight-and-level flight
- Standard rate turns
- Demonstrate effects of change of airspeed
- Constant airspeed climbs and descents
- Pattern D (see Chapter 9, *Instrument Flying*)
- Pattern E (see Chapter 9, *Instrument Flying*)
- Pattern F (see Chapter 9, *Instrument Flying*)
- Radar vectors, ILS approach (demonstrated)
- Postflight

### Completion Standards:

This module is complete when the student can effectively control the airplane within 200 feet, 20 degrees, and 20 knots, and perform standard rate turns, while performing the maneuvers listed in the content of this module.

### Recommended Reading:

*Instrument Flying*



This lesson may be completed using ATD Lesson 2. See Appendix 6.

Stage 1 / **Module 2**

**Date of Completion:** \_\_\_\_\_

**Signature:** \_\_\_\_\_

**Time Flown:** \_\_\_\_\_

**Aircraft** \_\_\_\_\_ **ATD** \_\_\_\_\_ **Other** \_\_\_\_\_

# Stage 1 / **Module 3**

**Minimum 141 Requirements:** Dual, Instrument  
1.0 hours flight  
1.0 hours ground instruction



## Ground Training

### Objective:

For the student to gain an understanding of the straight climb and descent, and turning during instrument flight.

### Content:

#### *The straight climb*

- Climbing at different airspeeds
- Variations on entering the climb
- Climbing at a particular rate
- Climbing into clouds after takeoff

#### *The straight descent*

- Climbing away from a descent
- Descending at a particular rate
- The precision approach

#### *Turning*

- Bank angle and rate of turn
- Roll-in and roll-out rate
- The medium level turn
- Instrument turns to a specific heading
- Climbing turns
- Descending turns
- Steep Turns
- Steep level turn
- Steep descending turn

### Completion Standards:

This lesson is complete when the student has successfully completed all review questions following the assigned reading.

### Assignment:

*Instrument Flying*, Chapters 5 and 6



This lesson may be completed using ATD Lesson 3.  
See Appendix 6.



## Flight Training

### Objective:

For the student to become proficient in performing Steep Turns and Slow Flight solely by reference to instruments, and understand the process of checking the instrument and equipment postflight.

### Content:

- Preflight inspection
- Normal takeoff
- Standard rate turns
- Slow Flight
- Steep Turns
- Pattern I (see Chapter 9, *Instrument Flying*)
- Pattern E (see Chapter 9, *Instrument Flying*)
- Radar vectors, nonprecision approach (demonstrated)
- Postflight, checking instruments and equipment

### Completion Standards:

This module is complete when the student can perform Steep Turns, Slow Flight solely by reference to instruments, and postflight procedures, and can maintain flight within 150 feet, 15 degrees, 15 knots, and 5 degrees of bank angle, while performing the maneuvers listed in the content of this module.

### Recommended Reading:

*Instrument Flying*

Stage 1 / **Module 3**

**Date of Completion:** \_\_\_\_\_

**Signature:** \_\_\_\_\_

**Time Flown:** \_\_\_\_\_

**Aircraft** \_\_\_\_\_ **ATD** \_\_\_\_\_ **Other** \_\_\_\_\_

# Stage 1 / **Module 4**

**Minimum 141 Requirements:** Dual, Instrument  
1.0 hours flight  
1.0 hours ground instruction



## Ground Training

### Objective:

For the student to have an understanding of recognizing and recovering from unusual attitudes.

### Content:

*Unusual attitudes*

- Recognizing an unusual attitude
- Nose-low attitudes with increasing airspeed
- Nose-high attitude with decreasing airspeed
- Nose-high and approaching the stall

### Completion Standards:

This lesson is complete when the student has successfully completed all review questions following the assigned reading.

### Assignment:

*Instrument Flying*, Chapter 7



This lesson may be completed using ATD Lesson 4.  
See Appendix 6.



## Flight Training

### Objective:

For the student to become proficient at performing timed turns to magnetic compass headings, and constant rate climbs and descents, flying solely by reference to instruments.

### Content:

- Preflight
- Soft-field takeoff
- Standard rate turns
- Steep Turns
- Slow Flight
- Power on/off Stalls
- Timed turns to magnetic compass headings
- Pattern G (see Chapter 9, *Instrument Flying*)
- Pattern H (see Chapter 9, *Instrument Flying*)
- Systems and equipment malfunctions
- ASR approach (with tower or the instructor)
- Postflight procedures

### Completion Standards:

This module is complete when the student can maintain flight within 150 feet, 15 degrees, and 15 knots, while performing the maneuvers listed in the content of this module.

### Recommended Reading:

*Instrument Flying*



This lesson may be completed using ATD Lesson 5.  
See Appendix 6.

Stage 1 / **Module 4**

**Date of Completion:** \_\_\_\_\_

**Signature:** \_\_\_\_\_

**Time Flown:** \_\_\_\_\_

**Aircraft** \_\_\_\_\_ **ATD** \_\_\_\_\_ **Other** \_\_\_\_\_

# Stage 1 / Module 5 and Stage Check



## Ground Training

### Objective:

For the student to gain an understanding of normal instrument flight on a partial panel and the maneuvers used in instrument flight training.

### Content:

*Normal instrument flight on a partial panel*

- Interpreting pitch attitude on a partial panel
- Interpreting bank attitude on a partial panel
- Straight flight on a partial panel
  - straight-and-level flight on a partial panel
  - climbing on a partial panel
  - descending on a partial panel
- Turning on a partial panel
- Recovery from unusual attitudes on a partial panel

*Training maneuvers*

- Seven-Ts
- Performance sheets
- Warm-ups
- Maneuvers (A-K)

### Completion Standards:

This lesson is complete when the student has successfully completed all review questions following the assigned reading. Stage 1 Exam must be passed with a minimum score of 80% and reconciled to 100%.

### Assignment:

*Instrument Flying*, Chapters 8 and 9  
Stage 1 Exam



This lesson may be completed using ATD Lesson 6.  
See Appendix 6.

**Minimum 141 Requirements:** Dual, Instrument  
1.5 hours flight  
Stage check  
1.5 hours ground instruction  
Stage exam



## Flight Training

### Objective:

For the student to become proficient in recovery from unusual flight attitudes, and partial panel flight. For the Stage Check, student should demonstrate skill in the following areas according to the completion standards.

### Content:

- Preflight inspection
- Aircraft systems related to IFR operations
- Instrument cockpit check
- Short-field takeoff
- Straight-and-level flight
- Change of airspeed
- Constant airspeed climb and descents
- Rate climbs and descents
- Standard rate turns
- Steep Turns
- Slow Flight
- Power on/off Stalls
- Timed turns to headings
- Recovery from unusual flight attitudes
- Partial panel practice using patterns B and G
- Pattern J (see Chapter 9, *Instrument Flying*)
- Pattern H (see Chapter 9, *Instrument Flying*)
- Radar vector approach, instructor assisted
- Checking instruments and equipment postflight

### Completion Standards:

This module is complete when the student can recover from unusual flight attitudes, and fly partial panel. Student should maintain flight within 150 feet, 15 degrees, 15 knots, and 5 degrees of bank angle, while performing the maneuvers listed in the content of this module.

### Recommended Reading:

*Instrument Rating Test Prep*, Chapters 3 and 4  
*Instrument Flying*

Stage 1 / **Module 5**

**Date of Completion:** \_\_\_\_\_

**Signature:** \_\_\_\_\_

**Time Flown:** \_\_\_\_\_

**Stage Exam Score:** \_\_\_\_\_

**Stage Check Successful:** \_\_\_\_\_

**Aircraft** \_\_\_\_\_ **ATD** \_\_\_\_\_ **Other** \_\_\_\_\_

# Optional **Stage 1 Review**

**Lesson Time:** Dual, Instrument  
1.5 hours flight, or whatever is necessary to meet objective  
1.5 hour ground instruction, or whatever is necessary to meet objective



## **Flight Training**

### **Objective:**

For the student to review all Stage 1 tasks and meet all objectives.

### **Content:**

- Preflight inspection
- Aircraft systems related to IFR operations
- Instrument cockpit check
- Short-field takeoff
- Straight-and-level flight
- Change of airspeed
- Constant airspeed climbs and descents
- Rate climbs and descents
- Standard rate turns
- Steep Turns
- Slow Flight
- Power on/off Stalls
- Timed turns to headings
- Recovery from unusual flight attitudes
- Partial panel practice using patterns B and G
- Pattern J (see Chapter 9, *Instrument Flying*)
- Pattern H (see Chapter 9, *Instrument Flying*)
- Radar vector approach, instructor assisted
- Checking instruments and equipment postflight

### **Completion Standards:**

This module is complete when the student can recover from unusual flight attitudes, and fly partial panel. Student should maintain flight within 150 feet, 15 degrees, 15 knots, and 5 degrees of bank angle, while performing the maneuvers listed in the content of this module.

### **Recommended Reading:**

*Instrument Flying*

Optional **Stage 1 Review**

**Date of Completion:** \_\_\_\_\_

**Signature:** \_\_\_\_\_

**Time Flown:** \_\_\_\_\_

**Aircraft** \_\_\_\_\_ **ATD** \_\_\_\_\_ **Other** \_\_\_\_\_

# Stage 2

## Navigation

---

### Objective

The objective of Stage 2 is for the student to become proficient in and have an understanding of the following:



### Ground Training

- Radio navigation aids
- Radar
- DME
- The NDB and ADF
- The Relative Bearing Indicator (RBI)
- The Radio Magnetic Indicator (RMI) and rotatable-card ADF
- The VOR
- The Instrument Landing System (ILS)
- GPS



### Flight Training

- ATC Clearances
- Ground-based navigation
- GPS navigation
- Intercepting and tracking VOR/VORTAC radials or NDB bearings and DME arcs
- Low Altitude Enroute chart use
- Airway use

### Completion Standards

Stage 2 is complete when the student achieves the objective of each lesson and can list or describe the correct process or reference for accomplishing elements, exercises, and activities. Student shall score at least 80% on the Stage 2 Exam, and all deficient areas shall be reconciled to 100%.

# Stage 2 / Module 1

**Minimum 141 Requirements:** Dual, Instrument  
1.5 hours flight  
1.5 hours ground instruction



## Ground Training

### Objective:

For the student to be introduced to radio navigation aids and gain an understanding of radar.

### Content:

- Review objective of Stage 2

*Introduction to radio navigation aids*

*Radar*

- Radar vectoring
- Radar approaches
- Surveillance approaches
- PAR approaches
- No-gyro approaches
- Using the transponder
- How radar works

### Completion Standards:

This lesson is complete when the student has successfully completed all review questions following the assigned reading.

### Assignment:

*Instrument Flying*, Chapter 10



## Flight Training

### Objective:

For the student to become oriented with VOR homing and tracking procedures and to become proficient in ATC clearances.

### Content:

- Preflight inspection
- Air Traffic Control clearances
- VOR, VOT accuracy checks
- TO-FROM and CDI orientation/use
- Homing a VOR radial
- Tracking a VOR radial
- Effects of wind on VOR use
- Tracking outbound/reverse sensing
- Determining station passage
- ASR approach, full panel (instructor assisted)
- Postflight procedures

### Completion Standards:

This module is complete when the student can communicate effectively with ATC, home and track using VOR radials, perform VOR accuracy checks, and orient himself/herself using a VOR. Flight should be maintained within 150 feet altitude, 15 knots airspeed, and 15 degrees heading, while performing the maneuvers listed in the content of this module.

### Recommended Reading:

*Instrument Flying*

Stage 2 / **Module 1**

**Date of Completion:** \_\_\_\_\_

**Signature:** \_\_\_\_\_

**Time Flown:** \_\_\_\_\_

**Aircraft** \_\_\_\_\_ **ATD** \_\_\_\_\_ **Other** \_\_\_\_\_

# Stage 2 / Module 2

**Minimum 141 Requirements:** Dual, Instrument  
1.0 hours flight  
1.0 hours ground instruction



## Ground Training

### Objective:

For the student to gain an operational understanding of DME and the VOR.

### Content:

#### DME

- DME measures slant distance
- DME uses the principle of secondary radar
- DME frequencies
- VOR/DME pairing
- ILS/DME pairing
- DME arcs

#### VOR

- VOR radial
- How the VOR works
- The range of a VOR
- VORs on aeronautical charts
- VOR/DME, TACAN, VORTAC
- VOR cockpit instrument
- TO or FROM
- Preparing the OBI for use
- Orientation using the VOR
- Tracking using the VOR
- Intercepting a course using the VOR
- Other presentations of the VOR
- The VOR instrument approach

### Completion Standards:

This lesson is complete when the student has successfully completed all review questions following the assigned reading.

### Assignment:

*Instrument Flying*, Chapters 12 and 14



This lesson may be completed using ATD Lesson 7.  
See Appendix 6.



## Flight Training

### Objective:

For the student to become proficient at VOR navigation and intercepting and tracking VOR/VORTAC radials and DME arcs.

### Content:

- Preflight
- ATC clearances
- VOR/VOT accuracy checks
- VOR navigation techniques
- Homing a VOR radial
- Intercepting and tracking VOR/VORTAC radials
- DME arcs
- VOR full approach (instructor assisted)
- Postflight procedures

### Completion Standards:

This module is complete when the student can navigate using VORs, and can intercept and track VOR/VORTAC radials and DME arcs. Flight should be maintained within 150 feet altitude, 15 knots airspeed, and 15 degrees heading, while performing the maneuvers listed in the content of this module.

### Recommended Reading:

*Instrument Flying*



This lesson may be completed using ATD Lesson 8.  
See Appendix 6.

Stage 2 / **Module 2**

**Date of Completion:** \_\_\_\_\_

**Signature:** \_\_\_\_\_

**Time Flown:** \_\_\_\_\_

**Aircraft** \_\_\_\_\_ **ATD** \_\_\_\_\_ **Other** \_\_\_\_\_

# Stage 2 / Module 3

**Minimum 141 Requirements:** Dual, Instrument  
1.0 hours flight  
1.0 hours ground instruction



## Ground Training

### Objective:

For the student to gain an operational understanding of the NDB and ADF, the relative bearing indicator (RBI), the radio magnetic indicator (RMI), and the rotatable-card ADF.

### Content:

*The NDB and the ADF*

- The Automatic Direction Finder
- The ADF Cockpit Display

*The Relative Bearing Indicator (RBI)*

- Operational use of the RBI
- Tracking
- The NDB approach

*The Radio Magnetic Indicator (RMI) and Rotatable-card ADF*

- Orientation using the RMI
- The initial interception of course
- Maintaining course

### Completion Standards:

This lesson is complete when the student has successfully completed all review questions following the assigned reading.

### Assignment:

*Instrument Flying*, Chapter 11



This lesson may be completed using ATD Lesson 9.  
See Appendix 6.



## Flight Training

### Objective:

For the student to become proficient with NDB navigation and intercepting and tracking NDB bearings.

### Content:

- Preflight
- ATC clearances
- ADF orientation
- NDB navigation
- Homing with an NDB
- Tracking with an NDB
- Intercepting NDB bearings
- Nonprecision full approach (instructor assisted)
- Postflight procedures

### Completion Standards:

This module is complete when the student can navigate using the NDB, and intercept and track NDB bearings. Flight should be maintained within 150 feet altitude, 15 knots airspeed, and 15 degrees heading, while performing the maneuvers listed in the content of this module.

### Recommended Reading:

*Instrument Flying*



This lesson may be completed using ATD Lesson 10.  
See Appendix 6.

Stage 2 / **Module 3**

**Date of Completion:** \_\_\_\_\_

**Signature:** \_\_\_\_\_

**Time Flown:** \_\_\_\_\_

**Aircraft** \_\_\_\_\_ **ATD** \_\_\_\_\_ **Other** \_\_\_\_\_



## Ground Training

### Objective:

For the student to gain an operational understanding of the Instrument Landing System (ILS).

### Content:

*Instrument Landing System (ILS)*

- The Localizer
  - flying the Localizer
  - flying the Localizer with an HSI
- The Glideslope
  - flying the glideslope
- Marker Beacons
  - other means of checking glideslope
- Approach lights and other lights
  - approach light systems (ALS)
  - visual approach slope indicator (VASI)
  - runway lighting
  - taxiway lights
  - control of lighting systems
- Precision instrument runway markings
- Inoperative ILS components
- Flying a typical ILS
- International terminology
- Simultaneous approaches
- The sidestep maneuver
- The localizer-type directional aid (LDA)
- The simplified directional facility (SDF)
- Windshear on the approach
  - windshear terminology
  - windshear effects on an aircraft's flightpath
  - the causes of windshear

### Completion Standards:

This lesson is complete when the student has successfully completed all review questions following the assigned reading.

### Assignment:

*Instrument Flying*, Chapter 13



This lesson may be completed using ATD Lesson 11.  
See Appendix 6.



## Flight Training

### Objective:

For the student to be introduced to Low Altitude Enroute chart use and to become proficient with Time to Station problems, VOR navigation, DME arcs, NDB navigation, GPS navigation, and intercepting NDB bearings and VOR radials.

### Content:

- Preflight
- ATC clearances
- Low Altitude Enroute chart orientation and use
- DME arcs
- VOR navigation
- NDB navigation
- GPS navigation
- Intercepting and tracking VOR radials
- Intercepting and tracking NDB bearings
- NDB time to station problems
- VOR time to station problems
- ILS full approach (instructor assisted)
- Postflight procedures

### Completion Standards:

This module is complete when the student can understand and apply the techniques used in DME arcs, VOR navigation, NDB navigation, and low altitude enroute chart use, and accurately perform VOR and NDB Time to Station problems. Flight should be maintained within 150 feet altitude, 15 knots airspeed, and 15 degrees heading, while performing the maneuvers listed in the content of this module.

### Recommended Reading:

*Instrument Flying*

Stage 2 / **Module 4**

**Date of Completion:** \_\_\_\_\_

**Signature:** \_\_\_\_\_

**Time Flown:** \_\_\_\_\_

**Aircraft** \_\_\_\_\_ **ATD** \_\_\_\_\_ **Other** \_\_\_\_\_

# Stage 2 / Module 5 and Stage Check



## Ground Training

### Objective:

For the student to gain an operational understanding of RNAV.

### Content:

RNAV

- Pseudo-VORTACs
- DPs and approaches
- GPS

### Completion Standards:

This lesson is complete when the student has successfully completed all review questions following the assigned reading. Stage 2 Exam must be passed with a minimum score of 80% and reconciled to 100%.

### Assignment:

*Instrument Flying*, Chapter 15  
Stage 2 Exam

**Minimum 141 Requirements:** Dual, Instrument  
1.5 hours flight  
Stage check  
1.5 hours ground instruction  
Stage exam



## Flight Training

### Objective:

For the student to review how to home, track, and intercept VOR and NDB radials/bearings, navigate using VORs, NDBs, or GPS, comply with ATC clearances, correctly use a Low Altitude Enroute chart, and be introduced to airway use. For the Stage Check, student should demonstrate skill in the following areas according to the completion standards.

### Content:

- Preflight
- ATC clearances
- VOR/VOT accuracy check
- VOR navigation
- NDB navigation
- Intercepting and tracking VOR radials
- Intercepting and tracking NDB bearings
- Low Altitude Enroute chart use and orientation
- Airway orientation with instruments and charts
- Standard rate turns
- Steep Turns
- Slow Flight
- Power on/off Stalls
- Timed turns to headings
- Recovery from unusual flight attitudes
- Partial panel practice using patterns B and G
- Full approach, instructor assisted
- Postflight procedures

### Completion Standards:

This lesson is complete when the student can perform all maneuvers listed in the content of this module, while maintaining VOR and NDB navigation within 2 dots or 5 degrees of course, and altitude within 100 feet, heading within 10 degrees, and airspeed within 10 knots.

### Recommended Reading:

*Instrument Flying*  
*Instrument Rating Test Prep*, Chapter 8

Stage 2 / **Module 5**

**Date of Completion:** \_\_\_\_\_

**Signature:** \_\_\_\_\_

**Time Flown:** \_\_\_\_\_

**Stage Exam Score:** \_\_\_\_\_

**Stage Check Successful:** \_\_\_\_\_

**Aircraft** \_\_\_\_\_ **ATD** \_\_\_\_\_ **Other** \_\_\_\_\_

# Optional **Stage 2 Review**

**Lesson Time:** Dual, Instrument  
1.5 hours flight, or whatever is necessary to meet objective  
1.5 hour ground instruction, or whatever is necessary to meet objective



## **Flight Training**

### **Objective:**

For the student to review all Stage 2 tasks and meet all objectives.

### **Content:**

- Preflight
- ATC clearances
- VOR/VOT accuracy check
- VOR navigation
- NDB navigation
- GPS navigation
- Intercepting and tracking VOR radials
- Intercepting and tracking NDB bearings
- Low Altitude Enroute chart use and orientation
- Airway orientation with instruments and charts
- Standard rate turns
- Steep Turns
- Slow Flight
- Power on/off Stalls
- Timed turns to headings
- Recovery from unusual flight attitudes
- Partial panel practice using patterns B and G
- Full approach, instructor assisted
- Postflight procedures

### **Completion Standards:**

This lesson is complete when the student can perform all maneuvers listed in the content of this module, while maintaining VOR and NDB navigation within 2 dots or 5 degrees of course, and altitude within 100 feet, heading within 10 degrees, and airspeed within 10 knots.

### **Recommended Reading:**

*Instrument Flying*

Optional **Stage 2 Review**

**Date of Completion:** \_\_\_\_\_

**Signature:** \_\_\_\_\_

**Time Flown:** \_\_\_\_\_

**Aircraft** \_\_\_\_\_ **ATD** \_\_\_\_\_ **Other** \_\_\_\_\_

# Stage 3

## Holding Procedures

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### Objective

The objective of Stage 3 is for the student to become proficient in and have an understanding of the following:



### Ground Training

- Holding patterns
- Procedure turns
- DME arcs
- Regulations pertaining to the instrument pilot
- Preparation for instrument flight
- Icing
- Visibility



### Flight Training

- Holding procedures:
  - entries to holds
  - holding at VORs
  - holding at NDBs
  - holding at intersections
  - partial panel holds
  - holding speeds
- Compliance with departure, en route, and arrival procedures and clearances
- Filing an IFR flight plan

### Completion Standards

Stage 3 is complete when the student achieves the objective of each lesson, and can list or describe the correct process or reference for accomplishing elements, exercises and activities. Student shall score at least 80% on the Stage 3 Exam, and all deficient areas shall be reconciled to 100%.

# Stage 3 / Module 1

**Minimum 141 Requirements:** Dual, Instrument  
1.5 hours flight  
1.5 hours ground instruction



## Ground Training

### Objective:

For the student to gain an understanding of holding patterns, procedure turns, and DME arcs.

### Content:

- Review objective of Stage 3

#### *Holding patterns*

- Tracking
- Corrections for wind
- Entering a holding pattern
- Holding speeds

#### *Procedure turns*

- The 45°/180° procedure turn
- The 80°/260° procedure turn
- The base turn, or teardrop turn
- Positioning in a racetrack pattern

#### *DME Arcs*

### Completion Standards:

This lesson is complete when the student has successfully completed all review questions following the assigned reading.

### Assignment:

*Instrument Flying*, Chapter 28



This lesson may be completed using ATD Lesson 12.  
See Appendix 6.



## Flight Training

### Objective:

For the student to be introduced to entries to holds and holding at VORs.

### Content:

- Instrument preflight
- Holding instruction
- Perform three holds at a VOR
  - Direct entry, standard turns
  - Parallel entry, nonstandard turns
  - Teardrop entry, standard turns
- VOR approach, radar vectors (instructor assisted)
- Postflight procedures

### Completion Standards:

This module is complete when the student has an understanding of entries to holds, and can perform a hold using a VOR. Student should maintain altitude within 150 feet, airspeed within 15 knots, and heading within 15 degrees, while performing the maneuvers listed in the content of this module.

### Recommended Reading:

*Instrument Flying*



This lesson may be completed using ATD Lesson 13.  
See Appendix 6.

Stage 3 / **Module 1**

**Date of Completion:** \_\_\_\_\_

**Signature:** \_\_\_\_\_

**Time Flown:** \_\_\_\_\_

**Aircraft** \_\_\_\_\_ **ATD** \_\_\_\_\_ **Other** \_\_\_\_\_

# Stage 3 / **Module 2**

**Minimum 141 Requirements:** Dual, Instrument  
1.0 hours flight  
1.0 hours ground instruction



## Ground Training

**Objective:**

For the student to understand the federal aviation regulations which pertain to the instrument pilot.

**Content:**

*Regulations pertaining to the instrument pilot*

- Federal Aviation Regulations
- Aeronautical Information Manual
- Responsibility and authority of the PIC
- What is IFR?
- Am I qualified to fly IFR today?
- Is the airplane suitable for IFR?
- IFR operations

**Completion Standards:**

This lesson is complete when the student has successfully completed all review questions following the assigned reading.

**Assignment:**

*Instrument Flying*, Chapter 24  
FAR/AIM



## Flight Training

**Objective:**

For the student to become proficient at holding entry procedures, performing standard and nonstandard holding patterns, complying with departure, en route, and arrival procedures and clearances, and filing an IFR flight plan.

**Content:**

- Instrument preflight
- Departure procedures
- File an IFR flight plan
- Comply with departure, en route, and arrival procedures and clearances
- Perform 3 VOR holds, using direct, parallel, and teardrop entries
- Demonstrate both standard and nonstandard holding patterns
- Perform 1 VOR hold, using partial panel
- ILS approach, radar vectors (instructor assisted)
- Postflight procedures

**Completion Standards:**

This module is complete when the student can accurately hold at a VOR using the proper entry procedure and timing techniques, maintaining orientation to whereabouts at all times. Student must maintain altitude within 150 feet, airspeed within 15 knots, and heading within 15 degrees, while performing the maneuvers listed in the content of this module.

**Recommended Reading:**

*Instrument Flying*

Stage 3 / **Module 2**

**Date of Completion:** \_\_\_\_\_

**Signature:** \_\_\_\_\_

**Time Flown:** \_\_\_\_\_

**Aircraft** \_\_\_\_\_ **ATD** \_\_\_\_\_ **Other** \_\_\_\_\_

# Stage 3 / Module 3

**Minimum 141 Requirements:** Dual, Instrument  
1.0 hours flight  
1.0 hours ground instruction



## Ground Training

### Objective:

For the student to understand the preparation necessary for an instrument flight.

### Content:

*Preparation for flight*

- Preflight considerations for an IFR flight
- En Route charts
  - airports
  - navigation aids
  - routes
  - airspace
  - communications
- Flight planning
  - the flight plan
- Human factors
  - Aeronautical decision making
  - Judgement
  - Crew resource management, to include crew communication and coordination

### Completion Standards:

This lesson is complete when the student has successfully completed all review questions following the assigned reading.

### Assignment:

*Instrument Flying*, Chapter 25  
*Ground School*, Chapter 12



## Flight Training

### Objective:

For the student to become proficient in performing holds at an NDB.

### Content:

- Instrument preflight
- Departure procedures
- File an IFR flight plan
- Perform NDB hold, standard and nonstandard turns
- Perform NDB hold, partial panel
- Review VOR holding procedures
- Nonprecision full approach (instructor assisted)
- Postflight procedures

### Completion Standards:

This module is complete when the student can perform holds at an NDB using the correct entry and timing procedures, maintaining orientation to whereabouts at all times. Student must maintain altitude within 150 feet, airspeed within 15 knots, and heading within 15 degrees, while performing the maneuvers listed in the content of this module.

### Recommended Reading:

*Instrument Flying*



This lesson may be completed using ATD Lesson 14.  
See Appendix 6.

Stage 3 / **Module 3**

**Date of Completion:** \_\_\_\_\_

**Signature:** \_\_\_\_\_

**Time Flown:** \_\_\_\_\_

**Aircraft** \_\_\_\_\_ **ATD** \_\_\_\_\_ **Other** \_\_\_\_\_

# Stage 3 / Module 4

**Minimum 141 Requirements:** Dual, Instrument  
1.0 hours flight  
1.0 hours ground instruction



## Ground Training

### Objective:

For the student to gain an understanding of IFR meteorology, specifically icing.

### Content:

#### Icing

- Structural Icing
  - clear ice
  - rime ice
  - mixed (or cloudy) ice
  - frost
  - structural icing and cloud type
- Induction Icing
  - carburetor icing
  - engine intake icing
- Some hints to the pilot flying in icing conditions

### Completion Standards:

This lesson is complete when the student has successfully completed all review questions following the assigned reading.

### Assignment:

*Instrument Flying*, Chapter 20



## Flight Training

### Objective:

For the student to perform partial panel and intersection holds.

### Content:

- Instrument preflight
- File an IFR flight plan
- VOR hold, partial panel
- Intersection hold, partial panel
- NDB hold, partial panel
- VOR full approach (instructor assisted)
- Postflight procedures

*Note: Students should practice a different entry technique with each hold.*

### Completion Standards:

This module is complete when the student can perform VOR, Intersection, and NDB holds using a partial panel, maintaining orientation to whereabouts at all times. Student must maintain altitude within 150 feet, airspeed within 15 knots, and heading within 15 degrees, while performing the maneuvers listed in the content of this module.

### Recommended Reading:

*Instrument Flying*

Stage 3 / **Module 4**

**Date of Completion:** \_\_\_\_\_

**Signature:** \_\_\_\_\_

**Time Flown:** \_\_\_\_\_

**Aircraft** \_\_\_\_\_ **ATD** \_\_\_\_\_ **Other** \_\_\_\_\_

# Stage 3 / Module 5 and Stage Check



## Ground Training

### Objective:

For the student to gain an understanding of IFR meteorology, specifically visibility.

### Content:

#### Visibility

- Inversions and reduced visibility
- Condensation
- Fog
  - radiation fog
  - advection fog
  - upslope fog
  - frontal fog
  - steam fog

### Completion Standards:

This lesson is complete when the student has successfully completed all review questions following the assigned reading. Stage 3 Exam must be passed with a minimum score of 80% and reconciled to 100%.

### Assignment:

*Instrument Flying*, Chapter 18

Stage 3 Exam

**Minimum 141 Requirements:** Dual, Instrument  
1.5 hours flight  
Stage check  
1.5 hours ground instruction  
Stage exam



## Flight Training

### Objective:

For the student to review VOR, Intersection, NDB—standard and nonstandard—holds, with both full and partial panel; and instrument flying maneuvers. For the Stage Check, student should demonstrate skill in the following areas according to the completion standards.

### Content:

- Instrument preflight
- File IFR flight plan
- Comply with departure, en route, and arrival procedures and clearances
- VOR hold
- Intersection hold
- NDB hold
- Slow Flight
- Steep Turns
- Power on/off Stalls
- ILS full approach (instructor assisted)
- Postflight procedures

*Note: Students should demonstrate holds using all entry procedures and full and partial panel proficiency.*

### Completion Standards:

This module is complete when the student can perform VOR, Intersection, and NDB holds, demonstrating all entry procedures, standard and nonstandard patterns, and full and partial panel proficiency. Student must maintain altitude within 100 feet, airspeed within 10 knots, and heading within 10 degrees, while performing the maneuvers listed in the content of this module.

### Recommended Reading:

*Instrument Flying*

*Instrument Rating Test Prep*, Chapter 5

Stage 3 / **Module 5**

**Date of Completion:** \_\_\_\_\_

**Signature:** \_\_\_\_\_

**Time Flown:** \_\_\_\_\_

**Stage Exam Score:** \_\_\_\_\_

**Stage Check Successful:** \_\_\_\_\_

**Aircraft** \_\_\_\_\_ **ATD** \_\_\_\_\_ **Other** \_\_\_\_\_

# Optional **Stage 3 Review**

**Lesson Time:** Dual, Instrument  
1.5 hours flight, or whatever is necessary to meet objective  
1.5 hour ground instruction, or whatever is necessary to meet objective



## **Flight Training**

### **Objective:**

For the student to review all Stage 3 tasks and meet all objectives.

### **Content:**

- Instrument preflight
- File IFR flight plan
- Comply with departure, en route, and arrival procedures and clearances
- VOR hold
- Intersection hold
- NDB hold
- Slow Flight
- Steep Turns
- Power on/off Stalls
- ILS full approach (instructor assisted)
- Postflight procedures

*Note: Students should demonstrate holds using all entry procedures and full and partial panel proficiency.*

### **Completion Standards:**

This module is complete when the student can perform VOR, Intersection, and NDB holds, demonstrating all entry procedures, standard and nonstandard patterns, and full and partial panel proficiency. Student must maintain altitude within 100 feet, airspeed within 10 knots, and heading within 10 degrees, while performing the maneuvers listed in the content of this module.

### **Recommended Reading:**

*Instrument Flying*

Optional **Stage 3 Review**

**Date of Completion:** \_\_\_\_\_

**Signature:** \_\_\_\_\_

**Time Flown:** \_\_\_\_\_

**Aircraft** \_\_\_\_\_ **ATD** \_\_\_\_\_ **Other** \_\_\_\_\_

# Stage 4

## Instrument Approaches

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### Objective

The objective of Stage 4 is for the student to become proficient in and have an understanding of the following:



### Ground Training

- Instrument approaches
- Instrument departures
- Visual maneuvering
- Clouds
- Thunderstorms
- High-level meteorology



### Flight Training

- VOR/VORTAC instrument approach procedure
- Nonprecision instrument approach procedure
- Precision instrument approach procedure
- Missed approach procedures
- Circling approach procedures
- Landing from a straight-in or circling approach procedure
- Localizer instrument approach procedure
- Localizer back-course approach
- Instrument approaches from holds
- Partial panel approaches
- Loss of communications

### Completion Standards

Stage 4 is complete when the student achieves the objective of each lesson, and can list or describe the correct process or reference for accomplishing elements, exercises and activities. Student shall score at least 80% on the Stage 4 Exam, and all deficient areas shall be reconciled to 100%.

# Stage 4 / **Module 1**

**Minimum 141 Requirements:** Dual, Instrument  
1.5 hours flight  
1.5 hours ground instruction



## Ground Training

### Objective:

For the student to gain an operational understanding of arrivals, instrument approaches, and instrument approach charts.

### Content:

- Review objective of Stage 4

#### *Arrivals*

- Standard Terminal Arrival Routes (STARs)

#### *Vertical navigation*

#### *The instrument approach*

- The segments of an instrument approach

#### *Instrument approach charts*

- The elements of an instrument approach chart
- Identification of an instrument approach chart
- Radio communications frequencies
- Plan view of the instrument approach
- Profile view
- The minimum safe altitude circle (MSA)
- Approach minimums
- Timing to the missed approach point
- Typical instrument approach charts
- General comments on instrument approaches
- Visual reference at the DH or MDA
- Visual illusions on approach

### Completion Standards:

This lesson is complete when the student has successfully completed all review questions following the assigned reading.

### Assignment:

*Instrument Flying*, Chapter 29



## Flight Training

### Objective:

For the student to become proficient in performing VOR approaches—full, radar vectors, straight-in, circle-to-land—and missed approach techniques.

### Content:

- Instrument Preflight
- File an IFR flight plan
- Full VOR approach, followed by missed approach procedures
- Radar vectors VOR approach, using straight-in minimums
- Partial panel VOR radar vectors approach, using circle-to-land minimums
- Postflight procedures

### Completion Standards:

This module is complete when the student can perform VOR approaches (full, radar vectors, straight-in, and circle-to-land) within 100 feet of altitude, and 3 dots of the CDI needle. The student must comply with all ATC clearances and perform all procedures according to the approach plates.

### Recommended Reading:

*Instrument Flying*



This lesson may be completed using ATD Lesson 15.  
See Appendix 6.

Stage 4 / **Module 1**

**Date of Completion:** \_\_\_\_\_

**Signature:** \_\_\_\_\_

**Time Flown:** \_\_\_\_\_

**Aircraft** \_\_\_\_\_ **ATD** \_\_\_\_\_ **Other** \_\_\_\_\_

# Stage 4 / **Module 2**

**Minimum 141 Requirements:** Dual, Instrument  
1.0 hours flight  
1.0 hours ground instruction



## Ground Training

**Objective:**

For the student to gain an operational understanding of the instrument departure.

**Content:**

*Instrument departures*

- Weather at the departure airport
- Takeoff minimums
- Setting course
- Departure Procedures (DPs)
- ATC clearances

**Completion Standards:**

This lesson is complete when the student has successfully completed all review questions following the assigned reading.

**Assignment:**

*Instrument Flying*, Chapter 26



This lesson may be completed using ATD Lesson 16.  
*See Appendix 6.*



## Flight Training

**Objective:**

For the student to become proficient in performing nonprecision approaches, demonstrating full, radar vectors, straight-in, circle-to-land, and missed approach techniques.

*Note:* Applicants will be required to demonstrate GPS approach proficiency if the aircraft includes a properly installed GPS.

**Content:**

- Instrument preflight
- File an IFR flight plan
- Nonprecision full approach, followed by missed approach
- Nonprecision radar vector approach, using straight-in minimums
- Nonprecision partial panel, radar vector approach, using circle-to-land minimums
- Postflight procedures

**Completion Standards:**

This module is complete when the student can perform nonprecision full, radar vectors, missed, circle-to-land, and straight-in approaches while maintaining flight within 100 feet above minimum descent altitude, not descending lower until a decision to land has been made. The student must maintain the flight within  $\pm 10^\circ$  of the runway at the missed approach point.

**Recommended Reading:**

*Instrument Flying*

Stage 4 / **Module 2**

**Date of Completion:** \_\_\_\_\_

**Signature:** \_\_\_\_\_

**Time Flown:** \_\_\_\_\_

**Aircraft** \_\_\_\_\_ **ATD** \_\_\_\_\_ **Other** \_\_\_\_\_

# Stage 4 / **Module 3**

**Minimum 141 Requirements:** Dual, Instrument  
1.0 hours flight  
1.0 hours ground instruction



## Ground Training

### Objective:

For the student to gain an understanding of visual maneuvering, including circling to land, contact approaches, visual approaches, visual illusions, wake turbulence on approach, and hydroplaning.

### Content:

*Visual maneuvering*

- Circling to land
  - the visual circling maneuver
  - the visual maneuvering (circling) area
  - sectorized visual maneuvering (circling) areas
  - the missed approach procedure when circling
  - approaches with circling minimums only
  - airports without a published IAP
- Contact approach
- Visual approach
- Visual illusions
- Wake turbulence on approach
- Hydroplaning

### Completion Standards:

This lesson is complete when the student has successfully completed all review questions following the assigned reading.

### Assignment:

*Instrument Flying*, Chapter 30



## Flight Training

### Objective:

For the student to become proficient in performing precision approaches, including missed approach, full and radar vector techniques.

### Content:

- Instrument preflight
- Discuss initiating the missed approach before reaching the missed approach point
- File an IFR flight plan
- Precision full approach, followed by missed approach
- Precision radar vector approach, using straight-in minimums
- Localizer radar vector approach, using circle-to-land minimums
- Localizer back course full approach, using straight-in minimums
- Postflight procedures

### Completion Standards:

This module is complete when the student can perform precision full and radar vector approaches, and Localizer approaches without descending below the minimum altitudes, and while maintaining airspeed within 10 knots of approach speed, and arriving at the MDA prior to the MAP and performing a prompt missed approach at the accurate time. Precision approach must maintain glideslope within less than full needle deflection.

### Recommended Reading:

*Instrument Flying*



This lesson may be completed using ATD Lesson 17.  
See Appendix 6.

Stage 4 / **Module 3**

**Date of Completion:** \_\_\_\_\_

**Signature:** \_\_\_\_\_

**Time Flown:** \_\_\_\_\_

**Aircraft** \_\_\_\_\_ **ATD** \_\_\_\_\_ **Other** \_\_\_\_\_

# Stage 4 / **Module 4**

**Minimum 141 Requirements:** Dual, Instrument  
1.5 hours flight  
1.0 hours ground instruction



## Ground Training

### Objective:

For the student to gain an understanding of IFR meteorology, specifically clouds and thunderstorms.

### Content:

#### Clouds

- The naming of clouds
- Moisture in the atmosphere
- The formation of clouds
- Precipitation from clouds
- Lifted index

#### Thunderstorms

- The life cycle of a thunderstorm
- Downbursts and microbursts
- Tornadoes and water spouts
- Thunderstorms are hazardous to aviation
- Weather radar
- Stormscopes

### Completion Standards:

This lesson is complete when the student has successfully completed all review questions following the assigned reading.

### Assignment:

*Instrument Flying*, Chapters 19 and 21



## Flight Training

### Objective:

For the student to demonstrate a proficient nonprecision hold and approach, and precision approach. Student will gain an understanding of IFR lost communication procedures.

### Content:

- Instrument preflight
- File an IFR flight plan
- VOR hold
- VOR approach
- Nonprecision approach
- Precision approach
- IFR lost communication procedures
- Postflight procedures

*Instructor should request holding entries and full/radar vectors based on areas the student is least proficient.*

### Completion Standards:

This module is complete when the student can perform the flight with little assistance from the instructor, and maintain flight within 10 knots airspeed, 100 feet altitude, without descending below any minimum altitudes. Student will demonstrate IFR lost communication procedures.

### Recommended Reading:

*Instrument Flying*

Stage 4 / **Module 4**

**Date of Completion:** \_\_\_\_\_

**Signature:** \_\_\_\_\_

**Time Flown:** \_\_\_\_\_

**Aircraft** \_\_\_\_\_ **ATD** \_\_\_\_\_ **Other** \_\_\_\_\_

# Stage 4 / **Module 5** and **Stage Check**



## **Ground Training**

### **Objective:**

For the student to gain an understanding of IFR meteorology, specifically high-level meteorology.

### **Content:**

*High-level meteorology*

- Jet streams
- Clouds at high levels

### **Completion Standards:**

This lesson is complete when the student has successfully completed all review questions following the assigned reading. Stage 4 Exam must be passed with a minimum score of 80% and reconciled to 100%.

### **Assignment:**

*Instrument Flying*, Chapter 22

**Minimum 141 Requirements:** Dual, Instrument  
1.5 hours flight  
Stage check  
1.5 hours ground instruction  
Stage exam



## **Flight Training**

### **Objective:**

For the student to review nonprecision and precision approaches, using missed, circling, straight-in, full/radar vectors, partial panel, and lost communication techniques. For the Stage Check, student should demonstrate skill in the following areas according to the completion standards.

### **Content:**

- Instrument preflight
- File an IFR flight plan
- Nonprecision approach
- Precision approach
- Localizer approach
- IFR lost communication procedures
- Postflight procedures

*Instructor should request missed, circling, straight-in, partial panel, and full/radar vectors based on areas the student is least proficient.*

### **Completion Standards:**

This module is complete when the student can conduct the flight using efficient cockpit management skills in instrument conditions, and demonstrate nonprecision and precision approaches under the conditions stated by the instructor without busting the minimums set out by each approach. Flight must be maintained at altitude within 100 feet, heading within 10 degrees, and airspeed within 10 knots.

### **Recommended Reading:**

*Instrument Flying*

*Instrument Test Prep*, Chapters 6 and 7

Stage 4 / **Module 5**

**Date of Completion:** \_\_\_\_\_

**Signature:** \_\_\_\_\_

**Time Flown:** \_\_\_\_\_

**Stage Exam Score:** \_\_\_\_\_

**Stage Check Successful:** \_\_\_\_\_

**Aircraft** \_\_\_\_\_ **ATD** \_\_\_\_\_ **Other** \_\_\_\_\_

# Optional **Stage 4 Review**

**Lesson Time:** Dual, Instrument  
1.5 hours flight, or whatever is necessary to meet objective  
1.5 hour ground instruction, or whatever is necessary to meet objective



## **Flight Training**

### **Objective:**

For the student to review all Stage 4 tasks and meet all objectives.

### **Content:**

- Instrument preflight
- File an IFR flight plan
- Nonprecision approach
- Precision approach
- IFR lost communication procedures
- Postflight procedures

*Instructor should request missed, circling, straight-in, partial panel, and full/radar vectors based on areas the student is least proficient.*

### **Completion Standards:**

This module is complete when the student can conduct the flight using efficient cockpit management skills in instrument conditions, and demonstrate nonprecision and precision approaches under the conditions stated by the instructor without busting the minimums set out by each approach. Flight must be maintained at altitude within 100 feet, heading within 10 degrees, and airspeed within 10 knots.

### **Recommended Reading:**

*Instrument Flying*

Optional **Stage 4 Review**

**Date of Completion:** \_\_\_\_\_

**Signature:** \_\_\_\_\_

**Time Flown:** \_\_\_\_\_

**Aircraft** \_\_\_\_\_ **ATD** \_\_\_\_\_ **Other** \_\_\_\_\_

# Stage 5

## En Route & Prep for Checkride

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### Objective

The objective of Stage 5 is for the student to become proficient in and have an understanding of the following:



### Ground Training

- Enroute procedures
- Wind, air masses, and fronts
- Weather reports and forecasts
- Review Instrument Airman Certification Standards
- Oral prep for the checkride
- Take and pass the FAA Knowledge Exam



### Flight Training

- Enroute procedures
- Weather information
- Cross-country flight planning
- Instrument cross-country
- Emergency procedures
- Review of Instrument Airman Certification Standards
- Sign-off for the Instrument Checkride

### Completion Standards

Stage 5 is complete when the student achieves the objective of each lesson and can list or describe the correct process or reference for accomplishing elements, exercises, and activities. Student shall score at least 80% on the Stage 5 Exam, and all deficient areas shall be reconciled to 100%. Upon completion of this stage, student will take the Instrument Rating checkride.

# Stage 5 / Module 1



## Ground Training

### Objective:

For the student to gain an understanding of enroute procedures on an IFR flight.

### Content:

- Review objective of Stage 5

#### *En route*

- Radar service
- Enroute clearances
- Position reports
- Additional compulsory radio reports
- Flying the airways
- High altitude flying and oxygen
- VFR-on-top
- DME failure
- Enroute diversions
- Minimum fuel
- Canceling an IFR flight plan

### Completion Standards:

This lesson is complete when the student has successfully completed all review questions following the assigned reading.

### Assignment:

*Instrument Flying*, Chapter 27

**Minimum 141 Requirements:** Dual, Instrument  
Cross-country  
2.0 hours flight  
1.5 hours ground instruction



## Flight Training

### Objective:

For the student to demonstrate proficiency in planning an IFR cross-country, enroute procedures, and performing a short round-robin that includes a precision and nonprecision approach.

### Content:

- Preflight
- Plan IFR round-robin cross-country
- Instrument preflight
- Round-robin IFR cross-country flight
- Simulated loss of communications
- Simulated engine failure
- Simulated instrument failure
- Simulated radio failure
- Nonprecision approach
- Precision approach
- Postflight procedures

*Note: One approach should be performed using a partial panel.*

### Completion Standards:

This module is complete when the student can accurately plan an IFR cross-country flight, demonstrate correct enroute procedures, and perform this flight, including a precision and nonprecision approach, while maintaining flight within  $\pm 100$  feet altitude,  $\pm 10$  degrees of heading,  $\pm 10$  knots airspeed, and approaches within specified minimums.

### Recommended Reading:

*Instrument Flying*

Stage 5 / **Module 1**

**Date of Completion:** \_\_\_\_\_

**Signature:** \_\_\_\_\_

**Time Flown:** \_\_\_\_\_

**Aircraft** \_\_\_\_\_ **ATD** \_\_\_\_\_ **Other** \_\_\_\_\_

# Stage 5 / Module 2

**Minimum 141 Requirements:** Dual, Instrument  
Cross-country  
2.0 hours flight  
1.0 hours ground instruction



## Ground Training

### Objective:

For the student to gain an understanding of IFR meteorology, specifically wind, air masses, and fronts.

### Content:

- The nature of the atmosphere
- The cause of weather

#### *Winds*

- Windshear
- Windshear avoidance

#### *Air masses and frontal weather*

- The warm front
- The cold front
- The occluded front

#### *Depressions—areas of low pressure*

- Weather associated with a depression
- Troughs of low pressure
- The wave or frontal depression
- The hurricane or tropical revolving storm

#### *Anticyclones—areas of high pressure*

- Weather associated with a high
- A ridge of high pressure
- A col

### Completion Standards:

This lesson is complete when the student has successfully completed all review questions following the assigned reading.

### Assignment:

*Instrument Flying*, Chapter 17



## Flight Training

### Objective:

For the student to demonstrate proficiency in all IFR cross-country procedures while performing a short round robin, including holds, approaches, and partial panel work.

### Content:

- Plan IFR cross-country
- Instrument preflight
- Round-robin cross-country flight
- Simulated loss of communications
- Simulated engine failure
- Simulated instrument failure
- Simulated radio failure
- VOR hold
- Nonprecision approach
- Precision approach
- Partial panel work
- Postflight procedures

### Completion Standards:

This module is complete when the student can perform IFR cross-country procedures using good cockpit management skills, can maintain flight within  $\pm 100$  feet,  $\pm 10$  knots, and  $\pm 10$  degrees, and can perform approaches within specified minimums.

### Recommended Reading:

*Instrument Flying*

Stage 5 / **Module 2**

**Date of Completion:** \_\_\_\_\_

**Signature:** \_\_\_\_\_

**Time Flown:** \_\_\_\_\_

**Aircraft** \_\_\_\_\_ **ATD** \_\_\_\_\_ **Other** \_\_\_\_\_

# Stage 5 / Module 3



## Ground Training

### Objective:

For the student to gain an understanding of IFR meteorology, specifically weather reports and forecasts.

### Content:

*Obtaining a weather briefing*

*Weather reports*

- Surface analysis charts
- METARs
- Pilot weather reports (PIREPs)

*Weather forecasts*

- Low-level significant weather prognostic charts
- Graphic area forecasts
- Terminal forecasts (TAF)
- The convective outlook (AC)
- Winds and temperature aloft forecasts (FB)
- Severe weather outlook charts (AC)
- Constant pressure analysis charts
- Tropopause data charts
- Other weather information
- Staying informed in the air

### Completion Standards:

This lesson is complete when the student has successfully completed all review questions following the assigned reading.

### Assignment:

*Instrument Flying*, Chapter 23  
[www.aviationweather.gov](http://www.aviationweather.gov)

**Minimum 141 Requirements:** Dual, Instrument  
Cross-country  
3.5 hours flight  
1.0 hours ground instruction



## Flight Training

### Objective:

For the student to perform the required 250 NM IFR cross-country, demonstrating correct enroute procedures, emergency procedures, and instrument approaches.

### Content:

- IFR cross-country planning
- Instrument preflight
- 250 NM cross-country
- Simulated loss of communications
- Simulated engine failure
- Simulated instrument failure
- Simulated radio failure
- Partial panel work
- Precision and non-precision approach—at different airports
- Postflight procedures

### Completion Standards:

This module is complete when the student can conduct the 250 NM IFR cross-country procedures efficiently, in an organized manner, with good communications, while maintaining flight within  $\pm 100$  feet,  $\pm 10$  degrees, and  $\pm 10$  knots and all approaches within specified minimums.

### Recommended Reading:

*Instrument Flying*

Stage 5 / **Module 3**

**Date of Completion:** \_\_\_\_\_

**Signature:** \_\_\_\_\_

**Time Flown:** \_\_\_\_\_

**Aircraft** \_\_\_\_\_ **ATD** \_\_\_\_\_ **Other** \_\_\_\_\_

# Stage 5 / **Module 4**

**Minimum 141 Requirements:** Dual, Instrument  
1.5 hours flight  
1.0 hours ground instruction



## Ground Training

**Objective:**

For the student to have a complete understanding of all areas included in the Instrument Airman Certification Standards.

**Content:**

- Review the Instrument Airman Certification Standards

**Assignment:**

Review the Instrument Airman Certification Standards



## Flight Training

**Objective:**

For the student to practice all instrument procedures in preparation for the checkride.

**Content:**

- Instrument preflight
- Departure procedures
- Navigation to airway
- Perform 2 holds, 1 partial panel
- Emergency procedures
- Nonprecision full approach
- Precision radar vectors approach
- Postflight procedures

*Note: Approaches should include straight-in, circle-to-land, and partial panel techniques.*

**Completion Standards:**

This module is complete when the student can perform all instrument procedures within Airman Certification Standards and within specified minimums.

**Recommended Reading:**

*Instrument Flying*

*Instrument Test Prep*, Chapters 1 and 2



This lesson may be completed using ATD Lesson 18.  
See Appendix 6.

Stage 5 / **Module 4**

**Date of Completion:** \_\_\_\_\_

**Signature:** \_\_\_\_\_

**Time Flown:** \_\_\_\_\_

**Aircraft** \_\_\_\_\_ **ATD** \_\_\_\_\_ **Other** \_\_\_\_\_

# Stage 5 / Module 5 and Stage Check



## Ground Training

### Objective:

For the student to gain complete understanding of all areas covered in the oral portion of the Instrument checkride.

### Content:

- Review all subject matter required for the Instrument rating
- Suggested review material: *Instrument Oral Exam Guide*

### Completion Standards:

This lesson is complete when the student passes the Stage 5 Exam with at least an 80%, reconciled to 100%. Student should receive endorsement for FAA instrument written exam.

### Assignment:

Suggested reading: Review *Instrument Oral Exam Guide*  
Stage 5 Exam  
FAA Instrument Rating Knowledge Exam

**Minimum 141 Requirements:** Dual, Instrument  
1.5 hours flight  
Stage check  
1.5 hours ground instruction  
Stage exam



## Flight Training

### Objective:

For the student to review all instrument procedures in preparation for the checkride. For the Stage Check, student should demonstrate skill in the following areas according to the completion standards.

### Content:

- Instrument preflight
- Instrument cockpit check
- File an IFR flight plan
- Compliance with departure, en route, and arrival procedures and clearances
- Departure procedures
- Navigate to airway
- Intercept and track VOR radial
- Intercept and track NDB bearing
- Perform 2 holds, 1 partial panel
- Simulated loss of communications
- Simulated engine failure
- Simulated instrument failure
- Simulated radio failure
- Recover from unusual attitudes
- Steep Turns
- Slow Flight
- Nonprecision approach
- Precision approach
- Postflight procedures

*Note: Approaches must demonstrate straight-in, circle-to-land, missed approach, partial panel, full and radar vector procedures.*

### Completion Standards:

This module is complete when the student can demonstrate all instrument maneuvers within practical test standards and approach minimums and conduct the flight unassisted by the flight instructor. Student should receive endorsement for instrument checkride.

### Recommended Reading:

*Instrument Flying*

Stage 5 / <b>Module 5</b>
<b>Date of Completion:</b> _____
<b>Signature:</b> _____
<b>Time Flown:</b> _____
<b>Stage Exam Score:</b> _____
<b>FAA Knowledge Exam Score:</b> _____
<b>Stage Check Successful:</b> _____
<b>Aircraft</b> _____ <b>ATD</b> _____ <b>Other</b> _____

# Optional **Stage 5 Review**

**Lesson Time:** Dual, Instrument  
1.5 hours flight, or whatever is necessary to meet objective  
1.5 hours ground instruction, or whatever is necessary to meet objective



## **Flight Training**

### **Objective:**

For the student to review all Stage 5 tasks and meet all objectives.

### **Content:**

- Instrument preflight
- Instrument cockpit check
- File an IFR flight plan
- Compliance with departure, en route, and arrival procedures and clearances
- Departure procedures
- Navigate to airway
- Intercept and track VOR radial
- Intercept and track NDB bearing
- Perform 2 holds, 1 partial panel
- Simulated loss of communications
- Simulated engine failure
- Simulated instrument failure
- Simulated radio failure
- Recovery from unusual attitudes
- Steep Turns
- Slow Flight
- Nonprecision approach
- Precision approach
- Postflight procedures

*Note: Approaches must demonstrate straight-in, circle-to-land, missed approach, partial panel, full and radar vector procedures.*

### **Completion Standards:**

This module is complete when the student can demonstrate all instrument maneuvers within practical test standards and conduct the flight unassisted by the flight instructor.

### **Recommended Reading:**

*Instrument Flying*

## Optional **Stage 5 Review**

**Date of Completion:** \_\_\_\_\_

**Signature:** \_\_\_\_\_

**Time Flown:** \_\_\_\_\_

**Aircraft** \_\_\_\_\_ **ATD** \_\_\_\_\_ **Other** \_\_\_\_\_

**1. Aeronautical knowledge test: 14 CFR §§61.35(a)(1) and 61.65(a) and (b)**

I certify that (First name, MI, Last name) \_\_\_\_\_  
has received the required training of §61.65(b). I have determined that he/she is prepared for the instrument  
rating knowledge test.

S/S            [date]            J.J. Jones            987654321 CFI            Exp. 06-30-16

**2. Flight proficiency/practical test: 14 CFR §61.65(a)(6)**

I certify that (First name, MI, Last name) \_\_\_\_\_  
has received the required training of 14 CFR §61.65(c) and (d). I have determined that he/she is prepared for the  
Instrument–Airplane practical test.

S/S            [date]            J.J. Jones            987654321 CFI            Exp. 06-30-16

**Confirm for the Checkride:**

- Pilot certificate current
- Application form completely filled out
- Logbook and necessary supplies readily accessible
- Materials necessary for planning a cross-country flight
- FAA Knowledge Exam results
- Photo/signature ID
- Medical certificate current
- Instructor endorsements for checkride
- Graduation certificate
- Examiner’s fee



U.S. Department  
of Transportation  
**Federal Aviation  
Administration**

## **FAA Form 8710-1, Airman Certificate and/or Rating Application Supplemental Information and Instructions**

### **Paperwork Reduction Act Statement**

The information collected on this form is necessary to determine applicant eligibility for airman ratings. We estimate it will take 30 minutes to complete this form. The information collected is required to obtain a benefit and becomes part of the Privacy Act system of records DOT/FAA 847, Aviation Records on Individuals. Please note that an agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a current valid OMB control number. The OMB control number associated with this collection is 2120-0021. You may direct comments concerning the accuracy of this burden and suggestions for reducing the burden to the FAA at: 800 Independence Ave. SW, Washington, DC 20591, Attn: Information Collection Clearance Officer, ASP-110.

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### **See attached Privacy Act Information and Pilot's Bill of Rights Written Notification of Investigation**

Detach these supplemental information instruction parts before submitting the attached form. Instructions for completing this form (FAA 8710-1 form) are attached. If an electronic form is not printed on a duplex printer, the applicant's name, date of birth, and certificate number (if applicable) must be furnished on the reverse side of the application. This information is required for identification purposes. The applicant's social security number, telephone number, and e-mail address are optional.

Tear off this cover before submitting form

# AIRMAN CERTIFICATE AND/OR RATING APPLICATION

**PRIVACY ACT STATEMENT:** This statement is provided pursuant to 5 U.S.C. § 552(a):

The authority for collecting this information is contained in 49 U.S.C. §§ 40113, 44702, 44703, 44709 and 14 CFR Part 61. The principal purpose for which the information is intended to be used is to identify and evaluate your qualifications and eligibility for the issuance of an airman certificate and/or rating. Submission of the data is mandatory, except for the applicant's social security number which is optional. Failure to provide all required information will result in the FAA being unable to issue you a certificate and/or rating. The information collected on this form will be included in a Privacy Act System of Records known as DOT/FAA 847, titled "Aviation Records on Individuals" and will be subject to the routine uses published in the System of Records Notice for DOT/FAA 847 (see [www.dot.gov/privacy/privacyactnotices](http://www.dot.gov/privacy/privacyactnotices)), including:

- (a) Providing basic airmen certification and qualification information to the public upon request. Examples of basic information include:
- The type of certificate(s) and/or rating(s) held, limitations, date of issuance and certificate number;
  - The status of the airman's certificate (i.e., whether it has been amended, modified, suspended or revoked for any reason);
  - The airman's home address, unless requested by the airman to be withheld from public disclosure per 49 U.S.C. 44703(c);
  - Information relating to an airman's physical status or condition used to determine statistically the validity of FAA medical standards, the date, class, and restrictions of the latest physical;
  - Information relating to an individual's eligibility for medical certification, requests for exemption from medical requirements, and requests for review of medical certificate denials.
- (b) Using contact information to inform airmen of meetings and seminars conducted by the FAA regarding aviation safety.
- (c) Disclosing information to the National Transportation Safety Board in connection with its investigation responsibilities.
- (d) Providing information about airmen to Federal, State, local and tribal law enforcement agencies when engaged in an official investigation in which an airman is involved.
- (e) Providing information about enforcement actions, or orders issued thereunder, to Federal agencies, the aviation industry, and the public upon request.
- (f) Making records of delinquent civil penalties owed to the FAA available to the U.S. Department of the Treasury and the U.S. Department of Justice (DOJ) for collection pursuant to 31 U.S.C. 3711(g).
- (g) Making records of effective orders against the certificates of airmen available to their employers if the airmen use the affected certificates to perform job responsibilities for those employers.
- (h) Making airmen records available to users of FAA's Safety Performance Analysis System (SPAS), including the Department of Defense Commercial Airlift Division's Air Carrier Analysis Support System (ACAS) for its use in identifying safety hazards and risk areas, targeting inspection efforts for certificate holders of greatest risk, and monitoring the effectiveness of targeted oversight actions.
- (i) Making records of an individual's positive drug test result, alcohol test result of 0.04 or greater breath alcohol concentration, or refusal to submit to testing required under a DOT-required testing program, available to third parties, including current and prospective employers of such individuals. Such records also contain the names and titles of individuals who, in their commercial capacity, administer the drug and alcohol testing programs of aviation entities.
- (j) Providing information about airmen through the Civil Aviation Registry's Comprehensive Airmen Information System to the Department of Health and Human Services, Office of Child Support Enforcement, and the Federal Parent Locator Service that locates noncustodial parents who owe child support. Records in this system are used to identify airmen to the child support agencies nationwide in enforcing child support obligations, establishing paternity, establishing and modifying support orders and location of obligors. Records listed within the section on Categories of Records are retrieved using Connect: Direct through the Social Security Administration's secure environment.
- (k) Making personally identifiable information about airmen available to other Federal agencies for the purpose of verifying the accuracy and completeness of medical information provided to FAA in connection with applications for airmen medical certification.
- (l) Making records of past airman medical certification history data available to Aviation Medical Examiners (AMEs) on a routine basis so that AMEs may render the best medical certification decision.
- (m) Making airman, aircraft and operator record elements available to users of FAA's Skywatch system, including the Department of Defense, the Department of Homeland Security (DHS), DOJ and other authorized Federal agencies, for their use in managing, tracking and reporting aviation-related security events.
- (n) Other possible routine uses published in the Federal Register (see Prefatory Statement of General Routine Uses for additional uses (65 FR 19477-78) For example, a record from this system of records may be disclosed to the United States Coast Guard (Coast Guard) and to the Transportation Security Administration (TSA) if information from this system was shared with either agency when that agency was a component of the Department of Transportation (DOT) before its transfer to DHS and such disclosure is necessary to accomplish a DOT, TSA or Coast Guard function related to this system of records.

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***Your signature on this form (FAA Form 8710-1) acknowledges that you received the Pilot's Bill of Rights Written Notification of Investigation at the time of this application.***

### **PILOT'S BILL OF RIGHTS WRITTEN NOTIFICATION OF INVESTIGATION**

The information you submit on the attached FAA Form 8710-1, Airman Certificate and/or Rating Application, will be used by the Administrator of the Federal Aviation Administration as part of the basis for issuing an airman certificate, rating, or inspection authorization to you under Title 49, United States Code (U.S.C.) section 44703(a), if the Administrator finds, after investigation, that you are qualified for, and physically able to perform the duties related to the certificate, rating, or inspection authorization for which you are applying. Therefore, in accordance with the Pilot's Bill of Rights, the Administrator is providing you with this written notification of investigation of your qualifications for an airman certificate, rating, or inspection authorization:

- The nature of the Administrator's investigation, which is precipitated by your submission of this application, is to determine whether you meet the qualifications for the airman certificate, rating, or inspection authorization you are applying for under Title 14, Code of Federal Regulations (CFR) part 61.
- Any response to an inquiry by a representative of the Administrator by you in connection with this investigation of your qualifications for an airman certificate, rating, or inspection authorization may be used as evidence against you.
- A copy of your airman application file for this date is available to you upon your written request addressed to:

Federal Aviation Administration  
Airmen Certification Branch,  
AFS-760 P.O. Box 25082  
Oklahoma City, OK 73125-0082

(If you make a written request for your airman application file, please provide your full name, date of birth or airman certification number for identification purposes, and the date of application.)

**AIRMAN CERTIFICATE AND/OR RATING APPLICATION  
INSTRUCTIONS FOR COMPLETING FAA FORM 8710-1**

**I. APPLICATION INFORMATION.** Mark "X" in all appropriate blocks(s).

**Note:** Please enter all dates in eight digits as MM/DD/YYYY.  
Use numeric characters, (e.g. 01/01/2014).

**Block A. Name.** Enter full legal name (Last, First, Middle). If your full legal name is more than 50 characters, use no more than one middle name for record purposes. Do not change the name on subsequent applications unless it is done in accordance with 14 CFR part 61.25. If you do not have a middle name, enter "NMN." If you have a middle initial only, indicate "Initial only." Indicate if you are a Jr., II, or III.

**Block B. Social Security Number.** Enter either your 9-digit social security number, "Do Not Use" or "None" if you are not a U.S. citizen. If entering a social security number, only enter a 9-digit U.S. social security number (optional). See supplemental Privacy Act Information.

**Block C. Date of Birth.** Enter your date of birth in the following format: MM/DD/YYYY. Check for accuracy. Verify that DOB is the same as it is on the medical certificate.

**Block D. Place of Birth.** If you were born in the USA, enter the city and state where you were born. If the city is unknown, enter the county and state. If you were born outside the USA, enter the name of the city and country where you were born.

**Block E1. Residential Address.** Enter your complete residential address. This must include street number, city, state, and zip code. If the applicant has a foreign address, the country must be stated. If a residential address does not exist, a map or written directions to the applicant's physical residence must be attached to the application. Verify that the numbers are not transposed.

**Block E2. Mailing Address.** Enter your mailing address, if different than block E1. This may be a residence, post office box, rural route, flight school address, personal mail box (PMB), commercial address, or other mail drop location, as applicable. The address provided in block E2, if any, will be printed on the permanent airman certificate. If you want your airman certificate mailed to an address other than provided in blocks E1 or E2, you will need to provide instructions on a separate attachment or in the remarks section of the form.

**Block F. Citizenship/Nationality.** Mark USA if you are a U.S. Citizen or legally naturalized U.S. Citizen. If you are not a U.S. citizen, mark "Other" and enter the country where you are a legal citizen. To claim Dual Citizenship the applicant must present appropriate documentation of citizenship for each country.

**Block G. Do you read, speak, write and understand the English language?** Mark yes or no. If you answered "No" and it is due to medical reasons, an operating limitation will be placed on the airman certificate.

**Block H. Height.** Enter your height in inches. Example: 5'8" would be entered as 68 in. No fractions, use whole inches only.

**Block I. Weight.** Enter your weight in pounds. No fractions, use whole pounds only.

**Block J. Hair Color.** Spell out the color of your hair. Choose from the following: bald, black, blond, brown, gray, red or white. If you wear a wig or toupee, enter the color of your hair under the wig or toupee.

**Block K. Eye Color.** Spell out the color of your eyes. Choose from the following: black, blue, brown, gray, green, or hazel.

**Block L. Sex.** Mark either Male or Female as appropriate.

**Block M. Do You Hold or Have You Ever Held An FAA Pilot Certificate?** Mark yes or no. (NOTE: A student pilot certificate is a pilot certificate.) If Yes, complete Blocks M1, M2, and M3.

**Block M1. Grade of Certificate.** Enter the grade of the FAA pilot certificate you hold (i.e., Student, Recreational, Private, Commercial, or ATP). DO NOT enter flight instructor certificate information.

**Block M2. Certificate Number.** Enter your current FAA certificate number as it appears on the pilot certificate.

**Block M3. Date Issued.** Enter the date your pilot certificate was last issued.

**Block N. Do You Hold a Medical Certificate?** Mark applicable boxes. If yes, complete blocks N1, N2, and N3.

**Block N1. Class of Medical Certificate.** Enter the class as shown on the medical certificate, (i.e., First, Second, or Third Class).

**Block N2. Name of Medical Examiner.** Enter the medical examiner's name as shown on your medical certificate.

**Block N3. Date Issued.** Enter the date your medical certificate was issued.

**Block O. Narcotics Drugs.** Mark appropriate block. Only mark "Yes" if you have actually been convicted. If you have been charged with a violation which has not been adjudicated, mark "No." Do not include alcohol offenses involving a motor vehicle mode of transportation as those are covered on the FAA Form 8500-8, Medical application.

**Block O1. Date of Final Conviction.** If block "N" was marked "Yes" provide the date of final conviction.

**II. CERTIFICATE OR RATING APPLIED FOR ON BASIS OF:**

**Block A. Completion of Required Test.**

1. Aircraft to be used. (If flight test required) – Enter the make and model of each aircraft used or represented. If a flight simulation training device (FSTD) is used, indicate Level of Device(s).
2. Total time in this aircraft and/or approved full flight simulator (FFS) or flight training device (FTD) (Hrs.) – (2a) Enter the total Flight Time (2b) Enter Pilot-In-Command (PIC) Flight Time.

**Block B. U.S. Military Competence Or Experience.** Enter your branch of service, date rated as a U.S. military pilot, and your rank or grade. In block 4a and 4b, enter the make and model of each military aircraft used to qualify (as appropriate).

**Block C. Graduate of an Approved Course.**

1. Name, Location, Certification Number of Training Agency/Center, as shown on the graduation certificate. Indicate if this was a part 142 training center.
2. Curriculum From Which Graduated. Enter name of curriculum and level, category, and/or type rating, as applicable.
3. Date. Date of graduation from indicated course.

**Note:** Approved course graduate must also complete block A "Completion of Test or Activity," if the course is not part of an Air Agency or a part 142 Training Center.

**Block D. Holder of Foreign License.**

1. Country that Issued the Foreign Pilot License.
2. Grade Of Foreign Pilot License (i.e. private, commercial, etc).
3. Number. Number which appears on the foreign license.
4. Ratings. Enter the FAA equivalent only ratings that appear on the foreign license. Indicate the ratings as they will appear on the FAA Certificate (i.e. ASEL, AMEL, ROTORCRAFT HELICOPTER, CE-500, etc).

**Block E. Completion of Air Carrier's Training Program.**

1. Name of air carrier.
2. Date program was started.
3. Identify the training program accomplished.

**III. RECORD OF PILOT TIME.** At a minimum, the applicant should complete the blocks applicable to the certificate or rating sought; however, it is recommended that all pilot time be entered. If decimal points are utilized, ensure that they are legible. Time entered in the "Class Totals" block should reflect time in aircraft class for the certificate or rating sought with this application. The time entered for an FFS, FTD, and/or ATD may be credited towards the total time in the category, class, and instrument time as permitted by the regulations. Add any Flight Engineer time used for ATP in remarks section.

**IV. HAVE YOU PREVIOUSLY RECEIVED A NOTICE OF DISAPPROVAL OR BEEN DENIED FOR ANY REASON FOR THE CERTIFICATE AND/OR RATING FOR WHICH YOU ARE APPLYING?** Mark "Yes" or "No" as appropriate.

**V. APPLICANT'S CERTIFICATION.**

- A. Signature. Sign your name.
- B. Date. The date you signed the application.



<input type="checkbox"/> Accepted Student Pilot Application - I have personally reviewed the applicant's information and verified this person meets the eligibility requirements and verified the applicant's identification.		<b>Instructor Action</b>		<input type="checkbox"/> Rejected Student Pilot Application																																											
<input type="checkbox"/> Flight Review <input type="checkbox"/> Instrument Proficiency Check <input type="checkbox"/> Recommendation - I have personally instructed the applicant and consider this person ready to take the test.																																															
Date	Certified Flight Instructor's Signature ( <i>Print Name and Sign</i> )	Certificate Number	CFI Certificate Expires																																												
<b>Air Agency's Recommendation</b>																																															
The applicant has successfully completed our _____ course, and is recommended for certificate or rating without further practical test.																																															
Date	Agency Name and Number	Official Signature																																													
<b>Designated Examiner or Airman Certification Representative Report</b>																																															
<input type="checkbox"/> Accepted-Student Pilot Application		<input type="checkbox"/> Rejected Student Pilot Application																																													
<input type="checkbox"/> I have personally reviewed this applicant's pilot logbook and/or training record, and I certify that the individual meets the applicable requirements of 14 CFR Part 61 for the certificate or rating sought.																																															
<input type="checkbox"/> I have personally reviewed this applicant's graduation certificate, and found it to be appropriate and in order, and have returned the certificate. (Original ATP CTP graduation certificate must be attached)																																															
<input type="checkbox"/> I have personally tested and/or verified this applicant in accordance with pertinent procedures and standards with the result indicated below.																																															
<input type="checkbox"/> I have personally delivered the Written Notification under the Pilot's Bill of Rights to the applicant.																																															
<input type="checkbox"/> Approved – Temporary Certificate Issued (Original Attached)			<input type="checkbox"/> Disapproved – Disapproval Notice Issued (Original Attached)																																												
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<b>Evaluator's Record (Use for All ATP Certificate(s) and/or Type Rating(s))</b>																																															
	Inspector	Examiner	Signature and Certificate Number	Date																																											
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Approved FFS/FTD Check	<input type="checkbox"/>	<input type="checkbox"/>	_____	_____																																											
Aircraft Flight Check	<input type="checkbox"/>	<input type="checkbox"/>	_____	_____																																											
Advanced Qualification Program	<input type="checkbox"/>	<input type="checkbox"/>	_____	_____																																											
<b>Aviation Safety Inspector or Technician Report</b>																																															
I have personally tested this applicant in accordance with or have otherwise verified that this applicant complies with, pertinent procedures, standards, policies, and or necessary requirements with the result indicated below. ( <i>The approved box need only checked if the Inspector is the one that issued the temporary airman certificate</i> )																																															
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Certification Activities: <table style="width:100%; border: none;"> <tr> <td><input type="checkbox"/> Examiner's Recommendation Provided/Reviewed</td> <td><input type="checkbox"/> Ground Instructor Certificate Issued</td> <td><input type="checkbox"/> Flight Instructor Certificate Issued</td> <td colspan="3">Certificate or Rating Based on:</td> </tr> <tr> <td><input type="checkbox"/> Accepted <input type="checkbox"/> Rejected</td> <td><input type="checkbox"/> Basic</td> <td><input type="checkbox"/> Initial <input type="checkbox"/> Renewal <input type="checkbox"/> Reinstatement</td> <td><input type="checkbox"/> Approved FAA Qualification</td> <td colspan="2"><input type="checkbox"/> Military Competency</td> </tr> <tr> <td><input type="checkbox"/> Application for a Student Pilot Certificate Accepted</td> <td><input type="checkbox"/> Advanced</td> <td>Instructor Renewal Based On:</td> <td colspan="3">Criteria Not Identified on Page 1</td> </tr> <tr> <td><input type="checkbox"/> Reissue or exchange of pilot, CFI, or G.I. certificate</td> <td><input type="checkbox"/> Instrument</td> <td><input type="checkbox"/> Activity <input type="checkbox"/> Training Course</td> <td colspan="3"><input type="checkbox"/> Foreign License</td> </tr> <tr> <td><input type="checkbox"/> Change of name, nationality, gender or date of birth</td> <td></td> <td><input type="checkbox"/> Test <input type="checkbox"/> Duties and Responsibilities</td> <td colspan="3"><input type="checkbox"/> Special medical test conducted – report forwarded to issuing medical office or AAM-300</td> </tr> <tr> <td><input type="checkbox"/> SIC Type Rating issued under § 61.55(b) (Part 91)</td> <td></td> <td><input type="checkbox"/> Military Instructor Proficiency Check</td> <td colspan="3"><input type="checkbox"/> Special Test-Reexamination (44709) conducted</td> </tr> <tr> <td></td> <td></td> <td></td> <td colspan="3"><input type="checkbox"/> Approved <input type="checkbox"/> Disapproved</td> </tr> </table>						<input type="checkbox"/> Examiner's Recommendation Provided/Reviewed	<input type="checkbox"/> Ground Instructor Certificate Issued	<input type="checkbox"/> Flight Instructor Certificate Issued	Certificate or Rating Based on:			<input type="checkbox"/> Accepted <input type="checkbox"/> Rejected	<input type="checkbox"/> Basic	<input type="checkbox"/> Initial <input type="checkbox"/> Renewal <input type="checkbox"/> Reinstatement	<input type="checkbox"/> Approved FAA Qualification	<input type="checkbox"/> Military Competency		<input type="checkbox"/> Application for a Student Pilot Certificate Accepted	<input type="checkbox"/> Advanced	Instructor Renewal Based On:	Criteria Not Identified on Page 1			<input type="checkbox"/> Reissue or exchange of pilot, CFI, or G.I. certificate	<input type="checkbox"/> Instrument	<input type="checkbox"/> Activity <input type="checkbox"/> Training Course	<input type="checkbox"/> Foreign License			<input type="checkbox"/> Change of name, nationality, gender or date of birth		<input type="checkbox"/> Test <input type="checkbox"/> Duties and Responsibilities	<input type="checkbox"/> Special medical test conducted – report forwarded to issuing medical office or AAM-300			<input type="checkbox"/> SIC Type Rating issued under § 61.55(b) (Part 91)		<input type="checkbox"/> Military Instructor Proficiency Check	<input type="checkbox"/> Special Test-Reexamination (44709) conducted						<input type="checkbox"/> Approved <input type="checkbox"/> Disapproved		
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<b>Attachments:</b>		<b>Airman's Identification (ID)</b> ( <i>U.S. driver's license or passport recommended</i> )		<b>Applicant Information</b> ( <i>required if printed on 2 pages</i> )																																											
<input type="checkbox"/> Certifying Statement		Form of ID		Name																																											
<input type="checkbox"/> College Transcript (Official)		ID Number ( <i>If issued by State, include State</i> )		Date of Birth																																											
<input type="checkbox"/> ATP CTP Graduation Certificate		Expiration Date ( <i>must be valid</i> )		Certificate Number																																											
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<input type="checkbox"/> Temporary Airman Certificate		<input type="checkbox"/> Meets FAA Aviation English Language Proficiency <input type="checkbox"/> Does Not Meet FAA Aviation English Language Proficiency																																													
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# Stage 1 Exam

## Instrument Flight

Name: \_\_\_\_\_

Grade: \_\_\_\_\_ Date: \_\_\_\_\_

Instructor: \_\_\_\_\_

*Note: for Figures in the Stage Exams, see the figures included on pages 59–76.*

1. When an altimeter is changed from 30.11" Hg to 29.96" Hg, in which direction will the indicated altitude change and by what value?  
A— Altimeter will indicate 15 feet lower.  
B— Altimeter will indicate 150 feet lower.  
C— Altimeter will indicate 150 feet higher.
2. When an aircraft is decelerated, some attitude indicators will precess and incorrectly indicate a  
A— left turn.  
B— climb.  
C— descent.
3. Pressure altitude is the altitude read on your altimeter when the instrument is adjusted to indicate height above  
A— sea level.  
B— the standard datum plane.  
C— ground level.
4. Prior to starting an engine, you should check the turn-and-slip indicator to determine if the  
A— needle indication properly corresponds to the angle of the wings or rotors with the horizon.  
B— needle is approximately centered and the tube is full of fluid.  
C— ball will move freely from one end of the tube to the other when the aircraft is rocked.
5. How can you determine the pressure altitude on an airport without a tower or FSS?  
A— Set the altimeter to 29.92" Hg and read the altitude indicated.  
B— Set the altimeter to the current altimeter setting of a station within 100 miles and correct this indicated altitude with local temperature.  
C— Use your computer and correct the field elevation for temperature.
6. When airspeed is increased in a turn, what must be done to maintain a constant altitude?  
A— Decrease the angle of attack.  
B— Increase the angle of bank and/or decrease the pitch attitude.  
C— Decrease the angle of bank.
7. On the taxi check, the magnetic compass should  
A— swing opposite to the direction of turn when turning from north.  
B— exhibit the same number of degrees of dip as the latitude.  
C— swing freely and indicate known headings.
8. The local altimeter setting should be used by all pilots in a particular area, primarily to provide for  
A— the cancellation of altimeter error due to nonstandard temperatures aloft.  
B— better vertical separation of aircraft.  
C— more accurate terrain clearance in mountainous areas.
9. If a standard rate turn is maintained, how long would it take to turn 180°?  
A— 1 minute.  
B— 2 minutes.  
C— 3 minutes.
10. What is the first fundamental skill in attitude instrument flying?  
A— Aircraft control.  
B— Instrument cross-check.  
C— Instrument interpretation.
11. Under which condition will pressure altitude be equal to true altitude?  
A— When the atmospheric pressure is 29.92" Hg.  
B— When standard atmospheric conditions exist.  
C— When indicated altitude is equal to the pressure altitude.

- 12.** The gyroscopic heading indicator is inoperative. What is the primary bank instrument in unaccelerated straight-and-level flight?
- A— Magnetic compass.
  - B— Attitude indicator.
  - C— Miniature aircraft of turn coordinator.
- 13.** What is the correct sequence in which to use the three skills used in instrument flying?
- A— Attitude control, cross-check, and instrument interpretation.
  - B— Pitch controls, power control, and trim control.
  - C— Cross-check, instrument interpretation, and aircraft control.
- 14.** What does the miniature aircraft of the turn coordinator directly display?
- A— Rate of roll and rate of turn.
  - B— Angle of bank and rate of turn.
  - C— Angle of bank.
- 15.** As a rule of thumb, altitude corrections of less than 100 feet should be corrected by using
- A— two bar widths on the attitude indicator.
  - B— less than a full bar width on the attitude indicator.
  - C— less than half bar width on the attitude indicator.
- 16.** If a 180° steep turn is made to the right and the aircraft is rolled out to straight-and-level flight by visual references, the attitude indicator
- A— should immediately show straight-and-level flight.
  - B— will show a slight skid and climb to the right.
  - C— may show a slight climb and turn.
- 17.** As power is reduced to change airspeed from high to low cruise in level flight, which instruments are primary for pitch, bank, and power, respectively?
- A— Attitude indicator, heading indicator, and manifold pressure gauge or tachometer.
  - B— Altimeter, attitude indicator, and airspeed indicator.
  - C— Altimeter, heading indicator, and manifold pressure gauge or tachometer.
- 18.** The lighter workloads associated with glass (digital) flight instrumentation
- A— are instrumental in decreasing flightcrew fatigue.
  - B— have proven to increase safety in operations.
  - C— may lead to complacency by the flightcrew.
- 19.** You check the flight instruments while taxiing and find that the vertical speed indicator (VSI) indicates a descent of 100 feet per minute. In this case, you
- A— may not proceed under IFR until the instrument is corrected by an authorized instrument repairman.
  - B— may take off under IFR and use 100-foot descent as the zero indication.
  - C— may takeoff and proceed under IFR but only in VFR weather conditions.
- 20.** If both the ram air input and drain hole of the pitot system are blocked, what airspeed indication can be expected?
- A— Increase of indicated airspeed during a climb.
  - B— Decrease of indicated airspeed during a climb.
  - C— Constant indicated airspeed during any change in altitude.
- 21.** Which instruments are considered to be supporting instruments for pitch during change of airspeed in a level turn?
- A— Airspeed indicator and VSI.
  - B— Altimeter and attitude indicator.
  - C— Attitude indicator and VSI.
- 22.** What should be the indication on the magnetic compass as you roll into a standard rate turn to the right from a south heading in the Northern Hemisphere?
- A— The compass will indicate a turn to the right, but at a faster rate than is actually occurring.
  - B— The compass will initially indicate a turn to the left.
  - C— The compass will remain on south for a short time, then gradually catch up to the magnetic heading of the aircraft.
- 23.** Which initial pitch attitude change on the attitude indicator should be made to correct altitude while at normal cruise in a helicopter?
- A— Two bar width.
  - B— One and one-half bar width.
  - C— One bar width.

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- 24.** Automation in aircraft has proven
- A— to present new hazards in its limitations.
  - B— that automation is basically flawless.
  - C— effective in preventing accidents.
- 25.** (Refer to Figure 150.) What is the flight attitude?  
One instrument has malfunctioned.
- A— Climbing turn to the right.
  - B— Climbing turn to the left.
  - C— Descending turn to the right.

# Stage 2 Exam

## Navigation

Name: \_\_\_\_\_

Grade: \_\_\_\_\_ Date: \_\_\_\_\_

Instructor: \_\_\_\_\_

*Note: for Figures in the Stage Exams, see the figures included on pages 59–76.*

1. What record shall be made in the aircraft log or other permanent record by the pilot making the VOR operational check?
  - A— The date, place, bearing error, and signature.
  - B— The date, frequency of VOR or VOT, number of flight hours since last check, and signature.
  - C— The date, place, bearing error, aircraft total time, and signature.
2. Which checks and inspections of flight instruments or instrument systems must be accomplished before an aircraft can be flown under IFR?
  - A— VOR within 30 days, altimeter systems within 24 calendar months, and transponder within 24 calendar months.
  - B— ELT test within 30 days, altimeter systems within 12 calendar months, and transponder within 24 calendar months.
  - C— VOR within 24 calendar months, transponder within 24 calendar months, and altimeter system within 12 calendar months.
3. What minimum navigation equipment is required for IFR flight?
  - A— VOR/LOC receiver, transponder, and DME.
  - B— VOR receiver and, if in ARTS III environment, a coded transponder equipped for altitude reporting.
  - C— Navigation equipment appropriate to the ground facilities to be used.
4. (Refer to Figure 81.) When checking a dual VOR system by use of a VOT, which illustration indicates the VOR's are satisfactory?
  - A— 1
  - B— 2
  - C— 4
5. In which publication can the VOR receiver ground checkpoint(s) for a particular airport be found?
  - A— Aeronautical Information Manual.
  - B— En Route Low Altitude Chart.
  - C— Chart Supplement.
6. As a rule of thumb, to minimize DME slant range error, how far from the facility should you be to consider the reading as accurate?
  - A— Two miles or more for each 1,000 feet of altitude above the facility.
  - B— One or more miles for each 1,000 feet of altitude above the facility.
  - C— No specific distance is specified since the reception is line-of-sight.
7. What angular deviation from a VOR course centerline is represented by a full-scale deflection of the CDI?
  - A— 4°.
  - B— 5°.
  - C— 10°.
8. When using VOR for navigation, which of the following should be considered as station passage?
  - A— The first movement of the CDI as the airplane enters the zone of confusion.
  - B— The moment the TO-FROM indicator becomes blank.
  - C— The first positive, complete reversal of the TO-FROM indicator.
9. (Refer to Figure 104.) If the radio magnetic indicator is tuned to a VOR, which illustration indicates the aircraft is on the 335° radial?
  - A— 2
  - B— 3
  - C— 4
10. (Refer to Figure 104.) If the radio magnetic indicator is tuned to a VOR, which illustration indicates the aircraft is on the 010° radial?
  - A— 1
  - B— 2
  - C— 3
11. (Refer to Figure 110.) In which general direction from the VORTAC is the aircraft located?
  - A— Southwest.
  - B— Northwest.
  - C— Northeast.

- 12.** When installed with the ILS and specified in the approach procedures, DME may be used
- A— in lieu of the OM.
  - B— in lieu of visibility requirements.
  - C— to determine distance from TDZ.
- 13.** How wide is an SDF course?
- A— Either 3° or 6°.
  - B— Either 6° or 12°.
  - C— Varies from 5° to 10°.
- 14.** While flying a 3° glide slope, a constant tailwind shears to a calm wind. Which conditions should the pilot expect?
- A— Airspeed and pitch attitude decrease and there is a tendency to go below glide slope.
  - B— Airspeed and pitch attitude increase and there is a tendency to go below glide slope.
  - C— Airspeed and pitch attitude increase and there is a tendency to go above glide slope.
- 15.** Which range facility associated with the ILS is identified by the last two letters of the localizer identification group?
- A— Inner marker.
  - B— Outer marker.
  - C— Middle compass locator.
- 16.** Which indications will a pilot receive where an IM is installed on a front course ILS approach?
- A— One dot per second and a steady amber light.
  - B— Four dots per second and a flashing white light.
  - C— Alternate dashes and a blue light.
- 17.** When tracking inbound on the localizer, which of the following is the proper procedure regarding drift corrections?
- A— Drift corrections should be accurately established before reaching the outer marker and completion of the approach should be accomplished with heading corrections no greater than 2°.
  - B— Drift corrections should be made in 5° increments after passing the outer marker.
  - C— Drift corrections should be made in 10° increments after passing the outer marker.
- 18.** The primary purpose of runway end identifier lights, installed at many airfields, is to provide
- A— rapid identification of the approach end of the runway during reduced visibility.
  - B— a warning of the final 3,000 feet of runway remaining as viewed from the takeoff or approach position.
  - C— rapid identification of the primary runway during reduced visibility.
- 19.** During a “no-gyro” approach and prior to being handed off to the final approach controller, the pilot should make all turns
- A— one-half standard rate unless otherwise advised.
  - B— any rate not exceeding a 30° bank.
  - C— standard rate unless otherwise advised.
- 20.** Hand-held GPS systems, and GPS systems certified for VFR operation, may be used during IFR operations as
- A— the principal reference to determine enroute waypoints.
  - B— an aid to situational awareness.
  - C— the primary source of navigation.
- 21.** On a GPS approach, the GPS/HSI shows an LNAV/VNAV flag. What should you do?
- A— Descend to the LNAV MDA missed approach point.
  - B— Follow the glideslope to the LNAV/VNAV DA.
  - C— Execute the missed approach.
- 22.** In what circumstances would a baro-VNAV approach not be authorized?
- A— When the ground-based NAVAIDs, such as the ILS, are out of service.
  - B— In areas of hazardous terrain or when a remote altimeter setting is required.
  - C— When the lower limit of the published temperature is -20C and the outside temperature is -15C.

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- 23.** While on a GPS approach, you receive a RAIM annunciation about the status of RAIM reliability. You
- A— execute an immediate missed approach regardless of where you are on the approach path.
  - B— execute an immediate missed approach only if you are past the FAWP.
  - C— continue the approach since you have up to 5 minutes of GPS accuracy to complete the approach after you receive the annunciation.
- 24.** As part of your GPS preflight planning, RAIM prediction should be verified. This means that
- A— RAIM availability is assured for your entire route of flight including the GPS approach at your destination.
  - B— RAIM is predicted to be available for your entire route of flight including the GPS approach at your destination.
  - C— if RAIM is predicted to be available, you must still have ILS capability to use a GPS approach.
- 25.** On a WAAS-capable GPS approach, what is the significance of “LNAV+V” being displayed?
- A— Advisory vertical guidance is provided to the pilot that must be used in lieu of published step-down fixes on the instrument approach.
  - B— Advisory vertical guidance is provided as an aid to the pilot during the descent to the runway.
  - C— Approved vertical guidance to descend to the decision height is provided to the pilot.

# Stage 3 Exam

## Holding Procedures

Name: \_\_\_\_\_

Grade: \_\_\_\_\_ Date: \_\_\_\_\_

Instructor: \_\_\_\_\_

*Note: for Figures in the Stage Exams, see the figures included on pages 59–76.*

1. During your preflight planning for an IFR flight, you determine that the first airport of intended landing has no instrument approach prescribed in 14 CFR §97. The weather forecast for one hour before through one hour after your estimated time of arrival is 3,000' scattered with 5 miles visibility. To meet the fuel requirements for this flight, you must be able to fly to the first airport of intended landing,
  - A— then to the alternate airport, and then for 30 minutes at normal cruising speed.
  - B— then to the alternate airport, and then for 45 minutes at normal cruising speed.
  - C— and then fly for 45 minutes at normal cruising speed.
2. To meet the minimum instrument experience requirements, within the last 6 calendar months you need
  - A— six instrument approaches, holding procedures, and intercepting and tracking courses in the appropriate category of aircraft.
  - B— six hours in the same category aircraft.
  - C— six hours in the same category aircraft, and at least 3 of the 6 hours in actual IFR conditions.
3. After your recent IFR experience lapses, how much time do you have before you must pass an instrument proficiency check to act as pilot in command under IFR?
  - A— 6 months.
  - B— 90 days.
  - C— 12 months.
4. The pilot in command of a civil aircraft must have an instrument rating only when operating
  - A— under IFR in positive control airspace.
  - B— under IFR, in weather conditions less than the minimum for VFR flight, and in a Class A airspace.
  - C— in weather conditions less than the minimum prescribed for VFR flight.
5. An aircraft operated under 14 CFR §91 IFR is required to have which of the following?
  - A— Radar altimeter.
  - B— Dual VOR system.
  - C— Gyroscopic direction indicator.
6. When may a pilot file a composite flight plan?
  - A— When requested or advised by ATC.
  - B— Any time a portion of the flight will be VFR.
  - C— Any time a landing is planned at an intermediate airport.
7. Preferred IFR routes beginning with a fix indicate that departing aircraft will normally be routed to the fix by
  - A— the established airway(s) between the departure airport and the fix.
  - B— an instrument departure procedure (DP), or radar vectors.
  - C— direct route only.
8. Which types of airspace are depicted on the En Route Low Altitude Chart?
  - A— Limits of controlled airspace, military training routes and special use airspace.
  - B— Class A, special use airspace, Class D and Class E.
  - C— Special use airspace, Class E, Class D, Class A, Class B and Class C.
9. Which conditions result in the formation of frost?
  - A— The temperature of the collecting surface is at or below freezing and small droplets of moisture are falling.
  - B— When dew forms and the temperature is below freezing.
  - C— Temperature of the collecting surface is below the dewpoint of surrounding air and the dewpoint is colder than freezing.
10. Clouds, fog, or dew will always form when
  - A— water vapor condenses.
  - B— water vapor is present.
  - C— the temperature and dew point are equal.

- 11.** Under which condition does advection fog usually form?
- A— Moist air moving over colder ground or water.
  - B— Warm, moist air settling over a cool surface under no-wind conditions.
  - C— A land breeze blowing a cold air mass over a warm water current.
- 12.** (Refer to Figure 188.) You have been cleared to the CREAK intersection via the BTG 054° radial at 7,000 feet. Approaching CREAK, you are cleared for the LOC/DME RWY 21 approach to PDX. Descent to procedure turn altitude should not begin prior to
- A— completion of the procedure turn, and established on the localizer.
  - B— CREAK outbound.
  - C— intercepting the glide slope.
- 13.** While flying on an IFR flight plan, you experience two-way communications radio failure while in VFR conditions. In this situation, you should continue your flight under
- A— VFR and land as soon as practicable.
  - B— VFR and proceed to your flight plan destination.
  - C— IFR and maintain the last assigned route and altitude to your flight plan destination.
- 14.** Which aeronautical chart depicts Military Training Routes (MTR) above 1,500 feet?
- A— IFR Planning Chart.
  - B— IFR Low Altitude En Route Chart.
  - C— IFR High Altitude En Route Chart.
- 15.** (Refer to Figure 108.) Where should the bearing pointer be located relative to the wingtip reference to maintain the 16 DME range in a left-hand arc with a left crosswind component?
- A— Ahead of the left wingtip reference for the VOR-2.
  - B— Ahead of the right wingtip reference for the VOR-1.
  - C— Behind the left wingtip reference for the VOR-2.
- 16.** (Refer to Figure 113.) You receive this ATC clearance:  
“...HOLD EAST OF THE ABC VORTAC ON THE ZERO NINER ZERO RADIAL, LEFT TURNS...”
- What is the recommended procedure to enter the holding pattern?
- A— Parallel only.
  - B— Direct only.
  - C— Teardrop only.
- 17.** (Refer to Figure 113.) You receive this ATC clearance:  
“...CLEARED TO THE ABC VORTAC. HOLD SOUTH ON THE ONE EIGHT ZERO RADIAL...”
- What is the recommended procedure to enter the holding pattern?
- A— Teardrop only.
  - B— Direct only.
  - C— Parallel only.
- 18.** (Refer to Figure 113.) You receive this ATC clearance:  
“...CLEARED TO THE ABC VORTAC. HOLD WEST ON THE TWO SEVEN ZERO RADIAL...”
- What is the recommended procedure to enter the holding pattern?
- A— Parallel only.
  - B— Direct only.
  - C— Teardrop only.
- 19.** What timing procedure should be used when performing a holding pattern at a VOR?
- A— Timing for the outbound leg begins over or abeam the VOR, whichever occurs later.
  - B— Timing for the inbound leg begins when initiating the turn inbound.
  - C— Adjustments in timing of each pattern should be made on the inbound leg.
- 20.** To ensure proper airspace protection while holding at 5,000 feet in a civil aircraft, what is the maximum indicated airspeed a pilot should use?
- A— 230 knots.
  - B— 200 knots.
  - C— 210 knots.

- 
- 21.** When making a “timed approach” from a holding fix at the outer marker, the pilot should adjust the
- A — holding pattern to start the procedure turn at the assigned time.
  - B — airspeed at the final approach fix in order to arrive at the missed approach point at the assigned time.
  - C — holding pattern to leave the final approach fix inbound at the assigned time.
- 22.** What does the absence of the procedure turn barb on the plan view on an approach chart indicate?
- A — A procedure turn is not authorized.
  - B — Teardrop-type procedure turn is authorized.
  - C — Racetrack-type procedure turn is authorized.
- 23.** When more than one circuit of the holding pattern is needed to lose altitude or become better established on course, the additional circuits can be made
- A — at pilot’s discretion.
  - B — only in an emergency.
  - C — only if pilot advises ATC and ATC approves.
- 24.** Expect clear ice to form on the leading edge of airfoils when
- A — liquid water and snow combine with ice.
  - B — temperatures are close to freezing, there is a large volume of liquid water precipitation and the aircraft is at high airspeeds.
  - C — the precipitation is small droplets and the aircraft is at low airspeeds.
- 25.** Enroute weather conditions are IMC. However, during the descent to your destination for an ILS approach, you encounter VMC weather conditions prior to reaching the initial approach fix. You know that to log the ILS approach toward instrument currency requirements,
- A — the flight must remain on an IFR flight plan throughout the approach and landing.
  - B — the ILS approach can be credited only if you use a view-limiting device.
  - C — the ILS approach can be credited regardless of actual weather if you are issued an IFR clearance.

# Stage 4 Exam

## Instrument Approaches

Name: \_\_\_\_\_

Grade: \_\_\_\_\_ Date: \_\_\_\_\_

Instructor: \_\_\_\_\_

*Note: for Figures in the Stage Exams, see the figures included on pages 59–76.*

1. Steady precipitation, in contrast to showers, preceding a front is an indication of
  - A— stratiform clouds with moderate turbulence.
  - B— cummuliform clouds with little or no turbulence.
  - C— stratiform clouds with little or no turbulence.
2. The presence of ice pellets at the surface is evidence that
  - A— there are thunderstorms in the area.
  - B— a cold front has passed.
  - C— there is freezing rain at a higher altitude.
3. What determines the structure or type of clouds which form as a result of air being forced to ascend?
  - A— The method by which the air is lifted.
  - B— The stability of the air before lifting occurs.
  - C— The amount of condensation nuclei present after lifting occurs.
4. The presence of standing lenticular altocumulus clouds is a good indication of
  - A— a jet stream.
  - B— very strong turbulence.
  - C— heavy icing conditions.
5. What are the four families of clouds?
  - A— Stratus, cumulus, nimbus, and cirrus.
  - B— Clouds formed by updrafts, fronts, cooling layers of air, and precipitation into warm air.
  - C— High, middle, low, and those with extensive vertical development.
6. What is indicated by the term “embedded thunderstorms”?
  - A— Severe thunderstorms are embedded within a squall line.
  - B— Thunderstorms are predicted to develop in a stable air mass.
  - C— Thunderstorms are obscured by massive cloud layers and cannot be seen.
7. Which thunderstorms generally produce the most severe conditions, such as heavy hail and destructive winds?
  - A— Warm front.
  - B— Squall line.
  - C— Air mass.
8. The strength and location of the jet stream is normally
  - A— stronger and farther north in the winter.
  - B— weaker and farther north in the summer.
  - C— stronger and farther north in the summer.
9. Maximum downdrafts in a microburst encounter may be as strong as
  - A— 8,000 feet per minute.
  - B— 7,000 feet per minute.
  - C— 6,000 feet per minute.
10. (Refer to Figure 36A.) What is the MDA and visibility criteria respectively for the S 33 approach procedure?
  - A— 1,240 feet MSL; 1/2 SM.
  - B— 1,240 feet MSL; 1 SM.
  - C— 1,280 feet MSL; 1 and 1/4 SM.
11. (Refer to Figure 49.) When conducting the LOC/DME RWY 21 approach at PDX, what is the Minimum Safe Altitude (MSA) while maneuvering between the BTG VORTAC and CREAK intersection?
  - A— 3,400 feet MSL.
  - B— 5,700 feet MSL.
  - C— 6,100 feet MSL.
12. (Refer to Figure 211.) At which point does the basic instrument departure procedure terminate?
  - A— When Helena Departure Control establishes radar contact.
  - B— At STAKK intersection.
  - C— Over the BOZEMAN VOR.

- 13.** (Refer to Figure 211.) Using an average ground speed of 140 knots, what minimum rate of climb would meet the required minimum climb rate per NM as specified on the instrument departure procedure for RWY 9?  
A— 933 feet per minute.  
B— 1050 feet per minute.  
C— 968 feet per minute.
- 14.** What response is expected when ATC issues an IFR clearance to pilots of airborne aircraft?  
A— Read back the entire clearance as required by regulation.  
B— Read back those parts containing altitude assignments or vectors and any part requiring verification.  
C— Read-back should be unsolicited and spontaneous to confirm that the pilot understands all instructions.
- 15.** What action is recommended if a pilot does not wish to use an instrument departure procedure?  
A— Advise clearance delivery or ground control before departure.  
B— Advise departure control upon initial contact.  
C— Enter “No DP” in the REMARKS section of the IFR flight plan.
- 16.** What does the symbol T within a black triangle in the minimums section of the IAP for a particular airport indicate?  
A— Takeoff minimums are 1 mile for aircraft having two engines or less and 1/2 mile for those with more than two engines.  
B— Instrument takeoffs are not authorized.  
C— Takeoff minimums are not standard and/or departure procedures are published.
- 17.** An abbreviated departure clearance “...CLEARED AS FILED...” will always contain the name  
A— and number of the STAR to be flown when filed in the flight plan.  
B— of the destination airport filed in the flight plan.  
C— of the first compulsory reporting point if not in a radar environment.
- 18.** When landing behind a large jet aircraft, at which point on the runway should you plan to land?  
A— If any crosswind, land on the windward side of the runway and prior to the jet’s touchdown point.  
B— At least 1,000 feet beyond the jet’s touchdown point.  
C— Beyond the jet’s touchdown point.
- 19.** You arrive at your destination airport on an IFR flight plan. Which is a prerequisite condition for the performance of a contact approach?  
A— Clear of clouds and at least 1 SM flight visibility.  
B— A ground visibility of at least 2 SM.  
C— A flight visibility of at least 1/2 NM.
- 20.** Which procedure should be followed by a pilot who is circling to land in a Category B airplane, but is maintaining a speed 5 knots faster than the maximum specified for that category?  
A— Use the approach minimums appropriate for Category C.  
B— Use Category B minimums.  
C— Use Category D minimums since they apply to all circling approaches.
- 21.** Aircraft approach categories are based on  
A— certificated approach speed at maximum gross weight.  
B— 1.3 times the stall speed in landing configuration at maximum gross landing weight.  
C— 1.3 times the stall speed at maximum gross weight.
- 22.** You are being vectored to the ILS approach course, but have not been cleared for the approach. It becomes evident that you will pass through the localizer course. What action should be taken?  
A— Turn outbound and make a procedure turn.  
B— Continue on the assigned heading and query ATC.  
C— Start a turn to the inbound heading and inquire if you are cleared for the approach.

---

**23.** Under which conditions is hydroplaning most likely to occur?

- A— When rudder is used for directional control instead of allowing the nosewheel to contact the surface early in the landing roll on a wet runway.
- B— During conditions of standing water, slush, high speed, and smooth runway texture.
- C— During a landing on any wet runway when brake application is delayed until a wedge of water begins to build ahead of the tires.

**24.** When may a pilot make a straight-in landing, if using an IAP having only circling minimums?

- A— A straight-in landing may not be made, but the pilot may continue to the runway at MDA and then circle to land on the runway.
- B— The pilot may land straight-in if the runway is the active runway and he has been cleared to land.
- C— A straight-in landing may be made if the pilot has the runway in sight in sufficient time to make a normal approach for landing, and has been cleared to land.

**25.** Under which condition does ATC issue a STAR?

- A— To all pilots wherever STAR's are available.
- B— Only if the pilot requests a STAR in the "Remarks" section of the flight plan.
- C— When ATC deems it appropriate, unless the pilot requests "No STAR."

# Stage 5 Exam

## En Route & Prep for Checkride

### Final Exam

Name: \_\_\_\_\_

Grade: \_\_\_\_\_ Date: \_\_\_\_\_

Instructor: \_\_\_\_\_

*Note: for Figures in the Stage Exams, see the figures included on pages 59–76.*

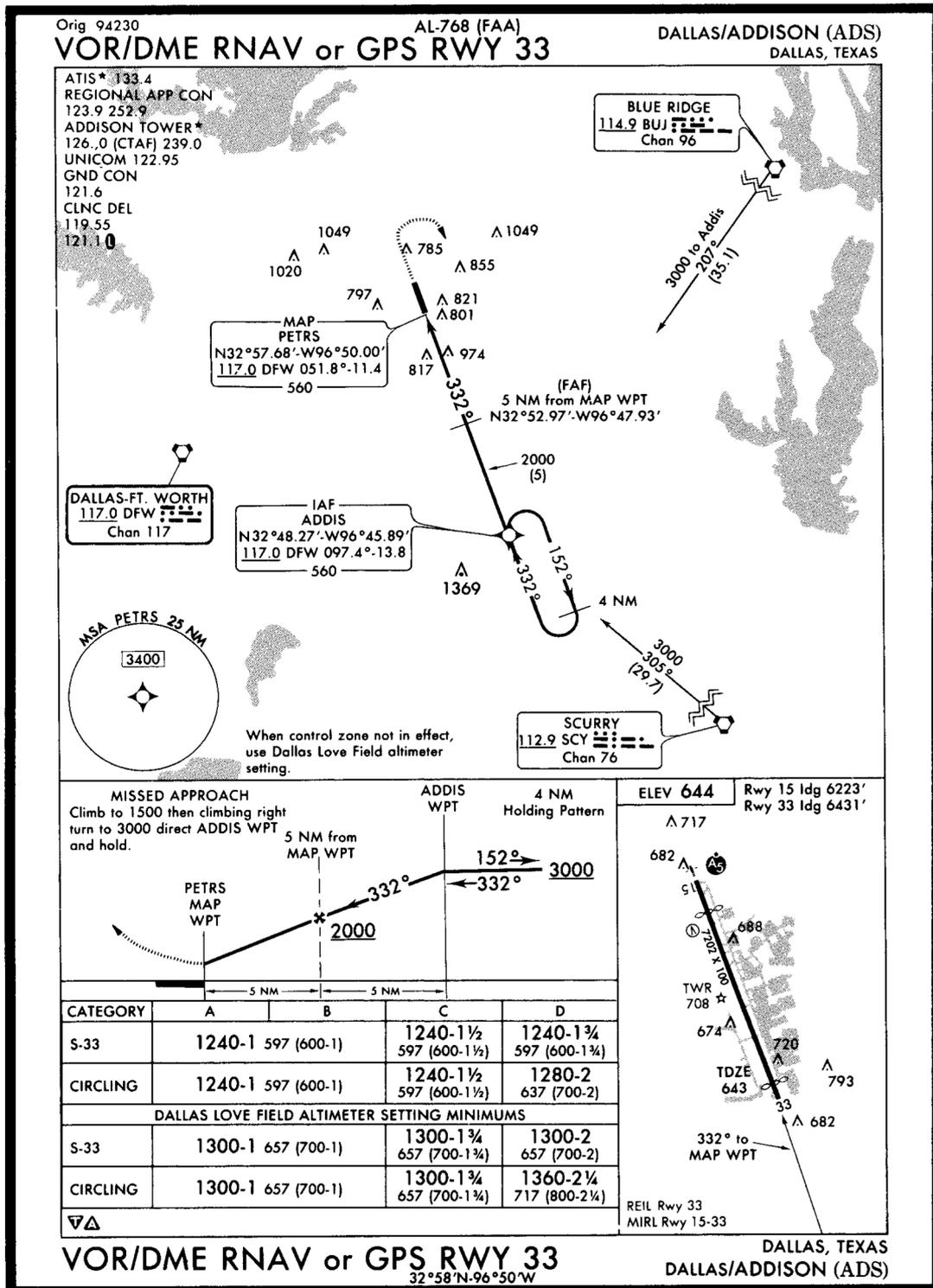
- 1.** No pilot may act as pilot-in-command of an aircraft under IFR or in weather conditions less than the minimums prescribed for VFR unless that pilot has, within the preceding 6 calendar months, completed at least
  - A— three instrument approaches and logged 3 hours.
  - B— six instrument flights under actual IFR conditions.
  - C— six instrument approaches, holding procedures, intercepting and tracking courses using navigational systems, or passed an instrument proficiency check.
  
- 2.** If the aircraft's transponder fails during flight within Class B airspace,
  - A— the pilot should immediately request clearance to depart the Class B airspace.
  - B— ATC may authorize deviation from the transponder requirement to allow aircraft to continue to the airport of ultimate destination.
  - C— aircraft must immediately descend below 1,200 feet AGL and proceed to destination.
  
- 3.** The pilot in command of a civil aircraft must have an instrument rating only when operating
  - A— under IFR in positive control airspace.
  - B— under IFR, in weather conditions less than the minimum for VFR flight, and in a Class A airspace.
  - C— in weather conditions less than the minimum prescribed for VFR flight.
  
- 4.** When may a pilot cancel the IFR flight plan prior to completing the flight?
  - A— Any time.
  - B— Only if an emergency occurs.
  - C— Only in VFR conditions when not in Class A airspace.
  
- 5.** Which types of airspace are depicted on the En Route Low Altitude Chart?
  - A— Limits of controlled airspace, military training routes and special use airspace.
  - B— Class A, special use airspace, Class D and Class E.
  - C— Special use airspace, Class E, Class D, Class A, Class B and Class C.
  
- 6.** Under what condition is pressure altitude and density altitude the same value?
  - A— At standard temperature.
  - B— When the altimeter setting is 29.92" Hg.
  - C— When indicated, and pressure altitudes are the same value on the altimeter.
  
- 7.** What is an indication that downdrafts have developed and the thunderstorm cell has entered the mature stage?
  - A— The anvil top has completed its development.
  - B— Precipitation begins to fall from the cloud base.
  - C— A gust front forms.
  
- 8.** Under which condition does advection fog usually form?
  - A— Moist air moving over colder ground or water.
  - B— Warm, moist air settling over a cool surface under no-wind conditions.
  - C— A land breeze blowing a cold air mass over a warm water current.
  
- 9.** A high cloud is composed mostly of
  - A— ozone.
  - B— condensation nuclei.
  - C— ice crystals.
  
- 10.** In what localities is advection fog most likely to occur?
  - A— Coastal areas.
  - B— Mountain slopes.
  - C— Level inland areas.

- 11.** When is the temperature at one of the forecast altitudes omitted at a specific location or station in the Winds and Temperatures Aloft Forecast (FB)?
- A— When the temperature is standard for that altitude.
- B— For the 3,000-foot altitude (level) or when the level is within 2,500 feet of station elevation.
- C— Only when the winds are omitted for that altitude (level).
- 12.** Decode the excerpt from the Winds and Temperature Aloft Forecast (FB) for OKC at 39,000 feet.
- |     |      |      |        |
|-----|------|------|--------|
| FT  | 3000 | 6000 | 39000  |
| OKC |      |      | 830558 |
- A— Wind 130° at 50 knots, temperature -58°C.
- B— Wind 330° at 105 knots, temperature -58°C.
- C— Wind 330° at 205 knots, temperature -58°C.
- 13.** Which response most closely interprets the following PIREP?
- UA/OV OKC 063064/TM 1522/FL080/TP C172/TA M04/WV 245040/TB LGT/RM IN CLR
- A— 64 nautical miles on the 63° radial from Oklahoma City VOR at 1522 UTC, flight level 8,000 ft. Type of aircraft is a Cessna 172.
- B— Reported by a Cessna 172, turbulence and light rime icing in climb to 8,000 ft.
- C— 63 nautical miles on the 64° radial from Oklahoma City, thunderstorm and light rain at 1522 UTC.
- 14.** A prognostic chart depicts the conditions
- A— existing at the surface during the past 6 hours.
- B— which presently exist from the 1,000-millibar through the 700-millibar level.
- C— forecast to exist at a specific time in the future.
- 15.** (Refer to Figure 36A.) What is the MDA and visibility criteria respectively for the S 33 approach procedure?
- A— 1,240 feet MSL; 1/2 SM.
- B— 1,240 feet MSL; 1 SM.
- C— 1,280 feet MSL; 1 and 1/4 SM.
- 16.** How can a pilot determine if a Global Positioning System (GPS) installed in an aircraft is approved for IFR enroute and IFR approaches?
- A— Flight manual supplement.
- B— GPS operator's manual.
- C— Aircraft owner's handbook.
- 17.** (Refer to the FD excerpt below, and use the wind entry closest to the flight planned altitude.) Determine the time to be entered in block 10 of the flight plan.
- |                      |                        |         |         |       |
|----------------------|------------------------|---------|---------|-------|
| Route of flight      | Figures 38, 39, and 40 |         |         |       |
| Flight log & MAG VAR | Figure 39              |         |         |       |
| ACTON TWO ARRIVAL    | Figure 41              |         |         |       |
| FT                   | 3000                   | 6000    | 9000    | 12000 |
| ABI                  | 2033+13                | 2141+13 | 2142+05 |       |
- A— 1 hour 24 minutes.
- B— 1 hour 26 minutes.
- C— 1 hour 31 minutes.
- 18.** (Refer to Figure 78.) What is the maximum altitude that you may flight plan an IFR flight on V-86 EASTBOUND between BOZEMAN and BILLINGS VORTACs?
- A— 14,500 feet MSL.
- B— 17,000 feet MSL.
- C— 18,000 feet MSL.
- 19.** (Refer to Figure 78.) What is the minimum crossing altitude over the BOZEMAN VORTAC for a flight southeast bound on V86?
- A— 8,500 feet MSL.
- B— 9,300 feet MSL.
- C— 9,700 feet MSL.
- 20.** Which indications are acceptable tolerances when checking both VOR receivers by use of the VOT?
- A— 360° TO and 003° TO, respectively.
- B— 001° FROM and 005° FROM, respectively.
- C— 176° TO and 003° FROM, respectively.
- 21.** A particular instrument departure procedure requires a minimum climb rate of 210 feet per NM to 8,000 feet. If you climb with a ground speed of 140 knots, what is the rate of climb required in feet per minute?
- A— 210
- B— 450
- C— 490
- 22.** Which condition is guaranteed for all of the following altitude limits: MAA, MCA, MRA, MOCA, and MEA? (Non-mountainous area.)
- A— Adequate navigation signals.
- B— Adequate communications.
- C— 1,000-foot obstacle clearance.

- 23.** Pilots on IFR flights seeking ATC in-flight weather avoidance assistance should keep in mind that
- A — ATC radar limitations and, frequency congestion may limit the controllers capability to provide this service.
  - B — circumnavigating severe weather can only be accommodated in the en route areas away from terminals because of congestion.
  - C — ATC Narrow Band Radar does not provide the controller with weather intensity capability.
- 24.** (Refer to Figure 85.) What procedure should be followed if communications are lost before reaching 9,000 feet?
- A — At 9,000, turn left direct to FMG VORTAC, then via assigned route if at proper altitude; if not, climb in holding pattern until reaching the proper altitude.
  - B — Continue climb to WAGGE INT, turn left direct to FMG VORTAC, then if at or above MCA, proceed on assigned route; if not, continue climb in holding pattern until at the proper altitude.
  - C — Continue climb on LOC course to cross WAGGE INT at or above 9,000, turn left direct to FMG VORTAC to cross at 10,000 or above, and continue on assigned course.
- 25.** (Refer to Figure 85.) Of the following, which is the minimum acceptable rate of climb (feet per minute) to 9,000 feet required for the WASH2 WAGGE departure at a GS of 150 knots?
- A — 750 feet per minute.
  - B — 825 feet per minute.
  - C — 1,000 feet per minute.
- 26.** If, while in Class E airspace, a clearance is received to “maintain VFR conditions on top,” the pilot should maintain a VFR cruising altitude based on the direction of the
- A — true course.
  - B — magnetic heading.
  - C — magnetic course.
- 27.** (Refer to Figure 116.) You arrive over the 15 DME fix on a heading of 350°. Which holding pattern correctly complies with the ATC clearance below, and what is the recommended entry procedure?
- “...HOLD WEST OF THE ONE FIVE DME FIX ON THE TWO SIX EIGHT RADIAL OF THE ABC VORTAC, FIVE MILE LEGS, LEFT TURNS...”
- A — 1; teardrop entry.
  - B — 2; direct entry.
  - C — 1; direct entry.
- 28.** (Refer to Figure 230.) The symbol on the plan view of the VOR/DME or GPS-A procedure at 7D3 represents a minimum safe sector altitude within 25 NM of
- A — DEANI intersection.
  - B — White Cloud VOR/DME.
  - C — Baldwin Municipal Airport.
- 29.** How does a pilot determine if DME is available on an ILS/LOC?
- A — IAP indicate DME/TACAN channel in LOC frequency box.
  - B — LOC/DME are indicated on en route low altitude frequency box.
  - C — LOC/DME frequencies available in the Airman’s Information Manual.
- 30.** Which range facility associated with the ILS is identified by the last two letters of the localizer identification group?
- A — Inner marker.
  - B — Outer marker.
  - C — Middle compass locator.
- 31.** Which of these facilities may be substituted for an MM during a complete ILS IAP?
- A — Surveillance and precision radar.
  - B — Compass locator and precision radar.
  - C — A VOR/DME fix.
- 32.** When using GPS for navigation and instrument approaches, any required alternate airport must have
- A — authorization to fly approaches under IFR using GPS avionics systems.
  - B — a GPS approach that is anticipated to be operational and available at the ETA.
  - C — an approved operational instrument approach procedure other than GPS.

- 33.** Which instruments are considered to be supporting instruments for pitch during change of airspeed in a level turn?
- A— Airspeed indicator and VSI.
  - B— Altimeter and attitude indicator.
  - C— Attitude indicator and VSI.
- 34.** What should be the indication on the magnetic compass as you roll into a standard rate turn to the left from an east heading in the Northern Hemisphere?
- A— The compass will initially indicate a turn to the right.
  - B— The compass will remain on east for a short time, then gradually catch up to the magnetic heading of the aircraft.
  - C— The compass will indicate the approximate correct magnetic heading if the roll into the turn is smooth.
- 35.** If the outside air temperature increases during a flight at constant power and at a constant indicated altitude, the true airspeed will
- A— decrease and true altitude will increase.
  - B— increase and true altitude will decrease.
  - C— increase and true altitude will increase.
- 36.** The primary reason the angle of attack must be increased, to maintain a constant altitude during a coordinated turn, is because the
- A— thrust is acting in a different direction, causing a reduction in airspeed and loss of lift.
  - B— vertical component of lift has decreased as the result of the bank.
  - C— use of ailerons has increased the drag.
- 37.** When icing is detected, particularly while operating an aircraft without deicing equipment, the pilot should
- A— fly to an area with liquid precipitation.
  - B— fly to a lower altitude.
  - C— leave the area of precipitation or go to an altitude where the temperature is above freezing.
- 38.** (Refer to Figure 250.) For a stabilized approach, the aircraft would be in a configuration for approach or landing and descending at about
- A— 480 feet per minute to MDA.
  - B— 480 feet per nautical mile below 1,580 feet MSL.
  - C— a descent rate of less than 1,000 FPM below 1,080 feet MSL and bank angles of less than 15 degrees below 500 feet AGL.

# Stage Exam Figures



FAA Figure 36A — for Stage 4, Question #10 and Stage 5, Question #17



# FLIGHT LOG

BIG SPRING McMAHON-WRINKLE TO DALLAS FT. WORTH (DFW)

CHECK POINTS		ROUTE	COURSE	WIND	SPEED-KTS		DIST NM	TIME		FUEL	
FROM	TO	ALTITUDE		TEMP	TAS	GS		LEG	TOT	LEG	TOT
21XS	BGS	DIRECT CLIMB	DIRECT					:06:0			
	LORAN	V16 11,000	075°								
	ABI	V16 11,000	076°		156						
	COTTN	DIRECT 11,000	087°								
	AQN	AQN2	075°								
	CREEK	AQN2	040°								
APPROACH & LANDING		RADAR VEC-						:08:0			
	DFW AIRPORT	DESCENT									

**OTHER DATA:**  
**NOTE:** MAG. VAR. 11° E.  
 (STAR) ACTON TWO ARRIVAL (AQN2)

**FLIGHT SUMMARY**

TIME	FUEL (LB)	
		EN ROUTE
		RESERVE
		MISSED APPR.
		TOTAL

**BIG SPRING McMAHON-WRINKLE** (21XS) 2SW UTC-6(-5DT). **DALLAS-FT. WORTH**  
H-21, 5A, L-13A, 15B  
IAP

32°12'45"N101°31'17"W  
 2572 B S4FUEL 100LL, JET A  
 RWY 17-35: H8803X100 (ASPH-CONC) S-44, D-62, DDT-101 MIRL  
 RWY 17:SSALS.PVASI(ASPH)-GA3.0°TCH 41'.  
 RWY 06-24:H4600X75(ASPH) MIRL  
 RWY 24:PVASI(PSIL)-GA3.55°TCH31'. P-line.  
**AIRPORT REMARKS:** Attended 1400-2300Z . For fuel after hours call 915-263-3958. ACTIVATE MIRL Rwy 06-24  
 and Rwy 17-35, SSALS Rwy 17 and PVASI Rwy 17 and 24-CTAF.  
**COMMUNICATIONS:**CTAF/UNICOM 122.8  
 SAN ANGELOSFSS (SJT) TF 1-800-WX-BRIEF. NOTAM FILE SJT.  
 RCO 122.4(SAN ANGELOFSS)  
 FORT WORTH CENTER APP/DEP CON 133.7  
**RADIO AIDS TO NAVIGATION:** NOTAM FILE SJT.  
 (L) VORTACW 144.3 BGS Chan 90 32°23'08"N 101°10.5NM to fld. 2670/11E.

EXCERPT FROM AIRPORT/FACILITY DIRECTORY (21 XS)

FAA Figure 39 — for Stage 5, Question #19

**HELENA REGIONAL** (HLN) 2 NE UTC-7(-6DT) 46°36'25"N 111°58'55"W **GREAT FALLS**  
 3873 B S4 FUEL 100LL, JET A OX 1,3 AOE ARFF Index B **H-1C, L-9B**  
**RWY 09-27:** H9000X150 (ASPH-PFC) S-100, D-160, DT-250 HIRL **IAP**  
**RWY 09:** VASI(V4L)—GA 3.0°TCH 45'. Ground. **RWY 27:** MALSR. VASI(V4L)—GA 3.0°TCH 55'. Rgt ttc.  
**RWY 05-23:** H4599X75 (ASPH-PFC) S-21, D-30  
**RWY 05:** Road. **RWY 23:** Fence. Rgt ttc.  
**RWY 16-34:** H2979X75 (ASPH) S-21, D-30 MIRL  
**RWY 34:** Ground. Rgt ttc.

**AIRPORT REMARKS:** Attended 1200-0800Z. East 2400' Taxiway C and first 900' Rwy 27 not visible from tower. Prior permission for unscheduled FAR 121 operations, Call 406-442-2821. AOE, 1 hour prior notice required, phone 449-1569 1500-0000Z, 0000-1500Z 449-1024. Twys A;B; high speed and C (between A and D) not available for air carrier use by acft with greater than 30 passenger seats. Rwy 16-34 and Rwy 05-23 (except between Rwy 09-27 and Twy D) not available for air carrier use by acft with greater than 30 passenger seats. When tower closed, ACTIVATE HIRL Rwy 09-27 and MALSR Rwy 27—CTAF, when twr closed MIRL Rwy 16-34 are off. Ldg fee for all acft over 12,500 lbs. NOTE: See SPECIAL NOTICE—Simultaneous Operations on Intersecting Runways.

**COMMUNICATIONS:** CTAF 118.3 ATIS 120.4 (Mon-Fri 1300-0700Z, Sat-Sun 1300-0500Z)  
 UNICOM 122.95  
**GREAT FALLS FSS (GTF)** TF 1-800-WX-BRIEF. NOTAM FILE HLN.  
**RCO 122.2 122.1R 117.7T (GREAT FALLS FSS)**  
**APP/DEP CON 119.5 (Mon-Fri 1300-0700Z, Sat-Sun 1300-0500Z)**  
**SALT LAKE CENTER APP/DEP CON 133.4 (Mon-Fri 0700-1300Z, Sat-Sun 0500-1300Z)**  
**TOWER 118.3 (Mon-Fri 1300-0700Z, Sat-Sun 1300-0500Z) GND CON 121.9**

**RADIO AIDS TO NAVIGATION: NOTAM FILE HLN.**  
**(H) VORTAC 117.7 HLN Chan 124 46°36'25"N 111°57'10"W 254.1 1.2 NM to fld. 3810/16E.**  
 VORTAC unusable:  
 006°-090° beyond 25 NM below 11,000' 091°-120° beyond 20 NM below 16,000'  
 121°-240° beyond 25 NM below 10,000' 355°-006° beyond 15 NM below 17,500'  
 241°-320° beyond 25 NM below 10,000'

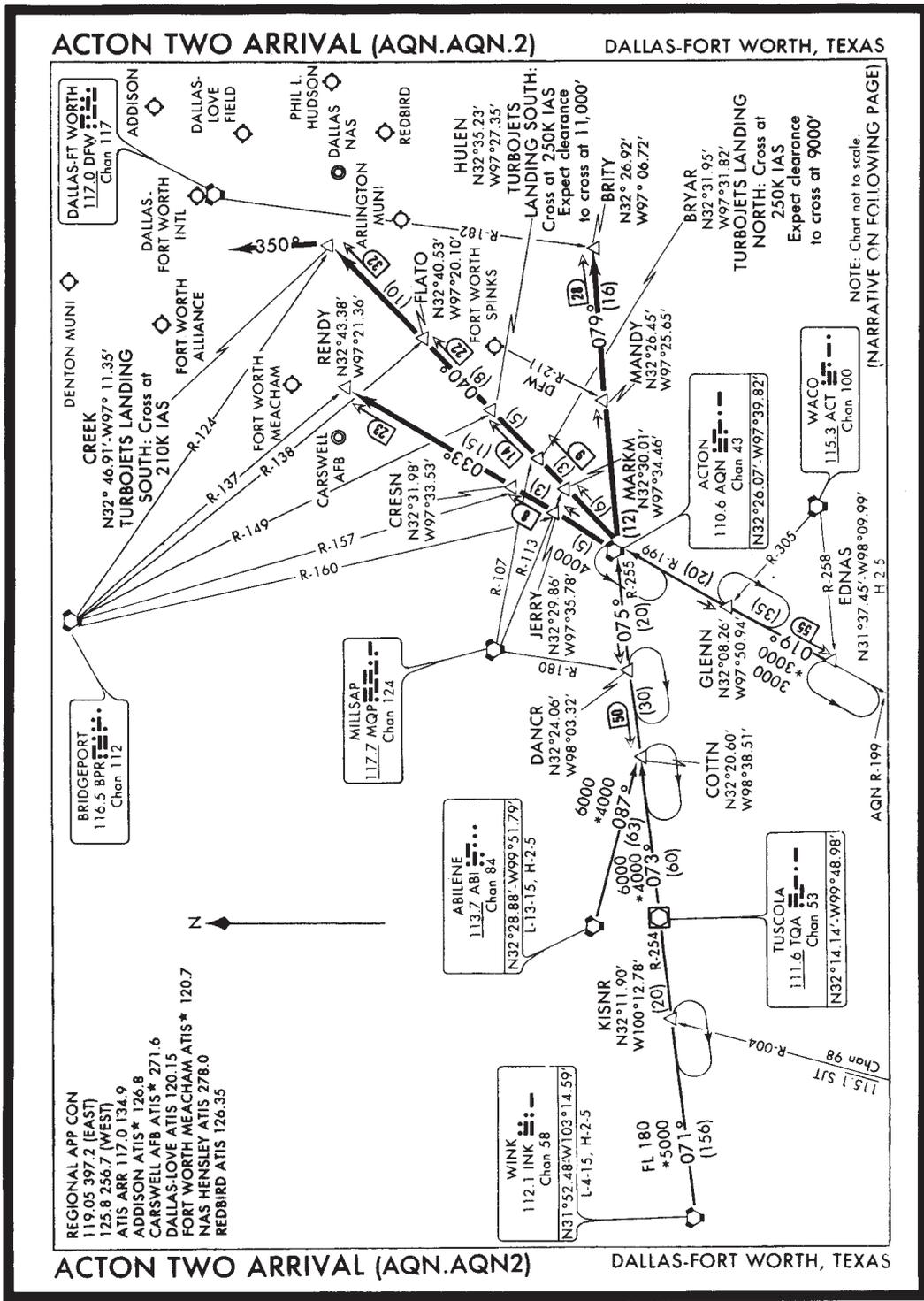
**CAPITOL NDB (HW) 317 CVP 46°36'24"N 111°56'11"W 254.1 1.9 NM to fld.**  
 NDB unmonitored when tower closed.  
**HAUSER NDB (MHW) 386 HAU 46°34'08"N 111°45'26"W 268.9 9.6 NM to fld.**  
**ILS 110.1 I-HLN Rwy 27 ILS unmonitored when tower closed.**

### Excerpt from Airport/Facility Directory (21 XS)

**BIG SPRING McMAHON-WRINKLE** (21XS) 2 SW UTC-6(-5DT). **DALLAS-FT WORTH**  
 32°12'45"N 101°31'17"W **H-21, 5A, L-13A, 15B**  
 2572 B S4 FUEL 100LL, JET A **IAP**  
**RWY 17-35:** H8803X100 (ASPH-CONC) S-44, D-62, DDT-101 MIRL  
**RWY 17:** SSALS. PVASI (PSIL)—GA 3.0° TCH 41'.  
**RWY 06-24:** H4600X75 (ASPH) MIRL  
**RWY 24:** PVASI (PSIL)—GA 3.55°TCH 31'. P-line.  
**AIRPORT REMARKS:** Attended 1400-2300Z. For fuel after hours call 915-263-3958. ACTIVATE MIRL Rwy 06-24 and Rwy 17-35, SSALS Rwy 17 and PVASI Rwy 17 and 24—CTAF.  
**COMMUNICATIONS:** CTAF/UNICOM 122.8  
**SAN ANGELO FSS (SJT)** TF 1-800-WX-BRIEF. NOTAM FILE SJT.  
**RCO 122.4 (SAN ANGELO FSS)**  
**FORT WORTH CENTER APP/DEP CON 133.7**  
**RADIO AIDS TO NAVIGATION: NOTAM FILE SJT.**  
**(L) VORTACW 114.3 BGS Chan 90 32°23'08"N 101°29'00"W 180° 10.5 NM to fld. 2670/11E.**

FAA Figure 39A — for Stage 5, Question #19





FAA Figure 41 — for Stage 5, Question #19

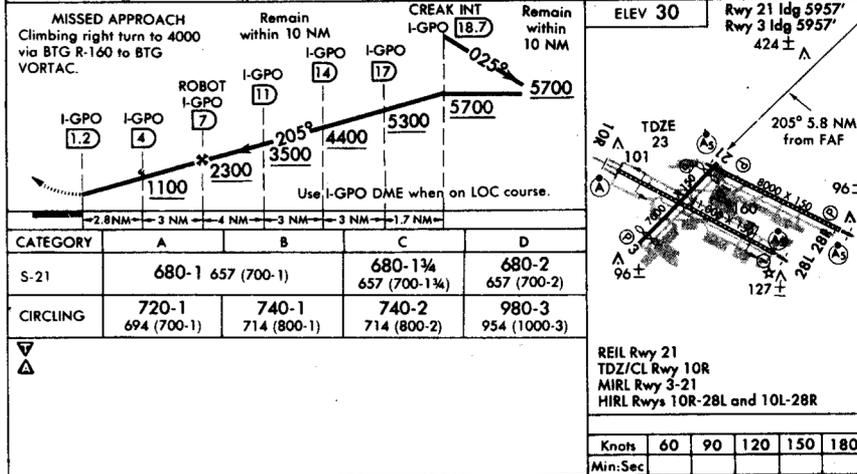
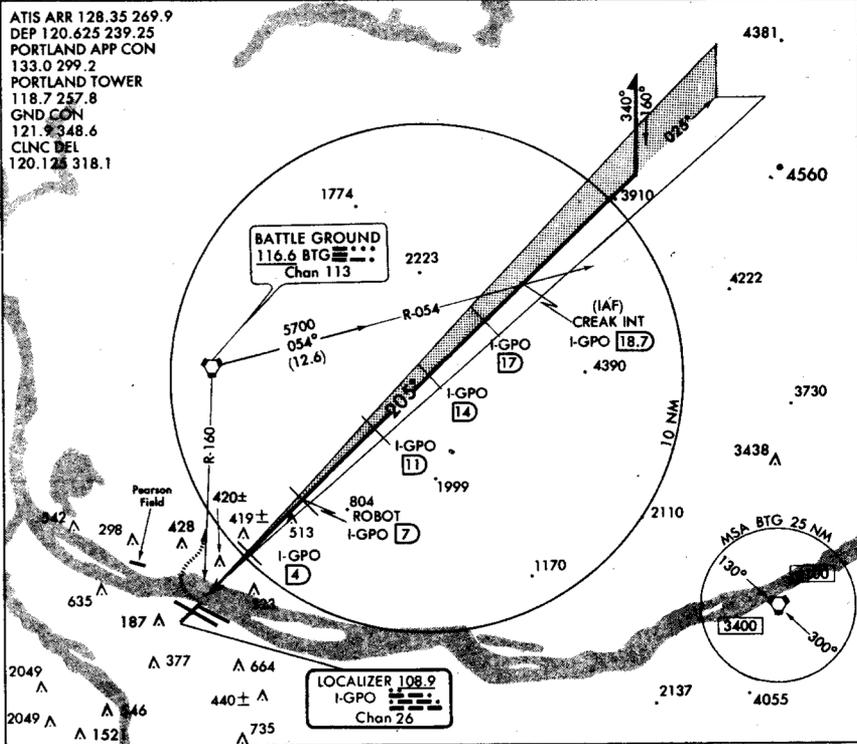
Amdt 7A 9

# LOC/DME RWY 21

AL-330 (FAA)

PORTLAND INTL (PDX)  
PORTLAND, OREGON

ATIS ARR 128.35 269.9  
DEP 120.625 239.25  
PORTLAND APP CON  
133.0 299.2  
PORTLAND TOWER  
118.7 257.8  
GND CON  
121.9 348.6  
CLNC DEL  
120.125 318.1



# LOC/DME RWY 21

45°35'N-122°36'W

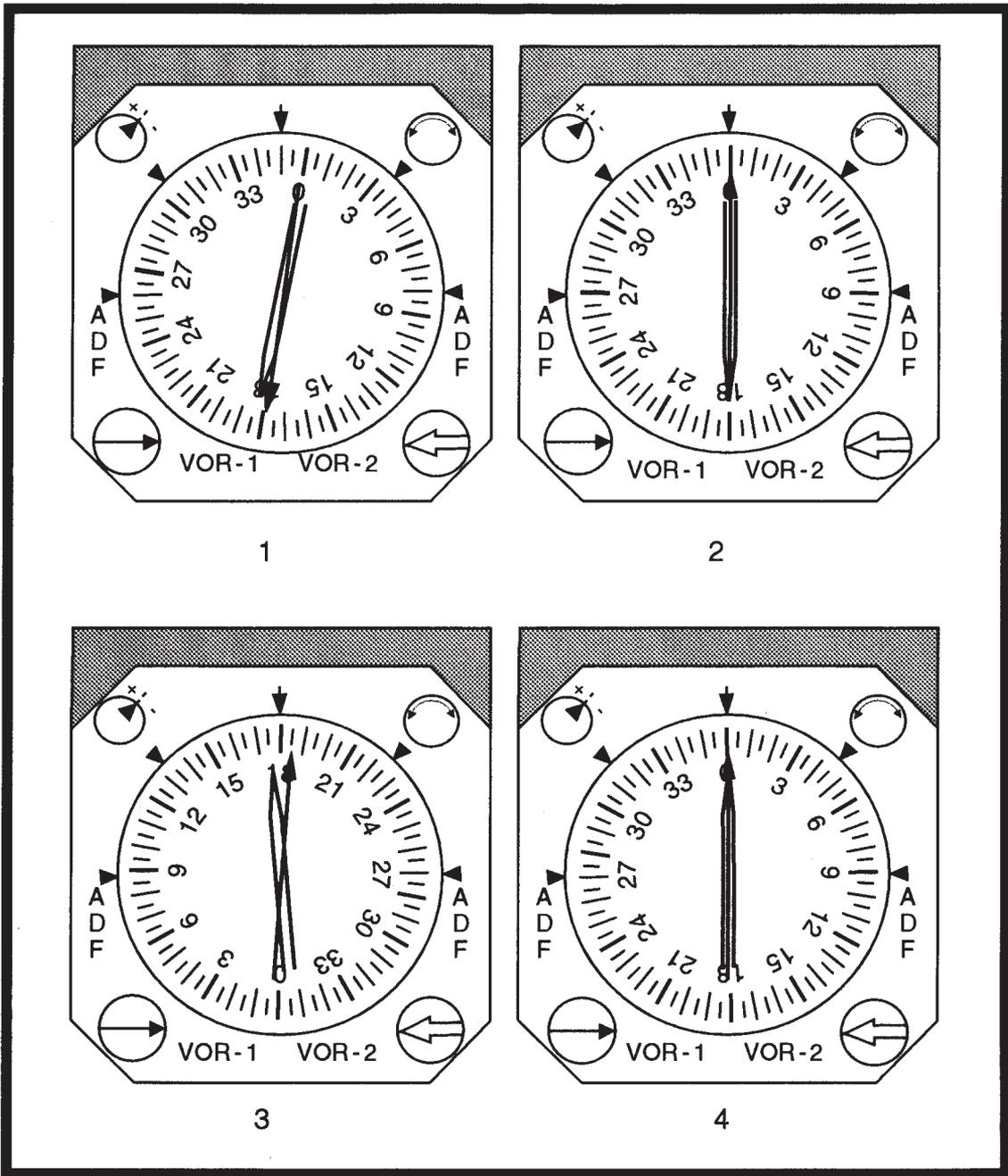
Amdt 7A 99364

309

PORTLAND, OREGON  
PORTLAND INTL (PDX)  
NW-1, 30 DEC 1999

FAA Figure 49 — for Stage 4, Question #11



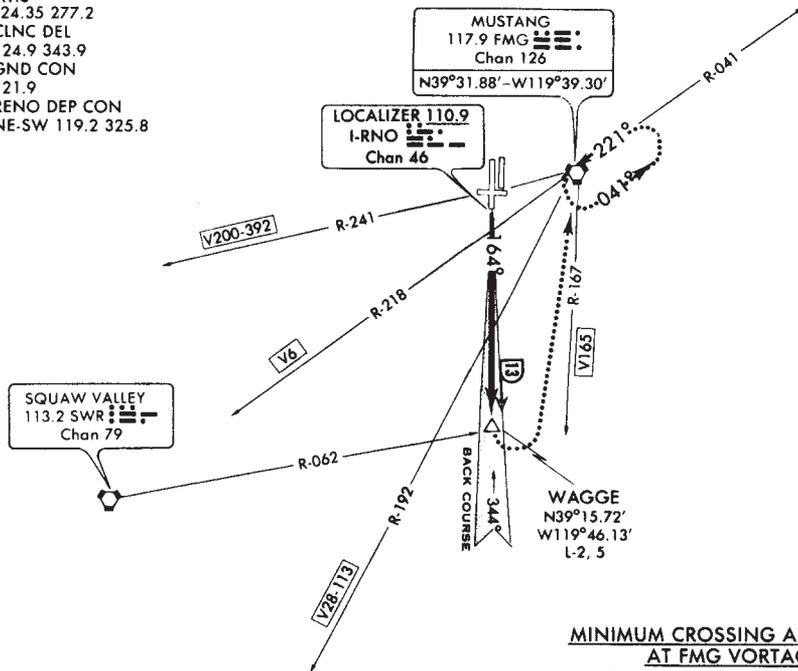


FAA Figure 81 — for Stage 2, Question #4

(VECTOR) (WASH2.WAGGE) 91094  
**WASHOE TWO DEPARTURE** SL-346 (FAA)

RENO CANNON INTL  
 RENO, NEVADA

ATIS  
 124.35 277.2  
 CLNC DEL  
 124.9 343.9  
 GND CON  
 121.9  
 RENO DEP CON  
 NE-SW 119.2 325.8



**MINIMUM CROSSING ALTITUDES  
 AT FMG VORTAC**

- South V165, 10000
- Southwest V28-113, 10500
- Southwest V200-392, 10000
- Southwest V6, 12000

NOTE: Minimum climb rate at 400'  
 per NM to 9000' required.

NOTE: Chart not to scale.

**DEPARTURE ROUTE DESCRIPTION**

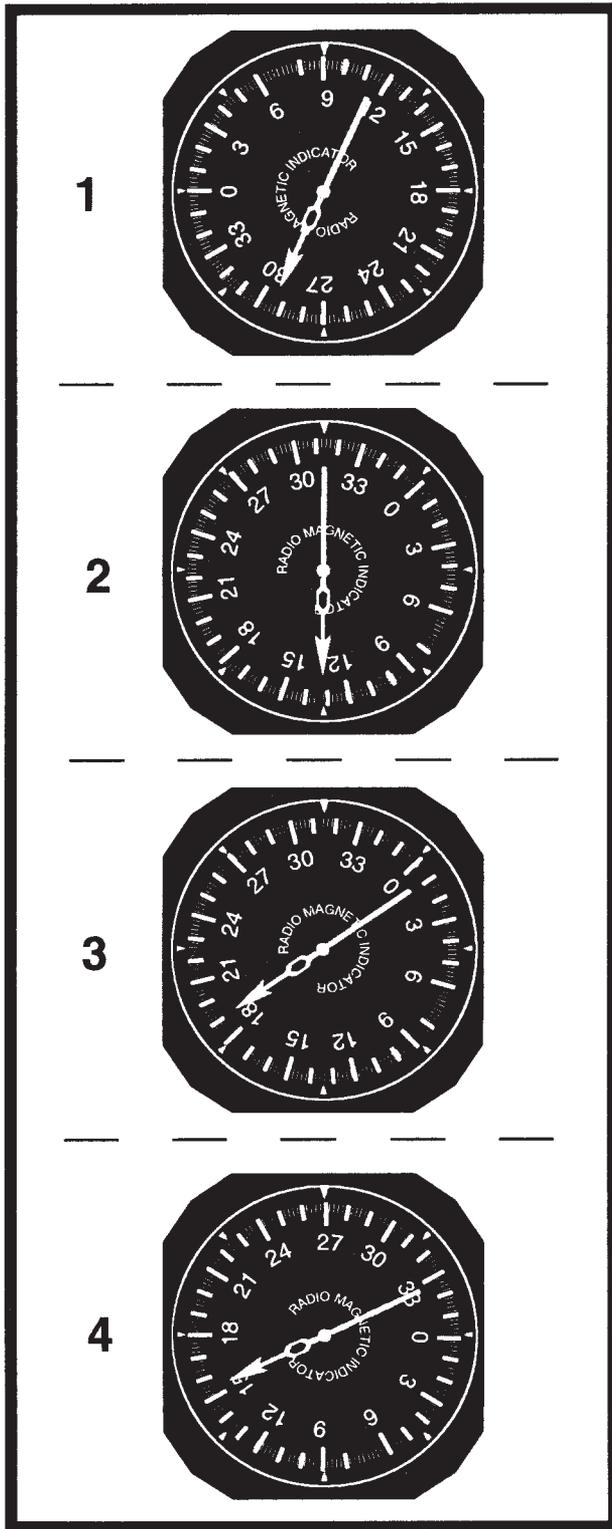
**TAKE-OFF RUNWAYS 16L/R:** Climb via I-RNO Localizer south course to WAGGE INT then via radar vectors to assigned route.

**LOST COMMUNICATIONS:** If not in contact with departure control within one minute after takeoff, or if communications are lost before reaching 9000', continue climb via I-RNO localizer south course to WAGGE INT, turn left, proceed direct FMG VORTAC. Cross FMG VORTAC at or above MCA, thence via assigned route or climb in holding pattern northeast on FMG R-041, left turns to cross FMG VORTAC at or above MCA for assigned route.

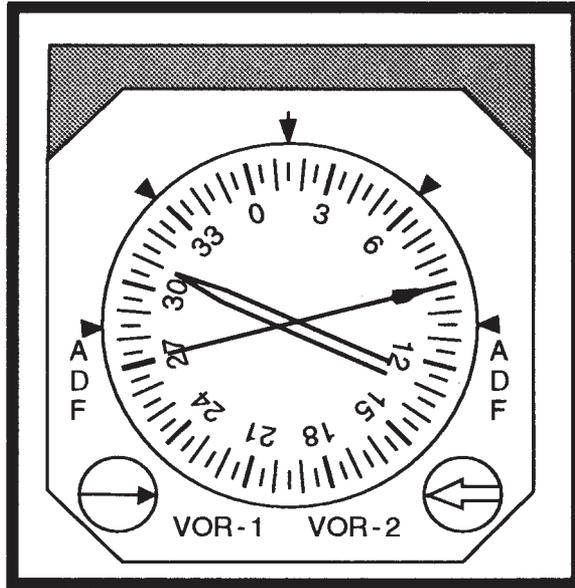
**WASHOE TWO DEPARTURE  
 (VECTOR) (WASH2.WAGGE)**

RENO, NEVADA  
 RENO CANNON INTL

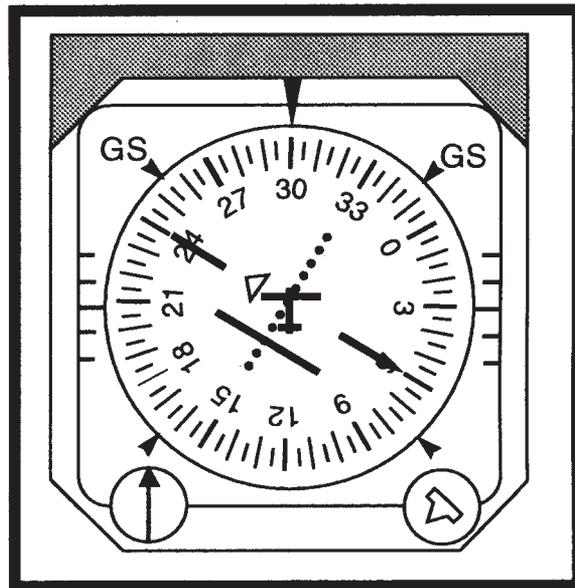
FAA Figure 85 — for Stage 5, Questions #26 and 27



FAA Figure 104 — for Stage 2, Questions #9 and 10



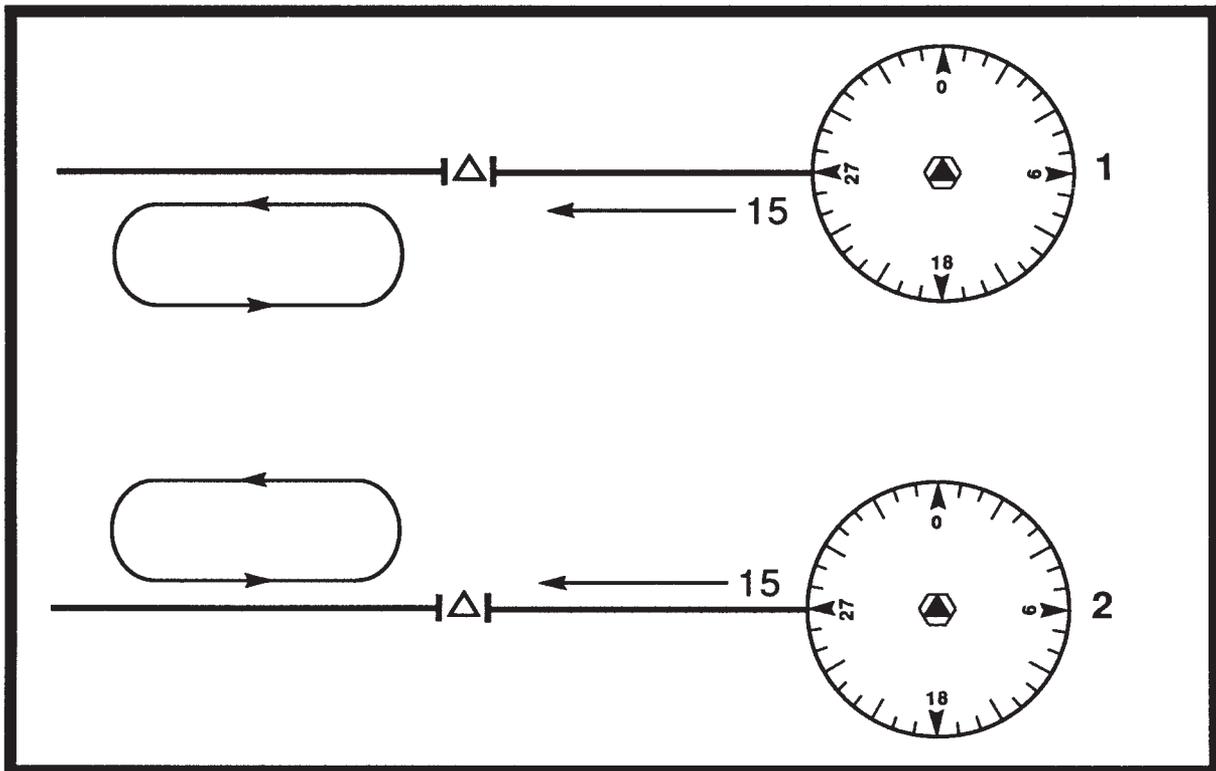
FAA Figure 108 — for Stage 3, Question #15



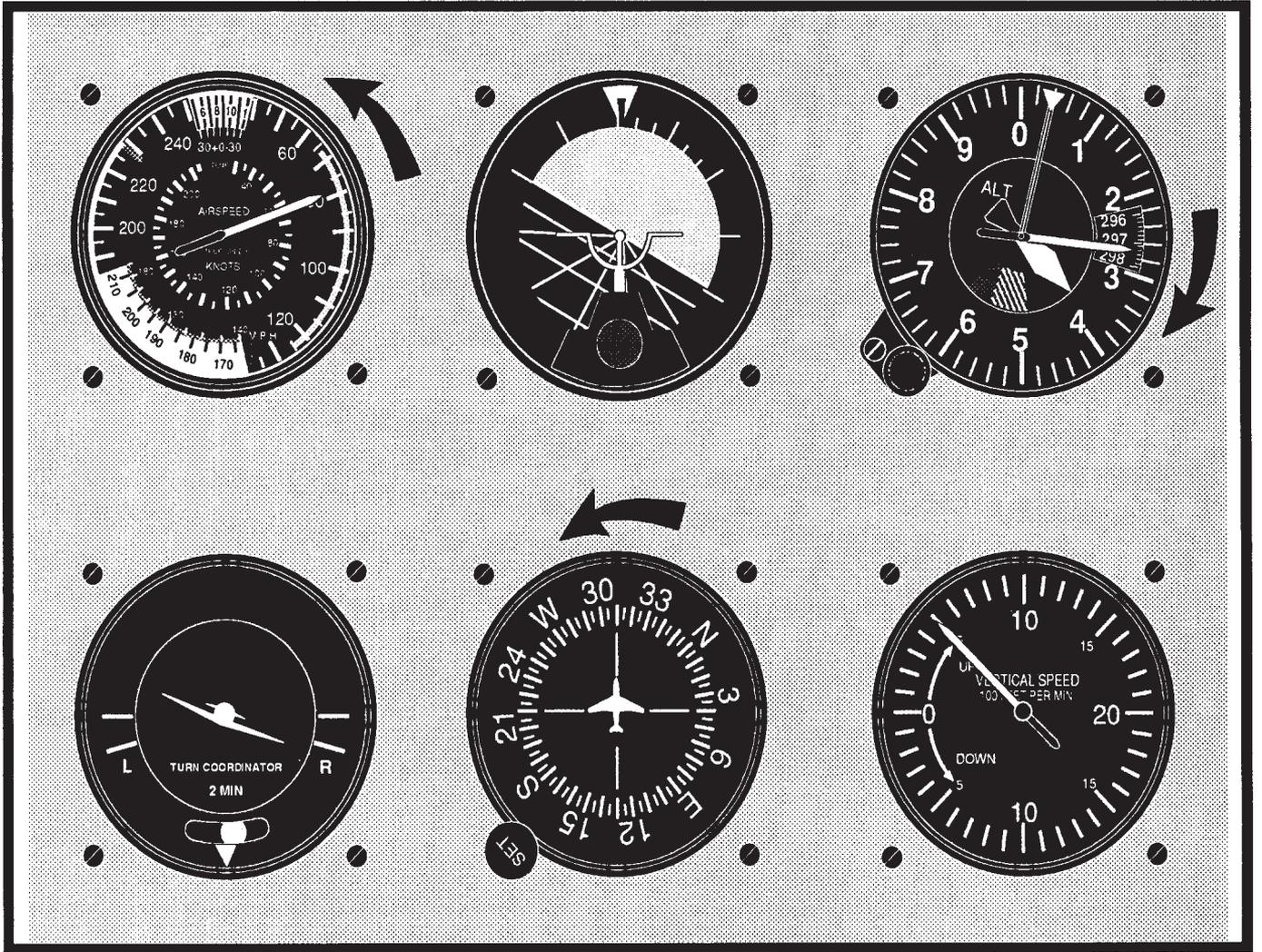
FAA Figure 110 — for Stage 2, Question #11



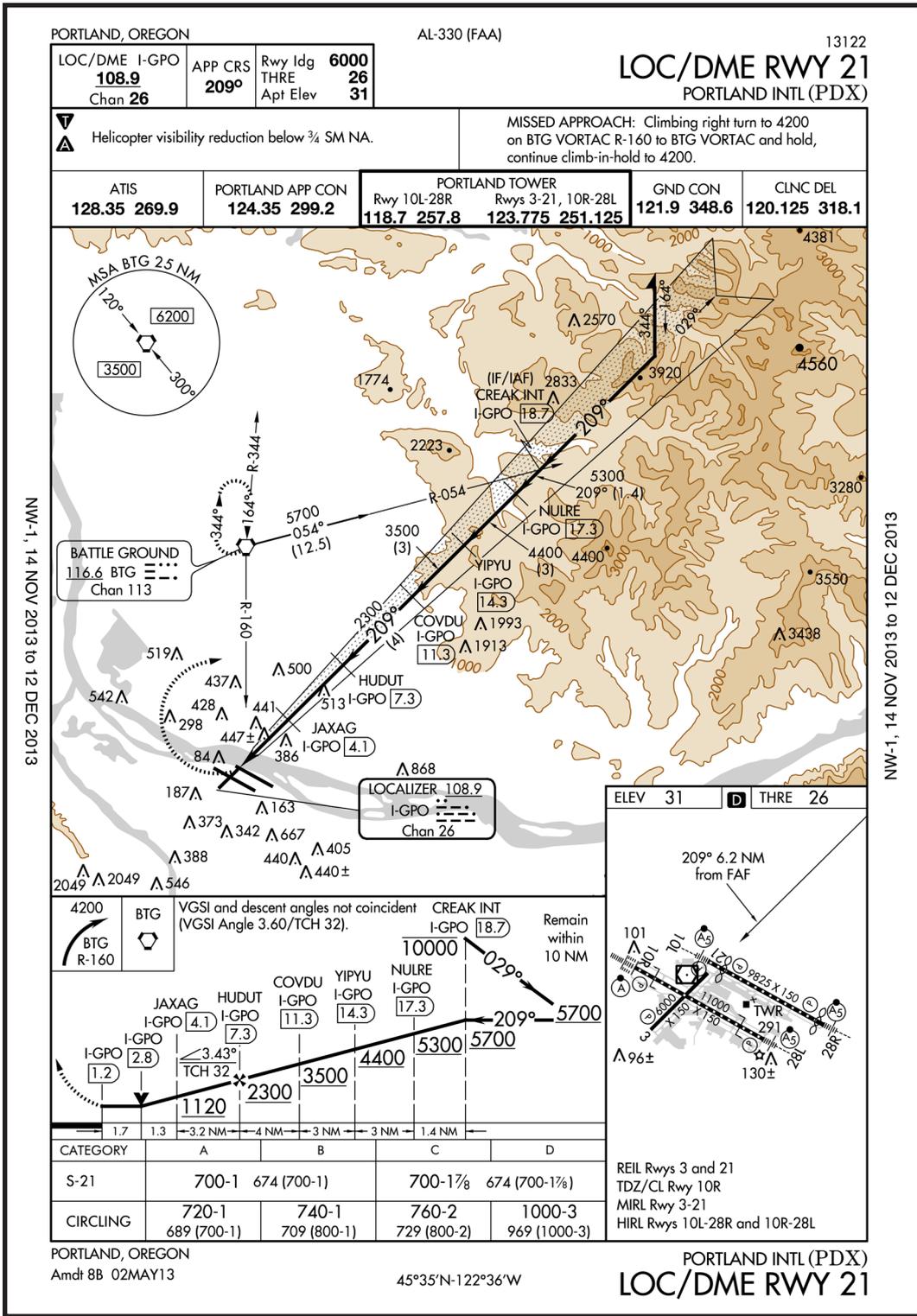
FAA Figure 113 — for Stage 3, Questions #16, 17, and 18



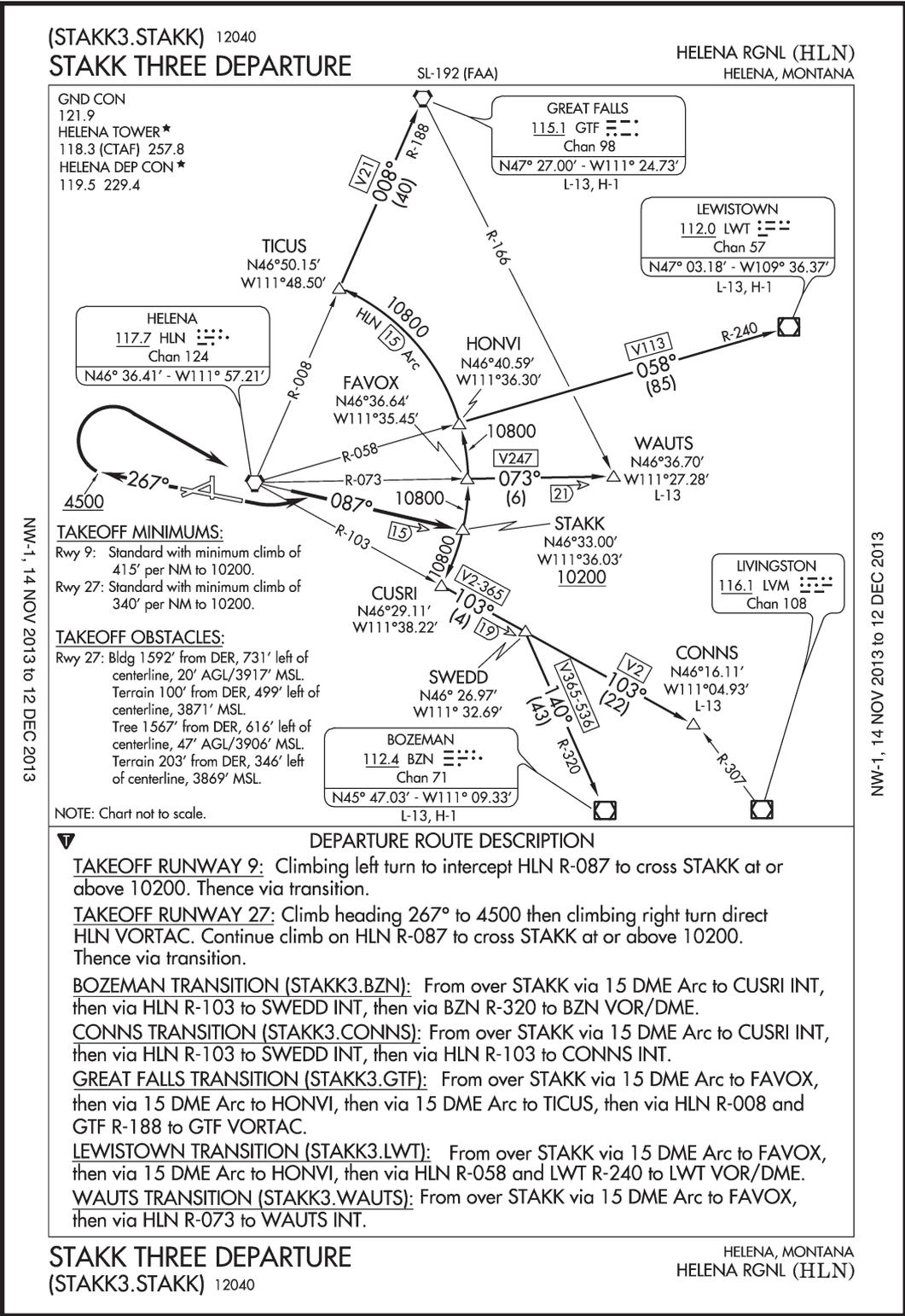
FAA Figure 116 — for Stage 5, Question #29



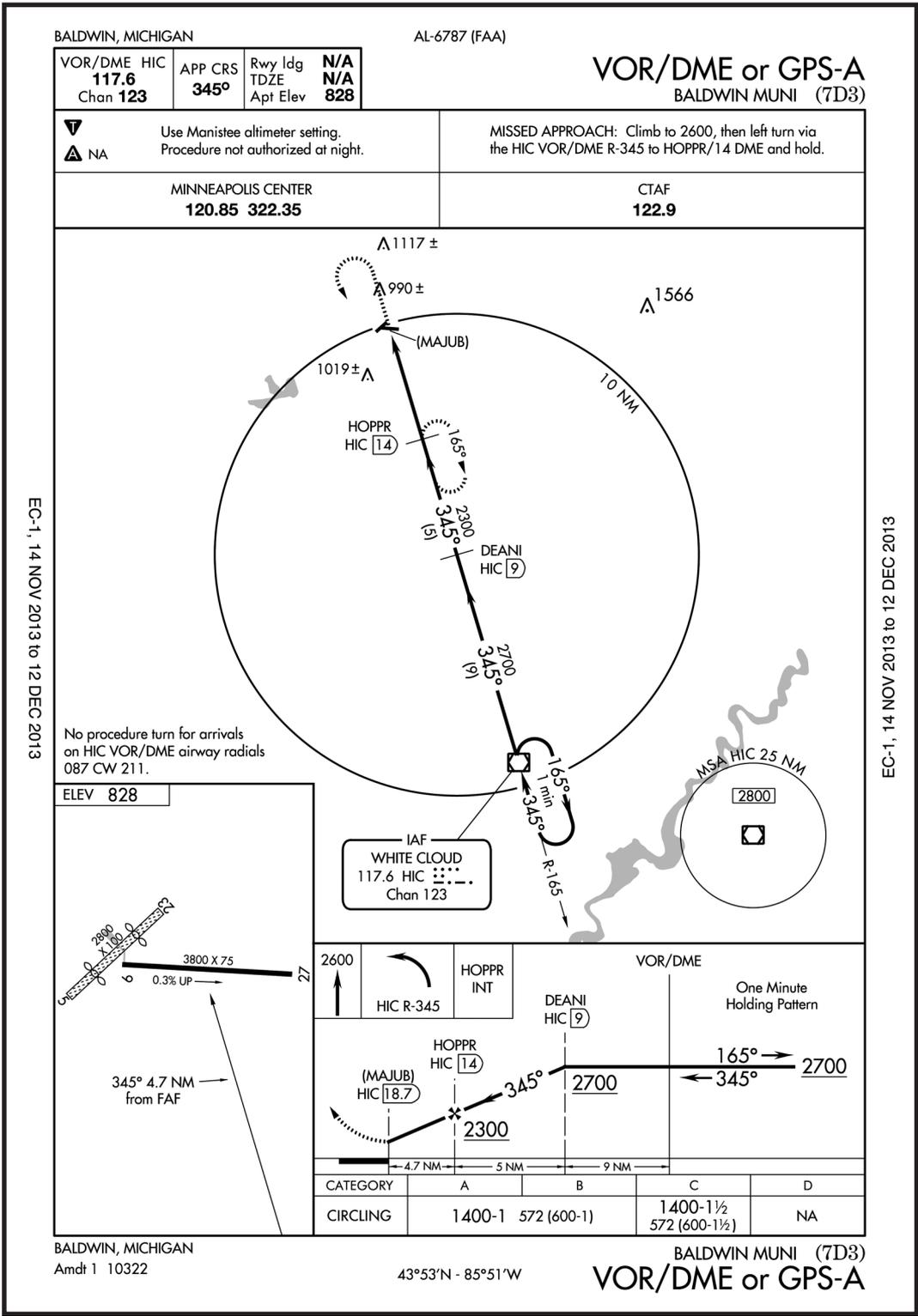
FAA Figure 150 — for Stage 1, Question #25



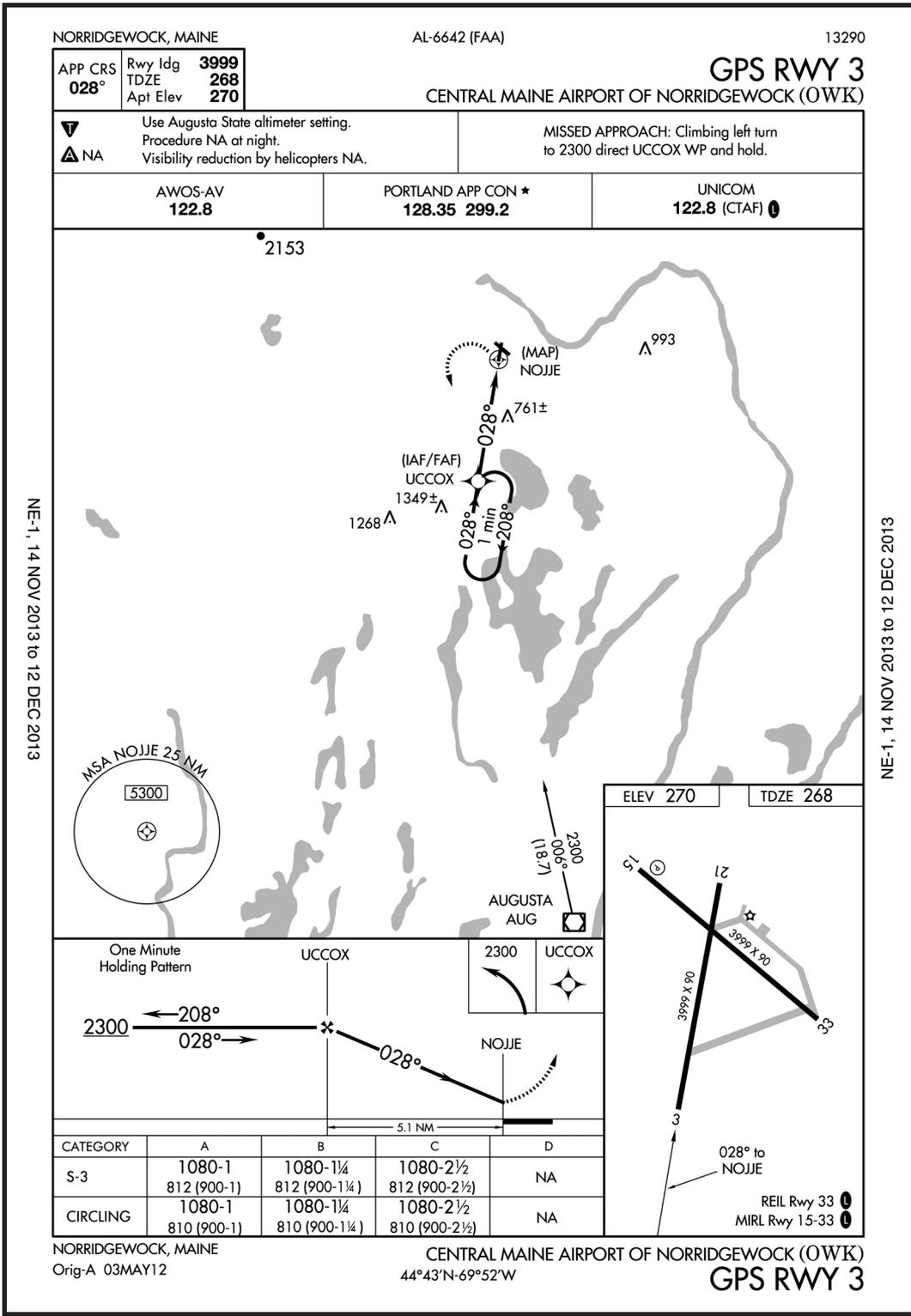
FAA Figure 188 — for Stage 3, Question #12



FAA Figure 211 — for Stage 4, Questions #12 and 13



FAA Figure 230 — for Stage 5, Question #30



FAA Figure 250 — for Stage 5, Question #40

# Aviation Training Device (ATD) Syllabus



The following lessons allow Aviation Training Device technology to integrate with existing methods of aviation instruction and training. This syllabus follows the guidelines established in Advisory Circular 61-136, and can be used to reduce the total flight training hours, otherwise accomplished in an aircraft, needed to meet the requirements for an instrument rating under §61 or §141. Approved ATDs may be used for not more than 10 hours of time that ordinarily would be acquired in an aircraft, a flight simulator, or flight training device. This syllabus also encourages using ATDs to supplement the ground training and allows for 10 hours of time to replace the traditional classroom instructional techniques.

Instructors are encouraged to challenge students by altering the virtual environment within which the lessons take place. This can be done by changing the weather (adding turbulence, altering the winds, or assigning the ceiling and visibility to the approach minimum conditions) and/or simulating a system or engine failure. These changes can be set to occur randomly or within a specified time frame, allowing the students to learn flight and decision-making skills simultaneously. This method, in conjunction with training to the Airman Certification Standards at all times, will encourage a willing suspension of disbelief and maximize the value of ATDs used in a curriculum.

The following Modules may be supplemented using an approved ATD, in lieu of an aircraft for the flight training component, or traditional ground instruction for the ground training component. The following Modules are suggested because the associated tasks and placement within the curriculum lend themselves particularly well to an integrated flight training environment:

<b>ATD Lesson</b>	<b>PM-S-I</b>	<b>Time Logged</b>
1	Stage 1, Module 1: Ground Training	1.0 hour
2	Stage 1, Module 2: Flight Training	1.0 hour
3	Stage 1, Module 3: Ground Training	1.0 hour
4	Stage 1, Module 4: Ground Training	1.0 hour
5	Stage 1, Module 4: Flight Training	1.0 hour
6	Stage 1, Module 5: Ground Training	1.5 hours
7	Stage 2, Module 2: Ground Training	1.0 hour
8	Stage 2, Module 2: Flight Training	1.0 hour
9	Stage 2, Module 3: Ground Training	1.0 hour
10	Stage 2, Module 3: Flight Training	1.0 hour
11	Stage 2, Module 4: Ground Training	1.0 hour
12	Stage 3, Module 1: Ground Training	1.5 hours
13	Stage 3, Module 1: Flight Training	1.5 hours
14	Stage 3, Module 3: Flight Training	1.0 hour
15	Stage 4, Module 1: Flight Training	1.5 hours
16	Stage 4, Module 2: Ground Training	1.0 hour
17	Stage 4, Module 3: Flight Training	1.0 hour
18	Stage 5, Module 4: Flight Training	1.0 hour
Total time <b>logged</b> in ATD:		10.0 hours Ground Training 10.0 hours Flight Training

---

# ATD / Lesson 1

**Minimum 141 Requirements:** Dual, 1.0 hour ATD

**Objective:**

For the student to become familiar with ATD features, and develop an understanding of instrument scanning techniques.

**Content:**

- \_\_\_\_\_ ATD orientation
  - \_\_\_\_\_ Physical controls
  - \_\_\_\_\_ Virtual controls
- \_\_\_\_\_ Instrument cockpit check
- \_\_\_\_\_ Instrument scanning technique
  - \_\_\_\_\_ Selective radial scan
  - \_\_\_\_\_ Basic T-scan
  - \_\_\_\_\_ Other scans

**Assignment:**

*Instrument Flying*, Chapters 1 and 2

**Completion Standards:**

The student must successfully complete all review questions following the assigned reading.

---

# ATD / Lesson 2

**Minimum 141 Requirements:** Dual, 1.0 hour ATD

**Objective:**

For the student to become proficient in flight by reference to instruments while maintaining changes of airspeed, and constant airspeed climbs and descents.

**Content:**

- \_\_\_\_\_ Instrument scan
- \_\_\_\_\_ Straight-and-level flight
- \_\_\_\_\_ Standard rate turns
- \_\_\_\_\_ Review effects of change of airspeed
- \_\_\_\_\_ Constant airspeed climbs and descents
- \_\_\_\_\_ Pattern B
- \_\_\_\_\_ Pattern D
- \_\_\_\_\_ Pattern F
- \_\_\_\_\_ Review ground tracks

**Assignment:**

*Instrument Flying*, Chapters 3 and 4

**Completion Standards:**

The student must effectively control the airplane within 200 feet, 20 degrees, and 20 knots; perform standard rate turns; and successfully complete all review questions following the assigned reading.

---

## ATD / Lesson 3

**Minimum 141 Requirements:** Dual, 1.0 hour ATD

### **Objective:**

For the student to gain understanding of the straight climb and descent, and turns, during instrument flight.

### **Content:**

- \_\_\_\_\_ The straight climb
  - \_\_\_\_\_ Climbing at different airspeeds
  - \_\_\_\_\_ Variations on entering the climb
  - \_\_\_\_\_ Climbing at a particular rate
- \_\_\_\_\_ The straight descent
  - \_\_\_\_\_ Climbing away from a descent
  - \_\_\_\_\_ Descending at a particular rate
  - \_\_\_\_\_ The precision approach
- \_\_\_\_\_ Turning
  - \_\_\_\_\_ Bank angle and rate of turn
  - \_\_\_\_\_ Roll-in and roll-out rate
  - \_\_\_\_\_ The medium level turn
  - \_\_\_\_\_ Instrument turns to a specific heading
  - \_\_\_\_\_ Climbing turns
  - \_\_\_\_\_ Descending turns
  - \_\_\_\_\_ Steep level turn
  - \_\_\_\_\_ Steep climbing turn
  - \_\_\_\_\_ Steep descending turn
- \_\_\_\_\_ Pattern A
- \_\_\_\_\_ Pattern G
- \_\_\_\_\_ Review ground tracks

### **Assignment:**

*Instrument Flying*, Chapters 5 and 6

### **Completion Standards:**

The student must successfully complete all review questions following the assigned reading, and effectively control the airplane within 200 feet, 20 degrees, and 20 knots, keeping all turns coordinated.

---

## ATD / Lesson 4

**Minimum 141 Requirements:** Dual, 1.0 hour ATD

### **Objective:**

For the student to understand how to recognize and recover from unusual attitudes.

### **Content:**

- \_\_\_\_\_ Unusual attitudes
  - \_\_\_\_\_ Recognizing an unusual attitude
  - \_\_\_\_\_ Nose-low attitudes with increasing airspeed
  - \_\_\_\_\_ Nose-high attitude with decreasing airspeed
  - \_\_\_\_\_ Nose-high, and approaching the stall
- \_\_\_\_\_ Pattern D
- \_\_\_\_\_ Review ground tracks

### **Assignment:**

*Instrument Flying*, Chapter 7

### **Completion Standards:**

The student must successfully complete all review questions following the assigned reading; effectively control the airplane within 200 feet, 20 degrees, and 20 knots; and recover from unusual attitudes in a timely manner.

---

## ATD / Lesson 5

**Minimum 141 Requirements:** Dual, 1.0 hour ATD

### **Objective:**

For the student to become proficient at performing timed turns to magnetic compass headings, and at constant-rate climbs and descents, flying solely by reference to instruments.

### **Content:**

- \_\_\_\_\_ Standard rate turns
- \_\_\_\_\_ Steep turns
- \_\_\_\_\_ Time turns to magnetic compass headings
- \_\_\_\_\_ Pattern A
- \_\_\_\_\_ Pattern C
- \_\_\_\_\_ Review ground tracks

### **Assignment:**

*Instrument Flying*, Chapter 8

### **Completion Standards:**

This lesson is complete when the student can maintain flight within 150 feet, 15 degrees, and 15 knots, and successfully complete all review questions following the assigned reading.

---

## ATD / Lesson 6

**Minimum 141 Requirements:** Dual, 1.5 hour ATD

### **Objective:**

For the student to gain understanding of normal instrument flight on a partial panel, and continue performing instrument flight training patterns.

### **Content:**

- \_\_\_\_\_ System failures
  - \_\_\_\_\_ Loss of heading and/or attitude indicators
- \_\_\_\_\_ Interpreting pitch attitude on a partial panel
- \_\_\_\_\_ Interpreting bank attitude on a partial panel
- \_\_\_\_\_ Straight-and-level flight on a partial panel
- \_\_\_\_\_ Climbing on a partial panel
- \_\_\_\_\_ Descending on a partial panel
- \_\_\_\_\_ Turning on a partial panel
- \_\_\_\_\_ Recovery from unusual attitudes on a partial panel
- \_\_\_\_\_ Seven Ts
- \_\_\_\_\_ Performance sheet
- \_\_\_\_\_ Pattern D
- \_\_\_\_\_ Pattern E
- \_\_\_\_\_ Review ground tracks

### **Assignment:**

*Instrument Flying*, Chapters 9 and 10

### **Completion Standards:**

The student must successfully complete all review questions following the assigned reading, and maintain flight within 150 feet, 15 degrees, and 15 knots, keeping all turns coordinated.

---

# ATD / Lesson 7

**Minimum 141 Requirements:** Dual, 1.0 hour ATD

## **Objective:**

For the student to gain operational understanding of DME and the VOR.

## **Content:**

### *DME*

- \_\_\_\_\_ DME measures slant distance
- \_\_\_\_\_ DME uses the principle of secondary radar
- \_\_\_\_\_ DME frequencies
- \_\_\_\_\_ VOR/DME pairing
- \_\_\_\_\_ ILS/DME pairing
- \_\_\_\_\_ DME arcs

### *VOR*

- \_\_\_\_\_ VOR radial
- \_\_\_\_\_ How the VOR works
- \_\_\_\_\_ The range of a VOR
- \_\_\_\_\_ VORs on aeronautical charts
- \_\_\_\_\_ VOR/DME, TACAN, VORTAC
- \_\_\_\_\_ VOR cockpit instrument
- \_\_\_\_\_ TO or FROM
- \_\_\_\_\_ Preparing the OBI for use
- \_\_\_\_\_ Orientation using the VOR
- \_\_\_\_\_ Tracking using the VOR
- \_\_\_\_\_ Intercepting a course using the VOR
- \_\_\_\_\_ The VOR instrument approach
- \_\_\_\_\_ Pattern J
- \_\_\_\_\_ Review ground tracks

## **Assignment:**

*Instrument Flying*, Chapter 14

## **Completion Standards:**

The student must successfully complete all review questions following the assigned reading, and maintain flight within 150 feet, 15 degrees, and 15 knots, keeping all turns coordinated.

---

# ATD / Lesson 8

**Minimum 141 Requirements:** Dual, 1.0 hour ATD

## **Objective:**

For the student to become proficient at VOR navigation, and at intercepting and tracking VOR/VORTAC radials and DME arcs.

## **Content:**

- \_\_\_\_\_ VOR/VOT accuracy checks
- \_\_\_\_\_ VOR navigation techniques
- \_\_\_\_\_ Homing a VOR radial
- \_\_\_\_\_ Intercepting and tracking VOR/VORTAC radials
- \_\_\_\_\_ DME arcs
- \_\_\_\_\_ VOR full approach
- \_\_\_\_\_ Pattern H
- \_\_\_\_\_ Review ground tracks

## **Assignment:**

*Instrument Flying*, Chapter 12

## **Completion Standards:**

The student must navigate using VORs, and intercept and track VOR/VORTAC radials and DME arcs. Flight should be maintained within 150 feet altitude, 15 knots airspeed, and 15 degrees heading, and the student must successfully complete all review questions following the assigned reading.

---

## ATD / Lesson 9

**Minimum 141 Requirements:** Dual, 1.0 hour ATD

### **Objective:**

For the student to gain operational understanding of the NDB and ADF, the relative bearing indicator (RBI), the radio magnetic indicator (RMI), and the rotatable-card ADF.

### **Content:**

- \_\_\_\_\_ The NDB and ADF
  - \_\_\_\_\_ The Automatic Direction Finder
  - \_\_\_\_\_ The ADF Cockpit Display
- \_\_\_\_\_ The Relative Bearing Indicator (RBI)
  - \_\_\_\_\_ Operational use of the RBI
  - \_\_\_\_\_ Tracking
  - \_\_\_\_\_ The NDB approach
- \_\_\_\_\_ The Radio Magnetic Indicator (RMI) and Rotatable-card ADF
  - \_\_\_\_\_ Orientation using the RMI
  - \_\_\_\_\_ The initial interception of course
  - \_\_\_\_\_ Maintaining course
- \_\_\_\_\_ Review ground tracks

### **Assignment:**

*Instrument Flying*, Chapter 11

### **Completion Standards:**

The student must successfully complete all review questions following the assigned reading, and maintain coordinated flight within 150 feet, 15 degrees, and 15 knots.

---

## ATD / Lesson 10

**Minimum 141 Requirements:** Dual, 1.0 hour ATD

### **Objective:**

For the student to become familiar with radar, RNAV, and VHF direction finding, and become proficient with NDB navigation and intercepting and tracking NDB bearings.

### **Content:**

- \_\_\_\_\_ ADF orientation
- \_\_\_\_\_ NDB navigation
- \_\_\_\_\_ Homing with an NDB
- \_\_\_\_\_ Tracking with an NDB
- \_\_\_\_\_ Intercepting NDB bearings
- \_\_\_\_\_ NDB full approach
- \_\_\_\_\_ Radar
- \_\_\_\_\_ RNAV
- \_\_\_\_\_ VHF direction finding
- \_\_\_\_\_ Review ground tracks

### **Assignment:**

*Instrument Flying*, Chapters 10 and 15

### **Completion Standards:**

The student must navigate using the NDB, and intercept and track NDB bearings. Flight should be maintained within 150 feet altitude, 15 knots airspeed, and 15 degrees heading, and the student must successfully complete all review questions following the assigned reading.

---

# ATD / Lesson 11

**Minimum 141 Requirements:** Dual, 1.0 hour ATD

**Objective:**

For the student to gain operational understanding of the Instrument Landing System (ILS).

**Content:**

- \_\_\_\_\_ Flying the localizer
- \_\_\_\_\_ Flying the localizer with an HSI
- \_\_\_\_\_ Flying the localizer backcourse
- \_\_\_\_\_ Flying the glide slope
- \_\_\_\_\_ Marker beacons
- \_\_\_\_\_ Approach lights
- \_\_\_\_\_ Precision instrument runway markings
- \_\_\_\_\_ Inoperative ILS components
- \_\_\_\_\_ ILS full approach
- \_\_\_\_\_ Simultaneous approaches
- \_\_\_\_\_ Wind shear on the approach
- \_\_\_\_\_ Pattern I
- \_\_\_\_\_ Review ground tracks

**Assignment:**

*Instrument Flying*, Chapter 13

**Completion Standards:**

The student must successfully complete all review questions following the assigned reading, and maintain coordinated flight within 150 feet, 15 degrees, and 15 knots.

---

# ATD / Lesson 12

**Minimum 141 Requirements:** Dual, 1.5 hour ATD

**Objective:**

For the student to gain understanding of holding patterns, procedure turns, and DME arcs.

**Content:**

- \_\_\_\_\_ Holding patterns
  - \_\_\_\_\_ Tracking
  - \_\_\_\_\_ Corrections for wind
  - \_\_\_\_\_ Entering a holding pattern
  - \_\_\_\_\_ Holding speeds
- \_\_\_\_\_ Procedure turns
  - \_\_\_\_\_ The 45/180 degree procedure turn
  - \_\_\_\_\_ The 80/260 degree procedure turn
  - \_\_\_\_\_ The base or teardrop turn
  - \_\_\_\_\_ Positioning in a racetrack pattern
- \_\_\_\_\_ DME arcs
- \_\_\_\_\_ Pattern H
- \_\_\_\_\_ Review ground tracks

**Assignment:**

*Instrument Flying*, Chapter 28

**Completion Standards:**

The student must successfully complete all review questions following the assigned reading, and maintain coordinated flight within 150 feet, 15 degrees, and 15 knots.

---

# ATD / Lesson 13

**Minimum 141 Requirements:** Dual, 1.5 hour ATD

**Objective:**

For the student to become proficient with entries to holds, and holding at VORs.

**Content:**

- \_\_\_\_\_ Holding instructions
- \_\_\_\_\_ Perform 3 holds at a VOR
  - \_\_\_\_\_ Direct entry, standard turns
  - \_\_\_\_\_ Parallel entry, nonstandard turns
  - \_\_\_\_\_ Teardrop entry, standard turns
- \_\_\_\_\_ VOR approach, radar vectors
- \_\_\_\_\_ Review ground tracks

**Assignment:**

*Instrument Flying*, Chapter 27

**Completion Standards:**

The student must understand entries to holds, and perform a hold using a VOR. The student should maintain altitude within 150 feet, airspeed within 15 knots, and heading within 15 degrees, and complete all review questions following the assigned reading.

---

# ATD / Lesson 14

**Minimum 141 Requirements:** Dual, 1.0 hour ATD

**Objective:**

For the student to become proficient in performing holds at an NDB.

**Content:**

- \_\_\_\_\_ Perform NDB hold, standard and nonstandard turns
- \_\_\_\_\_ Perform NDB hold, partial panel
- \_\_\_\_\_ Review VOR holding procedures
- \_\_\_\_\_ Intersection holding
- \_\_\_\_\_ NDB full approach
- \_\_\_\_\_ Review ground tracks

**Assignment:**

*Instrument Flying*, Chapter 28

**Completion Standards:**

The student must perform holds at an NDB using the correct entry and timing procedures, and maintain orientation at all times. The student must maintain altitude within 150 feet, airspeed within 15 knots, and heading within 15 degrees, and complete all review questions following the assigned reading.

---

## ATD / Lesson 15

**Minimum 141 Requirements:** Dual, 1.5 hour ATD

**Objective:**

For the student to become proficient in performing VOR approaches—full, radar vectors, straight-in and missed approach techniques.

**Content:**

- \_\_\_\_\_ Full VOR approach
- \_\_\_\_\_ VOR missed approach
- \_\_\_\_\_ Radar vectors VOR approach, using straight-in minimums
- \_\_\_\_\_ Partial panel VOR radar vectors approach
- \_\_\_\_\_ Partial panel VOR missed approach
- \_\_\_\_\_ Review ground tracks

**Assignment:**

*Instrument Flying*, Chapter 29

**Completion Standards:**

The student must perform VOR approaches (full, radar vectors, straight-in, missed approach) within 100 feet of altitude, and 3 dots of the CDI needle. The student must comply with ATC/instructor clearances, perform all procedures according to the approach plates, and successfully complete all review questions following the assigned reading.

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## ATD / Lesson 16

**Minimum 141 Requirements:** Dual, 1.0 hour ATD

**Objective:**

For the student to become proficient in performing NDB approaches, demonstrating full, radar vectors, straight-in, and missed approach techniques, and be introduced to instrument departure procedures.

**Content:**

- \_\_\_\_\_ DPs
- \_\_\_\_\_ NDB full approach
- \_\_\_\_\_ NDB missed approach
- \_\_\_\_\_ NDB radar vector approach, using straight-in minimums
- \_\_\_\_\_ NDB partial panel, radar vector approach
- \_\_\_\_\_ NDB partial panel missed approach
- \_\_\_\_\_ Review ground tracks

**Assignment:**

*Instrument Flying*, Chapter 26

**Completion Standards:**

The student must perform NDB full, radar vectors, missed, and straight-in approaches while maintaining flight within 100 feet above minimum descent altitude, not descending lower until a decision to land has been made. The student must maintain the flight within 10 degrees of the runway at the missed approach point. Student should complete all review questions following the assigned reading.

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# ATD / Lesson 17

**Minimum 141 Requirements:** Dual, 1.0 hour ATD

**Objective:**

For the student to become proficient in performing ILS and localizer approaches, including missed approach, full and radar vector techniques.

**Content:**

- \_\_\_\_\_ ILS full approach
- \_\_\_\_\_ ILS missed approach
- \_\_\_\_\_ ILS radar vector approach, using straight-in minimums
- \_\_\_\_\_ Localizer radar vector approach
- \_\_\_\_\_ Localizer back course full approach
- \_\_\_\_\_ Localizer missed approach
- \_\_\_\_\_ Review ground tracks

**Assignment:**

*Instrument Flying*, Chapter 25

**Completion Standards:**

The student must perform ILS full and radar vector approaches, and localizer approaches without descending below the minimum altitudes; maintain airspeed within 10 knots of approach speed; and arrive at the MDA prior to the MAP and perform a prompt missed approach at the accurate time. ILS approach must maintain glide slope within less than full needle deflection, and student must complete all review questions following the assigned reading.

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# ATD / Lesson 18

**Minimum 141 Requirements:** Dual, 1.0 hour ATD

**Objective:**

For the student to practice instrument procedures in preparation for the checkride.

**Content:**

- \_\_\_\_\_ Departure procedures
- \_\_\_\_\_ Navigation to airway
- \_\_\_\_\_ Steep turns
- \_\_\_\_\_ Recovery from unusual attitudes
- \_\_\_\_\_ VOR holding
- \_\_\_\_\_ ADF holding (partial panel)
- \_\_\_\_\_ Systems and equipment malfunctions
- \_\_\_\_\_ VOR full approach (partial panel)
- \_\_\_\_\_ NDB full approach
- \_\_\_\_\_ Missed approach procedures
- \_\_\_\_\_ ILS radar vectors approach
- \_\_\_\_\_ Review ground tracks

**Assignment:**

Instrument Airman Certification Standards

**Completion Standards:**

The student must perform all instrument procedures within Airman Certification Standards and within specified minimums.