



Multi-Engine

ORAL EXAM GUIDE



MICHAEL D. HAYES

THE COMPREHENSIVE GUIDE
TO PREPARE YOU FOR THE
FAA CHECKRIDE

EIGHTH EDITION

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Eighth Edition
by Michael D. Hayes

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— M.D.H.

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Appendix 1 Applicant's Practical Test Checklist

Appendix 2 Know Your Aircraft

Appendix 3 Operations of Aircraft Without/With an MEL

Appendix 4 Light Twin Takeoff Control and Performance Briefing

Introduction

The *Multi-Engine Oral Exam Guide* is a comprehensive guide designed for pilots training for the addition of a Multi-Engine Land rating to an existing pilot certificate. This guide was originally designed for use in Part 141 flight schools, but it quickly became popular with those training under Part 61 who are not affiliated with an approved school. The guide also proves beneficial to pilots who wish to refresh their knowledge or who are preparing for a flight review.

This book is divided into four main sections. The first three chapters represent the basic knowledge areas that must be demonstrated by applicants before they are issued a multi-engine rating. The fourth chapter is a general review of the Airman Certification Standards (ACS) tasks required during the flight portion of the checkride. You should review the ACS applicable to your particular certification in addition to the material in this section. For additional reference, several appendixes have been included at the end of this guide. Appendix 1 reprints the FAA's "Applicant's Practical Test Checklist." Appendix 2 contains questions common to understanding of aircraft performance, limitations, systems, and procedures that are particularly helpful when checking out in a new airplane. Appendix 3 "Operations of Aircraft Without/With an MEL" depicts the typical sequence of events a pilot, operating with and without an MEL, should follow when inoperative equipment is discovered to be onboard. Appendix 4 is a copy of the FAA's "Light Twin Takeoff Control and Performance Briefing."

An FAA evaluator may ask questions at any time during the practical test to determine the applicant has the required knowledge. The result of intensive post-checkride debriefings, this book provides the most consistent questions asked, along with the information necessary for a knowledgeable response.

This guide may be supplemented with other comprehensive study materials as noted in parentheses after each question. For example: (FAA-H-8083-1). The abbreviations for these materials and their titles are listed below. Be sure to use the latest revision of these references when reviewing for the test.

| | |
|----------------|---|
| 14 CFR Part 23 | <i>Airworthiness Standards: Normal, Utility, Acrobatic, and Commuter Category Airplanes</i> |
| 14 CFR Part 43 | <i>Maintenance, Preventive Maintenance, Rebuilding, and Alteration</i> |
| 14 CFR Part 45 | <i>Identification and Registration Marking</i> |
| 14 CFR Part 61 | <i>Certification: Pilots, Flight Instructors, and Ground Instructors</i> |
| 14 CFR Part 91 | <i>General Operating and Flight Rules</i> |
| AC 61-67 | <i>Stall and Spin Awareness Training</i> |
| AC 91-73 | <i>Part 91 and 135 Single-Pilot Procedures During Taxi Operations</i> |
| AC 120-80 | <i>In-Flight Fires</i> |
| AC 150-5340-18 | <i>Standards for Airport Sign Systems</i> |
| FAA-H-8083-1 | <i>Aircraft Weight and Balance Handbook</i> |
| FAA-H-8083-2 | <i>Risk Management Handbook</i> |
| FAA-H-8083-3 | <i>Airplane Flying Handbook</i> |
| FAA-H-8083-6 | <i>Advanced Avionics Handbook</i> |
| FAA-H-8083-15 | <i>Instrument Rating Handbook</i> |
| FAA-H-8083-25 | <i>Pilot's Handbook of Aeronautical Knowledge</i> |
| FAA-H-8083-30 | <i>Aviation Maintenance Technician Handbook—General</i> |
| FAA-H-8083-31 | <i>Aviation Maintenance Technician Handbook—Airframe</i> |
| FAA-H-8083-32 | <i>Aviation Maintenance Technician Handbook—Powerplant</i> |
| FAA OK-09-439 | <i>Oxygen Equipment Use in General Aviation Operations</i> |
| FAA-P-8740-2 | <i>Density Altitude</i> |
| FAA-P-8740-13 | <i>Engine Operation for Pilots</i> |

| | |
|-------------------|--|
| FAA-P-8740-25 | <i>Always Leave Yourself an Out</i> |
| FAA-P-8740-66 | <i>Flying Light Twins Safely (AFS-800 2008)</i> |
| FAA-S-ACS-6 | <i>Private Pilot Airman Certification Standards</i> |
| FAA-S-ACS-8 | <i>Instrument Rating Airman Certification Standards</i> |
| FAA Order 8900.1 | <i>Flight Standards Information Management Systems</i> |
| FAA Safety ALC-30 | <i>FAA Multi-Engine Safety Review</i> |
| AFM | <i>FAA-Approved Flight Manuals</i> |
| AIM | <i>Aeronautical Information Manual</i> |
| POH | <i>Pertinent Pilot Operating Handbooks</i> |
| SAIB CE-05-51 | <i>FAA Special Airworthiness Information Bulletin</i> |
| SAIB CE-10-11 | <i>FAA Special Airworthiness Information Bulletin CE-10-11, "Electrical: Fire Hazard in Resetting Circuit Breakers (C/Bs)"</i> |

Most of the books listed above are reprinted by ASA and available from aviation retailers worldwide. A review of the appropriate ACS and the information presented in this guide should provide you with the necessary preparation for the FAA Private Pilot Certification practical test.

Be sure to use the latest references when reviewing for the test. Check the ASA Textbook Updates webpage at asa2fly.com/TextbookUpdates for the latest updates to this book; all the latest changes in FAA procedures and regulations that affect these questions will be listed there.

Multi-Engine Operations

1

A. Normal Procedures

1. What documents are required on board a multi-engine aircraft? (14 CFR 91.9, 91.203)

Airworthiness Certificate (14 CFR §91.203)

Registration Certificate (14 CFR §91.203)

Radio Station License (if operating outside of U.S., an FCC regulation)

Operating limitations (POH/AFM and supplements, placards, markings) (14 CFR §91.9)

Weight and balance data—(current)

Compass deviation card—(14 CFR §23.1547)

External data plate/serial number—(14 CFR §45.11)

Exam Tip: During the practical test your evaluator may wish to examine the various required aircraft documents (ARROW) during the preflight inspection as well as the currency of any aeronautical charts, electronic flight bag (EFB) data, etc., on board the aircraft. Prior to the test, verify that all of the necessary aircraft documentation, on-board databases, and charts are current and available.

2. What are the required tests and inspections to be performed on multi-engine aircraft? (Include inspections for IFR.) (14 CFR 91.409, 91.171, 91.411, 91.413, 91.207)

Annual inspection within the preceding 12 calendar months. (14 CFR §91.409)

Airworthiness Directives (ADs) and life-limited parts complied with, as required. (14 CFR §§91.403, 91.417)

VOR equipment check every 30 days (for IFR ops). (14 CFR §91.171)

100-hour inspection, if used for hire or flight instruction in aircraft CFI provides. (14 CFR §91.409)

Altimeter, altitude reporting equipment, and static pressure systems tested and inspected (for IFR ops), every 24 calendar months. (14 CFR §91.411)

Transponder tests and inspections, every 24 calendar months. (14 CFR §91.413)

Continued

Emergency locator transmitter, operation and battery condition inspected every 12 calendar months. (14 CFR §91.207)

Exam Tip: Be prepared to locate all of the required inspections, ADs, life-limited parts, etc., in the aircraft and engine logbooks and be able to determine when the next inspections are due. Create an aircraft status sheet that indicates the status of all required inspections, ADs, life-limited parts, and other related items. Use post-it notes to tab the specific pages in the aircraft and engine logbooks. Write the due date of the next inspection on the post-it note.

3. Is taxiing a multi-engine airplane significantly different than taxiing a single-engine airplane? (FAA-H-8083-3)

No, it is generally the same. The following general guidelines may be used:

- a. Brakes and throttles are used to control momentum, using care not to ride the brakes by keeping engine power to a minimum.
- b. Steering is done primarily with the steerable nose wheel.
- c. Directional control may also be obtained through use of differential power, if necessary.
- d. Plan ahead. Multi-engine airplanes are heavier, larger, and more powerful. They require more time and distance to stop.
- e. Also, due to size, pilot perspective may change, requiring additional vigilance to avoid obstacles, other aircraft, or bystanders.

4. How can a pilot use differential power during taxiing? (FAA-H-8083-3)

While taxiing, a tight turn to the right, for example, may be accomplished by reducing power on the right engine and increasing power on the left engine while applying right rudder/brake. Also, in a crosswind condition, differential power assists in controlling direction. Power should be applied on the upwind engine causing a turning moment away from the crosswind.

Note: Making sharp turns assisted by brakes and differential power can cause the airplane to pivot about a stationary inboard wheel and landing gear. The airplane was not designed for such abuse, and you should avoid doing this.

5. How should checklists be used in multi-engine airplanes? (FAA-H-8083-3)

Checklist use is essential to safe operation of a multi-engine airplane and no flight should be conducted without one. Checklists need not be “do lists”—the proper actions can be accomplished, and then the checklist used to quickly ensure all necessary tasks or actions have been completed. Certain immediate action items (such as the response to an engine failure in a critical phase of flight) should be committed to memory. After they are accomplished, and as workload permits, the pilot can then verify the action taken with a printed checklist.

6. Why can training and flying in a multi-engine aircraft be associated with greater risk? (FAA-H-8083-2, FAA-H-8083-3)

- a. Multi-engine aircraft are heavier, faster, and the systems are typically more complex.
- b. The increased performance and complexity of multi-engine aircraft require additional planning, judgment, and piloting skills.
- c. At times, the workload for the pilot can be much higher than that of a single-engine aircraft increasing risk substantially, especially if the pilot has not maintained currency and proficiency.
- d. When a malfunction or emergency occurs, the situation can deteriorate at a much faster rate than a comparable event or emergency in a single-engine airplane.
- e. During flight training, substantially more time is devoted to emergency procedures with emphasis on one engine inoperative (OEI) procedures. Risk is increased.

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The OEG Series is an excellent study tool for students and instructors alike, arranged in a question-and-answer format. Use when you're gearing up for the Practical Exam, as well as for a general refresher! Other Oral Exam Guides available from ASA...

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