



Multi-Engine Pilot

ORAL EXAM GUIDE



JASON BLAIR

Based on original text by Michael D. Hayes

COMPREHENSIVE PREPARATION
FOR THE FAA CHECKRIDE

NINTH EDITION

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AVIATION SUPPLIES & ACADEMICS, INC.
NEWCASTLE, WASHINGTON

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Ninth Edition

by Jason Blair

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Aviation Supplies & Academics, Inc.

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First edition published 1994. Ninth edition published 2024.

See the Reader Resources at asa2fly.com/oegme for additional information and updates relating to this book.

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ASA-OEG-ME9

ISBN 978-1-64425-401-1

Additional formats available:

eBook EPUB ISBN 978-1-64425-402-8

eBook PDF ISBN 978-1-64425-403-5

Printed in the United States of America

2027 2026 2025 2024 9 8 7 6 5 4 3 2 1

Library of Congress Cataloging-in-Publication Data:

Names: Blair, Jason, author. | Hayes, Michael D., author.

Title: Multi-engine pilot oral exam guide : comprehensive preparation for the FAA checkride / Jason Blair, based on original text by Michael D. Hayes.

Description: Ninth edition. | Newcastle, Washington : Aviation Supplies & Academics, Inc., 2024. | "ASA-OEG-ME9"—Title page verso.

Identifiers: LCCN 2024014534 (print) | LCCN 2024014535 (ebook) | ISBN 9781644254011 (trade paperback) | ISBN 9781644254028 (epub) | ISBN 9781644254035 (pdf)

Subjects: LCSH: United States. Federal Aviation Administration—Examinations—Study guides. | Multiengine flying—Examinations—Study guides. | Oral examinations—Study guides. | LCGFT: Study guides.

Classification: LCC TL711.T85 B58 2024 (print) | LCC TL711.T85 (ebook) | DDC 629.132/52076—dc23/eng/20240415

LC record available at <https://lcn.loc.gov/2024014534>

LC ebook record available at <https://lcn.loc.gov/2024014535>

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About the Author



Jason Blair is an active single- and multi-engine instructor and an FAA Designated Pilot Examiner (DPE) with over 6,000 hours total time, over 3,500 hours of instruction given, and more than 3,500 hours in aircraft as a DPE. In his role as an Examiner, he has issued more than 2,500 pilot certificates. Blair has worked for and continues to work with multiple aviation associations with his work focusing on pilot training and testing.

His experience as a pilot goes back over 30 years, as an instructor spans over 20 years, and includes more than 100 makes and models of aircraft flown. Blair has written and continues to write for multiple aviation publications with a focus on training and safety.

In addition to ASA's Oral Exam Guide series, Blair is also the author of four books in ASA's Aviator's Field Guide series: *Buying an Airplane*, *Owning an Airplane*, *Tailwheel Flying*, and *Middle-Altitude Flying*.

Introduction

The *Multi-Engine Pilot 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 is equally valuable to students training under Part 61 or in a Part 141 flight school. It is also well paired with the *Private Pilot Oral Exam Guide* or *Commercial Pilot Oral Exam Guide*, depending on the certificate level the pilot is seeking while also flying a multi-engine aircraft. 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 contains the “Applicant’s Practical Test Checklist” to be used when making final preparations for the checkride. 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 or without an MEL, should follow when inoperative equipment is discovered to be on board. 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 whether the applicant has the required knowledge. Based on intensive debriefings conducted after checkrides, we have provided you with the questions and topics commonly asked along with the information or the appropriate references necessary for a knowledgeable response.

You may supplement this guide with other comprehensive study materials as noted in brackets at the end of each answer; for example: [PA.I.G, CA.I.G; FAA-H-8083-25]. The first items provided are ACS codes for the relevant Areas of Operation and Tasks from the *Private Pilot for Airplane Category Airman Certification Standards* (FAA-S-ACS-6) and *Commercial Pilot for Airplane Category Airman Certification Standards* (FAA-S-ACS-7). Additional references pertaining to the questions can be found in the ACS listed under the Tasks corresponding to the provided ACS codes. The next reference(s) in the brackets are other study materials for which abbreviations and corresponding titles are listed below.

Be sure that you use the latest revision of these references when reviewing for the test. Also, check the ASA website at asa2fly.com/oegme for the most recent updates to this book due to changes in FAA procedures and regulations as well as for Reader Resources containing additional relevant information and updates.

14 CFR Part 23	<i>Airworthiness Standards: Normal 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>Parts 91 and 135 Single-Pilot, Flight School Procedures During Taxi Operations</i>
AC 120-80	<i>Firefighting of General and High-Energy In-Flight Fires</i>
AC 150/5340-18	<i>Standards for Airport Sign Systems</i>
AFM	<i>FAA-Approved Airplane Flight Manual</i>
AIM	<i>Aeronautical Information Manual</i>
drs.faa.gov	<i>Dynamic Regulatory System—Order 8900.1</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-8083-15	<i>Instrument Flying Handbook</i>
FAA-H-8083-16	<i>Instrument Procedures 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-P-8740-2	<i>Density Altitude</i>
FAA-P-8740-13	<i>Engine Operation for Pilots</i>
FAA-P-8740-66	<i>Flying Light Twins Safely</i>
FAA-S-ACS-6	<i>Private Pilot for Airplane Category Airman Certification Standards</i>
FAA-S-ACS-7	<i>Commercial Pilot for Airplane Category Airman Certification Standards</i>
FAA-S-ACS-8	<i>Instrument Rating—Airplane Airman Certification Standards</i>
FAA Safety ALC-30	<i>FAA Multi-Engine Safety Review</i>
POH	<i>Pilot's Operating Handbook</i>
SAIB CE-05-51	<i>FAA Special Airworthiness Information Bulletin</i>
SAIB CE-10-11	<i>FAA Special Airworthiness Information Bulletin— Electrical: Fire Hazard in Resetting Circuit Breakers (C/Bs)</i>

Most of these documents are available on the FAA's website (faa.gov). Additionally, many of the publications are reprinted by ASA (asa2fly.com) and are 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 Multi-Engine Land practical test.

Multi-Engine Operations

1

SAMPLE

A. Required Documents/Airworthiness

1. What documents are required on board an aircraft prior to flight?

Supplements (14 CFR §91.9)

Placards (14 CFR §91.9)

Airworthiness Certificate (14 CFR §91.203)

Registration Certificate (14 CFR §91.203)

Radio Station License—if operating outside of U.S.; FCC regulation (47 CFR §87.18)

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

Weight and balance data—current (14 CFR §23.2620)

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 (SPARROW) during the preflight inspection, as well as the currency of any aeronautical charts, EFB data, etc., on board the aircraft. Prior to the test, verify that all of the necessary aircraft documentation, onboard databases, charts, etc., are current and available.

[PA.I.B, CA.I.B; 14 CFR 91.9, 91.203]

2. What are the required tests and inspections to be performed on multi-engine aircraft? (Include inspections for IFR.)

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)

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.

[PA.I.B, CA.I.B; 14 CFR 91.171, 91.207, 91.409, 91.411, 91.413]

3. Can a pilot legally conduct flight operations with known inoperative equipment onboard?

Yes, under specific conditions. Part 91 describes acceptable methods for the operation of an aircraft with certain inoperative instruments and equipment that are not essential for safe flight; they are:

- a. Operation of an aircraft with a minimum equipment list (MEL), as authorized by 14 CFR §91.213(a), or
- b. Operation of an aircraft without a MEL under 14 CFR §91.213(d).

Exam Tip: Know this regulation well; unfamiliarity with 14 CFR §91.213 is a common weakness of applicants at all levels. You must demonstrate that you understand and know how to apply it.

[PA.IX.C, CA.IX.C; 14 CFR 91.213]

4. What limitations apply to aircraft operations conducted using the deferral provision of 14 CFR 91.213(d)?

When inoperative equipment is found during preflight or prior to departure, the decision should be to cancel the flight, to obtain maintenance prior to flight, or to defer the item or equipment. Maintenance deferrals are not used for equipment found inoperative while in flight. The manufacturer's pilot's operating handbook (POH)/airplane flight manual (AFM) procedures are to be used in those situations.

[PA.IX.C, CA.IX.C; FAA-H-8083-25]

5. During the preflight inspection in an aircraft that doesn't have a MEL, the pilot notices that an instrument or equipment item is inoperative. Describe how the pilot will determine if the aircraft is still airworthy for flight.

The pilot in this case will need to evaluate if the aircraft is able to be operated with the inoperative equipment. This will be done in the following order:

- a. Is the inoperative equipment required for the day, night, or IFR flight requirements by regulation?
- b. Is inoperative equipment allowed to be inoperative by any MEL or KOEL document that allows the pilot to operate in the specific conditions while inoperative?
- c. Is the inoperative equipment required to be operational by an AD?

If the answer to any of items a, b, or c above is "yes," the aircraft is not considered airworthy and maintenance is required before it can be flown.

- d. Is the equipment required according to the aircraft's type certificate data sheet?
- e. Is the equipment such that it was installed in the equipment list as delivered from the manufacturer?
- f. Is the equipment installed in accordance with a supplemental type certificate (STC)?

If the answer to any of items d, e, or f is "yes," a maintenance provider will need to address the concern and determine if the aircraft can be made airworthy. With this, a logbook entry would be required. If the equipment will not be fixed, the equipment will need to be disabled, placarded as "inoperative," and a logbook entry made.

- g. Is the inoperative equipment able to be fixed by the pilot?

If the answer to item g is "yes," then the inoperative equipment is something that falls under the preventive maintenance allowances for a pilot to address, and the pilot may fix it and return the aircraft to an airworthy condition after properly logging the fix in the maintenance logs.

In a general sense, if some equipment is inoperative, and an MEL or KOEL does not give the pilot a path to operate with

such equipment inoperative, it will require maintenance and documentation before the aircraft will be allowed to be operated.

[PA.I.B, CA.I.B; 14 CFR 91.213(d), FAA-H-8083-25]

6. What is a minimum equipment list (MEL)?

An MEL is a precise listing of instruments, equipment, and procedures that allows an aircraft to be operated under specific conditions with inoperative equipment. The MEL is the specific inoperative equipment document for a particular make and model aircraft by serial and registration numbers; e.g., BE-200, N12345. The FAA-approved MEL includes only those items of equipment that the FAA deems may be inoperative and still maintain an acceptable level of safety with appropriate conditions and limitations. A pilot should consider a MEL a “permission to operate with inoperative” list. Any items outside of this list and outside the conditions set forth should be considered required to be operational.

Note: Do not confuse an MEL with the aircraft’s equipment list. They are not the same.

[PA.I.B, CA.I.B; FAA-H-8003-25]

7. For an aircraft with an approved MEL, explain the decision sequence a pilot would use after discovering the position lights are inoperative.

With an approved MEL, if the position lights were discovered inoperative prior to a daytime flight, the pilot would make an entry in the maintenance record or discrepancy record provided for that purpose. The item is then either repaired or deferred in accordance with the MEL. Upon confirming that daytime flight with inoperative position lights is acceptable in accordance with the provisions of the MEL, the pilot would leave the position lights switch OFF, open the circuit breaker (or whatever action is called for in the procedures document), and placard the position light switch as INOPERATIVE.

[PA.I.B, CA.I.B; FAA-H-8083-25]

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ORAL EXAM GUIDE



Other Oral Exam Guides
available from ASA:

- Private Pilot
- Instrument Pilot
- Commercial Pilot
- Flight Instructor
- Airline Transport Pilot
- Helicopter Pilot
- Aircraft Dispatcher
- Flight Review
- Aviation Mechanic

ASA's Oral Exam Guide Series is an excellent study tool for students and instructors alike. Arranged in a question-and-answer format, this comprehensive guide lists the questions most likely to be asked by evaluators during the practical exam and provides succinct, ready responses. FAA references are provided throughout for further study.

This ninth edition of the *Multi-Engine Pilot Oral Exam Guide* aligns with the Airman Certification Standards (ACS), with new and expanded content on multi-engine operations, aerodynamics, inoperative engine procedures, aircraft systems, and maneuvers. Additional checklists, briefing guidelines, and resources for understanding aircraft performance, limitations, and minimum equipment lists make this the complete resource to prepare applicants for the FAA Multi-Engine Land checkride.



Aviation Supplies & Academics, Inc.
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Newcastle, Washington 98059 USA
425-235-1500 | asa2fly.com

TRANSPORTATION USD \$19.95

ISBN 978-1-64425-401-1



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ASA-OEG-ME9