



Helicopter Pilot

ORAL EXAM GUIDE



RYAN DALE

WHEN USED WITH THE ORAL EXAM GUIDES, THIS BOOK PREPARES YOU FOR THE ORAL PORTION OF THE PRIVATE, INSTRUMENT, COMMERCIAL, FLIGHT INSTRUCTOR, OR ATP HELICOPTER CHECKRIDE

BASED ON THE OEG SERIES BY **MICHAEL D. HAYES**

SECOND EDITION

Helicopter Pilot Oral Exam Guide
Second Edition

Helicopter Supplement for the Oral Exam Guides
by Ryan Dale

(Based on the Oral Exam Guide Series by Michael D. Hayes.)

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

Visit the ASA website often (www.asa2fly.com, Product Updates link) to find updates posted there due to FAA regulation revisions that may affect this book.

© 2006–2012 Aviation Supplies & Academics, Inc. All rights reserved.
Second Edition published 2012

No part of this book shall be reproduced, stored in any retrieval system, or transmitted by any means, electronic, mechanical, xerographic, audio/visual record, or otherwise, without written permission from the publisher. While every precaution has been taken in the preparation of this book, the publisher and Ryan Dale assume no responsibility for errors or omissions. Neither is any liability assumed for damages resulting from the use of the information contained herein. None of the material in this guide supersedes any documents, procedures, or regulations issued by the Federal Aviation Administration.

Printed in the United States of America

2015 2014 2013 2012 9 8 7 6 5 4 3 2 1

ASA-OEG-H2

ISBN 978-1-61954-010-1

Library of Congress Cataloging-in-Publication Data:

Dale, Ryan.

Helicopter oral exam guide / by Ryan Dale.

p. cm.

“When used with the Oral Exam Guides, this book prepares you for the oral portion of the Private, Instrument, Commercial, Flight Instructor, or ATP helicopter checkride.”

1. Helicopters—Piloting—Examinations—Study guides. 2. Helicopters—Piloting—Examinations, questions, etc. I. Title.

TL716.5.D35 2006

629.132'5252076—dc22

2006001953

Contents

Introduction: How To Use This Bookvii

Private Pilot

1	Certificates and Documents	P-3
2	Cross-Country Flight Planning	P-5
3	Performance and Limitations	P-7
	A. Aerodynamics.....	P-7
	B. Weight and Balance.....	P-11
	C. Retreating Blade Stall.....	P-13
	D. Height/Velocity Diagram.....	P-13
	E. Operating Limitations	P-14
4	Additional Study Questions	P-17
5	Helicopter Systems	P-19
	A. Flight Controls.....	P-19
	B. Powerplant.....	P-20
	C. Main Rotor, Anti-Torque Rotor, and Transmission.....	P-21
	D. Landing Gear.....	P-22
	E. Fuel, Oil, and Hydraulic	P-23
	F. Electrical.....	P-24
	G. Flight Instruments	P-25
	H. Environmental	P-26
	I. Carburetor Heat.....	P-26
6	Emergency Operations	P-29
	A. Power Failure at a Hover.....	P-29
	B. Power Failure at Altitude.....	P-29
	C. Systems and Equipment Malfunctions.....	P-30

Continued

D. Settling-With-Power.....	P-32
E. Low RPM Recovery.....	P-33
F. Anti-Torque System Failure.....	P-33
G. Dynamic Rollover.....	P-34
H. Ground Resonance.....	P-35
I. Low-G Conditions.....	P-36

Instrument Pilot

1 Instrument Helicopter.....	I-3
-------------------------------------	------------

Commercial Pilot

1 Certificates and Documents.....	C-3
A. Privileges and Limitations.....	C-3
B. Aircraft Certificates and Documents.....	C-5
2 Cross-Country Flight Planning.....	C-7
3 Performance and Limitations.....	C-11
A. Adverse Effects of Exceeding Limitations.....	C-11
B. Height/Velocity Diagram.....	C-12
C. Loss of Tail Rotor Effectiveness.....	C-13
D. Operating Limitations.....	C-13
4 Aircraft Performance Charts.....	C-15
5 Helicopter Systems.....	C-17
A. Primary Flight Controls.....	C-17
B. Powerplant.....	C-18
C. Main Rotor and Anti-Torque Rotor.....	C-20
D. Helicopter Skids, Brakes, Steering, or Frame.....	C-22
E. Electrical.....	C-23
F. Avionics Equipment.....	C-23
6 Emergency Procedures.....	C-25
A. Power Failure at Altitude.....	C-25
B. Low Rotor RPM.....	C-26
C. Dynamic Rollover.....	C-26
D. Retreating Blade Stall.....	C-28

Certified Flight Instructor

1 Principles of Flight	CFI-3
A. Characteristics of Different Rotor Systems	CFI-3
B. Effect of Lift, Weight, Thrust, and Drag	CFI-3
C. Torque Effect	CFI-7
D. Dissymmetry of Lift	CFI-8
E. Blade Flapping and Coning	CFI-8
F. Coriolis Effect	CFI-9
G. Translating Tendency	CFI-9
H. Translational Lift	CFI-10
I. Pendular Action	CFI-10
2 Helicopter Flight Controls	CFI-11
3 Logbook Entries and Certificate Endorsements	CFI-13
4 Hovering Maneuvers	CFI-17
A. Normal Takeoff To a Hover	CFI-17
B. Surface Taxi	CFI-19
C. Hover Taxi	CFI-21
D. Air Taxi	CFI-22
E. Slope Operations	CFI-24
5 Takeoffs, Landings, and Go-Arounds	CFI-27
A. Normal Takeoff From a Hover	CFI-27
B. Max Performance Takeoff	CFI-29
C. Rolling/Running Takeoff	CFI-31
D. Normal Approach	CFI-33
E. Steep Approach	CFI-35
F. Running/Roll-On Landing	CFI-38
G. Go-Around	CFI-40
6 Fundamentals of Flight	CFI-43
A. Straight-and-Level Flight	CFI-43
B. Level Turns	CFI-44
C. Normal Climbs	CFI-45
D. Normal Descent	CFI-47

7	Performance Maneuvers	CFI-49
	A. Rapid Deceleration (Quick Stop)	CFI-49
	B. Straight-In Autorotation	CFI-51
	C. 180° Autorotation.....	CFI-54
8	Emergency Operations	CFI-59
	A. Power Failure at a Hover.....	CFI-59
	B. Power Failure at Altitude	CFI-61
	C. Vortex Ring State (Settling With Power).....	CFI-63
	D. Low RPM Recovery.....	CFI-65
	E. Anti-Torque System Failure.....	CFI-66
	F. Dynamic Rollover	CFI-68
	G. Ground Resonance	CFI-69
	H. Low-G Conditions.....	CFI-70
9	Special Operations	CFI-73
	A. High, Low, Ground Reconnaissance	CFI-73
	B. Confined Area Operation	CFI-74
	C. Pinnacle/Platform Operation.....	CFI-76

Airline Transport Pilot

1	Equipment Examination	ATP-3
	A. Landing Gear.....	ATP-3
	B. Powerplant and Transmission	ATP-3
	C. Fuel System.....	ATP-4
	D. Oil Systems	ATP-4
	E. Hydraulic System	ATP-5
	F. Electrical System.....	ATP-8
2	Regulations	ATP-11

Appendix—Maneuvers Tables

Normal Maneuver Speeds for the R-22.....	A-3
Practical Test Standards—Private and Commercial.....	A-4
Practical Test Standards—Instrument.....	A-6

Certificates and Documents

1

1. What kind of helicopters can you fly with a private pilot certificate? (14 CFR 61.31)

Any helicopter up to 12,500 pounds, except for the R-22 and R-44 unless the SFAR 73 to Part 61 is followed.

2. Can you fly a twin turbine powered helicopter? (14 CFR 61.31)

Yes. You can fly any helicopter up to 12,500 pounds, except for the R-22 and R-44 (unless you meet the requirements outlined in SFAR 73 to Part 61).

3. If you take your flight review in a Bell 206, can you act as PIC in the R-22? (SFAR No. 73 to Part 61)

No, according to SFAR No. 73 2(c)(1): No flight review completed to satisfy 61.56...shall be valid for the operation of the R-22 helicopter *unless* that flight review was taken in an R-22.

4. To act as PIC in the R-22 how often do you have to take a flight review if you have less than 200 hours? (SFAR No. 73 to Part 61)

According to SFAR No. 73 2(b)(1), every 12 calendar months and have obtained an endorsement for that flight review from a certified flight instructor authorized under paragraph (b)(5).

The review must include:

- a. Enhanced training in autorotation procedures,
- b. Engine Rotor RPM control without the use of the governor,
- c. Low rotor RPM recognition and recovery, and
- d. Effects of low G maneuvers and proper recovery procedures.

Cross-Country Flight Planning

2

1. What types of charts are available for use in helicopter VFR navigation? (FAA-H-8083-25)

WAC—World Aeronautical Charts, revised annually except several Alaskan Charts and the Mexican/Caribbean charts, which are revised every 2 years. Not good for low altitude or slow flight because of scale.

Sectionals—Sectional Charts, these charts are revised semiannually except for some areas outside the coterminous United States where they are revised annually.

Terminals—VFR Terminal Area Charts, helpful when flying in or near Class B airspace, these charts are revised semiannually, except for several Alaskan and Caribbean Charts.

Helicopter Route Charts—These three-color charts depict current aeronautical information useful to helicopter pilots navigating in areas with high concentrations of helicopter activity. They are not updated on a regular basis because they will be updated when a significant number of changes have accumulated, or when safety related or major airspace modifications warrant the printing of a new chart.

2. How low can helicopter pilots fly? (14 CFR 91.119)

Helicopters may be operated at less than the minimums prescribed in paragraph (b) or (c) of this section if the operation is conducted *without hazard to persons or property* on the surface. In addition, each person operating a helicopter shall comply with any routes or altitudes specifically prescribed for helicopters by the FAA.

3. When flying into an airport environment, what rules apply to helicopters? (14 CFR 91.126)

Each pilot of a helicopter must avoid the flow of fixed-wing aircraft.

4. What are the VFR weather minimums for Class G airspace below 1,200 feet AGL? (14 CFR 91.155)

A helicopter may be operated *clear of clouds* if operated at a speed that allows the pilot adequate opportunity to see any air traffic or obstruction in time to avoid a collision.

5. What is required for a helicopter pilot to obtain a “Special VFR at a controlled airport”? (14 CFR 91.157)

Special VFR operations may only be conducted—


- a. With an ATC clearance;
- b. Clear of clouds

6. What are the fuel requirements for helicopters under VFR flight rules? (14 CFR Part 91.151)

No person may begin a flight in a rotorcraft under VFR conditions unless (considering wind and forecast weather conditions) there is enough fuel to fly to the first point of intended landing and, assuming normal cruising speed, to fly after that for at least 20 minutes.

Helicopter Pilot

ORAL EXAM GUIDE



HELICOPTER SUPPLEMENT TO
ASA'S ORAL EXAM GUIDE SERIES

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

- Private
- Instrument
- Commercial
- Multi-Engine
- Certified Flight Instructor
- Airline Transport Pilot
- Aviation Maintenance Technician
- Flight Review
- Sport Pilot Checkride by Paul Hamilton

Aviation Supplies & Academics, Inc.

7005 132nd Place SE | Newcastle, Washington 98059-3153

www.asa2fly.com | 1-800-ASA-2-FLY



PNR ASA-0EG-H2

ISBN 978-1-61954-010-1



9 781619 540101

5 1 2 9 5

