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COMMERCIAL PILOT
Practical Test Standards
for
ROTORCRAFT
HELICOPTER
GYROPLANE

APRIL 1996

FLIGHT STANDARDS SERVICE
Washington, DC 20591

COMMERCIAL PILOT ROTORCRAFT

Practical Test Standards

1996

FLIGHT STANDARDS SERVICE
Washington, DC 20591

NOTE

Material in FAA-S-8081-16 will be effective April 1, 1996. This version contains change 1. All previous editions of the Commercial Pilot – Rotorcraft (Helicopter and Gyroplane) Practical Test Standards will be obsolete as of this date.

FOREWORD

The Commercial Pilot – Rotorcraft (Helicopter and Gyroplane) Practical Test Standards (PTS) book has been published by the Federal Aviation Administration (FAA) to establish the standards for commercial pilot certification practical tests for the rotorcraft category, helicopter and gyroplane classes. FAA inspectors and designated pilot examiners shall conduct practical tests in compliance with these standards. Flight instructors and applicants should find these standards helpful during training and when preparing for the practical test.

William J. White
Deputy Director, Flight Standards Service

RECORD OF CHANGES

Change 1: 3/1/96

Reason:

1. Commercial Pilot-Rotorcraft Practical Test Prerequisites, (page vii). Delete item #2, and renumber the remaining prerequisites. There is no requirement for possessing an instrument rating when making application for initial Rotorcraft- Helicopter, certification.
2. Commercial Pilot-Rotorcraft-Gyroplane PTS, AREA OF OPERATION VI, GROUND REFERENCE MANEUVER- EIGHTS AROUND PYLONS, (pages 2-ii, 2-viii, and 2-16). All reference to Ground Reference Maneuvers are deleted from Gyroplane PTS. It has been determined that this AREA OF OPERATION is not appropriate for Gyroplane training and testing.

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INTRODUCTION

The Flight Standards Service of the Federal Aviation Administration (FAA) has developed this practical test book as a standard to be used by FAA inspectors and designated pilot examiners when conducting commercial pilot – rotorcraft (helicopter and gyroplane) practical tests. Flight instructors are expected to use this book when preparing applicants for practical tests.

Applicants should be familiar with this book and refer to these standards during their training.

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

The FAA gratefully acknowledges the valuable assistance provided by a nationwide public “Job Task Analysis” team that developed the knowledge, skills, and abilities that appear in this book. We would also like to thank the many individuals and organizations who contributed their time and talent in assisting with the revision of these practical test standards.

This publication may be obtained from FedWorld through the use of a computer modem or purchased from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.

Comments regarding this publication should be sent to:

U.S. Department of Transportation
Federal Aviation Administration
Flight Standards Service
Operations Support Branch, AFS-630
P.O. Box 25082
Oklahoma City, OK 73125

PRACTICAL TEST STANDARD CONCEPT

Federal Aviation Regulations (FAR's) specify the areas in which knowledge and skill must be demonstrated by the applicant before the issuance of a commercial pilot certificate. The FAR's provide the flexibility to permit the FAA to publish practical test standards containing specific TASKS in which pilot competency must be demonstrated. The FAA will revise this book whenever it is determined that changes are needed in the interest of safety. Adherence to the provisions of the regulations and the practical test standards is mandatory for the evaluation of commercial pilot applicants.

COMMERCIAL PILOT ROTORCRAFT PRACTICAL TEST BOOK DESCRIPTION

This test book contains the following commercial pilot practical test standards:

- Section 1** Rotorcraft, Helicopter
- Section 2** Rotorcraft, Gyroplane

The Commercial Pilot Rotorcraft Practical Test Standards include the AREAS OF OPERATION and TASKS for the issuance of an initial commercial pilot certificate and for the addition of category and/or class ratings to that certificate.

PRACTICAL TEST STANDARD DESCRIPTION

AREAS OF OPERATION are phases of the practical test arranged in a logical sequence within this standard. They begin with preflight preparation and end with post-flight procedures. The examiner, however, may conduct the practical test in any sequence that results in a complete and efficient test.

The REFERENCE identifies the publication(s) that describe(s) the TASK. Descriptions of TASKS are not included in the standards because this information can be found in the reference list. Publications other than those listed may be used, if their content conveys substantially the same meaning as the listed publications.

Reference list:

- FAR Part 43** Maintenance, Preventive Maintenance, Rebuilding, and Alteration
- FAR Part 61** Certification: Pilots and Flight Instructors
- FAR Part 67** Medical Standards and Certification
- FAR Part 91** General Operating and Flight Rules

NTSB Part 830 Notification and Reporting of Aircraft Accidents and Incidents

AC 00-2	Advisory Circular Checklist
AC 00-6	Aviation Weather
AC 00-45	Aviation Weather Services
AC 61-13	Basic Helicopter Handbook
AC 61-21	Flight Training Handbook
AC 61-23	Pilot's Handbook of Aeronautical Knowledge
AC 61-65	Certification: Pilots and Flight Instructors
AC 61-84	Role of Preflight Preparation
AC 90-48	Pilots' Role in Collision Avoidance
AC 90-87	Helicopter Dynamic Rollover
AC 91-13	Cold Weather Operation of Aircraft
AC 91-23	Pilot's Weight and Balance Handbook
AC 91-32	Safety In and Around Helicopters
AC 91-42	Hazards of Rotating Propeller and Helicopter Rotor Blades
AIM	Aeronautical Information Manual
AFD	Airport Facility Directory
NOTAM's	Notices to Airmen
	Helicopter Flight Manuals
	Gyroplane Flight Manuals
	Industry Related Manuals

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

1. specifically what the applicant should be able to do;
2. the conditions under which the TASK is to be performed; and
3. the acceptable standards of performance.

USE OF THE PRACTICAL TEST STANDARDS BOOK

The Commercial Pilot Rotorcraft Practical Test Standards have been designed to evaluate the competency of commercial pilots in both knowledge and skill. Commercial pilots are professionals engaged in various flight activities for compensation or hire. Because of their professional status, they should exhibit a significantly higher level of knowledge and skill than the private pilot. Although some TASKS listed are similar to those in the Private Pilot Rotorcraft Practical Test Standards, the wording used in the Commercial Pilot Rotorcraft Practical Test Standards reflects a higher level of competency expected of a commercial pilot applicant in performing these similar TASKS.

The FAA requires that all practical tests be conducted in accordance with the appropriate Commercial Pilot Practical Test Standards and the policies set forth in this INTRODUCTION. Commercial pilot applicants shall be evaluated in **ALL TASKS** included in the **AREAS OF OPERATION** of the appropriate practical test standard.

In preparation for the practical test, the examiner shall develop a written “plan of action.” The “plan of action” shall include all **TASKS** in each **AREA OF OPERATION**.

The examiner is not required to follow the precise order in which the **AREAS OF OPERATION** and **TASKS** appear in this book. The examiner may change the sequence or combine **TASKS** with similar objectives to meet the orderly and efficient flow of the practical test. For example, lost procedures may be combined with radio navigation. The examiner's “plan of action” shall include the order and combination of **TASKS** to be demonstrated by the applicant in a manner that will result in an efficient and valid test.

Examiners shall place special emphasis upon areas of aircraft operation that are most critical to flight safety. Among these areas are precise aircraft control and sound judgment in decision making. Although these areas may or may not be shown under each **TASK**, they are essential to flight safety and shall receive careful evaluation throughout the practical test. **THE EXAMINER SHALL ALSO EMPHASIZE WAKE TURBULENCE AVOIDANCE, LOW LEVEL WIND SHEAR, INFLIGHT COLLISION AVOIDANCE, RUNWAY INCURSION AVOIDANCE, AND CHECKLIST USAGE.**

The examiner is expected to use good judgment in the performance of simulated emergency procedures. The use of the safest means for simulation is expected. Consideration must always be given to local conditions (both meteorological and topographical), the examiner's level of performance at the time of the test, as well as the applicant's, ATC workload, and the relative condition of the aircraft used. If the procedure being evaluated would put the maneuver in jeopardy of safe operation, it is expected that the applicant shall simulate that portion of the maneuver, i.e. - engine governor, trim system malfunction, etc., unless otherwise indicated by the **NOTE** in a particular **AREA OF OPERATION** or **TASK**.

COMMERCIAL PILOT ROTORCRAFT PRACTICAL TEST PREREQUISITES

An applicant for the commercial pilot rotorcraft practical test is required by Federal Aviation Regulations to:

1. possess a private pilot certificate with a helicopter or gyroplane rating, if a commercial pilot certificate with a helicopter or gyroplane rating is sought, or meet the flight experience required for a private pilot certificate and pass the private helicopter or gyroplane knowledge and practical test;
2. pass the appropriate commercial pilot knowledge test since the beginning of the 24th month before the month in which the practical test is taken;
3. obtain the applicable instruction and aeronautical experience prescribed for the commercial pilot certificate or training sought;
4. for initial certification, hold at least a current second-class medical certificate issued under FAR Part 67;
5. be at least 18 years of age, and;
6. obtain a written statement from an appropriately certificated flight instructor certifying that the applicant has been given flight instruction in preparation for the practical test within 60 days preceding the date of application. The statement shall also state that the instructor finds the applicant competent to pass the practical test and that the applicant has satisfactory knowledge of the subject area(s) in which a deficiency was indicated by the airman knowledge test report.

AC 61-65, Certification: Pilots and Flight Instructors, states that the instructor may sign the instructor's recommendation on the reverse side of FAA Form 8710-1, Airman Certificate and/or Rating Application, in lieu of the previous statement, provided all appropriate FAR Part 61 requirements are substantiated by reliable records.

AIRCRAFT AND EQUIPMENT REQUIRED FOR THE PRACTICAL TEST

The commercial pilot applicant is required by FAR Section 61.45 to provide an airworthy, certificated aircraft for use during the practical test. This section further requires that the aircraft:

1. have fully functioning dual controls, except as provided in this FAR Section; and
2. be capable of performing **ALL** appropriate TASKS for the commercial pilot certificate and have no operating limitations that prohibit the performance of those TASKS.

METRIC CONVERSION INITIATIVE

To assist the pilots in understanding and using the metric measurement system, the practical test standards refer to the metric equivalent of various altitudes throughout. The inclusion of meters is intended to familiarize pilots with its use. The metric altimeter is arranged in 10 meter increments; therefore, when converting from feet to meters, the exact conversion, being too exact for practical purposes, is rounded to the nearest 10 meter increment or even altitude as necessary.

POSITIVE EXCHANGE OF FLIGHT CONTROLS

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

When the examiner wishes to take the controls to allow the applicant to adjust the seat, headset, etc., he/she will say "I have the controls." The applicant will acknowledge immediately by saying, "You have the controls." The examiner again says, "I have the controls." When control is returned to the applicant, follow the same procedure. A visual check is recommended to verify that the exchange has occurred. There should never be any doubt as to who is flying the aircraft.

USE OF DISTRACTIONS DURING PRACTICAL TESTS

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

APPLICANT'S USE OF PRESCRIBED CHECKLISTS

Throughout the practical test, the applicant is evaluated on the use of the prescribed checklist. The situation may be such that the use of the checklist while accomplishing the elements of the objective would be either unsafe or impractical, especially in a single-pilot operation. In this case, it may be more prudent to review the checklist after the elements have been met.

CREW RESOURCE MANAGEMENT (CRM)

CRM “...refers to the effective use of ALL available resources; human resources, hardware, and information.” Human resources “...includes all other groups routinely working with the cockpit crew (or pilot) who are involved in decisions that are required to operate a flight safely. These groups include, but are not limited to: dispatchers, cabin crewmembers, maintenance personnel, and air traffic controllers.” CRM is not a single TASK, it is a set of skill competencies that must be evident in all TASKS in this PTS as applied to either single pilot or a crew operation.

FLIGHT INSTRUCTOR RESPONSIBILITY

An appropriately rated flight instructor is responsible for training the commercial pilot applicant to acceptable standards in **all** subject matter areas, procedures, and maneuvers included in the TASKS within the appropriate commercial pilot practical test standard. Because of the impact of their teaching activities in developing safe, proficient pilots, flight instructors should exhibit a high level of knowledge, skill, and ability. Additionally, the flight instructor must certify that the applicant is able to perform safely as a commercial pilot and is competent to pass the required practical test.

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

EXAMINER¹ RESPONSIBILITY

The examiner conducting the practical test is responsible for determining that the applicant meets the acceptable standards of knowledge and skill of each TASK within the appropriate practical test standard. Since there is no formal division between the **oral** and **skill** portions of the practical test, this becomes an ongoing process throughout the test. To avoid unnecessary distractions, oral questioning should be used judiciously at all times, especially during the flight portion of the practical test.

Examiners shall test to the greatest extent practicable the applicant's correlative abilities rather than mere rote enumeration of facts throughout the practical test.

Throughout the flight portion of the practical test, the examiner shall evaluate the applicant's use of visual scanning and collision avoidance procedures.

SATISFACTORY PERFORMANCE

Satisfactory performance to meet the requirements for certification is based on the applicant's ability to safely:

1. perform the approved areas of operation for the certificate or rating sought within the approved standards;
2. demonstrate mastery of the aircraft with the successful outcome of each task performed never seriously in doubt;
3. demonstrate sound judgment aeronautical decision making and skilled competencies in CRM.

UNSATISFACTORY PERFORMANCE

If, in the judgment of the examiner, the applicant does not meet the standards of performance of any TASK performed, the associated AREA OF OPERATION is failed and therefore, the practical test is failed. The examiner or applicant may discontinue the test any time after the failure of an AREA OF OPERATION makes the applicant ineligible for the certificate or rating sought. The test will be continued¹ ONLY with the consent of the applicant. If the test is either continued or discontinued, the applicant is entitled credit for only those TASKS satisfactorily performed. However, during the retest and at the discretion of the examiner, any TASK may be re-evaluated including those previously passed.

¹The word "examiner" denotes either the FAA inspector or FAA designated pilot examiner who conducts the practical test.

Typical areas of unsatisfactory performance and grounds for disqualification are:

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

When a disapproval notice is issued, the examiner will record the applicant's unsatisfactory performance and tasks not completed in terms of AREA OF OPERATIONS appropriate to the practical test conducted.

USE OF RATING TASKS TABLES

If an applicant already holds a commercial pilot certificate, use the appropriate table at the beginning of each section, to determine which TASKS are required on the practical test. However, at the discretion of the examiner, the applicant's competence in any TASK may be evaluated, if indications of the applicant's performance suggests that such action is appropriate.

If the applicant holds more than one category or class rating at the commercial level, and the table indicates differing required TASKS, the "least restrictive" entry applies. For example, if "ALL" and "NONE" are indicated for one AREA OF OPERATION, the "NONE" entry applies. If "B" and "B, C" are indicated, the "B" entry applies.

SECTION 1

**COMMERCIAL PILOT
ROTORCRAFT – HELICOPTER**

Practical Test Standards

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Addition of a Rotorcraft/Helicopter rating to an existing Commercial Pilot Certificate

Area of Opera- tion	Required TASKS are indicated by either the TASK letter(s) that apply(s) or an indication that all or none of the TASKS must be tested.								
	COMMERCIAL PILOT RATING(S) HELD								
	ASEL	ASES	AMEL	AMES	RG	Non- Power Glider	Power Glider	Free Balloon	Airship
I	E,F,G	E,F,G	E,F,G	E,F,G	E,F,G	E,F,G, I,J	E,F,G, I,J	E,F,G, I,J	E,F,G
II	ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL
III	B,C	B,C	B,C	B,C	ALL	ALL	ALL	ALL	B,C
IV	ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL
V	ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL
VI	ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL
VII	NONE	NONE	NONE	NONE	B	B,C,D	B,C,D	B,C,D	NONE
VIII	ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL
IX	ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL
X	ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL

Appendix 1

TASK VS. SIMULATION DEVICE CREDIT

Examiners conducting the Commercial Pilot – Helicopter Practical Tests with simulation devices should consult appropriate documentation to ensure that the device has been approved for training. The documentation for each device should reflect that the following activities have occurred:

1. The device must be evaluated, determined to meet the appropriate standards, and assigned the appropriate qualification level by the National Simulator Program Manager. The device must continue to meet qualification standards through continuing evaluations as outlined in the appropriate advisory circular (AC). For helicopter simulators, AC 120-63 (as amended), Helicopter Simulator Qualification, will be used.
2. The FAA must approve the device for specific TASKS.
3. The device must continue to support the level of student or applicant performance required by this PTS.

NOTE: Users of the following chart are cautioned that use of the chart alone is incomplete. The description and objective of each task as listed in the body of the PTS, including all notes, must also be incorporated for accurate simulation device use.

USE OF CHART

X Creditable.

X1 Creditable only if accomplished in conjunction with a running takeoff and running landing, as appropriate.

- NOTE:
1. The helicopter may be used for all tasks.
 2. Level C simulators may be used as indicated only if the applicant meets established pre-requisite experience requirements.
 3. Level A helicopter simulator standards have not been defined.
 4. Helicopter flight training devices have not been defined.

FLIGHT TASK

FLIGHT SIMULATION DEVICE LEVEL

Areas of Operation :

1 2 3 4 5 6 7 A B C D

II. Preflight Procedures

A. Preflight Inspection (Cockpit Only)

B. Cockpit Management

C. Engine Starting and Rotor Engagement (If applicable)

D. Before Takeoff Check

III. Airport and Heliport Operations

A. Radio Communications and ATC Light Signals

B. Traffic Patterns

C. Airport and Heliport Markings and Lighting

IV. Hovering Maneuvers

A. Vertical Takeoff and Landing

B. Slope Operations

C. Surface Taxi

D. Hover Taxi

E. Air Taxi

V. Takeoffs, Landings, and GoArounds

A. Normal and Crosswind Takeoff and Climb

B. Normal and Crosswind Approach

C. Maximum Performance Takeoff and Climb

D. Steep Approach

E. Rolling Takeoff

F. Shallow Approach and Running Roll-On

G. Go-Around

FLIGHT TASK

FLIGHT SIMULATION DEVICE LEVEL

Areas of Operation :

1 2 3 4 5 6 7 A B C D

VI. Performance Maneuvers

- A. Rapid Deceleration
- B. 180° Autorotations

VII. Navigation

- A. Pilotage and Dead Reckoning
- B. Radio Navigation and Radar Services
- C. Diversion
- D. Lost Procedures

----- X X
----- X X
----- X X
----- X X

VIII. Emergency Operations

- A. Power Failure at a Hover
- B. Power Failure at Altitude
- C. Systems and Equipment Malfunctions
- D. Settling-With-Power
- E. Low Rotor RPM Recovery
- F. Dynamic Roll Over
- G. Ground Resonance
- H. Low G Conditions
- I. Emergency Equipment and Survival Gear

----- X X
----- X X
----- X X
----- X X
----- X X

IX. Special Operations

- A. Confined Area Operations
- B. Pinnacle/Platform Operations

X. Postflight Procedures

- A. After Landing and Securing

**APPLICANT'S PRACTICAL TEST CHECKLIST
(HELICOPTER)
APPOINTMENT WITH EXAMINER:**

EXAMINER'S NAME _____

LOCATION _____

DATE/TIME _____

ACCEPTABLE AIRCRAFT

- Aircraft Documents:
 - Airworthiness Certificate
 - Registration Certificate
 - Operating Limitations
- Aircraft Maintenance Records:
 - Logbook Record of Airworthiness Inspections and AD Compliance
- Pilot's Operating Handbook, FAA-Approved Helicopter Flight Manual
- FCC Station License

PERSONAL EQUIPMENT

- View-Limiting Device
- Current Aeronautical Charts
- Computer and Plotter
- Flight Plan Form
- Flight Logs
- Current AIM, Airport Facility Directory, and Appropriate Publications

PERSONAL RECORDS

- Identification - Photo/Signature ID
- Pilot Certificate
- Current and Appropriate Medical Certificate
- Completed FAA Form 8710-1, Airman Certificate and/or Rating Application with Instructor's Signature (if applicable)
- AC Form 8080-2, Airman Written Test Report, or Computer Test Report
- Pilot Logbook with Appropriate Instructor Endorsements
- FAA Form 8060-5, Notice of Disapproval (if applicable)
- Approved School Graduation Certificate (if applicable)
- Examiner's Fee (if applicable)

EXAMINER'S PRACTICAL TEST CHECKLIST

(HELICOPTER)

APPLICANT'S NAME _____

LOCATION _____

DATE/TIME _____

I. PREFLIGHT PREPARATION

- A. CERTIFICATES AND DOCUMENTS
- B. WEATHER INFORMATION
- C. CROSS-COUNTRY FLIGHT PLANNING
- D. NATIONAL AIRSPACE SYSTEM
- E. PERFORMANCE AND LIMITATIONS
- F. OPERATION OF SYSTEMS
- G. MINIMUM EQUIPMENT LIST
- H. AEROMEDICAL FACTORS
- I. PHYSIOLOGICAL ASPECTS OF NIGHT FLYING
- J. LIGHTING AND EQUIPMENT FOR NIGHT FLYING

II. PREFLIGHT PROCEDURES

- A. PREFLIGHT INSPECTION
- B. COCKPIT MANAGEMENT
- C. ENGINE STARTING AND ROTOR ENGAGEMENT
- D. BEFORE TAKEOFF CHECK

III. AIRPORT AND HELIPORT OPERATIONS

- A. RADIO COMMUNICATIONS AND ATC LIGHT SIGNALS
- B. TRAFFIC PATTERNS
- C. AIRPORT AND HELIPORT MARKINGS AND LIGHTING

IV. HOVERING MANEUVERS

- A. VERTICAL TAKEOFF AND LANDING
- B. SLOPE OPERATIONS
- C. SURFACE TAXI
- D. HOVER TAXI
- E. AIR TAXI

V. TAKEOFFS, LANDINGS, AND GO-AROUNDS

- **A. NORMAL AND CROSSWIND TAKEOFF AND CLIMB**
- **B. NORMAL AND CROSSWIND APPROACH**
- **C. MAXIMUM PERFORMANCE TAKEOFF AND CLIMB**
- **D. STEEP APPROACH**
- **E. ROLLING TAKEOFF**
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VIII. EMERGENCY OPERATIONS

- **A. POWER FAILURE AT A HOVER**
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- **H. LOW G CONDITIONS**
- **I. EMERGENCY EQUIPMENT AND SURVIVAL GEAR**

IX. SPECIAL OPERATIONS

- **A. CONFINED AREA OPERATION**
- **B. PINNACLE/PLATFORM OPERATIONS**

X. POST-FLIGHT PROCEDURES

- **AFTER LANDING AND SECURING**

I. AREA OF OPERATION:
PREFLIGHT PREPARATION

A. TASK: CERTIFICATES AND DOCUMENTS

REFERENCES: FAR Parts 43, 61, 67, 91; AC 61-13, AC 61-23; Helicopter Flight Manual.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to certificates and documents by explaining—
 - a. pilot certificate privileges and limitations.
 - b. medical certificate class and duration.
 - c. pilot logbook or flight records.
2. Exhibits knowledge of the elements related to certificates and documents by locating and explaining—
 - a. airworthiness and registration certificates.
 - b. operating limitations, placards, and instrument markings.
 - c. weight and balance data and equipment list.
 - d. airworthiness directives, compliance records, maintenance requirements, and appropriate records.

B. TASK: WEATHER INFORMATION

REFERENCES: AC 00-6, AC 00-45, AC 61-23, AC 61-84; AIM.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to weather information from various sources with emphasis on—
 - a. PIREP's.
 - b. SIGMET's and AIRMET's.
 - c. wind shear reports.
 - d. use of weather reports and forecasts.
2. Makes a competent "go/no-go" decision based on available weather information.

C. TASK: CROSS-COUNTRY FLIGHT PLANNING

REFERENCES: AC 61-21, AC 61-23, AC 61-84; Navigation Charts; Airport/Facility Directory; NOTAM's; AIM.

NOTE: In-flight demonstration of cross-country procedures by the applicant is tested under the area of operation NAVIGATION.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to cross-country flight planning by presenting and explaining a pre-planned VFR cross-country flight, as previously assigned by the examiner. The flight plan shall be to the first fuel stop necessary, based on maximum allowable passenger, baggage, and/or cargo loads using real-time weather.
2. Uses appropriate and current aeronautical charts.
3. Properly identifies airspace, obstacles, and terrain features, including discussion of wire strike avoidance techniques.
4. Selects easily identifiable en route checkpoints.
5. Selects most favorable altitudes, considering weather conditions and equipment capabilities.
6. Computes headings, flight time, and fuel requirements.
7. Selects appropriate navigation systems/facilities and communication frequencies.
8. Extracts and applies pertinent information from NOTAM's, Airport/Facility Directory, and other flight publications.
9. Completes a navigation log and simulates filing a VFR flight plan.

D. TASK: NATIONAL AIRSPACE SYSTEM

REFERENCES: FAR Part 91; AIM.

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

1. Basic VFR Weather Minimums – for all classes of airspace.
2. Airspace classes – their boundaries, pilot certification and helicopter equipment requirements for the following—
 - a. Class A.
 - b. Class B.
 - c. Class C.
 - d. Class D.
 - e. Class E.
 - f. Class G.
3. Special use airspace and other airspace areas.

E. TASK: PERFORMANCE AND LIMITATIONS

REFERENCES: AC 61-13, AC 61-84, AC 91-23; Helicopter Flight Manual.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to performance and limitations by explaining the use of charts, tables, and data to determine performance and the adverse effects of exceeding limitations.
2. Computes weight and balance, including adding, removing, and shifting weight.
3. Determines if the weight and center of gravity will remain within limits during all phases of flight.
4. Describes the effects of various atmospheric conditions on the helicopter's performance.
5. Understands the cause and effects of retreating blade stall.
6. Considers circumstances when operating within "avoid areas" of the height/velocity diagram.
7. Is aware of situations that lead to loss of tail rotor/antitorque effectiveness (unanticipated yaw).
8. Determines whether the computed performance is within the helicopter's capabilities and operating limitations.

F. TASK: OPERATION OF SYSTEMS

REFERENCES: AC 61-13; Helicopter Flight Manual.

Objective. To determine that the applicant exhibits knowledge of the elements related to the appropriate normal operating procedures and limitations of the following systems by explaining:

1. Primary flight controls, trim, and, if installed, stability control.
2. Powerplant.
3. Main rotor and antitorque.
4. Landing gear, brakes, steering, skids, or floats, as applicable.
5. Fuel, oil, and hydraulic.
6. Electrical.
7. Pitot-static, vacuum/pressure and associated flight instruments, if applicable.
8. Environmental.
9. Anti-icing, including carburetor heat, if applicable.
10. Avionics equipment.

G. TASK: MINIMUM EQUIPMENT LIST

REFERENCE: FAR Part 91.

Objective. To determine that the applicant exhibits knowledge of the elements related to the FAA-approved minimum equipment list (MEL) by explaining:

1. Which aircraft require the use of an MEL.
2. Airworthiness limitations imposed on aircraft operations with inoperative instruments or equipment.
3. Requirements for a letter of authorization from the FAA Flight Standards District Office.
4. Supplemental type certificates related to MEL's.
5. Instrument and equipment exceptions.
6. When a special flight permit would be required.
7. Procedures for obtaining a special flight permit.

H. TASK: AEROMEDICAL FACTORS

REFERENCES: AC 61-21; AIM.

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

1. The symptoms, causes, effects, and corrective actions of at least four of the following—
 - a. hypoxia.
 - b. hyperventilation.
 - c. middle ear and sinus problems.
 - d. spatial disorientation.
 - e. motion sickness.
 - f. carbon monoxide poisoning.
 - g. stress and fatigue.
2. The effects of alcohol and drugs, including over-the-counter drugs.
3. The effects of nitrogen excesses during scuba dives upon a pilot and/or passenger in flight.

I. TASK: PHYSIOLOGICAL ASPECTS OF NIGHT FLYING

REFERENCES: AC 61-21; AIM.

Objective. To determine that the applicant exhibits knowledge of the elements related to the physiological aspects of night flying by explaining:

1. The function of various parts of the eye essential for night vision.
2. Adaptation of the eye to changing light.
3. Correct use of the eye to accommodate changing light.
4. Coping with illusions created by various light conditions.
5. Effects of the pilot's physical condition on visual acuity.
6. Methods for increasing vision effectiveness.

J. TASK: LIGHTING AND EQUIPMENT FOR NIGHT FLYING

REFERENCES: AC 61-21, AC 61-23; Helicopter Flight Manual.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to lighting and equipment for night flying by explaining—
 - a. the types and uses of various personal lighting devices.
 - b. the required equipment, and location of external navigation lighting of the helicopter.
 - c. the meaning of various airport, heliport, and navigation lights, the method of determining their status, and the procedure for airborne activation of runway lights.
2. Locates and identifies switches, spare fuses, and circuit breakers pertinent to night operations.

II. AREA OF OPERATION: PREFLIGHT PROCEDURES

A. TASK: PREFLIGHT INSPECTION

REFERENCES: AC 61-13; Helicopter Flight Manual.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to a preflight inspection including which items must be inspected, for what reason, and how to detect possible defects.
2. Inspects the helicopter by systematically following a prescribed checklist.
3. Verifies that the helicopter is in condition for safe flight, notes any discrepancy, and determines if maintenance is required.

B. TASK: COCKPIT MANAGEMENT

REFERENCES: FAR Part 91; AC 91-32; Helicopter Flight Manual.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to efficient cockpit management procedures, and related safety factors.
2. Organizes and arranges material and equipment in a manner that makes the items readily available.
3. Briefs or causes the briefing of occupants on the use of safety belts, rotor blade avoidance, and emergency procedures.
4. If applicable, briefs crew appropriately.
5. Completes the prescribed checklist.

C. TASK: ENGINE STARTING AND ROTOR ENGAGEMENT

REFERENCES: AC 61-13, AC 91-13, AC 91-42; Helicopter Flight Manual.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to correct engine starting procedures, including the use of an external power source, starting under various atmospheric conditions, awareness of other persons and property during start, and the effects of using incorrect starting procedures.
2. Ensures proper rotor blade clearance, and frictions flight controls, as necessary.
3. Accomplishes correct starting procedures.
4. Prevents helicopter movement during and after the engine start.
5. Monitors engine instruments after start for proper engine RPM, temperature, and pressures.
6. Completes the prescribed checklist.

D. TASK: BEFORE TAKEOFF CHECK

REFERENCES: AC 61-13; Helicopter Flight Manual.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to the before takeoff check, including the reasons for checking the items and how to detect malfunctions.
2. Positions the helicopter properly considering other aircraft, surface conditions, and if applicable, existing wind conditions.
3. Properly divides attention.
4. Accomplishes the before takeoff check and ensures that the helicopter is in safe operating condition.
5. Reviews expected takeoff distance, if necessary.
6. Reviews takeoff emergency procedures, and if applicable, briefs crew on procedures.
7. Ensures no conflict with traffic prior to takeoff.
8. Ensures that the engine temperature and oil pressure are suitable, and rotor RPM is adequate for takeoff.
9. Completes the prescribed checklist, if applicable.

I. AREA OF OPERATION:
AIRPORT AND HELIPORT OPERATIONS

A. TASK: RADIO COMMUNICATIONS AND ATC LIGHT SIGNALS

REFERENCE: AIM.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to radio communications, radio failure, and ATC light signals.
2. Selects appropriate frequencies for facilities to be used.
3. Transmits using recommended phraseology.
4. Acknowledges radio communications and complies with instructions.
5. Uses prescribed procedures following radio communications failure.
6. Interprets and complies with ATC light signals.

B. TASK: TRAFFIC PATTERNS

REFERENCES: FAR Part 91; AC 61-21; AIM, Helicopter Flight Manual.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to traffic pattern procedures at each class airspace airport, runway incursion avoidance, collision and wake turbulence avoidance, and approach procedure when wind shear is reported.
2. Follows the established traffic pattern procedures, instructions, and rules.
3. Maintains proper spacing from other traffic or avoids the flow of fixed wing aircraft.
4. Remains aware of the possibility of wind shear and/or wake turbulence.
5. Maintains proper ground track with crosswind correction, if necessary.
6. Remains oriented with runway and/or landing area in use.
7. Maintains and holds traffic pattern altitude ± 100 feet (30 meters), and appropriate airspeed, ± 10 knots.
8. Completes the prescribed checklist, if applicable.

C. TASK: AIRPORT AND HELIPORT MARKINGS AND LIGHTING

REFERENCE: AIM.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to airport and heliport markings and lighting.
2. Identifies and interprets airport and heliport markings and lighting.

IV. AREA OF OPERATION: HOVERING MANEUVERS

A. TASK: VERTICAL TAKEOFF AND LANDING

REFERENCES: AC 61-13; Helicopter Flight Manual.

Objective To determine that the applicant:

1. Exhibits knowledge of the elements related to a vertical takeoff to a hover and landing from a hover.
2. Ascends to and maintains recommended hovering altitude, and descends from recommended hovering altitude in headwind, crosswind, and tailwind conditions.
3. Maintains RPM within normal limits.
4. Establishes recommended hovering altitude, $\pm 1/2$ of that altitude within 10 feet (3 meters) of the surface; if above 10 feet, ± 5 feet (2 meters).
5. Avoids conditions that might lead to loss of tail rotor/antitorque effectiveness.
6. Keeps forward and sideward movement within 2 feet (.6 meters) of a designated point, with no aft movement.
7. Descends vertically to within 2 feet (.6 meters) of the designated touchdown point.
8. Maintains specified heading, $\pm 10^\circ$.

B. TASK: SLOPE OPERATIONS

REFERENCES: AC 61-13; Helicopter Flight Manual.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to slope operations.
2. Selects a suitable slope, approach, and direction considering wind effect, obstacles, dynamic rollover avoidance, and discharging passengers.
3. Properly moves toward the slope.
4. Maintains RPM within normal limits.
5. Makes a smooth positive descent to touch the upslope skid on the sloping surface.
6. Maintains positive control while lowering the downslope skid or landing gear to touchdown.
7. Recognizes when the slope is too steep and abandons the operation prior to reaching cyclic control stops.
8. Makes a smooth transition from the slope to a stabilized hover parallel to the slope.
9. Properly moves away from the slope.
10. Maintains the specified heading throughout the operation, $\pm 5^\circ$.

C. TASK: SURFACE TAXI

REFERENCES: AC 61-13; AIM, Helicopter Flight Manual.

NOTE: This TASK applies to only helicopters equipped with wheel-type landing gear.

Objective To determine that the applicant:

1. Exhibits knowledge of the elements related to surface taxiing.
2. Surface taxis the helicopter from one point to another under headwind, crosswind, and tailwind conditions, with the landing gear in contact with the surface, avoiding conditions that might lead to loss of tail rotor/antitorque effectiveness.
3. Properly uses cyclic, collective, and brakes to control speed while taxiing.
4. Properly positions tailwheel, if applicable, locked or unlocked.
5. Maintains RPM within normal limits.
6. Maintains appropriate speed for existing conditions.
7. Stops helicopter within 2 feet (.6 meters) of a specified point.
8. Maintains specified track within 2 feet (.6 meters).

D. TASK: HOVER TAXI

REFERENCES: AC 61-13; AIM, Helicopter Flight Manual.

Objective To determine that the applicant:

1. Exhibits knowledge of the elements related to hover taxiing.
2. Hover taxis over specified ground references, demonstrating forward, sideward, and rearward hovering and hovering turns.
3. Maintains RPM within normal limits.
4. Maintains specified ground track within 2 feet (.6 meters) on straight legs.
5. Maintains constant rate of turn at pivot points.
6. Maintains position within 2 feet (.6 meters) of each pivot point during turns.
7. Makes 90°, 180°, and 360° pivoting turns, stopping within 10° of specified headings.
8. Maintains recommended hovering altitude, $\pm 1/2$ of that altitude within 10 feet (3 meters) of the surface, if above 10 feet, ± 5 feet (2 meters).

E. TASK: AIR TAXI

REFERENCES: AC 61-13; AIM, Helicopter Flight Manual.

Objective To determine that the applicant:

1. Exhibits knowledge of the elements related to air taxiing.
2. Air taxis the helicopter from one point to another under headwind and crosswind conditions.
3. Maintains RPM within normal limits.
4. Selects a safe airspeed and altitude considering the possibility of an engine failure during taxi.
5. Maintains desired track and groundspeed in headwind and crosswind conditions, avoiding conditions that might lead to loss of tail rotor/antitorque effectiveness.
6. Maintains a specified altitude, ± 5 feet (2 meters).

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

A. TASK: NORMAL AND CROSSWIND TAKEOFF AND CLIMB

REFERENCES: AC 61-13; Helicopter Flight Manual.

NOTE: If a calm wind weather condition exists, the applicant's knowledge of the crosswind elements shall be evaluated through oral testing; otherwise a crosswind takeoff and climb shall be demonstrated.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to normal and crosswind takeoff and climb, including factors affecting performance, to include height/velocity information.
2. Establishes a stationary position on the surface or a stabilized hover, prior to takeoff in headwind and crosswind conditions.
3. Maintains RPM within normal limits.
4. Accelerates to manufacturer's recommended climb airspeed, ± 5 knots.
5. Maintains proper ground track with crosswind correction, if necessary.
6. Remains aware of the possibility of wind shear and/or wake turbulence.
7. Completes the prescribed checklist, if applicable.

B. TASK: NORMAL AND CROSSWIND APPROACH

REFERENCES: AC 61-13; Helicopter Flight Manual.

NOTE: If a calm wind weather condition exists, the applicant's knowledge of the crosswind elements shall be evaluated through oral testing; otherwise a crosswind approach and landing shall be demonstrated.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to normal and crosswind approach.
2. Considers performance data, to include height/velocity information.
3. Considers the wind conditions, landing surface, and obstacles.
4. Selects a suitable termination point.
5. Establishes and maintains the recommended approach angle, and rate of closure.
6. Remains aware of the possibility of wind shear and/or wake turbulence.
7. Avoids situations that may result in settling-with-power.
8. Maintains proper ground track with crosswind correction, if necessary.
9. Arrives at the termination point, on the surface or at a stabilized hover, ± 2 feet (.6 meters).
10. Completes the prescribed checklist, if applicable.

C. TASK: MAXIMUM PERFORMANCE TAKEOFF AND CLIMB

REFERENCES: AC 61-13; Helicopter Flight Manual.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to maximum performance takeoff and climb.
2. Considers situations where this maneuver is recommended and factors related to takeoff and climb performance, to include height/velocity information.
3. Maintains RPM within normal limits.
4. Utilizes proper control technique to initiate takeoff and forward climb airspeed attitude.
5. Utilizes the maximum available takeoff power.
6. After clearing all obstacles, transitions to normal climb attitude, airspeed, ± 5 knots, and power setting.
7. Remains aware of the possibility of wind shear and/or wake turbulence.
8. Maintains proper ground track with crosswind correction, if necessary.
9. Completes the prescribed checklist, if applicable.

D. TASK: STEEP APPROACH

REFERENCES: AC 61-13; Helicopter Flight Manual.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to a steep approach.
2. Considers situations where this maneuver is recommended and factors related to a steep approach, to include height/velocity information.
3. Considers the wind conditions, landing surface, and obstacles.
4. Selects a suitable termination point.
5. Establishes and maintains the recommended approach angle, (15° maximum) and rate of closure.
6. Avoids situations that may result in settling-with-power.
7. Remains aware of the possibility of wind shear and/or wake turbulence.
8. Maintains proper ground track with crosswind correction, if necessary.
9. Arrives at the termination point, on the surface or at a stabilized hover, ± 2 feet (.6 meters).
10. Completes the prescribed checklist, if applicable.

E. TASK: ROLLING TAKEOFF

NOTE: This TASK applies only to helicopters equipped with wheel-type landing gear.

REFERENCES: AC 61-13; Helicopter Flight Manual.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to a rolling takeoff.
2. Considers situations where this maneuver is recommended and factors related to takeoff and climb performance, to include height/velocity information.
3. Maintains RPM within normal limits.
4. Utilizes proper preparatory technique prior to initiating takeoff.
5. Initiates forward accelerating movement on the surface.
6. Transitions to a normal climb airspeed, ± 5 knots, and power setting.
7. Remains aware of the possibility of wind shear and/or wake turbulence.
8. Maintains proper ground track with crosswind correction, if necessary.
9. Completes the prescribed checklist, if applicable.

F. TASK: SHALLOW APPROACH AND RUNNING/ROLL-ON LANDING

REFERENCES: AC 61-13; Helicopter Flight Manual.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to shallow approach and running/roll-on landing, including the purpose of the maneuver, factors affecting performance data, to include height/velocity information, and effect of landing surface texture.
2. Maintains RPM within normal limits.
3. Considers obstacles and other hazards.
4. Establishes and maintains the recommended approach angle, and proper rate of closure.
5. Remains aware of the possibility of wind shear and/or wake turbulence.
6. Maintains proper ground track with crosswind correction, if necessary.
7. Maintains a speed that will take advantage of effective translational lift during surface contact with landing gear parallel with the ground track.
8. Utilizes proper flight control technique after surface contact.
9. Completes the prescribed checklist, if applicable.

G. TASK: GO-AROUND

REFERENCES: AC 61-13; Helicopter Flight Manual.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to a go-around and when it is necessary.
2. Makes a timely decision to discontinue the approach to landing.
3. Maintains RPM within normal limits.
4. Establishes proper control input to stop descent and initiate climb.
5. Retracts the landing gear, if applicable, after a positive rate of climb indication.
6. Maintains proper ground track with crosswind correction, if necessary.
7. Transitions to a normal climb airspeed, ± 5 knots.
8. Completes the prescribed checklist, if applicable.

VI. AREA OF OPERATION: PERFORMANCE MANEUVERS

A. TASK: RAPID DECELERATION

REFERENCES: AC 61-13; Helicopter Flight Manual.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to rapid deceleration.
2. Maintains RPM within normal limits.
3. Properly coordinates all controls throughout the execution of the maneuver.
4. Maintains an altitude that will permit safe clearance between the tail boom and the surface.
5. Decelerates and terminates in a stationary hover at the recommended hovering altitude.
6. Maintains heading throughout the maneuver $\pm 5^\circ$.

B. TASK: 180° AUTOROTATION

REFERENCES: AC 61-13; Helicopter Flight Manual.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to a 180° autorotation terminating with a power recovery to a hover.
2. Selects a suitable touchdown area.
3. Initiates the maneuver at the proper point.
4. Establishes proper aircraft trim and autorotation airspeed, ± 5 knots.
5. Maintains rotor RPM within normal limits.
6. Compensates for windspeed and direction as necessary to avoid undershooting or overshooting the selected landing area.
7. Utilizes proper deceleration, collective pitch application to a hover.
8. Comes to a hover within 50 feet (20 meters) of a designated point.

I. AREA OF OPERATION: NAVIGATION

A. TASK: PILOTAGE AND DEAD RECKONING

REFERENCES: AC 61-21, AC 61-23, AC 61-84.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to pilotage and dead reckoning.
2. Correctly flies to at least the first planned checkpoint to demonstrate accuracy in computations.
3. Identifies and follows landmarks by relating the surface features to chart symbols.
4. Navigates by means of precomputed headings, groundspeed, and elapsed time.
5. Verifies the helicopter's position within 1 nautical mile (1.85 Km) of flight planned route at all times.
6. Arrives at the en route checkpoints within 3 minutes of the ETA.
7. Corrects for, and records, the differences between preflight fuel, groundspeed, and heading calculations and those determined en route.
8. Maintains the appropriate altitude, ± 100 feet (30 meters) and established heading, $\pm 10^\circ$.

B. TASK: RADIO NAVIGATION AND RADAR SERVICES

REFERENCES: AC 61-21, AC 61-23, AC 61-84; Navigation Equipment Operation Manuals.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to radio navigation and ATC radar services.
2. Selects and identifies the appropriate facilities or coordinates, as appropriate.
3. Locates the helicopter's position relative to the navigation facilities or coordinates, as appropriate.
4. Intercepts and tracks a given radial or bearing.
5. Locates position using cross radials, coordinates, or bearings.
6. Recognizes and describes the indication of station or way point passage.
7. Recognizes signal loss and takes appropriate action.
8. Uses proper communication procedures when utilizing ATC radar services.
9. Maintains the appropriate altitude, ± 100 feet (30 meters).

C. TASK: DIVERSION

REFERENCES: AC 61-21, AC 61-23, AC 61-84.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to procedures for diversion.
2. Selects an appropriate alternate airport or heliport and route.
3. Promptly, diverts toward the alternate airport or heliport.
4. Makes an accurate estimate of heading, groundspeed, arrival time, and fuel consumption to the alternate airport or heliport.
5. Maintains the appropriate altitude, ± 100 feet (30 meters) and established heading, $\pm 10^\circ$.

D. TASK: LOST PROCEDURES

REFERENCES: AC 61-21, AC 61-23, AC 61-84; AIM.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to lost procedures.
2. Selects the best course of action when given a lost situation.
3. Maintains the original or appropriate heading, and if necessary, climbs.
4. Attempts to identify nearest prominent landmark(s).
5. Uses available navigation aids and/or contacts an appropriate facility for assistance.
6. Plans a precautionary landing if deteriorating weather and/or fuel exhaustion is impending.

III. AREA OF OPERATION: EMERGENCY OPERATIONS

NOTE: Tasks F through I are knowledge only TASKS.

A. TASK: POWER FAILURE AT A HOVER

REFERENCES: AC 61-13; Helicopter Flight Manual.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to power failure at a hover.
2. Determines that the terrain below the aircraft is suitable for a safe touchdown.
3. Performs autorotation from a stationary or forward hover into the wind at recommended altitude, and RPM, while maintaining established heading, $\pm 5^\circ$.
4. Touches down with minimum sideward movement, and no rearward movement.
5. Exhibits orientation, division of attention, and proper planning.

B. TASK: POWER FAILURE AT ALTITUDE

REFERENCES: AC 61-13; Helicopter Flight Manual.

NOTE: Simulated power failure at altitude shall be given over areas where actual touchdowns can safely be completed in the event of an actual powerplant failure.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to power failure at altitude.
2. Establishes an autorotation and selects a suitable landing area.
3. Establishes proper aircraft trim and autorotation airspeed, ± 5 knots.
4. Maintains rotor RPM within normal limits.
5. Compensates for windspeed and direction as necessary to avoid undershooting or overshooting the selected landing area.
6. Terminates approach with a power recovery at a safe altitude when directed by the examiner.

C. TASK: SYSTEMS AND EQUIPMENT MALFUNCTIONS

REFERENCES: AC 61-13; Helicopter Flight Manual.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to causes, indications, and pilot actions for various systems and equipment malfunctions.
2. Analyzes the situation and takes action, appropriate to the helicopter used for the practical test, in at least four of the following areas—
 - a. engine/oil and fuel.
 - b. hydraulic, if applicable.
 - c. electrical.
 - d. carburetor or induction icing.
 - e. smoke and/or fire.
 - f. flight control/trim.
 - g. pitot static/vacuum and associated flight instruments, if applicable.
 - h. rotor and/or antitorque.
 - i. various frequency vibrations and the possible components that may be affected.
 - j. any other emergency unique to the helicopter flown.

D. TASK: SETTLING-WITH-POWER

REFERENCES: AC 61-13; Helicopter Flight Manual.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to settling-with-power.
2. Selects an altitude that will allow recovery to be completed no less than 1,000 feet (300 meters) AGL or, if applicable, the manufacturer's recommended altitude, whichever is higher.
3. Promptly recognizes and announces the onset of settling-with-power.
4. Utilizes the appropriate recovery procedure.

E. TASK: LOW ROTOR RPM RECOVERY

REFERENCES: AC 61-13; Appropriate Manufacturer's Safety Notices; Helicopter Flight Manual.

NOTE: The examiner may test the applicant orally on this TASK if helicopter used for the practical test has a governor that cannot be disabled.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to low rotor RPM recovery, including the combination of conditions that are likely to lead to this situation.
2. Detects the development of low rotor RPM and initiates prompt corrective action.
3. Utilizes the appropriate recovery procedure.

F. TASK: DYNAMIC ROLLOVER

REFERENCES: AC 61-13, AC 90-87; Helicopter Flight Manual.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to the aerodynamics of dynamic rollover.
2. Understands the interaction between the antitorque thrust, crosswind, slope, CG, cyclic and collective pitch control in contributing to dynamic rollover.
3. Explains preventive flight technique during takeoffs, landings, and slope operations.

G. TASK: GROUND RESONANCE

REFERENCES: AC 61-13; Helicopter Flight Manual.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to a fully articulated rotor system and the aerodynamics of ground resonance.
2. Understands the conditions that contribute to ground resonance.
3. Explains preventive flight technique during takeoffs and landings.

H. TASK: LOW G CONDITIONS

REFERENCE: Helicopter Flight Manual.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to low G conditions.
2. Understands and recognizes the situations that contribute to low G conditions.
3. Explains proper recovery procedures.

I. TASK: EMERGENCY EQUIPMENT AND SURVIVAL GEAR

REFERENCE: Helicopter Flight Manual.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to emergency equipment appropriate to the helicopter used for the practical test by describing—
 - a. purpose of such equipment.
 - b. location in the helicopter.
 - c. method of operation.
 - d. servicing requirements.
 - e. method of safe storage.
2. Exhibits knowledge of the elements related to survival gear by describing—
 - a. survival gear appropriate for operation in various climatological and topographical environments.
 - b. location in the helicopter.
 - c. method of operation.
 - d. servicing requirements.
 - e. method of safe storage.

IX. AREA OF OPERATION: SPECIAL OPERATIONS

A. TASK: CONFINED AREA OPERATION

REFERENCES: AC 61-13; Helicopter Flight Manual.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to confined area operations.
2. Accomplishes a proper high and low reconnaissance.
3. Selects a suitable approach path, termination point, and departure path.
4. Tracks the selected approach path at an acceptable approach angle and rate of closure to the termination point.
5. Maintains RPM within normal limits.
6. Avoids situations that can result in settling-with-power.
7. Terminates at a hover or on the surface, as conditions allow.
8. Accomplishes a proper ground reconnaissance.
9. Selects a suitable takeoff point, considers factors affecting takeoff and climb performance under various conditions.

B. TASK: PINNACLE/PLATFORM OPERATIONS

REFERENCES: AC 61-13; Helicopter Flight Manual.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to pinnacle/platform operations.
2. Accomplishes a proper high and low reconnaissance.
3. Selects a suitable approach path, termination point, and departure path.
4. Tracks the selected approach path at an acceptable approach angle and rate of closure to the termination point.
5. Maintains RPM within normal limits.
6. Terminates at a hover or on the surface, as conditions allow.
7. Accomplishes a proper ground reconnaissance.
8. Selects a suitable takeoff point, considers factors affecting takeoff and climb performance under various conditions.

X. AREA OF OPERATION: POST-FLIGHT PROCEDURES

TASK: AFTER LANDING AND SECURING

REFERENCES: AC 61-13; Helicopter Flight Manual.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to after-landing procedures, including local and ATC operations, ramp safety, parking hand signals, shutdown, securing, and post-flight inspection.
2. Minimizes the hazardous effects of rotor downwash during hovering.
3. Selects a suitable parking area while considering wind and the safety of nearby persons and property.
4. Follows the recommended procedure for engine shutdown, securing the cockpit, securing rotor blades, and discharging passengers.
5. Performs a satisfactory post-flight inspection.
6. Completes the prescribed checklist, if applicable.

SECTION 2

**COMMERCIAL PILOT
ROTORCRAFT – GYROPLANE**

Practical Test Standards

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Addition of a Rotorcraft/Gyroplane rating to an existing Commercial Pilot Certificate

Area of Operation	Required TASKS are indicated by either the TASK letter(s) that apply(s) or an indication that all or none of the TASKS must be tested.								
	COMMERCIAL PILOT RATING(S) HELD								
	ASEL	ASES	AMEL	AMES	RG	Non-Power Glider	Power Glider	Free Balloon	Airship
I	E,F,G	E,F,G	E,F,G	E,F,G	E,F,G	E,F,G, I,J	E,F,G, I,J	E,F,G, I,J	E,F,G, I,J
II	ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL
III	B	B,C	B	B,C	B	ALL	B	ALL	B
IV	ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL
V	ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL
VI	ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL
VII	NONE	NONE	NONE	NONE	NONE	B,C,D	B,C,D	B,C,D	NONE
VIII	ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL
IX	ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL
X	ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL

APPLICANT'S PRACTICAL TEST CHECKLIST (GYROPLANE)

APPOINTMENT WITH EXAMINER:

EXAMINER'S NAME _____

LOCATION _____

DATE/TIME _____

ACCEPTABLE AIRCRAFT

- Aircraft Documents:
 - Airworthiness Certificate
 - Registration Certificate
 - Operating Limitations
- Aircraft Maintenance Records:
 - Logbook Record of Airworthiness Inspections and AD Compliance
- Pilot's Operating Handbook, FAA-Approved Gyroplane Flight Manual
- FCC Station License

PERSONAL EQUIPMENT

- View-Limiting Device
- Current Aeronautical Charts
- Computer and Plotter
- Flight Plan Form
- Flight Logs
- Current AIM, Airport Facility Directory, and Appropriate Publications

PERSONAL RECORDS

- Identification - Photo/Signature ID
- Pilot Certificate
- Current and Appropriate Medical Certificate
- Completed FAA Form 8710-1, Airman Certificate and/or Rating Application with Instructor's Signature (if applicable)
- AC Form 8080-2, Airman Written Test Report, or Computer Test Report
- Pilot Logbook with Appropriate Instructor Endorsements
- FAA Form 8060-5, Notice of Disapproval (if applicable)
- Approved School Graduation Certificate (if applicable)
- Examiner's Fee (if applicable)

EXAMINER'S PRACTICAL TEST CHECKLIST

(GYROPLANE)

APPLICANT'S NAME _____

LOCATION _____

DATE/TIME _____

I. PREFLIGHT PREPARATION

- **A. CERTIFICATES AND DOCUMENTS**
- **B. WEATHER INFORMATION**
- **C. CROSS-COUNTRY FLIGHT PLANNING**
- **D. NATIONAL AIRSPACE SYSTEM**
- **E. PERFORMANCE AND LIMITATIONS**
- **F. OPERATION OF SYSTEMS**
- **G. MINIMUM EQUIPMENT LIST**
- **H. AEROMEDICAL FACTORS**
- **I. PHYSIOLOGICAL ASPECTS OF NIGHT FLYING**
- **J. LIGHTING AND EQUIPMENT FOR NIGHT FLYING**

II. PREFLIGHT PROCEDURES

- **A. PREFLIGHT INSPECTION**
- **B. COCKPIT MANAGEMENT**
- **C. ENGINE STARTING**
- **D. TAXIING**
- **E. BEFORE TAKEOFF CHECK**

III. AIRPORT OPERATIONS

- **A. RADIO COMMUNICATIONS AND ATC LIGHT SIGNALS**
- **B. TRAFFIC PATTERNS**
- **C. AIRPORT MARKINGS AND LIGHTING**

IV. TAKEOFFS, LANDINGS, AND GO-AROUNDS

- **A. NORMAL AND CROSSWIND TAKEOFF AND CLIMB**
- **B. NORMAL AND CROSSWIND APPROACH AND LANDING**
- **C. SOFT-FIELD TAKEOFF AND CLIMB**
- **D. SOFT-FIELD APPROACH AND LANDING**
- **E. SHORT-FIELD TAKEOFF AND CLIMB**
- **F. SHORT-FIELD APPROACH AND LANDING**
- **G. GO-AROUND**

V. PERFORMANCE MANEUVER

- **STEEP TURNS**

VI. NAVIGATION

- **A. PILOTAGE AND DEAD RECKONING**
- **B. RADIO NAVIGATION AND RADAR SERVICES**
- **C. DIVERSION**
- **D. LOST PROCEDURES**

VII. FLIGHT AT SLOW AIRSPEED

- **A. STRAIGHT-AND-LEVEL, TURNS, CLIMBS, AND DESCENTS AT SLOW AIRSPEEDS**
- **B. HIGH RATE OF DESCENT AND RECOVERY**

VIII. EMERGENCY OPERATIONS

- **A. EMERGENCY APPROACH AND LANDING**
- **B. LIFT-OFF AT LOW AIRSPEED AND HIGH ANGLE OF ATTACK**
- **C. GROUND RESONANCE**
- **D. SYSTEMS AND EQUIPMENT MALFUNCTIONS**
- **E. EMERGENCY EQUIPMENT AND SURVIVAL GEAR**

IX. POST-FLIGHT PROCEDURES

- **A. AFTER LANDING**
- **B. PARKING AND SECURING**

I. AREA OF OPERATION:
PREFLIGHT PREPARATION

A. TASK: CERTIFICATES AND DOCUMENTS

REFERENCES: FAR Parts 43, 61, 67, 91; AC 61-23; Gyroplane Flight Manual.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to certificates and documents by explaining—
 - a. pilot certificate privileges and limitations.
 - b. medical certificate class and duration.
 - c. pilot logbook or flight records.
2. Exhibits knowledge of the elements related to certificates and documents by locating and explaining—
 - a. airworthiness and registration certificates.
 - b. operating limitations, placards, and instrument markings.
 - c. weight and balance data and equipment list.
 - d. airworthiness directives, compliance records, maintenance requirements, and appropriate records.

B. TASK: WEATHER INFORMATION

REFERENCES: AC 00-6, AC 00-45, AC 61-23, AC 61-84; AIM.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to weather information from various sources with emphasis on—
 - a. PIREP's.
 - b. SIGMET's and AIRMET's.
 - c. wind shear reports.
 - d. use of weather reports and forecasts.
2. Makes a competent "go/no-go" decision based on available weather information.

C. TASK: CROSS-COUNTRY FLIGHT PLANNING

REFERENCES: AC 61-21, AC 61-23, AC 61-84; Navigation Charts; Airport/Facility Directory; NOTAM's; AIM.

NOTE: In-flight demonstration of cross-country procedures by the applicant is tested under the area of operation NAVIGATION.

Objective.To determine that the applicant:

1. Exhibits knowledge of the elements related to cross-country flight planning by presenting and explaining a pre-planned VFR cross-country flight, as previously assigned by the examiner. The flight plan shall be to the first fuel stop necessary, based on maximum allowable passenger, baggage, and/or cargo loads using real time weather.
2. Uses appropriate and current aeronautical charts.
3. Properly identifies airspace, obstacles, and terrain features, including discussion of wire strike avoidance techniques.
4. Selects easily identifiable en route checkpoints.
5. Selects most favorable altitudes, considering weather conditions and equipment capabilities.
6. Computes headings, flight time, and fuel requirements.
7. Selects appropriate navigation systems/facilities and communication frequencies.
8. Extracts and applies pertinent information from NOTAM's, Airport/Facility Directory, and other flight publications.
9. Completes a navigation log and simulates filing a VFR flight plan.

D. TASK: NATIONAL AIRSPACE SYSTEM

REFERENCES: FAR Part 91; AIM.

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

1. Basic VFR Weather Minimums – for all classes of airspace.
2. Airspace classes – their boundaries, pilot certification, and gyroplane equipment requirements for the following—
 - a. Class A.
 - b. Class B.
 - c. Class C.
 - d. Class D.
 - e. Class E.
 - f. Class G.
3. Special use airspace and other airspace areas.

E. TASK: PERFORMANCE AND LIMITATIONS

REFERENCES: AC 61-84, AC 91-23; Gyroplane Flight Manual.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to performance and limitations by explaining the use of charts, tables, and data to determine performance and the adverse effects of exceeding limitations.
2. Computes weight and balance, including adding, removing, and shifting weight.
3. Determines if the weight and center of gravity will remain within limits during all phases of flight.
4. Describes the effects of various atmospheric conditions on the gyroplane's performance.
5. Understands the cause, effect, and avoidance procedure of "power pushover," and "pilot induced oscillation."
6. Determines whether the computed performance is within the gyroplane's capabilities and operating limitations.

F. TASK: OPERATION OF SYSTEMS

REFERENCES: AC 61-13; Gyroplane Flight Manual.

Objective. To determine that the applicant exhibits knowledge of the elements related to the appropriate normal operating procedures and limitations of the following systems by explaining:

1. Primary flight controls and trim.
2. Powerplant.
3. Rotor, including prerotator/spin-up control, if applicable.
4. Landing gear, brakes, and steering.
5. Fuel, oil, and hydraulic.
6. Electrical.
7. Pitot-static, vacuum/pressure, and associated flight instruments, if applicable.
8. Environmental, if applicable.
9. Anti-icing, including carburetor heat, if applicable.
10. Avionics equipment.

G. TASK: MINIMUM EQUIPMENT LIST

REFERENCE: FAR Part 91.

Objective. To determine that the applicant exhibits knowledge of the elements related to the FAA-approved minimum equipment list (MEL) by explaining:

1. Which aircraft require the use of an MEL.
2. Airworthiness limitations imposed on aircraft operations with inoperative instruments or equipment.
3. Requirements for a letter of authorization from the FAA Flight Standards District Office.
4. Supplemental type certificates related to MEL's.
5. Instrument and equipment exceptions.
6. When a special flight permit would be required.
7. Procedures for obtaining a special flight permit.

H. TASK: AEROMEDICAL FACTORS

REFERENCES: AC 61-21; AIM.

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

1. The symptoms, causes, effects, and corrective actions of at least four of the following—
 - a. hypoxia.
 - b. hyperventilation.
 - c. middle ear and sinus problems.
 - d. spatial disorientation.
 - e. motion sickness.
 - f. carbon monoxide poisoning.
 - g. stress and fatigue.
2. The effects of alcohol and drugs, including over-the-counter drugs.
3. The effects of nitrogen excesses during scuba dives upon a pilot and/or passenger in flight.

I. TASK: PHYSIOLOGICAL ASPECTS OF NIGHT FLYING

REFERENCES: AC 61-21; AIM.

Objective. To determine that the applicant exhibits knowledge of the elements related to the physiological aspects of night flying by explaining:

1. The function of various parts of the eye essential for night vision.
2. Adaptation of the eye to changing light.
3. Correct use of the eye to accommodate changing light.
4. Coping with illusions created by various light conditions.
5. Effects of the pilot's physical condition on visual acuity.
6. Methods for increasing vision effectiveness.

J. TASK: LIGHTING AND EQUIPMENT FOR NIGHT FLYING

REFERENCES: AC 61-21, AC 61-23; Gyroplane Flight Manual.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to lighting and equipment for night flying by explaining—
 - a. the types and uses of various personal lighting devices.
 - b. the required equipment, and location of external navigation lighting of the gyroplane.
 - c. the meaning of various airport and navigation lights, the method of determining their status, and the procedure for airborne activation of runway lights.
2. Locates and identifies switches, spare fuses, and circuit breakers pertinent to night operations.

II. AREA OF OPERATION: PREFLIGHT PROCEDURES

A. TASK: PREFLIGHT INSPECTION

REFERENCES: AC 61-21; Gyroplane Flight Manual.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to a preflight inspection including which items must be inspected, for what reason, and how to detect possible defects.
2. Inspects the gyroplane by systematically following a prescribed checklist.
3. Verifies that the gyroplane is in condition for safe flight, notes any discrepancy, and determines if maintenance is required.

B. TASK: COCKPIT MANAGEMENT

REFERENCES: FAR Part 91; AC 91-32; Gyroplane Flight Manual.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to efficient cockpit management procedures, and related safety factors.
2. Organizes and arranges material and equipment in a manner that makes the items readily available.
3. Briefs or causes the briefing of occupants on the use of safety belts, propeller and rotor blade avoidance, and emergency procedures.
4. If applicable, briefs crew appropriately.
5. Completes the prescribed checklist.

C. TASK: ENGINE STARTING

REFERENCES: AC 61-21, AC 91-13, AC 91-42; Gyroplane Flight Manual.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to correct engine starting procedures, including the use of an external power source, starting under various atmospheric conditions, awareness of other persons and property during start, and the effects of using incorrect starting procedures.
2. Accomplishes correct starting procedures.
3. Prevents gyroplane movement during and after the engine start.
4. Completes the prescribed checklists.

D. TASK: TAXIING

REFERENCE: Gyroplane Flight Manual.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to recommended taxi procedures, including rotor blade management and the effect of wind during taxiing.
2. Performs a brake check immediately after the gyroplane begins moving.
3. Properly positions rotor blades while taxiing.
4. Controls direction and speed without excessive use of brakes.
5. Complies with airport markings, signals, and ATC clearances.
6. Avoids other aircraft and hazards.
7. Properly positions the gyroplane for runup considering other aircraft, surface conditions, and if applicable, existing wind conditions.
8. Completes the prescribed checklist, if applicable.

E. TASK: BEFORE TAKEOFF CHECK

REFERENCE: Gyroplane Flight Manual.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to the before takeoff check, including the reasons for checking the items and how to detect malfunctions.
2. Positions the gyroplane properly considering other aircraft, surface conditions, and if applicable, existing wind conditions.
3. Properly divides attention.
4. Accomplishes the before takeoff check and ensures that the gyroplane is in safe operating condition.
5. Reviews takeoff performance airspeeds and expected takeoff distance.
6. Describes takeoff emergency procedures, and if applicable, briefs crew on procedures to include low speed/high speed blade flap situations.
7. Ensures no conflict with traffic prior to takeoff.
8. Utilizes proper rotor spin-up procedure.
9. Completes the prescribed checklist, if applicable.

III. AREA OF OPERATION: AIRPORT OPERATIONS

A. TASK: RADIO COMMUNICATIONS AND ATC LIGHT SIGNALS

REFERENCE: AIM.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to radio communications, radio failure, and ATC light signals.
2. Selects appropriate frequencies for facilities to be used.
3. Transmits using recommended phraseology.
4. Acknowledges radio communications and complies with instructions.
5. Uses prescribed procedures following radio communications failure.
6. Interprets and complies with ATC light signals.

B. TASK: TRAFFIC PATTERNS

REFERENCES: FAR Part 91; AC 61-21; AIM, Gyroplane Flight Manual.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to traffic pattern procedures at each class airspace airport, runway incursion avoidance, collision and wake turbulence avoidance, and approach procedure when wind shear is reported.
2. Follows the established traffic pattern procedures, instructions, and rules.
3. Maintains proper spacing from other traffic.
4. Remains aware of the possibility of wind shear and/or wake turbulence.
5. Maintains proper ground track with crosswind correction, if necessary.
6. Remains oriented with runway and/or landing area in use.
7. Maintains traffic pattern altitude, ± 100 feet (30 meters), and appropriate airspeed, ± 5 knots.
8. Completes the prescribed checklist, if applicable.

C. TASK: AIRPORT MARKINGS AND LIGHTING

REFERENCE: AIM.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to airport markings and lighting.
2. Identifies and interprets airport markings and lighting.

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

A. TASK: NORMAL AND CROSSWIND TAKEOFF AND CLIMB

REFERENCE: Gyroplane Flight Manual.

NOTE: If a calm wind weather condition exists, the applicant's knowledge of the crosswind elements shall be evaluated through oral testing; otherwise a crosswind takeoff and climb shall be demonstrated.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to normal and crosswind takeoff and climb, including factors affecting performance.
2. Properly positions the controls.
3. Prerotates rotor blades to appropriate RPM.
4. Clears the area, taxis into the takeoff position, and aligns the gyroplane with takeoff path.
5. Advances the throttle as required.
6. Maintains proper directional control during acceleration on the surface.
7. Attains the proper lift-off attitude, and airspeed.
8. Accelerates to appropriate climb airspeed, ± 5 knots.
9. Maintains takeoff power to a safe maneuvering altitude, then sets climb power.
10. Maintains proper ground track with crosswind correction, if necessary.
11. Remains aware of the possibility of wind shear and/or wake turbulence.
12. Completes the prescribed checklist, if applicable.

B. TASK: NORMAL AND CROSSWIND APPROACH AND LANDING

REFERENCE: Gyroplane Flight Manual.

NOTE: If a calm wind weather condition exists, the applicant's knowledge of the crosswind elements shall be evaluated through oral testing; otherwise a crosswind approach and landing shall be demonstrated.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to normal and crosswind approach and landing.
2. Considers the wind conditions, landing surface, and obstacles.
3. Selects a suitable touchdown point.
4. Establishes and maintains a stabilized approach and recommended airspeed, with gust correction factor applied, ± 5 knots.
5. Maintains proper ground track with crosswind correction, if necessary.
6. Remains aware of the possibility of wind shear and/or wake turbulence.
7. Makes smooth, timely, and correct control application during the flare and touchdown.
8. Touches down smoothly, beyond and within 50 feet (20 meters) of a specified point with no appreciable drift, and with the longitudinal axis aligned with the intended landing path.
9. Completes the prescribed checklist, if applicable.

C. TASK: SOFT-FIELD TAKEOFF AND CLIMB

REFERENCES: AC 61-21; Gyroplane Flight Manual.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to a soft-field takeoff and climb including factors affecting performance.
2. Determines and utilizes best takeoff profile.
3. Properly position controls.
4. Prerotates rotor blades to appropriate RPM.
5. Clears area, taxis without stopping and aligns the gyroplane with the takeoff path.

6. Advances the throttle as required.
7. Maintains proper directional control during acceleration on the surface.
8. Lifts off and remains in ground effect while accelerating to recommended climb airspeed.
9. Maintains recommended climb airspeed, ± 5 knots.
10. Maintains takeoff power to a safe maneuvering altitude, then sets climb power.
11. Maintains proper ground track with crosswind correction, if necessary.
12. Remains aware of the possibility of wind shear and/or wake turbulence.
13. Completes the prescribed checklist, if applicable.

D. TASK: SOFT-FIELD APPROACH AND LANDING

REFERENCES: AC 61-21; Gyroplane Flight Manual.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to soft-field approach and landing.
2. Considers the wind conditions, landing surface, and obstacles.
3. Selects a suitable touchdown area.
4. Establishes and maintains a stabilized approach at the recommended airspeed, with gust correction factor applied, ± 5 knots.
5. Maintains proper ground track with crosswind correction, if necessary.
6. Remains aware of the possibility of wind shear and/or wake turbulence.
7. Makes smooth, timely, and correct control application during the flare and touchdown.
8. Touches down smoothly, at a minimum descent rate and airspeed with no appreciable drift, and with the longitudinal axis aligned with the intended landing path.
9. Maintains sufficient speed to taxi on soft surface.
10. Completes the prescribed checklist, if applicable.

E. TASK: SHORT-FIELD TAKEOFF AND CLIMB

REFERENCES: AC 61-21; Gyroplane Flight Manual.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to short-field takeoff and climb, including factors affecting performance.
2. Determines and utilizes best takeoff profile.
3. Properly positions controls.
4. Prerotates rotor blades to appropriate RPM.
5. Clears the area, taxies into the takeoff position and aligns the gyroplane for maximum utilization of available takeoff area.
6. Advances the throttle as required.
7. Maintains proper directional control during acceleration on the surface.
8. Climbs at manufacturer's recommended airspeed, or in its absence at V_x , $+5/-0$ knots until the obstacle is cleared, or until the gyroplane is at least 50 feet (20 meters) above the surface.
9. After clearing the obstacle, accelerates to appropriate airspeed, ± 5 knots.
10. Maintains takeoff power to a safe maneuvering altitude, then sets climb power.
11. Maintains proper ground track with crosswind correction, if necessary.
12. Remains aware of the possibility of wind shear and/or wake turbulence.
13. Completes the prescribed checklist, if applicable.

F. TASK: SHORT-FIELD APPROACH AND LANDING

REFERENCES: AC 61-21; Gyroplane Flight Manual.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to a short-field approach and landing.
2. Considers the wind conditions, landing surface, and obstacles.
3. Selects a suitable touchdown point.
4. Establishes and maintains a stabilized approach at the recommended airspeed, with gust correction factor applied, ± 5 knots.
5. Maintains proper ground track with crosswind correction, if necessary.
6. Remains aware of the possibility of wind shear and/or wake turbulence.
7. Makes smooth, timely, and correct control application during the flare and touchdown.
8. Touches down smoothly, with little or no float beyond and within 50 feet (20 meters) of a specified point with no appreciable drift, and with the longitudinal axis aligned with the intended landing path.
9. Applies brakes, as necessary, to stop in the shortest distance consistent with safety.
10. Completes the prescribed checklist, if applicable.

G. TASK: GO-AROUND

REFERENCES: AC 61-21; Gyroplane Flight Manual.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to a go-around and when it is necessary.
2. Makes a timely decision to discontinue the approach to landing.
3. Applies appropriate power and establishes a climb at the appropriate airspeed, ± 5 knots.
4. Maintains takeoff power to a safe maneuvering altitude, then sets climb power.
5. Maintains proper ground track with crosswind correction, if necessary.
6. Completes the prescribed checklist, if applicable.

V. AREA OF OPERATION: PERFORMANCE MANEUVER

TASK: STEEP TURNS

REFERENCES: AC 61-21; Gyroplane Flight Manual.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to steep turns.
2. Selects a safe altitude.
3. Establishes and maintains the appropriate entry speed (or in its absence, the design maneuvering speed), ± 5 knots.
4. Smoothly enters a coordinated steep 360° turn with a 40° bank, $\pm 5^\circ$, immediately followed by at least a 360° turn in the opposite direction.
5. Divides attention between airplane control and orientation.
6. Rolls out on the entry heading, $\pm 5^\circ$.
7. Maintains the entry altitude throughout the maneuver, ± 100 feet (30 meters).

VI. AREA OF OPERATION: NAVIGATION

Change 1—3/1/96

A. TASK: PILOTAGE AND DEAD RECKONING

REFERENCES: AC 61-21, AC 61-23, AC 61-84.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to pilotage and dead reckoning.
2. Correctly flies to at least the first planned checkpoint to demonstrate accuracy in computations.
3. Identifies and follows landmarks by relating the surface features to chart symbols.
4. Navigates by means of precomputed headings, groundspeed, and elapsed time.
5. Verifies the gyroplane's position within 1 nautical mile (1.85 Km) of flight planned route at all times.
6. Arrives at the en route checkpoints within 3 minutes of the ETA.
7. Maintains the appropriate altitude, ± 100 feet (30 meters) and established heading, $\pm 10^\circ$.

B. TASK: RADIO NAVIGATION AND RADAR SERVICES

REFERENCES: AC 61-21, AC 61-23, AC 61-84; Navigation Equipment Operation Manuals.

NOTE: If the gyroplane is not equipped with radio navigation aids, competency will be evaluated through oral testing.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to radio navigation and ATC radar services.
2. Selects and identifies the appropriate facilities or coordinates, as appropriate.
3. Locates the gyroplane's position relative to the navigation facility or coordinates, as appropriate.
4. Intercepts and tracks a given radial or bearing.
5. Locates position using cross radials, coordinates, or bearings.
6. Recognizes and describes the indication of station or way point passage.
7. Recognizes signal loss and takes appropriate action.
8. Uses proper communication procedures when utilizing ATC radar services.
9. Maintains the appropriate altitude, ± 100 feet (30 meters).

C. TASK: DIVERSION

REFERENCES: AC 61-21, AC 61-23, AC 61-84.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to procedures for diversion.
2. Selects an appropriate alternate airport and route.
3. Promptly diverts toward the alternate airport.
4. Makes an accurate estimate of heading, groundspeed, arrival time, and fuel consumption to the alternate airport.
5. Maintains the appropriate altitude, ± 100 feet (30 meters) and established heading, $\pm 10^\circ$.

D. TASK: LOST PROCEDURES

REFERENCES: AC 61-21, AC 61-23, AC 61-84; AIM.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to lost procedures.
2. Selects the best course of action when given a lost situation.
3. Maintains the original or appropriate heading, and if necessary, climbs.
4. Attempts to identify nearest prominent landmark(s).
5. Uses available navigation aids and/or contacts an appropriate facility for assistance, if gyroplane is radio equipped.
6. Plans a precautionary landing if deteriorating weather and/or fuel exhaustion is impending.

VII. AREA OF OPERATION:
FLIGHT AT SLOW AIRSPEEDS

Change 1—3/1/96

A. TASK: STRAIGHT-AND-LEVEL, TURNS, CLIMBS, AND
DESCENTS AT SLOW AIRSPEEDS

REFERENCES: AC 61-21; Gyroplane Flight Manual.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to flight characteristics and controllability associated with maneuvering during slow flight.
2. Selects a safe altitude.
3. Establishes and maintains a specified airspeed, $\pm 5, -0$, in straight-and-level flight, turns, climbs, and descents as directed.
4. Maintains the specified altitude, ± 50 feet (20 meters).
5. Maintains the specified heading during straight flight, $\pm 5^\circ$.
6. Maintains specified bank angle, $\pm 5^\circ$, during turning flight.
7. Rolls out on specified headings, $\pm 5^\circ$.
8. Divides attention between gyroplane control and orientation.

B. TASK: HIGH RATE OF DESCENT AND RECOVERY

REFERENCE: Gyroplane Flight Manual.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to aerodynamic factors associated with a high rate of descent and recovery and how this relates to actual approach and landing situations.
2. Selects an entry altitude that allows the task to be completed no lower than 1,000 feet (310 meters) AGL.
3. Establishes an airspeed that will induce a high rate of descent in high or low power settings.
4. Recognizes the onset of a high rate of descent.
5. Promptly recovers with or without power as directed.
6. Maintains the specified heading, $\pm 10^\circ$.
7. Resumes normal cruising flight.

VIII. AREA OF OPERATION:
EMERGENCY OPERATIONS

Change 1—3/1/96

NOTE: TASK B may be tested orally at the discretion of the examiner, TASKS C through E are knowledge only items.

A. TASK: EMERGENCY APPROACH AND LANDING

REFERENCES: AC 61-21; Gyroplane Flight Manual.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to emergency approach and landing with a power failure.
2. Establishes and maintains the appropriate airspeed, ± 5 knots.
3. Selects a suitable landing area, considering the possibility of an actual forced landing.
4. Plans and follows a flight pattern to the selected landing area, considering altitude, wind, terrain, obstacles, and other factors.
5. Attempts to determine the reason for the simulated malfunction, if time permits.
6. Completes the prescribed checklist, if applicable.

B. TASK: LIFT-OFF AT LOW AIRSPEED AND HIGH ANGLE OF ATTACK

REFERENCE: Gyroplane Flight Manual.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to lift-off at low airspeed and high angle of attack, including combination of conditions which are likely to lead to this situation.
2. Properly positions the controls.
3. Prerotates rotor blades to appropriate RPM, if applicable.
4. Clears the area, taxis into the takeoff position and aligns the gyroplane with the takeoff path.
5. Advances the throttle to less than available power simulating a "behind the power curve" situation.

6. Maintains proper directional control during acceleration on the surface.
7. Rotates for takeoff prior to normal lift-off airspeed with high angle of attack.
8. Detects the development of a low airspeed and high angle of attack, and initiates prompt corrective action.
9. Accelerates to appropriate climb airspeed, ± 5 knots.
10. Applies full power when maneuver has been satisfactorily demonstrated or to prevent a hazardous situation.

C. TASK: GROUNDRESONANCE

REFERENCES: AC 61-13; Gyroplane Flight Manual.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to a fully articulated rotor system and the aerodynamics of ground resonance.
2. Understands the conditions that contribute to ground resonance.
3. Explains preventive flight techniques used during takeoffs and landings.

D. TASK: SYSTEMS AND EQUIPMENT MALFUNCTIONS

REFERENCE: Gyroplane Flight Manual.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to causes, indications, and pilot actions for various systems and equipment malfunctions.
2. Analyzes the situation and takes action, appropriate to the gyroplane used for the practical test, in at least four of the following areas—
 - a. engine/oil and fuel.
 - b. hydraulic, if applicable.
 - c. electrical.
 - d. carburetor or induction icing.
 - e. smoke and/or fire.
 - f. flight control/trim.
 - g. pitot static/vacuum and associated flight instruments, if applicable.
 - h. rotor and/or propeller.
 - i. any other emergency unique to the gyroplane flown.

E. TASK: EMERGENCY EQUIPMENT AND SURVIVAL GEAR

REFERENCE: Gyroplane Flight Manual.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to emergency equipment appropriate to the gyroplane used for the practical test by describing—
 - a. purpose of such equipment.
 - b. location in the gyroplane.
 - c. method of operation.
 - d. servicing requirements.
 - e. method of safe storage.

2. Exhibits knowledge of the elements related to survival gear by describing—
 - a. survival gear appropriate for operation in various climatological and topographical environments.
 - b. location in the gyroplane.
 - c. method of operation.
 - d. servicing requirements.
 - e. method of safe storage.

**IX. AREA OF OPERATION:
POST-FLIGHT PROCEDURES**

Change 1—3/1/96

A. TASK: AFTER LANDING

REFERENCES: AC 61-21; Gyroplane Flight Manual.

Objective.To determine that the applicant:

1. Exhibits knowledge of the elements related to after-landing procedures, including local and ATC procedures.
2. Secures or utilizes the rotor system appropriately while taxiing to compensate for existing wind and/or surface conditions.
3. Selects a suitable parking area while considering proper wind correction technique and obstacle clearance.
4. Completes the prescribed checklist.

B. TASK: PARKING AND SECURING

REFERENCES: AC 61-21; Gyroplane Flight Manual.

Objective.To determine that the applicant:

1. Exhibits knowledge of the elements related to ramp safety, parking hand signals, shutdown, securing, and post-flight inspection.
2. Parks the gyroplane properly, considering the safety of nearby persons and property.
3. Follows the recommended procedure for engine shutdown, securing the cockpit, securing rotor blades, and discharging passengers.
4. Secures the gyroplane properly.
5. Performs a satisfactory post-flight inspection.
6. Completes the prescribed checklist.