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AIRLINE TRANSPORT PILOT AND AIRCRAFT TYPE RATING

Practical Test Standards

for

HELICOPTER

August 1998

**FLIGHT STANDARDS SERVICE
Washington, DC 20591**

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NOTE

Previous editions of the Airline Transport Pilot and Aircraft Type Rating Practical Test Standards contained the standards for both airplane and helicopter. The airplane and helicopter standards are now published as two separate practical test standards books. The standards for helicopter are contained in this practical test standards book. The standards for airplane are contained in another separate practical test standards book.

Material in FAA-S-8081-20 will be effective August 1, 1998. All previous editions of the Airline Transport Pilot and Aircraft Type Rating — Helicopter Practical Test Standards will be obsolete as of this date.

FOREWORD

The Airline Transport Pilot and Aircraft Type Rating — Helicopter Practical Test Standards (PTS) book has been published by the Federal Aviation Administration (FAA) to establish the standards for airline transport pilot and aircraft type rating practical tests for helicopters. FAA inspectors, designated pilot examiners, and check airmen (referred to as examiners throughout the remaining practical test standards) shall conduct practical tests in compliance with these standards. Flight instructors and applicants should find these standards helpful in practical test preparation.

Thomas E. Stuckey
Acting Director, Flight Standards Service

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INTRODUCTION

General Information

The Flight Standards Service of the Federal Aviation Administration (FAA) has developed this practical test standard (PTS) book to be used by examiners when conducting airline transport pilot and aircraft type rating practical tests (knowledge of the equipment and flight tasks) in helicopters. Instructors are expected to use this book when preparing applicants for practical tests. Applicants should refer to these standards during their training.

Information considered directive in nature is described in this practical test standard 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 many individuals and companies who contributed their time and talent in assisting with the development of this practical test standard.

This practical test standard may be accessed through the FedWorld Information System by computer modem at 703-321-3339. It may also be accessed on the Internet at www.fedworld.gov/pub/faa-att. This address goes to the index of training and testing files in the FAA-ATT Library on FedWorld. Subsequent changes to this standard, in accordance with AC 60-27, Announcement of Availability: Changes to Practical Test Standards, will be available through FedWorld and then later incorporated into a printed revision. For a listing of changes, AFS-600's Internet web site may be accessed at www.mmac.jccbi.gov/afs/afs600.

This publication may be 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
Airman Testing Standards Branch, AFS-630
P.O. Box 25082
Oklahoma City, OK 73125

Practical Test Standard Concept

Title 14 of the Code of Federal Regulations (14 CFR) part 61 specifies the areas in which knowledge and skills must be demonstrated by the applicant before the issuance of an airline transport pilot certificate and aircraft type rating in helicopters. The CFR'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 provisions of the regulations and the practical test standards is mandatory for the evaluation of pilot applicants.

For some aircraft types, provisions of FAA Flight Standardization Board (FSB) Reports may specify details as to how 14 CFR part 61 and this practical test standard apply to certain maneuvers, TASKS, procedures, or knowledge areas. Airmen certification credits applicable to part 135 operators may be permitted in accordance with Special Federal Aviation Regulations (SFAR) 58, and FSB Reports.

Part 61.157(f) provides that the successful completion of both a competency check under § 135.293 and a pilot-in-command check under § 135.297, satisfies the requirements for the appropriate aircraft rating. Any check or combination of checks used to satisfy the requirements must include all maneuvers and procedures required for the issuance of a type rating. Any check must be evaluated by a designated examiner, check airman, or FAA inspector.

Practical Test Book Description

This test book contains the Airline Transport Pilot and Aircraft Type Rating Practical Test Standards — Helicopter.

The Airline Transport Pilot and Aircraft Type Rating Practical Test Standards — Helicopter includes AREAS OF OPERATION and TASKS for the initial issuance of an airline transport pilot certificate and for the addition of category, class, and aircraft type ratings to that certificate.

The AREAS OF OPERATION are divided into two sections. The first AREA OF OPERATION in each section is conducted on the ground to determine the applicant's knowledge of the aircraft, equipment, performance, and limitations. The eight AREAS OF OPERATION in the second section are considered to be in flight. All eight AREAS OF OPERATION in the second section test the applicant's skill and knowledge.

If all increments of the practical test are not completed on one date, all remaining increments of the test must be satisfactorily completed not more than 60 calendar days after the date on which the applicant began the test.

AREAS OF OPERATION are phases of the practical test arranged in a logical sequence within each standard. They begin with preflight preparation and end with postflight procedures. The examiner may combine TASKS with similar objectives and conduct the practical test in any sequence that will result in a complete and efficient test.

TASKS are titles of knowledge areas, flight procedures, or maneuvers appropriate to an AREA OF OPERATION.

NOTE is used to emphasize special considerations required in the AREA OF OPERATION.

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.

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

This practical test standard is based on the following references:

14 CFR part 1	Definitions and Abbreviations
14 CFR part 61	Certification: Pilots and Flight Instructors
14 CFR part 91	General Operating and Flight Rules
SFAR 58	Advanced Qualification Program
AC 00-6	Aviation Weather
AC 00-45	Aviation Weather Services
AC 60-22	Aeronautical Decision Making
AC 60-28	English Language Skill Standards
AC 61-13	Basic Helicopter Handbook
AC 61-21	Flight Training Handbook
AC 61-27	Instrument Flying Handbook
AC 61-84	Role of Preflight Preparation
AC 120-51	Crew Resource Management Training

AC 120-54	Advanced Qualification Program
AC 120-62	Takeoff Safety Training Aid
AC 120-63	Helicopter Simulator Qualification
FSB Reports	Flight Standardization Board Reports
AIM	Aeronautical Information Manual
RFM	Rotorcraft Flight Manual
Other	Pertinent Pilot's Operating Handbooks and Flight Manuals
	En Route Low and High Altitude Charts
	Profile Descent Charts
SID	Standard Instrument Departure
STAR	Standard Terminal Arrivals
AFD	Airport Facility Directory
FDC NOTAM	National Flight Data Center Notices to Airmen
IAP	Instrument Approach Procedure Charts

Note: The latest revision of these references should be used.

Use of the Practical Test Standards

The TASKS, in this practical test standard, are for helicopters. These TASKS apply to the applicant who seeks an airline transport pilot certificate; the addition of a category, class, or aircraft type rating on that certificate; and to the applicant who holds a private or commercial pilot certificate (must have proper category/class rating) and is seeking the addition of an aircraft type rating on that certificate.

With certain exceptions, some described by NOTES, all TASKS are required. However, when a particular ELEMENT is not appropriate to the aircraft or its equipment, that ELEMENT, at the discretion of the examiner, may be omitted. Examples of ELEMENT exceptions are integrated flight systems for aircraft not so equipped, operation of landing gear in fixed gear aircraft, multiengine tasks in single-engine aircraft, or other situations where the aircraft operation is not compatible with the requirement of the ELEMENT.

Examiners must develop a written plan of action that includes the order and combination of TASKS to be demonstrated by the applicant in a manner that results in an efficient and valid test. Although TASKS with similar Objectives may be combined to conserve time, the Objectives of all TASKS must be demonstrated and evaluated at some time during the practical test. It is of utmost importance that the examiner accurately evaluate the applicant's ability to perform safely as a pilot in the National Airspace System. The examiner may simulate/act as air traffic control (ATC) while conducting the practical test.

Examiners shall place special emphasis upon areas of aircraft operations considered critical to flight safety. Among these are positive

aircraft control, positive exchange of the flight controls procedure (who is flying the aircraft), collision avoidance, wake turbulence avoidance, use of available automation, communication management, crew resource management (CRM), aeronautical decision making (ADM) and other areas deemed appropriate to any phase of the practical test. Although these areas may not be specifically addressed under each TASK, they are essential to flight safety and will be critically evaluated during the practical test. In all instances, the applicant's actions will relate to the complete situation. The examiner's role regarding ATC, crew resource management, and the duties and responsibilities of the examiner through all phases of the practical test must be explained to and understood by the applicant, prior to the test.

Practical Test Prerequisites: Airline Transport Pilot

An applicant for the original issuance of an airline transport pilot certificate is required (prior to the practical test) by 14 CFR part 61 to:

1. have passed the appropriate airline transport pilot knowledge test within 24 months before the date of the practical test;
2. have the aeronautical experience prescribed in 14 CFR part 61, that apply to the aircraft category and class rating;
3. have a minimum of a third-class medical certificate if a medical certificate is required;
4. be at least 23 years of age; and
5. be able to read, speak, write, and understand the English language. If there is a doubt, use AC 60-28, English Language Skill Standards.

NOTE: The 24-month limitation does not apply if the applicant:

1. is employed as a flight crewmember by a certificate holder under 14 CFR parts 121, 125, or 135 at the time of the practical test and has satisfactorily accomplished that operator's approved—
 - a. Pilot in command aircraft qualification training program that is appropriate to the certificate and rating sought; and
 - b. Qualification training requirements appropriate to the certificate and ratings sought; or
2. is employed as a flight crewmember in scheduled U.S. military air transport operations at the time of the practical test, and has accomplished the pilot in command aircraft qualification training program that is appropriate to the certificate and rating sought.

Practical Test Prerequisites: Aircraft Type Rating

An applicant for a type rating in a helicopter is required by 14 CFR part 61 to have:

1. the applicable experience;
2. a minimum of a third-class medical certificate if a medical certificate is required;
3. the appropriate category and class rating;
4. received and logged ground training from an authorized ground or flight instructor and flight training from an authorized flight instructor, on the AREAS OF OPERATION in this practical test standard that apply to the aircraft type rating sought; and
5. received a logbook endorsement from the instructor who conducted the training, certifying that the applicant completed all the training on the AREAS OF OPERATION in this practical test standard that apply to the aircraft type rating sought.

If the applicant is an employee of a part 135 certificate holder, the applicant may present a training record that shows the satisfactory completion of that certificate holder's approved pilot in command training program for the aircraft type rating sought, instead of the requirements of 4 and 5 above.

An applicant who holds the private pilot or limited commercial pilot certificate is required to have passed the appropriate instrument rating knowledge test since the beginning of the 24th month before the practical test is taken if the test is for the concurrent issuance of an instrument rating and an aircraft type rating.

If an applicant is taking a practical test for the issuance of a private or commercial pilot certificate with a helicopter rating, in an aircraft that requires a type rating, private pilot practical test standards or commercial pilot practical test standards, as appropriate to the certificate, should be used in conjunction with this guide. Also, the current instrument rating practical test standard should be used in conjunction with this guide if the applicant is concurrently taking a practical test for the issuance of an instrument rating and a type rating. The TASKS that are in the private pilot, commercial pilot, or instrument rating practical test standards (and not in this practical test standard) must be accomplished.

Aircraft Type Ratings Limited to VFR

Pilot applicants who wish to add a type rating, limited to VFR, to their certificate must take a practical test that includes the following items, as listed on pages 1-i, 2-i, and 2-ii of this document:

Section One: PREFLIGHT PREPARATION

I. AREA OF OPERATION: PREFLIGHT PREPARATION.

- A. Equipment examination.
- B. Performance and limitations.

Section Two: PREFLIGHT PROCEDURES, INFLIGHT MANEUVERS, AND POSTFLIGHT PROCEDURES

II. AREA OF OPERATION: PREFLIGHT PROCEDURES.

- A. Preflight inspection.
- B. Powerplant start.
- C. Taxiing.
- D. Pretakeoff checks.

III. AREA OF OPERATION: TAKEOFF AND DEPARTURE PHASE.

- A. Normal and crosswind takeoff.
- B. Powerplant failure during takeoff. (TASK C)
- C. Rejected takeoff. (TASK D)

IV. AREA OF OPERATION: INFLIGHT MANEUVERS.

- A. Steep turns.
- B. Powerplant failure—multiengine helicopter.
- C. Powerplant failure—single-engine helicopter.
- D. Recovery from unusual attitudes.
- E. Settling-with-power.

V. AREA OF OPERATION: INSTRUMENT PROCEDURES. (Not applicable)

VI. AREA OF OPERATION: LANDINGS AND APPROACHES
TO LANDINGS.

- A. Normal and crosswind approaches and landings.
- B. Approach and landing with simulated powerplant failure—
multiengine helicopter.
- C. Rejected landing.

VII. AREA OF OPERATION: NORMAL AND ABNORMAL
PROCEDURES.

VIII. AREA OF OPERATION: EMERGENCY PROCEDURES.

IX. AREA OF OPERATION: POSTFLIGHT PROCEDURES.

- A. After-landing procedures.
- B. Parking and securing.

Aircraft and Equipment Requirements for the Practical Test

The applicant is required to provide an appropriate and airworthy helicopter for the practical test. Its operating limitations must not prohibit the TASKS required on the practical test. Flight instruments are those required for controlling the aircraft without outside references. The aircraft must have radio equipment for communications with air traffic control and the performance of instrument approach procedures.

NOTE: The practical test must be performed in actual or simulated instrument conditions, unless the practical test cannot be accomplished under instrument flight rules because the aircraft's type certificate makes the aircraft incapable of operating under instrument flight rules.

Use of FAA-Approved Flight Simulator or Flight Training Device

In the AREA OF OPERATION labeled "PREFLIGHT PREPARATION," the TASKS are knowledge only. These TASKS do not require the use of a flight training device (FTD), flight simulator, or an aircraft to accomplish, but they may be used.

Each inflight maneuver or procedure must be performed by the applicant in an FTD, flight simulator, or an aircraft. Appendix 1 of this practical test standard should be consulted to identify the maneuvers or procedures that may be accomplished in an FTD or flight simulator. The level of FTD or flight simulator required for each maneuver or procedure will also be found in appendix 1.

When accomplished in an aircraft, certain task elements may be accomplished through “simulated” actions in the interest of safety and practicality, but when accomplished in an FTD or flight simulator, these same actions would not be “simulated.” For example, when in an aircraft, a simulated engine fire may be addressed by retarding the throttle to idle, simulating the shutdown of the engine, simulating the discharge of the fire suppression agent, and simulating the disconnection of associated electrics, hydraulics, pneumatics, etc. However, when the same emergency condition is addressed in an FTD or a flight simulator, all TASK elements must be accomplished as would be expected under actual circumstances. Similarly, safety of flight precautions taken in the aircraft for the accomplishment of a specific maneuver or procedure (such as altitude in powerplant failure, setting maximum airspeed for a rejected takeoff) need not be taken when an FTD or a flight simulator is used.

It is important to understand that whether accomplished in an FTD, a flight simulator, or the aircraft, all TASKS and TASK elements for each maneuver or procedure will have the same performance criteria applied for determination of overall satisfactory performance.

Examiner Responsibility

The examiner who conducts the practical test is responsible for determining that the applicant meets the standards outlined in the Objective of each TASK within the AREAS OF OPERATION, in the practical test standard. The examiner shall meet this responsibility by determining that the applicant’s knowledge and skill meet the Objective in all required TASKS.

The equipment examination must be closely coordinated and related to the flight portion of the practical test, but must not be given during the flight portion of the practical test. The equipment examination should be administered prior (it may be the same day) to the flight portion of the practical test. The examiner may accept written evidence of the equipment exam if the exam is approved by the Administrator and administered by an individual authorized by the Administrator. The examiner shall use whatever means deemed suitable to determine that the applicant’s equipment knowledge meets the standard.

The AREAS OF OPERATION in Section 2 contain TASKS which include both “knowledge” and “skill” ELEMENTS. The examiner shall ask the applicant to perform the skill ELEMENTS. Knowledge ELEMENTS not evident in the demonstrated skills may be tested by questioning, at anytime, during the flight event. Questioning in flight should be used judiciously so that safety is not jeopardized. Questions may be deferred until after the flight portion of the test is completed.

For aircraft requiring only one pilot, the examiner may not assist the applicant in the management of the aircraft, radio communications, tuning and identifying navigational equipment, and using navigation charts. If the examiner, other than an FAA Inspector, is qualified and current in the specific make and model aircraft that is certified for two or more crewmembers, he or she may occupy a duty position. If the examiner occupies a duty position on an aircraft that requires two or more crewmembers, the examiner must fulfill the duties of that position. Moreover, when occupying a required duty position, the examiner shall perform crew resource management functions as briefed and requested by the applicant.

SAFETY OF FLIGHT shall be the prime consideration at all times. The examiner, applicant, and crew shall be constantly alert for other traffic.

Satisfactory Performance

The ability of an applicant to safely perform the required TASKS is based on:

1. performing the TASKS specified in the AREAS OF OPERATION for the certificate or rating sought within the approved standards;
2. demonstrating mastery of the aircraft with the successful outcome of each TASK performed never seriously in doubt;
3. demonstrating sound judgment and crew resource management; and single-pilot competence if the aircraft is type certificated for single-pilot operations.

Unsatisfactory Performance

Consistently exceeding tolerances stated in the TASK Objective, or failure to take prompt, corrective action when tolerances are exceeded, is indicative of unsatisfactory performance. The tolerances represent the performance expected in good flying conditions. Any action, or lack thereof, by the applicant which requires corrective intervention by the examiner to maintain safe flight shall be disqualifying.

NOTE: It is vitally important that the applicant, safety pilot, and examiner use proper and effective scanning techniques to observe all other traffic in the area to ensure the area is clear before performing any maneuvers.

If, in the judgment of the examiner, the applicant's performance of any TASK is unsatisfactory, the associated AREA OF OPERATION is failed and therefore, the practical test is failed. Examiners shall not repeat

TASKS that have been attempted and failed. The examiner or applicant may discontinue the test at any time after the failure of a TASK which makes the applicant ineligible for the certificate or rating sought. The practical test will be continued only with the consent of the applicant. In such cases, it is usually better for the examiner to continue with the practical test to complete the other TASKS. If the examiner determines that the entire practical test must be repeated, the practical test should not be continued but should be terminated immediately. If the practical test is either continued or discontinued, the applicant is entitled to credit for those AREAS OF OPERATION satisfactorily performed, if the remainder of the practical test is completed within 60 days of when the practical test was discontinued. However, during the retest and at the discretion of the examiner, any AREA OF OPERATION may be reevaluated including those previously passed. Whether the remaining parts of the practical test are continued or not after a failure, a notice of disapproval must be issued.

When the examiner determines that a TASK is incomplete, or the outcome uncertain, the examiner may require the applicant to repeat that TASK, or portions of that TASK. This provision has been made in the interest of fairness and does not mean that instruction or practice is permitted during the certification process. When practical, the remaining TASKS of the practical test phase should be completed before repeating the questionable TASK. If the second attempt to perform a questionable TASK is not clearly satisfactory, the examiner shall consider it unsatisfactory.

If the practical test must be terminated for unsatisfactory performance and there are other AREAS OF OPERATION which have not been tested or still need to be repeated, a notice of disapproval shall be issued listing the specific AREAS OF OPERATION which have not been successfully completed or tested.

When a practical test is discontinued for reasons other than unsatisfactory performance (i.e., equipment failure, weather, air sickness), FAA Form 8710-1, Airman Certificate and/or Rating Application, and, if applicable, AC Form 8080-2, Airman Written Test Report, should be returned to the applicant. The examiner at that time should prepare, sign, and issue a Letter of Discontinuance to the applicant. The Letter of Discontinuance should identify the portions of the practical test that were successfully completed. The applicant shall be advised that the Letter of Discontinuance should be presented to the examiner when the practical test is resumed, and made part of the certification file.

Recording Unsatisfactory Performance

This practical test standard uses the terms “AREA OF OPERATION” and “TASK” to denote areas in which competency must be demonstrated. When a disapproval notice is issued, the examiner must record the applicant's unsatisfactory performance in terms of “AREA OF OPERATION” appropriate to the practical test conducted.

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. CRM is a set of skill competencies which must be evident in all TASKS in this practical test standard as applied to the single pilot or the multicrew operation. CRM competencies, grouped into three clusters of observable behavior, are:

1. COMMUNICATIONS PROCESSES AND DECISIONS
 - a. Briefing
 - b. Inquiry/Advocacy/Assertiveness
 - c. Self-Critique
 - d. Communication with Available Personnel Resources
 - e. Decision Making

2. BUILDING AND MAINTENANCE OF A FLIGHT TEAM
 - a. Leadership/Followership
 - b. Interpersonal Relationships

3. WORKLOAD MANAGEMENT AND SITUATIONAL AWARENESS
 - a. Preparation/Planning
 - b. Vigilance
 - c. Workload Distribution
 - d. Distraction Avoidance
 - e. Wake Turbulence Avoidance

CRM deficiencies almost always contribute to the unsatisfactory performance of a TASK. Therefore, the competencies provide an extremely valuable vocabulary for debriefing. For debriefing purposes,

an amplified list of these competencies, expressed as behavioral markers, may be found in AC 120-51, Crew Resource Management Training, as amended. These markers consider the use of various levels of automation in flight management systems.

The standards for each CRM competency as generally stated and applied are subjective. Conversely, some of the competencies may be found objectively stated as required operational procedures for one or more TASKS. Examples of the latter include briefings, radio calls, and instrument approach callouts. Whether subjective or objective, application of CRM competencies are dependent upon the composition of the crew.

How the Examiner Applies CRM

Examiners are required to exercise proper CRM competencies in conducting tests as well as expecting the same from applicants.

Pass/Fail judgments based solely on CRM issues must be carefully chosen since they may be entirely subjective. Those Pass/Fail judgments which are not subjective apply to CRM-related procedures in FAA-approved operations manuals that must be accomplished, such as briefings to other crewmembers. In such cases, the operator (or the aircraft manufacturer) specifies what should be briefed and when the briefings should occur. The examiner may judge objectively whether the briefing requirement was or was not met. In those cases where the operator (or aircraft manufacturer) has not specified a briefing, the examiner shall require the applicant to brief the appropriate items from the following note. The examiner may then judge objectively whether the briefing requirement was or was not met.

NOTE: The majority of aviation accidents and incidents are due to resource management failures by the pilot/crew; fewer are due to technical failures. Each applicant shall give a crew briefing before each takeoff/departure and approach/landing. If the operator or aircraft manufacturer has not specified a briefing, the briefing shall cover the appropriate items, such as runway, SID/STAR/IAP, power settings, speeds, abnormals or emergency prior to or after takeoff, emergency return intentions, missed approach procedures, FAF, altitude at FAF, initial rate of descent, DH/MDA, time to missed approach, and what is expected of the other crewmembers during the takeoff/SID and approach/landing. If the first takeoff/departure and approach/landing briefings are satisfactory, the examiner may allow the applicant to brief only the changes, during the remainder of the flight.

Applicant's Use of Checklists

Throughout the practical test, the applicant is evaluated on the use of an appropriate checklist. Proper use is dependent on the specific TASK being evaluated. The situation may be such that the use of the checklist, while accomplishing elements of an Objective, would be either unsafe or impractical, especially in a single-pilot operation. In this case, a review of the checklist after the elements have been accomplished would be appropriate. Use of a checklist should also consider visual scanning and division of attention at all times.

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 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.

Metric Conversion Initiative Conversion

To assist the pilots in understanding and using the metric measurement system, the practical test standard refers 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.

SECTION 1

PREFLIGHT PREPARATION

SECTION 1 — PREFLIGHT PREPARATION

CONTENTS

AREA OF OPERATION

I. PREFLIGHT PREPARATION	1-1
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B. PERFORMANCE AND LIMITATIONS	1-2

I. AREA OF OPERATION: PREFLIGHT PREPARATION

A. TASK: EQUIPMENT EXAMINATION

REFERENCES: Part 61; Pilot's Operating Handbook, RFM.

Objective. To determine that the applicant:

1. Exhibits adequate knowledge appropriate to the helicopter; its systems and components; its normal, abnormal, and emergency procedures; and uses the correct terminology with regard to the following items—
 - a. landing gear—indicators, brakes, tires, nosewheel steering, skids, and shocks.
 - b. powerplant—controls and indications, induction system, carburetor and fuel injection, exhaust and turbocharging, cooling, fire detection/protection, mounting points, turbine wheels, compressors, and other related components.
 - c. fuel system—capacity; drains; pumps; controls; indicators; crossfeeding; transferring; jettison; fuel grade, color and additives; fueling and defueling procedures; and emergency substitutions, if applicable.
 - d. oil system—capacity, grade, quantities, and indicators.
 - e. hydraulic system—capacity, pumps, pressure, reservoirs, grade, and regulators.
 - f. electrical system—alternators, generators, battery, circuit breakers and protection devices, controls, indicators, and external and auxiliary power sources and ratings.
 - g. environmental systems—heating, cooling, ventilation, oxygen and pressurization, controls, indicators, and regulating devices.
 - h. avionics and communications—autopilot; flight director; Electronic Flight Indicating Systems (EFIS); Flight Management System(s) (FMS); Long Range Navigation (LORAN) systems; Doppler Radar; Inertial Navigation Systems (INS); Global Positioning System (GPS/DGPS/WGPS); VOR, NDB, ILS/MLS, RNAV systems and components; indicating devices; transponder; and emergency locator transmitter.
 - i. ice protection—anti-ice, deice, pitot-static system protection, windshield, airfoil surfaces, and rotor protection.

- j. crewmember and passenger equipment—oxygen system, survival gear, emergency exits, evacuation procedures and crew duties, and quick donning oxygen mask for crewmembers and passengers.
 - k. main/tail rotor systems—transmissions, gear boxes, oil/fluid levels, tolerances, rotor brake if installed, and limitations.
 - l. pitot-static system with associated instruments and the power source for the flight instruments.
2. Exhibits adequate knowledge of the contents of the Pilot's Operating Handbook or RFM with regard to the systems and components listed in paragraph 1 (above); the Minimum Equipment List (MEL), if appropriate; and the Operations Specifications, if applicable.

B. TASK: PERFORMANCE AND LIMITATIONS

REFERENCES: Parts 1, 61, 91; Pilot's Operating Handbook, RFM.

Objective. To determine that the applicant:

1. Exhibits adequate knowledge of performance and limitations, including a thorough knowledge of the adverse effects of exceeding any limitation.
2. Demonstrates proficient use of (as appropriate to the helicopter) performance charts, tables, graphs, or other data relating to items such as—
 - a. takeoff performance—all engines, engine(s) inoperative.
 - b. climb performance—all engines, engine(s) inoperative, and other engine malfunctions.
 - c. service ceiling—all engines, engines(s) inoperative.
 - d. cruise performance.
 - e. fuel consumption, range, and endurance.
 - f. descent performance.
 - g. go-around from rejected landings.
 - h. hovering in and out of ground effect.
 - i. other performance data (appropriate to the helicopter).
3. Describes (as appropriate to the helicopter) the performance airspeeds used during specific phases of flight.

4. Describes the effects of meteorological conditions upon performance characteristics and correctly applies these factors to a specific chart, table, graph or other performance data.
5. Computes the center-of-gravity location for a specific load condition (as specified by the examiner), including adding, removing, or shifting weight.
6. Determines if the computed center of gravity is within the forward, aft, and lateral (if applicable) center-of-gravity limits for takeoff and landing.
7. Demonstrates good planning and knowledge of procedures in applying operational factors affecting helicopter performance.

SECTION 2

PREFLIGHT PROCEDURES, INFLIGHT MANEUVERS, AND POSTFLIGHT PROCEDURES

SECTION 2 — PREFLIGHT PROCEDURES, INFLIGHT MANEUVERS, AND POSTFLIGHT PROCEDURES

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II. AREA OF OPERATION: PREFLIGHT PROCEDURES

A. TASK: PREFLIGHT INSPECTION

REFERENCES: Parts 61, 91; Pilot's Operating Handbook, RFM.

Objective. To determine that the applicant:

1. Exhibits adequate knowledge of the preflight inspection procedures, while explaining briefly—
 - a. the purpose of inspecting the items which must be checked.
 - b. how to detect possible defects.
 - c. the corrective action to take.
2. Exhibits adequate knowledge of the operational status of the helicopter by locating and explaining the significance and importance of related helicopter documents such as—
 - a. airworthiness and registration certificates.
 - b. operating limitations, handbooks, and manuals.
 - c. minimum equipment list (MEL) (if appropriate).
 - d. weight and balance data.
 - e. maintenance requirements, tests, and appropriate records applicable to the proposed flight or operation; and maintenance that may be performed by the pilot or other designated crewmember.
3. Uses the approved checklist to systematically inspect the helicopter externally and internally.
4. Uses the challenge-and-response (or other approved) method with the other crewmember(s), where applicable, to accomplish the checklist procedures.
5. Verifies the helicopter is safe for flight by emphasizing (as appropriate to the helicopter) the need to look at and explain the purpose of inspecting items such as—
 - a. powerplant, including controls and indicators.
 - b. fuel quantity, grade, type, contamination safeguards, and servicing procedures.
 - c. oil quantity, grade, and type.
 - d. hydraulic fluid quantity, grade, type, and servicing procedures.
 - e. oxygen quantity, pressures, servicing procedures, and associated systems and equipment for crew and passengers.

- f. skid tubes or landing gear, brakes, and steering system, where applicable.
 - g. tires for condition, inflation, and correct mounting, where applicable.
 - h. fire protection/detection systems for proper operation, servicing, pressures, and discharge indications.
 - i. pneumatic system pressures and servicing.
 - j. ground environmental systems for proper servicing and operation.
 - k. auxiliary power unit (APU) for servicing and operation.
 - l. flight control systems including trim, rotor blades, and associated components.
 - m. main rotor and anti-torque systems.
 - n. anti-ice, deice systems, servicing, and operation.
6. Coordinates with ground crew and ensures adequate clearance prior to moving any devices such as doors or hatches.
 7. Complies with the provisions of the appropriate Operations Specifications, if applicable, as they pertain to the particular helicopter and operation.
 8. Demonstrates proper operation and verification of all helicopter systems.
 9. Notes any discrepancies, determines if the helicopter is airworthy and safe for flight, or takes the proper corrective action.
 10. Checks the general area around the helicopter for hazards to the safety of the helicopter and personnel.

B. TASK: POWERPLANT START

REFERENCES: Part 61; Pilot's Operating Handbook, RFM.

Objective. To determine that the applicant:

1. Exhibits adequate knowledge of the correct powerplant start procedures including the use of an external power source, starting under various atmospheric conditions, normal and abnormal starting limitations, and the proper action required in the event of a malfunction.
2. Ensures the ground safety procedures are followed during the before-start, start, and after-start phases.
3. Ensures the use of appropriate ground crew personnel during the start procedures.
4. Performs all items of the start procedures by systematically following the approved checklist items for the before-start, start, and after-start phases.
5. Demonstrates sound judgment and operating practices in those instances where specific instructions or checklist items are not published.

C. TASK: TAXIING

REFERENCES: Part 61; Pilot's Operating Handbook, RFM.

Objective. To determine that the applicant:

1. Exhibits adequate knowledge of safe and appropriate taxi procedures.
2. Demonstrates proficiency by maintaining correct and positive helicopter control such as hover height (when within 10 feet of the surface, maintains $\pm\frac{1}{2}$ of the hover altitude; when above 10 feet, maintains ± 5 feet of the hovering altitude), turns, and speed. This includes hovering taxi (maintains within 2 feet of desired track), air taxiing (maintains altitude within 10 feet of desired); and in helicopters with wheels, includes ground taxiing. In helicopters equipped with float devices, this includes water taxiing, approaching a buoy, and docking.
3. Maintains proper spacing on other aircraft and persons taking into consideration rotorwash and flying debris. Avoids conditions that may cause loss of tail rotor/antitorque effectiveness.
4. Accomplishes the applicable checklist items and performs recommended procedures.
5. Maintains desired and appropriate track and speed.

6. Complies with instructions issued by ATC (or the examiner simulating ATC).
7. Observes runway hold lines, localizer and glide slope critical areas, and other surface control markings and lighting.
8. Maintains constant vigilance and control of the helicopter during taxi operation.

D. TASK: PRETAKEOFF CHECKS

REFERENCES: Part 61; Pilot's Operating Handbook, RFM.

Objective. To determine that the applicant:

1. Exhibits adequate knowledge of the pretakeoff checks by stating the reason for checking the items outlined on the approved checklist and explaining how to detect possible malfunctions.
2. Divides attention inside and outside cockpit.
3. Ensures that all systems are within their normal operating range prior to beginning, during the performance of, and at the completion of those checks required by the approved checklist.
4. Explains, as may be requested by the examiner, any normal or abnormal system operating characteristic or limitation; and the corrective action for a specific malfunction.
5. Determines if the helicopter is safe for the proposed flight or requires maintenance.
6. Determines the helicopter's takeoff performance, considering such factors as wind, density altitude, helicopter weight, temperature, pressure altitude, and departure route or routing.
7. Determines airspeeds/V-speeds and properly sets all instrument references, flight director and autopilot controls, and navigation and communications equipment.
8. Reviews procedures for emergency and abnormal situations which may be encountered during takeoff, and states the corrective action required of the pilot in command and other concerned crewmembers.
9. Obtains and correctly interprets the takeoff and departure clearance as issued by ATC.

III. AREA OF OPERATION: TAKEOFF AND DEPARTURE PHASE

A. TASK: NORMAL AND CROSSWIND TAKEOFF

REFERENCES: Part 61; Pilot's Operating Handbook, RFM.

Objective. To determine that the applicant:

1. Exhibits adequate knowledge of normal and crosswind takeoffs and climbs including (as appropriate to the helicopter) airspeeds, configurations, and emergency/abnormal procedures. Performs all required pretakeoff checks as required by the appropriate checklist items.
2. Adjusts the powerplant controls as recommended by the FAA-approved guidance for the existing conditions.
3. Notes any obstructions or other hazards in the takeoff path.
4. Verifies and correctly applies the existing wind component to the takeoff performance.
5. Completes required checks prior to starting takeoff to verify the expected powerplant performance.
6. Aligns the helicopter on the runway centerline, or with the takeoff path.
7. Applies the controls correctly to maintain longitudinal alignment on the centerline of the runway or intended flightpath, prior to initiating and during the takeoff.
8. Sets power smoothly and positively to a predetermined value.
9. Monitors powerplant controls, settings, and instruments during takeoff to ensure all predetermined parameters are met.
10. Accelerates through effective translational lift to normal climb speed.
11. Uses the applicable noise abatement and wake turbulence avoidance procedures, as required.
12. Accomplishes the appropriate checklist items.
13. Maintains the appropriate climb segment airspeed/V-speeds.
14. Maintains the desired heading within $\pm 5^\circ$ and the desired airspeed/V-speed within ± 5 knots.

B. TASK: INSTRUMENT TAKEOFF

REFERENCES: Part 61; AC 61-27; Pilot's Operating Handbook, RFM, AIM.

Objective. To determine that the applicant:

1. Exhibits adequate knowledge of an instrument takeoff with instrument meteorological conditions simulated at or before reaching an altitude of 100 feet (30 meters) AGL. If accomplished in a flight simulator, visibility should be no greater than one-quarter (1/4) mile, or as specified by operator specifications.
2. Takes into account, prior to beginning the takeoff, operational factors which could affect the maneuver such as helicopter characteristics, takeoff path, surface conditions, wind, obstructions, and other related factors that could adversely affect safety.
3. Accomplishes the appropriate checklist items to ensure that the helicopter systems applicable to the instrument takeoff are operating properly.
4. Sets the applicable flight instruments to the desired setting prior to initiating the takeoff.
5. Transitions smoothly and accurately from visual meteorological conditions to actual or simulated instrument meteorological conditions.
6. Maintains the appropriate climb attitude.
7. Maintains desired heading within $\pm 5^\circ$ and desired airspeeds within ± 5 knots.
8. Complies with ATC clearances and instructions issued by ATC (or the examiner simulating ATC).

C. TASK: POWERPLANT FAILURE DURING TAKEOFF

REFERENCES: Part 61; AC 61-13, AC 120-62; Pilot's Operating Handbook, RFM.

Objective. To determine that the applicant:

1. Exhibits adequate knowledge of the procedures used during powerplant failure on takeoff, the appropriate reference airspeeds, and the specific pilot actions required.
2. Takes into account, prior to beginning the takeoff, operational factors which could affect the maneuver such as helicopter characteristics, takeoff path, surface conditions, wind, obstructions, and other related factors that could adversely affect safety.

3. Maintains the helicopter aligned with the runway heading or takeoff path appropriate for climb performance and terrain clearance when powerplant failure occurs.
4. Single-Engine Helicopters: Establishes a power-off descent approximately straight-ahead, if the powerplant failure occurs after becoming airborne. The failure of the powerplant should be simulated during a normal takeoff (no lower than 500 feet or 150 meters AGL).
5. Multiengine Helicopters: Continues the takeoff if the powerplant failure occurs at a point where the helicopter can continue to a specified airspeed and altitude at the end of the runway commensurate with the helicopter's performance capabilities and operating limitations. The failure of one powerplant should be simulated during a normal takeoff:
 - a. At an appropriate airspeed that will allow continued climb performance in forward flight; or
 - b. At an appropriate airspeed that is 50 percent of normal cruise speed, if there is no published single-engine airspeed for that type helicopter.
6. Maintains (in a multiengine helicopter), after a simulated powerplant failure and after a climb has been established, the desired heading within $\pm 5^\circ$ and desired airspeed within ± 5 knots.

D. TASK: REJECTED TAKEOFF

REFERENCES: Part 61; AC 61-13, AC 120-62; Pilot's Operating Handbook, RFM.

Objective. To determine that the applicant understands when to reject or continue the takeoff and:

1. Exhibits adequate knowledge of the technique and procedure for accomplishing a rejected takeoff after powerplant/system(s) failure/warnings, including related safety factors.
2. Takes into account, prior to beginning the takeoff, operational factors which could affect the maneuver such as helicopter characteristics, takeoff path, surface conditions, wind, obstructions, and other related factors that could adversely affect safety.
3. Aligns the helicopter on the runway centerline or takeoff path.
4. Performs all required pretakeoff checks as required by the appropriate checklist items.

5. Increases power smoothly and positively, if appropriate to the helicopter, to a predetermined value based on existing conditions.
6. Maintains directional control on the runway heading or takeoff path.
7. Aborts the takeoff if, in a single-engine helicopter, the powerplant (or other) failure occurs prior to becoming airborne; or in a multiengine helicopter, the powerplant (or other) failure occurs at a point during the takeoff where the abort procedure can be initiated and the helicopter can be safely landed and stopped.
8. Reduces the power smoothly and promptly, if appropriate to the helicopter, when powerplant failure is simulated. In a wheeled helicopter, the failure will be simulated at a reasonable airspeed determined after giving due consideration to the helicopter's characteristics, Height Velocity Diagram, length of landing area, surface conditions, wind direction and velocity, and any other factors that may adversely affect safety.
9. Maintains positive control, and accomplishes the appropriate powerplant failure procedures as recommended by the appropriate checklist.

E. TASK: INSTRUMENT DEPARTURE

REFERENCES: Part 61; AC 61-27; Pilot's Operating Handbook, RFM, AIM.

Objective. To determine that the applicant:

1. In actual or simulated instrument conditions, exhibits adequate knowledge of SIDs, En Route Low and High Altitude Charts, STARs, and related pilot/controller responsibilities.
2. Uses the current and appropriate navigation publications for the proposed flight.
3. Selects and uses the appropriate communications frequencies, and selects and identifies the navigation aids associated with the proposed flight.
4. Performs the appropriate checklist items.
5. Establishes communications with ATC, using proper phraseology.
6. Complies, in a timely manner, with all instructions and airspace restrictions.
7. Exhibits adequate knowledge of two-way radio communications failure procedures.

8. Intercepts, in a timely manner, all courses, radials, and bearings appropriate to the procedure, route, clearance, or as directed by the examiner.
9. Maintains the appropriate airspeed within ± 10 knots, headings within $\pm 10^\circ$, altitude within ± 100 feet (30 meters); and accurately tracks a course, radial, or bearing.
10. Conducts the departure phase to a point where, in the opinion of the examiner, the transition to the en route environment is complete.

IV. AREA OF OPERATION: INFLIGHT MANEUVERS

A. TASK: STEEP TURNS

REFERENCES: Part 61; AC 61-27; FSB Report; Pilot's Operating Handbook, RFM.

Objective. To determine that the applicant:

1. In actual or simulated instrument conditions, exhibits adequate knowledge of steep turns (if applicable to helicopter) and the factors associated with performance; and, if applicable, angle of bank, and pitch and power requirements.
2. Selects an altitude recommended by the manufacturer, training syllabus, or other training directive.
3. Establishes the recommended entry airspeed.
4. Rolls into a coordinated turn of 180° or 360° with a bank as appropriate, not to exceed 30°. Maintains the bank angle within $\pm 5^\circ$ while in smooth, stabilized flight.
5. Applies smooth coordinated pitch, bank, and power to maintain the specified altitude within ± 100 feet (30 meters) and the desired airspeed within ± 10 knots.
6. Rolls out of the turn (at approximately the same rate as used to roll into the turn) within $\pm 10^\circ$ of the entry or specified heading, stabilizes the helicopter in a straight-and-level attitude or, at the discretion of the examiner, reverses the direction of turn and repeats the maneuver in the opposite direction.
7. Avoids any indication of abnormal flight attitude, or exceeding any structural, rotor, or operating limitation during any part of the maneuver.

B. TASK: POWERPLANT FAILURE—MULTIENGINE HELICOPTER

REFERENCES: Part 61; Pilot's Operating Handbook, RFM.

NOTE: When this TASK is accomplished in an approved flight simulator, the engine shutdown and restart may be performed in conjunction with another procedure or maneuver, and at any location or altitude at the discretion of the examiner.

When this task is accomplished in the helicopter, the engine failure and restart procedure shall be simulated. This TASK shall be performed by reducing the power to idle on the selected engine. This task must be initiated at an altitude from which a safe landing can be made in the event of actual engine problems.

When authorized and conducted in a flight simulator, shutdown may be performed in conjunction with any procedure or maneuver, and at any location or altitude at the discretion of the examiner.

Objective. To determine that the applicant:

1. Exhibits adequate knowledge of the flight characteristics and controllability associated with maneuvering with powerplant(s) inoperative (as appropriate to the helicopter).
2. Sets powerplant controls, correctly identifies and verifies the inoperative powerplant(s) after the simulated failure.
3. Maintains positive helicopter control.
4. Determines the reason for the powerplant(s) failure.
5. Follows the prescribed helicopter checklist, and verifies the procedures for securing the inoperative powerplant(s). Determines if a restart is a viable option.
6. Maintains the operating powerplant(s) within acceptable operating limits.
7. Maintains desired altitude within ± 100 feet (30 meters), when a constant altitude is specified and is within the capability of the helicopter.
8. Maintains the desired airspeed within ± 10 knots.
9. Maintains the desired heading within $\pm 10^\circ$ of the specified heading.
10. Demonstrates proper powerplant restart procedures in accordance with FAA-approved procedure/checklist or the manufacturer's recommended procedures and pertinent checklist items.

C. TASK: POWERPLANT FAILURE—SINGLE-ENGINE HELICOPTER

REFERENCES: Part 61; AC 61-13; Pilot's Operating Handbook, RFM.

NOTE: No simulated powerplant failure shall be given by the examiner in a helicopter when an actual touchdown could not be safely completed should it become necessary, nor when an autorotative descent might constitute a violation of the CFR's. The examiner shall direct the applicant to terminate this TASK in a power recovery at an altitude high enough to assure that a safe touchdown could be accomplished in the event an actual powerplant failure should occur during recovery procedures.

Objective. To determine that the applicant:

1. Exhibits adequate knowledge of the flight characteristics, approach and forced (emergency) landing procedures, and related procedures to use in the event of a powerplant failure (as appropriate to the helicopter).
2. Enters autorotation promptly when the examiner simulates a powerplant failure by—
 - a. lowering the collective as necessary to maintain rotor RPM within acceptable limits,
 - b. establishing and maintaining the recommended autorotation airspeed within ± 5 knots, and
 - c. maintaining proper longitudinal trim.
3. Selects a suitable airport or landing area which is within the performance capability of the helicopter.
4. Establishes a proper flight pattern to the selected airport or landing area, taking into account altitude, wind, terrain, obstructions, and other pertinent operational factors. Avoids undershooting or overshooting the selected landing area.
5. Determines the cause for the simulated powerplant failure (if altitude permits) and if a restart is a viable option.
6. Performs the emergency memory checklist items appropriate to the helicopter.
7. Maintains positive helicopter control throughout the maneuver.

8. Uses helicopter configuration devices (such as landing gear) in a manner recommended by the manufacturer and/or approved by the FAA.
9. Terminates the autorotation by performing a power recovery, at a safe altitude or as briefed by the examiner, prior to the flight.

D. TASK: RECOVERY FROM UNUSUAL ATTITUDES

REFERENCES: Part 61; AC 61-27; Pilot's Operating Handbook, Flight Manual.

Objective. To determine that the applicant:

1. In actual or simulated instrument conditions, exhibits adequate knowledge of recovery from unusual attitudes.
2. Recovers from both nose-high and nose-low unusual attitudes, using proper pitch, bank, and power techniques.

E. TASK: SETTLING-WITH-POWER

REFERENCES: Part 61; AC 61-13; Pilot's Operating Handbook, Flight Manual.

Objective. To determine that the applicant:

1. Exhibits adequate knowledge of the conditions which contribute to, and may result in, "settling-with-power."
2. Describes the relationship of gross weight, RPM, and density altitude to the severity of the vertical rate of descent.
3. At an altitude above 1,500 feet (450 meters) AGL or as recommended by the manufacturer if it is higher, demonstrates entry into "settling-with-power," using the recommended procedures in the correct sequence.
4. Recovers immediately at the first indication of "settling-with-power," using the recommended procedures in the correct sequence.
5. Demonstrates smooth, positive helicopter control and prompt recovery techniques.

V. AREA OF OPERATION: INSTRUMENT PROCEDURES

A. TASK: INSTRUMENT ARRIVAL

REFERENCES: Part 61; Pilot's Operating Handbook, RFM, AIM; En Route Low and High Altitude Charts, Profile Descent Charts, STARs, Instrument Approach Procedure Charts.

Objective. To determine that the applicant:

1. While in actual or simulated instrument conditions, exhibits adequate knowledge of En Route Low and High Altitude Charts, STARs, Instrument Approach Procedure Charts, and related pilot and controller responsibilities.
2. Uses the current and appropriate navigation publications for the proposed flight.
3. Selects and correctly identifies the appropriate navigation frequencies and facilities associated with the area arrival.
4. Performs the helicopter checklist items appropriate to the area arrival.
5. Establishes communications with ATC, using proper phraseology.
6. Complies, in a timely manner, with all ATC clearances, instructions, and restrictions.
7. Exhibits adequate knowledge of two-way communications failure procedures.
8. Intercepts, in a timely manner, all courses, radials, and bearings appropriate to the procedure, route, ATC clearance, or as directed by the examiner.
9. Adheres to airspeed restrictions and adjustments required by regulations, ATC, the RFM, or the examiner.
10. Establishes, where appropriate, a rate of descent consistent with the helicopter operating characteristics and safety.
11. Maintains the appropriate airspeed/V-speed within ± 10 knots; heading $\pm 10^\circ$; altitude within ± 100 feet (30 meters); and accurately tracks radials, courses, and bearings.
12. Complies with the provisions of the Profile Descent, STAR, and other arrival procedures, as appropriate.

B. TASK: HOLDING

REFERENCES: Part 61; Pilot's Operating Handbook, RFM, AIM; En Route Low and High Altitude Charts, STARs, Instrument Approach Procedure Charts.

Objective. To determine that the applicant:

1. While in actual or simulated instrument conditions, exhibits adequate knowledge of holding procedures for standard and non-standard, published and non-published holding patterns. If appropriate, demonstrates adequate knowledge of holding endurance, including, but not necessarily limited to, fuel on board, fuel flow while holding, fuel required to alternate, etc.
2. Changes to the recommended holding airspeed appropriate for the helicopter and holding altitude, so as to cross the holding fix at or below maximum holding airspeed.
3. Recognizes arrival at the clearance limit or holding fix.
4. Remains within protected airspace.
5. Complies with ATC reporting requirements.
6. Uses the proper timing criteria required by the holding altitude and ATC or examiner's instructions.
7. Complies with the holding pattern leg length when a DME distance is specified.
8. Arrives over the holding fix as close as possible to the "expect further clearance" time.
9. Maintains the appropriate airspeed/V-speed within ± 10 knots, altitude within ± 100 feet (30 meters); headings within $\pm 10^\circ$; and accurately tracks radials, courses, and bearings.

C. TASK: PRECISION INSTRUMENT APPROACHES

REFERENCES: Part 61; AC 61-27; Pilot's Operating Handbook, RFM, AIM; Instrument Approach Procedure Charts.

NOTE: Two precision approaches must be accomplished in actual or simulated instrument conditions.

For a multiengine helicopter, at least one manually controlled precision approach must be accomplished with a simulated failure of one powerplant. The simulated powerplant failure should occur before initiating the final approach segment and must continue to touchdown or throughout the missed approach procedure. As the

markings on localizer/glide slope indicators vary, a one-quarter scale deflection of either the localizer, or glide slope indicator is when it is displaced one-fourth of the distance that it may be deflected from the on glide slope or on localizer position.

Objective. To determine that the applicant:

1. Exhibits adequate knowledge of the precision instrument approach procedures with all engines operating, and with one engine inoperative.
2. Establishes two-way communications with ATC as appropriate to the phase of flight or approach segment and uses the proper communications phraseology and techniques.
3. Accomplishes the appropriate precision instrument approach procedure as selected by the examiner.
4. Complies, in a timely manner, with all clearances, instructions, and procedures.
5. Advises ATC anytime the helicopter is unable to comply with a clearance.
6. Establishes the appropriate helicopter configuration and airspeed/V-speed considering turbulence, wind shear, microburst conditions, or other meteorological and operating conditions.
7. Completes the helicopter checklist items appropriate to the phase of flight or approach segment.
8. Prior to beginning the final approach segment, maintains the desired altitude ± 100 feet (30 meters), the desired airspeed within ± 10 knots, the desired heading within $\pm 5^\circ$; and accurately tracks radials, courses, and bearings.
9. Selects, tunes, identifies, and monitors the operational status of ground and helicopter navigation equipment used for the approach.
10. Applies the necessary adjustments to the published Decision Height and visibility criteria for the helicopter approach category as required, such as—
 - a. FDC and Class II NOTAMs.
 - b. Inoperative helicopter and ground navigation equipment.
 - c. Inoperative visual aids associated with the landing environment.
 - d. National Weather Service (NWS) reporting factors and criteria.

11. Establishes a predetermined rate of descent at the point where the electronic glide slope begins which approximates that required for the helicopter to follow the glide slope.
12. Maintains a stabilized final approach, arriving at Decision Height with no more than one-quarter scale deflection of the localizer, or the glide slope indicators and the airspeed/V-speed within ± 5 knots of that desired.
13. Avoids descent below the Decision Height before initiating a missed approach procedure or transitioning to a landing.
14. Initiates immediately the missed approach procedure, when at the Decision Height, and the required visual references for the runway or intended landing area are not distinctly visible and identifiable.
15. Transitions to a normal landing approach only when the helicopter is in a position from which a descent to a landing on the runway or intended landing area can be made at a normal rate of descent using normal maneuvering.

D. TASK: NONPRECISION INSTRUMENT APPROACHES

REFERENCES: Part 61; AC 61-27; Pilot's Operating Handbook, RFM, AIM; Instrument Approach Procedure Charts.

NOTE: The applicant must accomplish at least two nonprecision approaches (one of which must include a procedure turn) in simulated or actual weather conditions approach using two different approach systems. At least one nonprecision approach must be flown manually without receiving radar vectors. The examiner will select nonprecision approaches that are representative of that which the applicant is likely to use. The choices must utilize two different systems; i.e., NDB and one of the following: VOR, LOC, LDA, GPS, or LORAN.

Objective. To determine that the applicant:

1. Exhibits adequate knowledge of nonprecision approach procedures representative of those the applicant is likely to use.
2. Establishes two-way communications with ATC as appropriate to the phase of flight or approach segment and uses proper communications phraseology and techniques.
3. Accomplishes the nonprecision instrument approach procedures selected by the examiner.
4. Complies with all clearances issued by ATC.

5. Advises ATC or the examiner any time the helicopter is unable to comply with a clearance.
6. Establishes the appropriate helicopter configuration and airspeed, and completes all applicable checklist items.
7. Maintains, prior to beginning the final approach segment, the desired altitude ± 100 feet (30 meters), the desired airspeed ± 10 knots, the desired heading $\pm 5^\circ$; and accurately tracks radials, courses, and bearings.
8. Selects, tunes, identifies, and monitors the operational status of ground and helicopter navigation equipment used for the approach.
9. Applies the necessary adjustments to the published Minimum Descent Altitude and visibility criteria for the helicopter approach category when required, such as—
 - a. Notices to Airmen, including Flight Data Center Procedural NOTAMs.
 - b. Inoperative helicopter and ground navigation equipment.
 - c. Inoperative visual aids associated with the landing environment.
 - d. National Weather Service (NWS) reporting factors and criteria.
10. Establishes a rate of descent that will ensure arrival at the Minimum Descent Altitude with the helicopter in a position from which a descent to a landing on the intended runway or landing area can be made at a normal rate using normal maneuvering.
11. Allows, while on the final approach segment, not more than quarter-scale deflection of the Course Deviation Indicator (CDI) or $\pm 5^\circ$ in the case of the RMI or bearing pointer, and maintains airspeed within ± 5 knots of that desired.
12. Maintains the Minimum Descent Altitude, when reached, within -0, +50 feet (-0, +15 meters) to the missed approach point.
13. Executes the missed approach procedure if the required visual references for the intended runway are not distinctly visible and identifiable at the missed approach point.
14. Executes a normal landing from a straight-in approach.

NOTE: If TASK D, Nonprecision Instrument Approaches, is performed in a training device (other than an FTD or flight simulator) and the applicant has completed an approved training course for the helicopter type involved, not more than one of the required

instrument procedures may be observed by a person qualified to act as an instructor or check airman under that approved training program. The instrument approach is considered to begin when the helicopter is over the initial approach fix for the procedure being used and ends when the helicopter touches down on the runway or landing area, or when transition to a missed approach configuration is completed. Instrument conditions need not be simulated below the minimum altitude for the approach being accomplished.

E. TASK: MISSED APPROACH

REFERENCES: Part 61; AC 61-27; Pilot's Operating Handbook, RFM, AIM; Instrument Approach Procedure Charts.

NOTE: The applicant must be required to perform at least two missed approach procedures with at least one missed approach from a precision approach (ILS, MLS, or GPS). A complete approved missed approach procedure must be accomplished at least once and a simulated powerplant failure (in a multiengine helicopter) will be required during one of the missed approaches.

Going below the MDA or DH, as appropriate, prior to the initiation of the missed approach procedure shall be considered unsatisfactory performance, except in those instances where the required visual references for the runway or intended landing area are distinctly visible and identifiable at the MDA or DH.

Objective. To determine that the applicant:

1. While in actual or simulated instrument conditions, exhibits adequate knowledge of missed approach procedures associated with standard instrument approaches.
2. Initiates the missed approach procedure promptly by the timely application of power, establishes the proper climb attitude, and reduces drag in accordance with the approved procedures.
3. Reports to ATC, beginning the missed approach procedure.
4. Complies with the appropriate missed approach procedure or ATC clearance.
5. Advises ATC any time the helicopter is unable to comply with a clearance.
6. Follows the recommended helicopter checklist items appropriate to the go-around procedure for the helicopter used.

7. Requests clearance, if appropriate, to the alternate airport, another approach, a holding fix, or as directed by the examiner.
8. Maintains the desired altitudes ± 100 feet (30 meters), airspeed ± 5 knots, heading $\pm 5^\circ$, and accurately tracks courses, radials, and bearings.

VI. AREA OF OPERATION: LANDINGS AND APPROACHES TO LANDINGS

NOTE: Notwithstanding the authorizations for the combining of maneuvers and for the waiver of maneuvers, the applicant must make at least four landings to a hover or to the ground. These landings must include the types listed in this AREA OF OPERATION; however, more than one type may be combined where appropriate (i.e., crosswind and landing from a precision approach or landing with simulated powerplant failure, etc.).

A. TASK: NORMAL AND CROSSWIND APPROACHES AND LANDINGS

REFERENCES: Part 61; AC 61-13; Pilot's Operating Handbook, RFM.

Objective. To determine that the applicant:

1. Exhibits adequate knowledge of normal and crosswind approaches and landings including recommended approach angles, airspeeds, V-speeds, configurations, performance limitations, wake turbulence, and safety factors (as appropriate to the helicopter).
2. Establishes the approach and landing configuration appropriate for the runway or designated landing area and meteorological conditions, and adjusts the powerplant controls as required.
3. Maintains a ground track, within $\pm 5^\circ$, that ensures the desired traffic pattern will be flown, taking into account any obstructions and ATC or examiner instructions.
4. Verifies existing wind conditions, makes proper correction for drift, and maintains a precise ground track.
5. Maintains a normal approach angle and recommended airspeed and a normal rate of closure to the point of transition to a hover or touchdown.
6. Terminates the approach in a smooth transition to a hover or to a touchdown within 2 feet (.6 meter) of the designated point. (If a hover termination is specified, it will be within ± 2 feet (.6 meter) of recommended hovering altitude.)
7. Completes the applicable after-landing checklist items in a timely manner and as recommended by the manufacturer.

**B. TASK: APPROACH AND LANDING WITH SIMULATED
POWERPLANT FAILURE—MULTIENGINE
HELICOPTER**

REFERENCES: Part 61; AC 61-13; Pilot's Operating Handbook, RFM.

NOTE: In a multiengine helicopter maneuvering to a landing, the applicant should follow a procedure that simulates the loss of one powerplant.

Objective. To determine that the applicant:

1. Exhibits adequate knowledge of maneuvering to a landing with a powerplant inoperative, including the controllability factors associated with maneuvering, and the applicable emergency procedures.
2. Proceeds toward the nearest suitable airport or landing area.
3. Maintains, prior to beginning the final approach segment, the desired altitude ± 100 feet (30 meters), the desired airspeed ± 10 knots, the desired heading $\pm 5^\circ$, and accurately tracks courses, radials, and bearings.
4. Establishes the approach and landing configuration appropriate for the runway or landing area, and meteorological conditions; and adjusts the powerplant controls as required.
5. Maintains a normal approach angle and recommended airspeed to the point of transition to touchdown.
6. Terminates the approach in a smooth transition to touchdown.
7. Completes the after-landing checklist items in a timely manner, after clearing the runway, and as recommended by the manufacturer.

C. TASK: REJECTED LANDING

REFERENCES: Part 61; AC 61-13; Pilot's Operating Handbook, RFM; FSB Report.

NOTE: The maneuver may be combined with instrument or missed approach procedures, but instrument conditions need not be simulated below 100 feet (30 meters) above the runway or landing area. This maneuver should be initiated approximately 50 feet (15 meters) above the runway and approximately over the runway threshold or as recommended by the FSB Report.

Objective. To determine that the applicant:

1. Exhibits adequate knowledge of a rejected landing procedure, including the conditions that dictate a rejected landing, the importance of a timely decision, the recommended airspeed/V-speeds, and also the applicable "clean-up" procedure.
2. Makes a timely decision to reject the landing for actual or simulated circumstances.
3. Applies the appropriate power setting for the flight condition and establishes a pitch attitude necessary to obtain the desired performance.
4. Adjusts helicopter configuration and retracts the landing gear, if appropriate, in the correct sequence and at a safe altitude, establishes a positive rate of climb and the appropriate airspeed/V-speed within ± 5 knots.
5. Trims the helicopter as necessary, and maintains the proper ground track, within $\pm 5^\circ$, during the rejected landing procedure.
6. Accomplishes the appropriate checklist items in a timely manner in accordance with approved procedures.

VII. AREA OF OPERATION: NORMAL AND ABNORMAL PROCEDURES

REFERENCES: Part 61; AC 61-13; Pilot's Operating Handbook, RFM.

Objective. To determine that the applicant:

1. Possesses adequate knowledge of the normal and abnormal procedures of the systems, subsystems, and devices relative to the helicopter type (as may be determined by the examiner).
2. Demonstrates the proper use of the helicopter's systems, subsystems, and devices (as may be determined by the examiner) appropriate to the helicopter, such as—
 - a. powerplant.
 - b. fuel system.
 - c. electrical system.
 - d. hydraulic system.
 - e. environmental system.
 - f. fire detection and extinguishing systems.
 - g. navigation and avionics systems.
 - h. automatic flight control system, electronic flight instrument system, and related subsystems.
 - i. flight control systems.
 - j. anti-ice and deice systems.
 - k. helicopter and personal emergency equipment.
 - l. loss of tail rotor effectiveness.
 - m. other systems, subsystems, and devices specific to the type helicopter.

VIII. AREA OF OPERATION: EMERGENCY PROCEDURES

REFERENCES: Part 61; Pilot's Operating Handbook, RFM.

Objective. To determine that the applicant:

1. Possesses adequate knowledge of the emergency procedures (as may be determined by the examiner) relating to the particular helicopter type.
2. Demonstrates the proper emergency procedures (as must be determined by the examiner) relating to the particular helicopter type, including—
 - a. inflight fire and smoke removal.
 - b. emergency descent.
 - c. autorotation, with a power recovery.
 - d. ditching.
 - e. emergency evacuation.
3. Demonstrates the proper procedure for any other emergency outlined (as must be determined by the examiner) in the appropriate approved helicopter RFM.

IX. AREA OF OPERATION: POSTFLIGHT PROCEDURES

A. TASK: AFTER-LANDING PROCEDURES

REFERENCES: Pilot's Operating Handbook, RFM.

Objective. To determine that the applicant:

1. Exhibits adequate knowledge of safe after-landing/taxi procedures (as appropriate to the helicopter).
2. Demonstrates proficiency by maintaining correct and positive helicopter control. This includes hovering taxi, air taxiing; and in helicopters with wheels, includes ground taxiing. In helicopters equipped with float devices, this includes water taxiing, approaching a buoy, and docking.
3. Maintains proper spacing on other helicopter, obstructions, and persons.
4. Accomplishes the applicable checklist items and performs the recommended procedures.
5. Maintains the desired track and speed.
6. Complies with instructions issued by ATC (or the examiner simulating ATC).
7. Observes runway hold lines, localizer and glide slope critical areas, and other surface control markings and lighting.
8. Maintains constant vigilance and control of the helicopter during the taxi operation.

B. TASK: PARKING AND SECURING

REFERENCES: Pilot's Operating Handbook, RFM.

Objective. To determine that the applicant:

1. Exhibits adequate knowledge of the parking and the securing helicopter procedures.
2. Demonstrates adequate knowledge of the helicopter forms/logs to record the flight time/discrepancies.

APPENDIX 1

TASK VS. SIMULATION DEVICE CREDIT

Appendix 1 - Helicopters

TASK VS. SIMULATION DEVICE CREDIT

Examiners conducting the Airline Transport Pilot and Aircraft Type Rating Practical Tests with simulation devices should consult appropriate documentation to ensure that the device has been approved for training, testing, and checking the TASKS in question. 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 training, testing, and checking specific TASKS listed in this appendix.

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 or 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 prerequisite experience requirements.
3. Level A helicopter simulator standards have not been defined.
4. Helicopter flight training devices have not been defined.

FLIGHT TASK**Areas of Operation: Section Two****LEVEL of SIMULATION DEVICE**

	1	2	3	4	5	6	7	A	B	C	D
II. Preflight Procedures											
A. Preflight Inspection (Cockpit Only)									X	X	X
B. Powerplant Start									X	X	X
C1. Taxiing - Ground									X	X	X
C2. Taxiing - Hover										X	X
D. Pretakeoff Checks									X	X	X
III. Takeoff and Departure Phase											
A. Normal and Crosswind Takeoff									X1	X	X
B. Instrument Takeoff									X1	X	X
C. Powerplant Failure During Takeoff									X1	X	X
D. Rejected Takeoff									X1	X	X
E. Instrument Departure									X	X	X
IV. Inflight Maneuvers											
A. Steep Turns									X	X	X
B. Powerplant Failure - Multiengine Helicopters									X	X	X
C. Powerplant Failure - Single-Engine Helicopters									X	X	X
D. Recovery From Unusual Attitudes									X	X	X
E. Settling-With-Power										X	X

FLIGHT TASK**Areas of Operation: Section Two (Cont.)**

	LEVEL of SIMULATION DEVICE										
	1	2	3	4	5	6	7	A	B	C	D
V. Instrument Procedures											
A. Instrument Arrival									X	X	X
B. Holding									X	X	X
C1. Precision Instrument Approach (Normal)									X	X	X
C2. Precision Inst. Approach (Manual/Pwrplnt Fail.)									X	X	X
D. Nonprecision Instrument Approaches									X	X	X
E1. Missed Approach (Normal)									X	X	X
E2. Missed Approach (Powerplant Failure)									X	X	X
VI. Landings and Approaches to Landings											
A. Normal and Crosswind Approaches and Landings									X1	X	X
B. Approach and Landing with Simulated Powerplant Failure—Multiengine Helicopter									X1	X	X
C. Rejected Landing									X	X	X
VII. Normal and Abnormal Procedures (*1)											
A. Powerplant									X	X	X
B. Fuel System									X	X	X
C. Electrical System									X	X	X
D. Hydraulic System									X	X	X
E. Environmental System(s)									X	X	X

(*1) Evaluation of normal and abnormal procedures can usually be accomplished in conjunction with other events and does not normally require a specific event to test the applicant's use of the aircraft systems and devices. An applicant's performance must be evaluated on the maintenance of helicopter control, the ability to recognize and analyze abnormal indications, and the ability to apply corrective procedures in a timely manner.

FLIGHT TASK**Areas of Operation: Section Two (Cont.)****LEVEL of SIMULATION DEVICE****1 2 3 4 5 6 7 A B C D****VII. Normal and Abnormal Procedures
(Cont.) (*1)**

F. Fire Detection and Extinguisher Systems										X	X	X
G. Navigation and Aviation Systems										X	X	X
H. Automatic Flight Control System, Electronic Flight Instrument System, and Related Subsys.										X	X	X
I. Flight Control Systems										X	X	X
J. Anti-ice and Deice Systems										X	X	X
K. Aircraft and Personal Emergency Equipment										X	X	X
L. Loss of Tail Rotor Effectiveness											X	X
M. Others, as determined by make, model, or series												

VIII. Emergency Procedures

A. Emergency Descent											X	X	X
B. Inflight Fire and Smoke Removal											X	X	X
C. Emergency Evacuation											X	X	X
D. Ditching												X	X
E. Autorotative Landing												X	X

IX. Postflight Procedures

A. After-Landing Procedures											X	X	X
B. Parking and Securing											X	X	X

(*1) Evaluation of normal and abnormal procedures can usually be accomplished in conjunction with other events and does not normally require a specific event to test the applicant's use of the aircraft systems and devices. An applicant's performance must be evaluated on the maintenance of helicopter control, the ability to recognize and analyze abnormal indications, and the ability to apply corrective procedures in a timely manner.

