AC 61-59A

FLIGHT TEST GUIDE

PRIVATE and COMMERCIAL PILOT

Helicopter

1977

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

APPLICANT'S FLIGHT TEST CHECKLIST

(Suggested)

APPOINTMENT WITH INSPECTOR

OR EXAMINER: Name _____

Date/Time _____

ACCEPTABLE HELICOPTER

- ☐ Aircraft Documents:
  - Airworthiness Certificate
  - FAA Approved Helicopter Flight Manual or Any Combination of Approved Manual Material
  - Registration Certificate
  - Operating Limitations
  - Weight and Balance Data
- ☐ Aircraft Maintenance Records:
  - Airworthiness Inspections
- ☐ FCC Station License

PERSONAL EQUIPMENT

- ☐ Current Aeronautical Charts
- ☐ Computer and Plotter
- ☐ Flight Plan Form
- ☐ Flight Logs
- ☐ Current AIM

PERSONAL RECORDS

- ☐ Pilot Certificate
- ☐ Medical Certificate
- ☐ Signed Recommendation
- ☐ Written Test Results (AC Form 8060–37)
- ☐ Logbook With Instructor's Endorsement
- ☐ Notice of Disapproval of Application (if applicable) (FAA Form 8060–5)
- ☐ Approved School Graduation Certificate (if applicable)
- ☐ FCC Radiotelephone Operator Permit
- ☐ Examiner's Fee (if applicable)

PREFACE

This guide, which supersedes AC 61-59, was developed by the Flight Standards Service of the Federal Aviation Administration to assist applicants for the Private or Commercial Pilot Rotorcraft Certificate with Helicopter Rating in preparing for their certification flight tests. A suggested flight test checklist is included for the convenience of those who may find it useful.

In addition to providing assistance to helicopter pilot applicants, flight instructors should also find this guide useful when conducting flight training. FAA inspectors and designated pilot examiners may use the guide in the standardization and conduct of flight tests.

Persons using this guide in connection with pilot training and flight tests should refer to the applicable *Federal Aviation Regulations; Airman's Information Manual;* AC 61-21, *Flight Training Handbook;* AC 61-13A, *Basic Helicopter Handbook;* and other pertinent advisory circulars.

Comments regarding this guide may be directed to the U.S. Department of Transportation, Federal Aviation Administration, Flight Standards National Field Office, P.O. Box 25082, Oklahoma City, Oklahoma 73125.

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mercial applicant, are so indicated. Procedures and maneuvers not so indicated apply to both applicants.

When, in the judgment of the examiner, certain demonstrations are impractical, competency may be determined by oral testing. Throughout the flight test several procedures/maneuvers may be evaluated concurrently, i.e., traffic patterns, straight-and-level flight, climbs, descents, and turns.

This guide contains an ***Objective*** for each required pilot operation. Under each pilot operation, pertinent procedures or maneuvers are listed with ***Descriptions*** and ***Acceptable Performance Guidelines.***

1. The ***Objective*** states briefly the purpose of each pilot operation required on the flight test.

2. The ***Description*** provides information on what may be asked of the applicant regarding the selected procedure or maneuver. The procedures or maneuvers listed have been found most effective in demonstrating the objective of that particular pilot operation.

3. The ***Acceptable Performance Guidelines*** include the factors which will be taken into account by the examiner in deciding whether the applicant has met the objective of the pilot operation. The

airspeed, altitude, and heading tolerances given represent the minimum performance expected in good flying conditions. However, consistently exceeding these tolerances before corrective action is initiated is indicative of an unsatisfactory performance. Any procedure or action, or lack thereof, which requires the intervention of the examiner to maintain safe flight will be disqualifying. Failure to exercise proper vigilance or to take positive action to ensure that the flight area has been adequately cleared for conflicting traffic will also be disqualifying.

Emphasis will be placed on procedures, knowledge, and maneuvers which are most critical to a safe performance as a helicopter pilot. Unnecessary or avoidable flight into the caution/restricted areas of the "height-velocity curves" as a result of careless operation shall be considered disqualifying. During all maneuvers, the applicant's ability to maintain proper RPM will be carefully evaluated. RPM tolerances given in this guide apply to reciprocating engine-powered helicopters. If the flight test is given in a turbine engine-powered helicopter, the RPM limits set forth in the manufacturer's published recommendations shall be observed. Areas of particular importance include spatial disorientation, collision avoidance, and wake turbulence hazards.

test. This helicopter must be capable of, and its operating limitations must not prohibit, the performance of the pilot operations required in the test. The following equipment is relevant to the pilot operations required by § 61.107 for the private pilot flight test, and by § 61.127 for the commercial pilot flight test:

1. Two-way radio suitable for voice communications with aeronautical ground stations.

2. A radio receiver which can be utilized for available radio navigation facilities (may be the same radio used for communications).

3. Engine and flight controls that are easily reached and operated in a normal manner by both pilots.

4. Operating instructions and limitations. The applicant should have an appropriate checklist, an FAA approved Helicopter Flight Manual or current manual material, and other publications recommended, such as Owner's Manual/Handbook, and bulletins that are applicable to the specific helicopter.

PILOT OPERATIONS

I. PREFLIGHT

Objective

To determine that the applicant can ensure that the pilot requirements are met, that the helicopter is airworthy and ready for safe flight, and that suitable weather conditions exist for the proposed flight.

Procedures/Maneuvers

A. Certificates and Documents

1. Description The applicant may be asked to present pilot and medical certificates and to locate and explain the helicopter's registration certificate, airworthiness certificate, FAA approved Helicopter Flight Manual or current manual material, equipment list, and required weight and balance data. In addition, the applicant may be asked to explain helicopter and engine logbooks or other maintenance records.

2. Acceptable Performance Guidelines Performance shall be evaluated on the applicant's knowledge of the location, purpose, and significance of each required item.

hydraulic fluid is adequate for the proposed flight. Appropriate action shall be taken to eliminate possible fuel contamination.

2. Acceptable Performance Guidelines The applicant shall know the grade and type of oil and fuel specified for the helicopter and be able to determine the amount of fuel required to complete the flight. The applicant shall know where to find all fuel and oil fillers, and shall know the capacity of each tank, as well as the location of the battery. The applicant shall also know the proper steps necessary to avoid fuel contamination during and following servicing.

G. Engine and Systems Preflight Check

1. Description The applicant may be asked to demonstrate a check to determine that the engine is operating within acceptable limits and that all systems, equipment, and controls are functioning properly and adjusted for takeoff. A checklist provided by the manufacturer or operator should be used.

2. Acceptable Performance Guidelines Performance shall be evaluated on the applicant's use of proper procedures in engine starting and runup and in checking helicopter systems, equipment, and controls to determine that the helicopter is ready for flight. Careless operation in close proximity to obstructions, ground personnel, or other aircraft shall be disqualifying.

II. AIRPORT AND TRAFFIC PATTERN OPERATIONS

Objective

To determine that the applicant can safely and efficiently conform to arrival and departure procedures and established traffic patterns at controlled and noncontrolled airports, and can make takeoffs and landings competently under various field and wind conditions.

Procedures/Maneuvers

A. Radio Communication and ATC Light Signals

1. Description The applicant may be asked to demonstrate the use of designated frequencies and recommended voice procedures to report position and state intentions regarding the flight and to obtain pertinent information and clearances. Where applicable, the applicant is expected to use Airport Terminal Information Service, Airport Advisory Service, Control Tower, Approach and Departure Control, UNICOM, and ATC light signals.

2. Acceptable Performance Guidelines The applicant shall determine the type of communication facilities available, select correct frequencies, and use appropriate communications procedures to obtain and acknowledge necessary information. Failure to comply with airport traffic procedures or

Private		*Commercial*
±one rotor diameter ------	when below 10 feet altitude ---	±one-half rotor diameter
±50 feet -------	when above 10 feet altitude ---	±25 feet

The applicant's use of incorrect pedal corrections to compensate for torque during the climb after takeoff will also be disqualifying.

F. Normal and Crosswind Approaches and Landings

1. Description The applicant may be asked to demonstrate normal and crosswind approaches and landings.

2. Acceptable Performance Guidelines The applicant shall establish and maintain the proper approach angle (approximately 12°), airspeed, and ground track. RPM should be ±50 of that recommended for both private and commercial applicants. Drift during landing approach in excess of the following tolerances shall be disqualifying:

Private		*Commercial*
±one rotor diameter ------	when below 10 feet altitude ---	±one-half rotor diameter
±50 feet -------	when above 10 feet altitude ---	±25 feet

The applicant's use of incorrect pedal corrections to compensate for torque during the approach will also be disqualifying.

G. Maximum Performance Takeoffs and Climbs

1. Description The applicant may be asked to demonstrate a maximum performance takeoff from the surface, using the available maximum allowable takeoff power.

2. Acceptable Performance Guidelines Performance shall be evaluated on the basis of accurate coordinated control application to achieve a smooth transition from a position on the surface to a maximum performance climb. A smooth transition to a normal climb shall be accomplished after reaching a height of approximately 50 feet above the surface. Abrupt, uncoordinated control application, or failure to achieve maximum performance shall be disqualifying. The following tolerances should not be exceeded:

Private		*Commercial*
±10°	Heading	±5°
±50	RPM of that recommended	±50

NOTE: Penetration of the "height-velocity curve" during this maneuver is normal. This maneuver is not required if the flight test is conducted in a helicopter that has the "H-V curve" diagram in the operations limitations of the FAA Approved Flight Manual or manual materials.

H. Steep Approaches

1. Description The applicant may be asked to demonstrate an approach flown at an angle steeper than that of a normal approach (approximately 15°) and terminating

locations in which wingtip or rotor vortices may be encountered and to adjust the helicopter's flight path so as to avoid these areas. Failure to follow recommended procedures for minimizing the likelihood of flying into vortices or to minimize the effects of rotor downwash when operating close to small aircraft on the surface shall be disqualifying.

III. STRAIGHT-AND-LEVEL FLIGHT, CLIMBS, DESCENTS, AND TURNS

Objective

To determine that the applicant can competently maneuver the helicopter while monitoring instruments and outside visual references.

Procedures/Maneuvers

A. Straight-and-Level Flight

1. Description The applicant may be asked to maintain selected altitudes, headings, and airspeeds using outside references and flight instruments. This may be demonstrated in conjunction with other maneuvers, i.e., traffic patterns.

2. Acceptable Performance Guidelines Performance shall be evaluated on the applicant's ability to maintain altitude, heading, and airspeed within the following tolerances:

Private		*Commercial*
±100 feet	Altitude	±50 feet
±10 mph	Airspeed	±5 mph
±10°	Heading	±5°
±50	RPM of that recommended	±50

B. Climbs and Descents

1. Description The applicant may be asked to demonstrate climbs and descents by adjusting power to gain or lose altitude and by adjusting attitude to maintain recommended airspeeds. During level-offs, power and attitude should be adjusted to return the helicopter to straight-and-level flight. This may be demonstrated in conjunction with other maneuvers, i.e., traffic patterns.

2. Acceptable Performance Guidelines Performance shall be evaluated on the applicant's ability to perform climbs and descents while remaining within the following tolerances:

Private		*Commercial*
±100 feet	Level-off altitude	±50 feet
±10 mph	Airspeed	±5 mph
±10°	Heading	±5°
±50	RPM of that recommended	±50

C. Turns

1. Description The applicant may be asked to demonstrate turns to the left and to the right, while applying sufficient lateral cyclic to bank the helicopter. The desired bank should be maintained. The power and attitude should be varied as necessary to control the airspeed and altitude. During the rollouts from turns, power and attitude should be adjusted to return to straight-and-level flight. This may be demonstrated in con-

B. Vertical Landings from a Hover

1. Description The applicant may be required to demonstrate vertical descents to the surface. The landings shall be accomplished during headwind, crosswind, and tailwind conditions.

2. Acceptable Performance Guidelines Performance shall be evaluated on the applicant's ability to descend to the surface from hovering altitude with a minimum of forward, sideward, or backward movement. The following tolerances should not be exceeded.

Private		*Commercial*
±10°	Heading	±5°
10 foot circle	During Touchdown	5 foot circle
±50	RPM of that recommended	±50

C. Hovering Turns

1. Description The applicant may be asked to make 90°, 180°, and 360° turns at hovering altitude.

2. Acceptable Performance Guidelines Performance shall be evaluated on the applicant's ability to make both right and left hovering turns while maintaining position, altitude, and headings within these tolerances:

Private		*Commercial*
±10°	Desired Headings	±5°
10 feet	Within Circle	5 feet
±50	RPM of that recommended	±50

D. Pattern Flying at Hovering Altitude

1. Description The applicant may be asked to perform precision patterns at hovering altitude around a square, rectangle, or other ground reference. Demonstrations of forward, sideward, and rearward hovering flight should be included.

2. Acceptable Performance Guidelines Performance shall be evaluated on the applicant's ability to fly the preselected pattern accurately, maintaining a safe altitude and the desired headings within the following tolerances:

Private		*Commercial*
±10°	Headings	±5°
±50	RPM of that recommended	±50
±5 feet	Desired Track	±3 feet
±2 feet	Hovering Altitude of that recommended	±1 foot

E. Taxiing on the Surface

1. Description The applicant may be asked to move the helicopter on the surface under its own power, from one point to another, as directed.

2. Acceptable Performance Guidelines Performance shall be evaluated on the applicant's ability to maintain positive control of the helicopter, safely clear obstructions, and accurately move from one designated spot to another while in contact with the surface, maintaining a speed appropriate to existing conditions (no greater than 5 knots).

2. *Acceptable Performance Guidelines*
Performance shall be evaluated on the applicant's ability to apply proper coordination of controls to achieve a gradually accelerating straight ground run to a point where effective translational lift occurs, and thereafter, a smooth transition to flight. Normal climb speed shall be attained before exceeding an altitude of 10 feet. The following tolerances should not be exceeded:

Private		*Commercial*
±10°	Of Desired Heading	±10°
±50	RPM of that recommended	±50

B. Shallow Approaches and Roll-On (Running) Landings

1. Description The applicant may be asked to make an approach and landing using less than hover power. The examiner may limit power to simulate a high altitude or high gross weight condition. Sufficient forward speed should be maintained to take advantage of translational lift until ground contact is made.

2. *Acceptable Performance Guidelines*
Performance shall be evaluated on the applicant's ability to establish and follow a shallow approach angle so that ground contact is made beyond and within 50 feet of a designated spot for private applicants and 25 feet of a designated spot for commercial applicants. Performance shall also be evaluated on the

applicant's ability to apply proper control coordination to maintain a constant approach angle and to touch down smoothly in level attitude while using less than hovering power. The following tolerances should not be exceeded:

Private		*Commercial*
±5°	Heading	±5°
±50	RPM of that recommended	±50

C. Rapid Decelerations (Quick Stops)

1. Description The applicant may be required to perform a rapid deceleration. The maneuver should be performed at an altitude of approximately 25 feet with consideration being given to the "height-velocity" chart of the helicopter being flown. The helicopter should be decelerated until the desired groundspeed is attained, then the maneuver terminated at hovering altitude (3 to 5 feet AGL).

2. Acceptable Performance Guidelines Performance shall be evaluated on the applicant's ability to properly coordinate all controls. The following tolerances should not be exceeded:

Private		*Commercial*
±10°	Heading	±5°
±15 feet	Altitude of that assigned	±10 feet
±50 feet	Termination of predetermined point	±25 feet
±50	RPM of that recommended	±50

C. Diversion to an Alternate

1. Description The applicant may be asked to divert to an alternate airport, as might be necessary to avoid adverse weather and to determine the new course. This may be accomplished by means of pilotage, dead reckoning, or radio navigation aids.

2. Acceptable Performance Guidelines Performance shall be evaluated on the applicant's taking prompt action to avoid the announced hazard and either proceed toward the alternate or land at a suitable area and plot the new course. The applicant shall compute, within a reasonable time, a new heading and estimate the flying time and required fuel to reach the alternate.

IX. EMERGENCY OPERATIONS

Objective

To determine that the applicant can react promptly and correctly to in-flight emergencies.

Procedures/Maneuvers

A. Autorotative Descents

1. Description During cruising flight at traffic pattern altitude or higher, the examiner may close the throttle to simulate power failure. In response to the simulated emergency, the applicant should perform an autorotative descent to a designated landing area. An autorotative turn up to 180° may be necessary.

2. *Acceptable Performance Guidelines*

Performance shall be evaluated on the applicant's ability to safely complete an autorotative descent to a designated area suitable for touchdown. Slow reaction to the simulated emergency, such as failure to lower collective pitch immediately, allowing rotor RPM to exceed limits, excessive rate of descent or faulty planning of the pattern shall be disqualifying. The following tolerances should not be exceeded:

Private		*Commercial*
	Predetermined	
±100 feet	Spot	±50 feet
Within the green arc	RPM	Within the green arc

NOTE: No simulated power failure will be given where an actual touchdown could not be safely completed if one should become necessary, nor where an autorotative descent might constitute a violation of Federal Aviation Regulations. At the examiner's discretion, the applicant may be permitted to make an autorotative touchdown; however, landings without power are *not* required.

B. Power Failure at a Hover

1. Description During a stabilized hover or forward air taxiing, the examiner may close the throttle to simulate power failure. In response to the simulated emergency, the applicant should perform a hovering autorotation.

2. *Acceptable Performance Guidelines*

Performance shall be evaluated on the applicant's ability to make a safe touchdown. Poor

shall be disqualifying. Heading should be maintained within ±5° of that desired and RPM within ±50 of that recommended.

H. Slope Landings (Commercial)

1. Description The applicant may be asked to demonstrate a landing on a sloped surface.

2. Acceptable Performance Guidelines Performance shall be evaluated on the applicant's ability to make an accurate descent from stabilized hover to a landing on cross-sloping terrain. The applicant shall recognize a slope that is too steep and shall abandon the landing at the first indication of mast-bumping or prior to using full lateral cyclic. In this case, the applicant shall move the helicopter to a more acceptable slope. Sliding downslope, or attempting to land on a steep slope after mast-bumping occurs or full lateral cyclic has been applied shall be disqualifying. Heading should be maintained within ±5° of that desired and RPM within ±50 of that recommended.

I. Confined Area Takeoffs and Climbs (Commercial)

1. Description The applicant may be asked to demonstrate a takeoff from the ground, and a climb, from an area where the climb angle and flightpath are determined by wind, obstructions, and terrain features.

2. Acceptable Performance Guidelines
Performance shall be evaluated on the applicant's ability to take off and establish a climb that is as near normal as possible and to take advantage of wind, lowest barrier, and best terrain. Poor planning and judgment, incorrect use of power or controls, poor RPM, or attitude control shall be disqualifying.

J. Confined Area Approaches and Landings (Commercial)

1. Description The applicant may be asked to demonstrate an approach to, and landing in, an area where the flightpath and approach angle are determined by wind, terrain features, and obstructions. The landing should be made at a selected touchdown point.

2. Acceptable Performance Guidelines
Performance shall be evaluated on the applicant's planning, judgment, and coordination. Unnecessary flight over unfavorable areas, attempting to fly an approach angle which will not safely clear obstructions, poor RPM control, or inaccuracy in landing at the selected touchdown point shall be disqualifying. Heading should be maintained within $\pm 5°$ of that desired and RPM within ± 50 of that recommended.

K. Pinnacle/Rooftop Takeoffs and Climbs (Commercial)

1. Description The applicant may be asked to demonstrate a takeoff and climb from a small area that is higher than the surrounding terrain.

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FEDERAL AVIATION ADMINISTRATION
Flight Standards Service

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GENERAL INFORMATION

PILOT TRAINING AND CERTIFICATION CONCEPT

Part 61 of the Federal Aviation Regulations was revised and upgraded to reflect the complexity of the modern aircraft as well as its operating environment. Rather than merely duplicating on the flight test the maneuvers used for training, the training and certification concept requires that the applicant receive instruction in and demonstrate competency in *all pilot operations* listed in pertinent sections of Part 61. A pilot operation, as used herein, is a group of related procedures and maneuvers involving skills and knowledge required to safely and efficiently function as a pilot. The specific procedures and maneuvers used to teach the pilot operations are not listed in Part 61. Instead, the instructor is permitted to select procedures and maneuvers from FAA approved training publications pertinent to the certificate or rating sought. The instructor indicates by logbook endorsement that the applicant has demonstrated competency in all the required pilot operations and is considered qualified to pass the flight test. On the flight test, the

examiner[1] selects the procedures and maneuvers to be performed by the applicant to show competency in each required pilot operation.

The procedures and maneuvers appropriate to the Private and Commercial Pilot Rotorcraft Certificate with a Helicopter Rating are contained in either AC 61–21, *Flight Training Handbook*, or AC 61–13A, *Basic Helicopter Handbook;* or are generally accepted by helicopter operators and explained in this flight test guide.

USE OF THIS GUIDE

The pilot operations in this flight test guide, indicated by Roman numerals, are required by Part 61—§ 61.107 for the private pilot, § 61.127 for the commercial pilot. This guide outlines appropriate pilot operations and lists the minimum standards for the performance of each procedure or maneuver which will be accepted by the examiner as evidence of the pilot's competency. There is no intention that the applicant be tested on every procedure or maneuver within each pilot operation, but only on those considered necessary by the examiner to determine competency in each pilot operation. Certain procedures and maneuvers, pertinent *only* to the com-

[1] The word "examiner" is used hereafter in this guide to denote either the Federal Aviation Administration Inspector or designated pilot examiner who conducts an official flight test.

§ 61.43 FLIGHT TEST: GENERAL PROCEDURES

a. The ability of an applicant for a private or commercial pilot certificate, or for an aircraft or instrument rating on that certificate, to perform the required pilot operations is based on the following:

(1) Executing procedures and maneuvers within the aircraft's performance capabilities and limitations, including use of the aircraft's systems.

(2) Executing emergency procedures and maneuvers appropriate to the aircraft.

(3) Piloting the aircraft with smoothness and accuracy.

(4) Exercising judgment.

(5) Applying aeronautical knowledge.

(6) Showing the mastery of the aircraft, with the successful outcome of a procedure or maneuver never seriously in doubt.

b. If the applicant fails any of the required pilot operations in accordance with the applicable provisions of paragraph a of this section, the applicant fails the flight test. The applicant is not eligible for the certificate or rating sought until the applicant has passed any pilot operations that were failed.

c. The examiner or the applicant may discontinue the test at any time when the failure of a required pilot operation makes the applicant ineligible for the certificate or rating sought. If the test is discontinued, the appli-

cant is entitled credit for only those entire pilot operations that have been successfully performed.

FLIGHT TEST PREREQUISITES

An applicant for a helicopter pilot flight test is required to have: (1) passed the appropriate helicopter pilot written test within 24 months before the date the flight test is taken, (2) the applicable instruction and aeronautical experience prescribed for the pilot certificate sought, (3) at least a second-class medical certificate issued within the past 12 months for a commercial applicant or at least a third-class medical certificate issued within the past 24 months for a private applicant, (4) reached at least 17 years of age for a private or 18 years for a commercial applicant and (5) a written statement from an appropriately certificated and rated flight instructor certifying that the applicant has been given flight instruction in preparation for the flight test within 60 days preceding the date of application, and was found competent to pass the test. The written statement will also state that the applicant was found to have satisfactory knowledge in those subject areas which the Airman Written Test Report indicates were missed on the written test.

HELICOPTER AND EQUIPMENT REQUIREMENTS FOR FLIGHT TEST

The applicant is required by § 61.45 to provide an airworthy helicopter for the flight

B. Helicopter Performance and Limitations

1. Description The applicant may be orally quizzed on the performance capabilities, and approved operating procedures and limitations of the helicopter used. This includes power settings, placarded speeds, and fuel and oil requirements. In addition, the manufacturer's published recommendations or FAA approved Helicopter Flight Manual should be used to determine the effects of temperature, pressure altitude, wind, and gross weight on performance.

2. Acceptable Performance Guidelines Performance shall be evaluated upon the applicant's ability to obtain, explain, and apply the information which is essential in determining the performance and limitations of the helicopter used.

C. Weight and Balance

1. Description The applicant may be asked to demonstrate the application of approved weight and balance data for the helicopter used. Charts and graphs provided by the manufacturer may be used.

2. Acceptable Performance Guidelines Performance shall be evaluated on the applicant's ability to determine the empty weight, maximum gross weight, useful load (fuel, passengers, baggage) by reference to appropriate publications, and to determine that the gross weight and center of gravity are within approved limits.

D. Weather Information

1. Description The applicant may be asked to obtain Aviation Weather Reports, Area and Terminal Forecasts, and Winds Aloft Forecasts pertinent to the proposed flight.

2. Acceptable Performance Guidelines Performance shall be evaluated on the applicant's knowledge of what weather information is pertinent, how to obtain weather information and how to interpret the information obtained.

E. Line Inspection

1. Description The applicant may be asked to demonstrate a visual check to determine the helicopter's airworthiness and readiness for flight. This includes all required equipment and documents. A checklist provided by the manufacturer or operator should be used.

2. Acceptable Performance Guidelines The applicant shall use an orderly procedure in conducting a preflight check of the helicopter, recognizing any unsafe condition and explaining to the examiner the significance of each item checked.

F. Helicopter Servicing

1. Description The applicant may be asked to demonstrate a visual inspection to determine that the fuel is of the proper grade and type and that the supply of fuel, oil, and

instructions without permission to do so shall be disqualifying.

B. Airport and Heliport Markings and Lighting

1. Description Where available, the applicant may be asked to demonstrate the proper use of wind and traffic direction indicators, and markings indicating closed runways, taxiways, holding lines, and basic runways. The applicant is also expected to be familiar with taxiway and runway lighting, rotating beacons, and obstruction lights.

2. Acceptable Performance Guidelines The applicant shall demonstrate a knowledge of standard wind and traffic direction indicators, markings and lighting, and how they relate to helicopter operation. Failure to properly use these aids, creating an unsafe situation, shall be disqualifying.

C. Airport and Heliport Operations

1. Description The applicant may be asked to demonstrate safe operating practices while in close proximity to other aircraft, persons, or obstructions.

2. Acceptable Performance Guidelines The applicant shall air taxi the helicopter in compliance with local taxi rules and control tower instructions, avoiding turbulence generated by large aircraft and exercising caution when operating near small aircraft or near people.

D. Traffic Patterns

1. Description The applicant may be asked to demonstrate arrival and departure procedures which avoid the flow of fixed-wing traffic or which comply with control tower instructions.

2. Acceptable Performance Guidelines The applicant shall apply proper corrections for drift, maintain adequate spacing, and adhere to prescribed altitude and airspeeds. The following tolerances should not be exceeded:

Private		*Commercial*
±100 feet	Prescribed Altitude	±50 feet
± 10 knots	Airspeed	±5 knots
±50	RPM of that recommended	±50

E. Normal and Crosswind Takeoffs from a Hover

1. Description The applicant may be asked to demonstrate the transition from a stabilized hover to a climb during normal and crosswind conditions.

2. Acceptable Performance Guidelines Performance shall be evaluated on the basis of the applicant's planning, smoothness, observance of traffic, and adherence to control tower instructions. RPM should be ±50 of that recommended for both private and commercial applicants. Drift during climbout in excess of the following tolerances shall be disqualifying:

in a stabilized hover at a designated spot. Thereafter, the helicopter should be landed from a hover.

2. Acceptable Performance Guidelines Performance shall be evaluated on the applicant's ability to establish and maintain the proper steep approach angle, airspeed, and ground track, and to avoid settling with power. Excessive drift or faulty coordination of controls shall be disqualifying. The following tolerances should not be exceeded:

Private		*Commercial*
±10°	Heading	±5°
±50	RPM of that recommended	±50
±10 feet	Predetermined Circle Termination	±5 feet

NOTE: Penetration of the "height-velocity curve" during this maneuver is normal. This maneuver is not required if the flight test is conducted in a helicopter that has the "H-V curve" diagram in the operations limitations of the FAA Approved Flight Manual or manual materials.

I. Collision Avoidance Precautions

1. Description The applicant is expected to exercise conscientious and continuous surveillance of the airspace in which the helicopter is being operated to guard against potential mid-air collisions. In addition to "see and avoid" practices, the applicant is expected to use VFR Advisory Service at nonradar facilities, Airport Advisory Service at nontower airports or FSS locations, and

Radar Traffic Information Service, where available.

2. Acceptable Performance Guidelines Performance shall be evaluated on the applicant's ability to maintain continuous vigilance for other aircraft and to take immediate actions as necessary to avoid any situation which could result in a mid-air collision. Precautions shall be taken, particularly in areas of congested traffic, to visually clear the area prior to executing any turns and to ensure that the helicopter's structure does not obstruct the view of other aircraft. When traffic advisory service is used, the applicant shall understand terminology used by the radar controller in reporting positions of other aircraft. Failure to maintain proper surveillance shall be disqualifying.

J. Wake Turbulence Avoidance

1. Description The applicant may be asked to explain how, where, and when wingtip and rotor vortices are generated, as well as their characteristics, and associated hazards. The applicant may also be asked to explain the recommended courses of action to avoid the effects of wake turbulence of other aircraft and to minimize the effects of the helicopter's rotor downwash when operating in close proximity to other aircraft on the surface.

2. Acceptable Performance Guidelines Performance shall be evaluated on the applicant's ability to identify the conditions and

junction with other maneuvers, i.e., traffic patterns.

2. *Acceptable Performance Guidelines*

Performance shall be evaluated on the applicant's ability to perform turns while remaining within these tolerances:

Private		*Commercial*
±100 feet	Altitude	±50 feet
±10 mph	Airspeed	±5 mph
±10°	Bank	±5°
±10°	Heading on rollout	±5°
±50	RPM of that recommended	±50

IV. NORMAL AND CROSSWIND TAKEOFFS AND LANDINGS (Commercial)

Objective

To determine that the applicant can competently make takeoffs and landings during various wind conditions.

NOTE: Ths is a required pilot operation for the commercial applicant; however, the maneuvers listed apply to both the private and commercial pilot applicant under Airport and Traffic Pattern Operations, Section II.

Procedures/Maneuvers

A. Normal and Crosswind Takeoffs from a Hover (see II, E, on page 14).

B. Normal and Crosswind Approaches and Landings (see II, F, on page 15).

V. HOVERING, MANEUVERING BY GROUND REFERENCES, AND AIR TAXIING

Objective

To determine that the applicant can take off to a hover, perform hovering turns, and fly a precision pattern at hovering altitude; and that air and surface taxiing can be performed in compliance with local taxi rules or control tower instructions.

Procedures/Maneuvers

A. Vertical Takeoffs to a Hover

1. *Description* The applicant may be required to demonstrate vertical takeoffs to recommended hovering altitude for the helicopter being flown during headwind, crosswind, and tailwind conditions.

2. *Acceptable Performance Guidelines* Performance shall be evaluated on the applicant's ability to ascend from the surface to hovering altitude with a minimum of forward, lateral, or backward movement over the surface. The following tolerances should not be exceeded:

Private		*Commercial*
±10°	Heading	±5°
10 foot circle	During Liftoff	5 foot circle
±50	RPM of that recommended	±50
±2 feet	Hover Altitude of that recommended	±1 foot

F. Air Taxiing

1. Description The applicant may be asked to maneuver the helicopter along a designated route at hovering altitude.

2. Acceptable Performance Guidelines Performance shall be evaluated on the applicant's ability to maintain positive control of the helicopter while moving over the surface at hovering altitude. Obstructions shall be safely cleared and the designated route accurately followed. Groundspeed shall be appropriate to existing conditions (no greater than 10 knots). RPM shall be within ± 50 of that recommended.

VI. RAPID DESCENT WITH POWER AND RECOVERY (Commercial)

Objective

To determine that the applicant understands and can recognize conditions of flight which result in a rapid descent (settling-with-power), and can safely recover from such descents.

NOTE: This is a required pilot operation for the commercial pilot applicant; however, the maneuver "settling-with-power," applies to both the private and commercial pilot applicant under Emergency Operations, Section IX.

Procedures/Maneuvers

A. Settling-With-Power

1. Description The applicant may be asked to explain the conditions of flight which

result in a "settling-with-power" condition, and to explain the effects of increased power upon the recovery. The applicant may also be asked to demonstrate entry into this condition with an *immediate* recovery initiated when the first indications are detected.

2. Acceptable Performance Guidelines Performance shall be evaluated on the applicant's knowledge of and ability to recognize "settling-with-power." Failure to immediately recognize a "settling-with-power" condition and to initiate a prompt recovery to cruising airspeed shall be disqualifying.

VII. HIGH ALTITUDE TAKEOFFS, ROLL-ON LANDINGS, AND RAPID DECELERATIONS

Objective

To determine that the applicant has the control touch and coordination to safely take off and land under high altitude conditions and to safely perform quick stops.

Procedures/Maneuvers

A. High Altitude (Running) Takeoffs

1. Description The applicant may be asked to demonstrate a takeoff using less than hover power. A high altitude or high gross weight condition may be simulated by the examiner so the helicopter cannot become airborne without benefit of forward speed to gain effective translational lift.

2. *Acceptable Performance Guidelines*
Performance shall be evaluated on the applicant's ability to perform the takeoff and climb while taking into consideration wind, lowest barrier, and terrain. Poor planning, poor judgment, incorrect use of power or controls, or poor RPM control, shall be disqualifying. Heading should be maintained within $\pm 5°$ of that desired and RPM within ± 50 of that recommended.

L. Pinnacle/Rooftop Approaches and Landings (Commercial)

1. Description The applicant may be asked to demonstrate an approach to, and landing on, a small area that is higher than the surrounding terrain. The landing should be made at a selected touchdown point.

2. *Acceptable Performance Guidelines*
Performance shall be evaluated on the applicant's ability to fly a pattern suitable to the conditions of wind and terrain, to use good planning, judgment, and coordination. Attempting to fly an approach angle which is inappropriate for existing conditions, poor RPM control, or failure to land at the selected touchdown point shall be disqualifying. Heading should be maintained within $\pm 5°$ of that desired and RPM within ± 50 of that recommended.