



GHANA
CIVIL AVIATION AUTHORITY

ADVISORY CIRCULAR

AC 02-004

SKILL TEST STANDARDS

PRIVATE PILOT – HELICOPTER

SECTION 1 GENERAL

1.1 PURPOSE

This Advisory Circular (AC) provides guidance to individuals, organizations and examiners regarding the determination that an individual's pilot skill level is adequate for the issuance of a Private Pilot–Helicopter license (PPL) or a PPL Helicopter class rating.

1.2 STATUS OF THIS ADVISORY CIRCULAR

This is an original issuance of this AC.

1.3 BACKGROUND

- A. ICAO Standards in Annex 1, Personnel Licensing, require that, before issuing a Private Pilot License, the State must assess the knowledge and skill of the individual to perform such operations.
- B. Part 2 of the Ghana Civil Aviation Directives establishes the specific requirements for PPL testing that parallel the ICAO Standards.
- C. This AC provides amplified standards for a PPL applicant and the person assigned to conduct the skill test for license

1.4 APPLICABILITY

- A. These Skill Test Standards are for use by examiners for determination of an individual's fitness to be issued and continue to hold PPL privileges.
- B. Flight instructors are expected to use these standards when preparing applicants for their PPL skill tests.
- C. Applicants should be familiar with these skill test standards and refer to them during their training.

1.5 RELATED DIRECTIVES

The following directives are directly applicable to the guidance contained in this advisory circular—

- GCADs Part 2, Personnel Licensing
- GCADs Part 08, Operations of Aircraft

- Advisory Circulars are intended to provide advice and guidance to illustrate a means, but not necessarily the only means, of complying with the directives, or to explain certain regulatory requirements by providing informative, interpretative and explanatory material.
- Where a directive contains the words “prescribed by the Authority,” the AC may be considered to “prescribe” a viable method of compliance, but status of that “prescription” is always “guidance” (never directive).

1.6 RELATED PUBLICATIONS

For further information on this topic, individuals, instructors and examiners are invited to consult the following publications—

1) Ghana Civil Aviation Authority(GCAA)

- ◆ AC 08-002, Knowledge & Skill Testing
- ◆ AC 08-005, Flight Testing

Copies may be obtained from GCAA Safety Regulations Department.

2) Manufacturer of the aircraft to be used for the skill test

- ◆ Pilot Handbook, or
- ◆ Approved Flight Manual

3) United States Federal Aviation Administration (FAA)

- ◆ AC 00-45, Aviation Weather
- ◆ FAA-H-80-83-23, Rotorcraft Flying Handbook
- ◆ FAA-H-80-83-25, Pilot Handbook of Aeronautical Knowledge

- Copies are normally available through flight schools and instructors.
- Contact the GCAA Safety Regulations Department if unable to find copies.

4) International Civil Aviation Organization (ICAO)

- ◆ Annex, 1, Personnel Licensing

Copies may be obtained from Document Sales Unit, ICAO, 999 University Street, Montreal, Quebec, Canada H3C 5H7.

1.7 DEFINITIONS & ACRONYMS

A. The following definitions are used in this advisory circular—

- 1) **Aircraft – category.** Classification of aircraft according to specified basic characteristics, e.g. aeroplane, rotorcraft, glider, lighter-than-air, powered-lift.
- 2) **Competency.** A combination of skills, knowledge and attitudes required to perform a task to the prescribed standard.
- 3) **Crew resource management.** A program designed to improve the safety of flight operations by optimizing the safe, efficient, and effective use of human resources, hardware, and information through improved crew communication and coordination.
- 4) **Error.** An action or inaction by the flight crew that leads to deviations from organizational or flight crew intentions or expectations.
- 5) **Error management.** The process of detecting and responding to errors with countermeasures that reduce or eliminate the consequences of errors and mitigate the probability of further errors or undesired aircraft states.
- 6) **Examiner.** A qualified person designated by GCAA to conduct a proficiency test, a skill test for a licence or rating, or a knowledge test under the Ghana directives.
- 7) **Flight simulation training device.** Any one of the following three types of apparatus in which flight conditions are simulated on the ground—
 - (a) A **flight simulator**, which provides an accurate representation of the flight deck of a particular aircraft type to the extent that the mechanical, electrical, electronic, etc. aircraft systems control functions, the normal environment of flight crew members, and the performance and flight characteristics of that type of aircraft are realistically simulated;

- (b) A **flight procedures trainer**, which provides a realistic flight deck environment, and which simulates instrument responses, simple control functions of mechanical, electrical, electronic, etc. aircraft systems, and the performance and flight characteristics of aircraft of a particular class;
 - (c) A **basic instrument flight trainer**, which is equipped with appropriate instruments, and which simulates the flight deck environment of an aircraft in flight in instrument flight conditions
- 8) **Flight test.** For the purpose of this advisory circular, a portion of a skill test that includes Tasks that are normally accomplished while operating the aircraft.
 - 9) **Helicopter.** A heavier-than-air aircraft supported in flight chiefly by the reactions of the air on one or more power-driven rotors on substantially vertical axes.
 - 10) **Practical Test.** For the purpose of this advisory circular, a portion of the skill test that includes Tasks accomplished before the flight portion.
 - 11) **Rating.** An authorisation entered on or associated with a licence and forming part thereof, stating special conditions, privileges or limitations pertaining to such licence.
 - 12) **Scenario.** A plan of action that includes the provision for accomplishing each Task specified in the skill test standards in practical and logical manner.
 - 13) **Threat management.** The process of detecting and responding to threats with countermeasures that reduce or eliminate the consequences of threats and mitigate the probability of errors or undesired aircraft states
 - 14) **Threat.** Events or errors that occur beyond the influence of the flight crew, increase operational complexity and must be managed to maintain the margin of safety.
- B. The following acronyms are used in this advisory circular—
- 1) **AC** – Advisory Circular
 - 2) **GCAA** – Ghana Civil Aviation Authority
 - 3) **FAC** – Formal Application Checklist
 - 4) **SRD** – Safety Regulations Department
 - 5) **PEL** – Personnel Licensing
 - 6) **PPL** – Private Pilot License
 - 7) **STS** – Skill Test Standards
 - 8) **GCADs** – Ghana Civil Aviation Directives

SECTION 2 INTRODUCTORY INFORMATION

2.1 PRIVATE PILOT – HELICOPTER SKILL TEST PREREQUISITES

An applicant for the Private Pilot–Helicopter Skill Test is required to—

- 1) Be at least 17 years of age;
- 2) Be able to read, speak, write, and understand the English language.
- 3) Have passed the appropriate private pilot knowledge test since the beginning of the 24th month before the month in which he or she takes the skill test;

If the applicant has not demonstrated at least Level 4 English language proficiency. The license will contain the limitation:

- NOT VALID FOR INTERNATIONAL FLIGHT.

- 4) Have satisfactorily accomplished the required training and obtained the aeronautical experience prescribed;
- 5) Possess at least a current class two medical certificate;
- 6) Have an endorsement from an authorized instructor certifying that the applicant—
 - (a) Has received and logged training time within 60 days preceding the date of application in preparation for the skill test, and
 - (b) Is prepared for the skill test; and
- 7) Also have an endorsement certifying that the applicant has demonstrated satisfactory knowledge of the subject areas in which the applicant was deficient on the airman knowledge test.

2.2 APPLICANT SKILL TEST PREPARATION CHECKLIST

The following guidance is provided to ensure that the applicant arrives at the appointment with all equipment and documents necessary for the administration of the skill test, including—

2.2.1 APPOINTMENT WITH EXAMINER

- A. Contact the GCAA-SRD to be assigned an examiner for the purpose of the skill test.
- B. Contact the examiner to arrange a suitable location, date and time.
- C. Plan to arrive at the designated location before the actual time of the appointment.

2.2.2 ACCEPTABLE AIRCRAFT

The applicant must provide a suitable aircraft for the type of skill test to be administered, and provide the following associated documentation—

- 1) Airworthiness certificate
- 2) Registration certificate
- 3) Operating limitations
- 4) Aircraft logbook maintenance records of airworthiness inspections and AD compliance
- 5) Pilot's Operating Handbook and/or the Approved Rotorcraft Flight Manual

2.2.3 PERSONAL EQUIPMENT

The applicant must provide the following personal equipment for the skill test—

- 1) View-limiting device
- 2) Current aeronautical charts
- 3) Computer and plotter
- 4) Flight plan form
- 5) Flight logs
- 6) Appropriate route guide and other flight information publications

2.2.4 PERSONAL RECORDS

The applicant must provide the following personal records before the skill test can be administered—

- 1) Identification-photo/signature ID
- 2) Pilot certificate

- 3) Current and appropriate medical certificate
- 4) Completed GCAA-SRD Form 541, Airman Certificate and/or Rating Application, with Instructor's Signature (If applicable)
- 5) Aeronautical knowledge test report
- 6) Pilot Logbook with appropriate instructor endorsements
- 7) GCAA-SRD-Form 551, Notice of Disapproval (if applicable)
- 8) Graduation certificate from an Approved Training Organization (if applicable)
- 9) Examiner's fee

2.3 SKILL TEST STANDARDS FORMAT

- A. **Areas Of Operation** are phases of the skill test arranged in a logical sequence within each standard.
- They begin with Preflight Preparation and end with Post flight Procedures.
 - The examiner, however, may conduct the operational portions of the skill test in any sequence that will result in a complete and efficient test.
 - However the ground portion of the skill test shall be accomplished before the flight portion.
- B. **Tasks** are titles of knowledge areas, flight procedures, or maneuvers appropriate to an Area Of Operation.
- An accompanying note may be used to emphasize special considerations required in the AREA OF OPERATION or TASK.
- C. The **Objective** lists the 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) Conditions under which the *Task* is to be performed; and
 - 3) Acceptable performance standards.
- The tolerances specified in the individual skill test tasks represent the performance expected in good flying conditions.

2.4 WAIVERS FOR PREVIOUS ACCOMPLISHMENT OF TASK

- A. The actual accomplishment of the required Areas of Operation or specific Tasks in those operations may be waived at the examiner's discretion when the applicant holds another aircraft category and/or class rating in which—
- 1) Those tasks were accomplished; and
 - 2) There are no obvious skill differences for the accomplishment of those tasks between the class ratings.

2.5 SKILL STANDARDS SPECIFIED BY DIRECTIVES

The final determination of an applicant's ability to hold a license or rating is based on a demonstration of the ability to perform as pilot-in command to perform the procedures and maneuvers to the degree of competency appropriate to the privileges granted and to—

- 1) Recognize and manage threats and errors;
- 2) Manually control the aircraft within its limitations at all times;
- 3) Complete all manoeuvres with smoothness and accuracy;
- 4) Exercise good judgement and airmanship;

- 5) Apply aeronautical knowledge; and
- 6) Maintain control of the aircraft at all times in a manner such that the successful outcome of a procedure or manoeuvre is assured.

2.6 UNSATISFACTORY PERFORMANCE

- A. If, in the judgment of the examiner, the applicant does not meet the standards of performance of any TASK performed, the associated AREA OF OPERATION is failed and therefore, the practical test is failed.
- B. The examiner or applicant may discontinue the test at any time when the failure of an AREA OF OPERATION makes the applicant ineligible for the certificate or rating sought.
 - The test may be continued ONLY with the consent of the applicant.
- C. If the test is discontinued, the applicant is entitled credit for only those AREAS OF OPERATION and their associated TASKS satisfactorily performed.

The applicant must understand that during a retest, and at the discretion of the examiner, any TASK may be re-evaluated, including those previously passed.
- D. Typical areas of unsatisfactory performance and grounds for disqualification are—
 - 1) Any action or lack of action by the applicant that requires corrective intervention by the examiner to maintain safe flight.
 - 2) Failure to use proper and effective visual scanning techniques to clear the area before and while performing maneuvers.
 - 3) Consistently exceeding tolerances stated in the skill test TASK Objectives.
 - 4) Failure to take prompt corrective action when tolerances are exceeded.

SECTION 3 AREA OF OPERATION: PREFLIGHT PREPARATION

3.1 TASK: CERTIFICATES & DOCUMENTS

Objective. To determine that the applicant exhibits knowledge of the elements related to certificates and documents by—

- 1) Explaining—
 - (a) Private pilot certificate privileges, limitations, and recent flight experience requirements.
 - (b) Medical certificate class and duration.
 - (c) Pilot logbook or flight records.
- 2) Locating and explaining—
 - (a) Airworthiness and registration certificates.
 - (b) Operating limitations, placards, instrument markings, and POH/RFM.
 - (c) Weight and balance data and equipment list.

The examiner shall develop a scenario based on real time weather to evaluate TASKs 3.4, 3.5, 3.6 and 3.7.

3.2 TASK: AIRWORTHINESS REQUIREMENTS

Objective. To determine that the applicant exhibits knowledge of the elements related to airworthiness requirements by—

- 1) Explaining—
 - (a) Required instruments and equipment for day/night VFR.
 - (b) Procedures and limitations for determining airworthiness of the helicopter with inoperative instruments and equipment with and without an MEL.
 - (c) Requirements and procedures for obtaining a special flight permit.
- 2) Locating and explaining—
 - (a) Airworthiness directives.
 - (b) Compliance records.
 - (c) Maintenance/inspection requirements.
 - (d) Appropriate record keeping.

3.3 TASK: WEATHER INFORMATION

Objective. To determine that the applicant—

- 1) Exhibits knowledge of the elements related to weather information by analyzing weather reports, charts, and forecasts from various sources with emphasis on—
 - (a) METAR, TAF, and FA.
 - (b) Surface analysis chart.
 - (c) Radar summary chart.
 - (d) Winds and temperature aloft chart.
 - (e) Significant weather prognostic charts.
 - (f) AWOS, ASOS, and ATIS reports.
- 2) Makes a competent “go/no-go” decision based on available weather information.

3.4 TASK: CROSS-COUNTRY FLIGHT PLANNING

Objective. To determine that the applicant—

- 1) Exhibits knowledge of the elements related to cross-country flight planning by presenting and explaining a pre-planned VFR cross-country flight, as previously assigned by the examiner.
- 2) Uses appropriate and current aeronautical charts.
- 3) Properly identifies airspace, obstructions, and terrain features, including discussion of wire strike avoidance techniques.
- 4) Selects easily identifiable en route checkpoints.
- 5) Selects the most favorable altitudes, considering weather conditions and equipment capabilities.
- 6) Computes headings, flight time, and fuel requirements.
- 7) Selects appropriate navigation systems/facilities and communication frequencies.
- 8) Applies pertinent information from FDC NOTAMs, AFD, and other flight publications.
- 9) Completes a navigation log and simulates filing a VFR flight plan.

On the day of the practical test, the final flight plan shall be to the first fuel stop, based on maximum allowable passengers, baggage, and/ or cargo loads using real-time weather.

3.5 TASK: NATIONAL AIRSPACE SYSTEM

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

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

3.6 TASK: PERFORMANCE & LIMITATIONS

Objective. To determine that the applicant—

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

3.7 TASK: OPERATION OF SYSTEMS

Objective. To determine that the applicant exhibits knowledge of the elements related to the operation of systems on the helicopter provided for the flight test by explaining at least three (3) of the following systems—

- 1) Primary flight controls, trim, and, if installed, stability control.
- 2) Power plant.
- 3) Main rotor and antitorque.
- 4) Landing gear, brakes, steering, skids, or floats, as applicable.
- 5) Fuel, oil, and hydraulic.
- 6) Electrical.
- 7) Pitot-static, vacuum/pressure, and associated flight instruments, if applicable.

- 8) Environmental.
- 9) Anti-icing, including carburetor heat, if applicable.
- 10) Avionics equipment.

3.8 TASK: AEROMEDICAL FACTORS

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

- 1) The symptoms, causes, effects, and corrective actions of at least three (3) of the following—
 - (a) Hypoxia.
 - (b) Hyperventilation.
 - (c) Middle ear and sinus problems.
 - (d) Spatial disorientation.
 - (e) Motion sickness.
 - (f) Carbon monoxide poisoning.
 - (g) Stress and fatigue.
 - (h) Dehydration.
- 2) The effects of alcohol, drugs, and over-the-counter drugs.
- 3) The effects of excesses nitrogen during scuba dives upon a pilot or passenger in flight.

SECTION 4 AREA OF OPERATION: PREFLIGHT PROCEDURES

4.1 TASK: PREFLIGHT INSPECTION

Objective. To determine that the applicant—

- 1) Exhibits knowledge of the elements related to preflight inspection. This shall include which items must be inspected, the reasons for checking each item, and how to detect possible defects.
- 2) Inspects the helicopter with reference to an appropriate checklist.
- 3) Verifies the helicopter is in condition for safe flight.

4.2 TASK: COCKPIT MANAGEMENT

Objective. To determine that the applicant—

- 1) Exhibits knowledge of the elements related cockpit management procedures.
- 2) Ensures all loose items in the cockpit and cabin are secured.
- 3) Organizes material and equipment in an efficient manner so they are readily available.
- 4) Briefs the occupants on the use of safety belts, shoulder harnesses, doors, rotor blade avoidance, and emergency procedures.

4.3 TASK: ENGINE STARTING & ROTOR ENGAGEMENT

Objective. To determine that the applicant—

- 1) Exhibits knowledge of the elements related to correct engine starting procedures. This shall include the use of an external power source, starting under various atmospheric conditions.
- 2) Positions the helicopter properly considering structures, surface conditions, other aircraft, and the safety of nearby persons and property.
- 3) Utilizes the appropriate checklist for starting procedure.

4.4 TASK: BEFORE TAKEOFF CHECK

Objective. To determine that the applicant—

- 1) Exhibits knowledge of the elements related to the before takeoff check. This shall include the reasons for checking each item and how to detect malfunctions.
- 2) Positions the helicopter properly considering other aircraft, wind, and surface conditions.
- 3) Divides attention inside and outside the cockpit.
- 4) Ensures that the engine temperature and pressure are suitable for run-up and takeoff.
- 5) Accomplishes the before takeoff check and ensures that the helicopter is in safe operating condition.
- 6) Reviews takeoff performance airspeeds, takeoff distances departure, and emergency procedures.
- 7) Avoids runway incursions and/or ensures no conflict with traffic prior to takeoff.

SECTION 5 AREA OF OPERATION: AIRPORT & HELIPORT OPERATIONS

5.1 TASK: RADIO COMMUNICATIONS & ATC LIGHT SIGNALS

Objective. To determine that the applicant—

- 1) Exhibits knowledge of the elements related to radio communications and ATC light signals.
- 2) Selects appropriate frequencies.
- 3) Transmits using recommended phraseology.
- 4) Acknowledges radio communications and complies with instructions.

5.2 TASK: TRAFFIC PATTERNS

Objective. To determine that the applicant—

- 1) Exhibits knowledge of the elements related to traffic patterns. This shall include procedures at airports and heliports with and without operating control towers, prevention of runway incursions, collision avoidance, wake turbulence avoidance, and wind shear.
- 2) Complies with proper traffic pattern procedures.
- 3) Maintains proper spacing from other traffic or avoids the flow of fixed wing aircraft.
- 4) Corrects for wind drift to maintain proper ground track.
- 5) Maintains orientation with runway/landing area in use.
- 6) Maintains traffic pattern altitude, ± 100 feet and the appropriate airspeed, ± 10 knots.

5.3 TASK: AIRPORT/HELIPORT RUNWAY, HELIPAD, & TAXIWAY SIGNS, MARKINGS, & LIGHTING

Objective. To determine that the applicant—

- 1) Exhibits knowledge of the elements related to airport/heliport runway, and taxiway operations with emphasis on runway incursion avoidance.
- 2) Properly identifies and interprets airport/heliport, runway, and taxiway signs, markings, and lighting.

SECTION 6 AREA OF OPERATION: HOVERING MANEUVERS

6.1 TASK: VERTICAL TAKEOFF & LANDING

Objective. To determine that the applicant—

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

6.2 TASK: SLOPE OPERATIONS

Objective. To determine that the applicant—

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

6.3 TASK: SURFACE TAXI

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

Objective. To determine that the applicant—

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

6.4 TASK: HOVER TAXI

Objective. To determine that the applicant—

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

6.5 TASK: AIR TAXI

Objective. To determine that the applicant—

- 1) Exhibits knowledge of the elements related to air taxiing.
- 2) Air taxies the helicopter from one point to another under headwind and crosswind conditions.
- 3) Maintains RPM within normal limits.
- 4) Selects a safe airspeed and altitude.
- 5) Maintains desired track and groundspeed in headwind and crosswind conditions, avoiding conditions that might lead to loss of tail rotor/antitorque effectiveness.
- 6) Maintains a specified altitude, ± 10 feet.

SECTION 7 AREA OF OPERATION: TAKEOFFS, LANDINGS, & GO-AROUNDS

7.1 TASK: NORMAL & CROSSWIND TAKEOFF & CLIMB

Objective. To determine that the applicant—

- 1) Exhibits knowledge of the elements related to normal and crosswind takeoff and climb, including factors affecting performance, to include height/velocity information.
- 2) Establishes a stationary position on the surface or a stabilized hover, prior to takeoff in headwind and crosswind conditions.
- 3) Maintains RPM within normal limits.
- 4) Accelerates to manufacturer's recommended climb airspeed, ± 10 knots.
- 5) Maintains proper ground track with crosswind correction, if necessary.
- 6) Remains aware of the possibility of wind shear and/or wake turbulence.

The examiner shall select task 7.1, 7.2, 7.3, 7.4, 7.5 and at least one other TASK.

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

7.2 TASK: NORMAL & CROSSWIND APPROACH

Objective. To determine that the applicant—

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

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

7.3 TASK: MAXIMUM PERFORMANCE TAKEOFF & CLIMB

Objective. To determine that the applicant—

- 1) Exhibits knowledge of the elements related to a maximum performance takeoff and climb.
- 2) Considers situations where this maneuver is recommended and factors related to takeoff and climb performance, to include height/velocity information.
- 3) Maintains RPM within normal limits.
- 4) Utilizes proper control technique to initiate takeoff and forward climb airspeed attitude.

- 5) Utilizes the maximum available takeoff power.
- 6) After clearing all obstacles, transitions to normal climb attitude, airspeed, ± 10 knots, and power setting.
- 7) Remains aware of the possibility of wind shear and/or wake turbulence.
- 8) Maintains proper ground track with crosswind correction, if necessary.

7.4 TASK: STEEP APPROACH

Objective. To determine that the applicant—

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

7.5 TASK: ROLLING TAKEOFF

Objective. To determine that the applicant—

- 1) Exhibits knowledge of the elements related to a rolling takeoff.
- 2) Considers situations where this maneuver is recommended and factors related to takeoff and climb performance, to include height/velocity information.
- 3) Maintains RPM within normal limits.
- 4) Utilizes proper preparatory technique prior to initiating takeoff.
- 5) Initiates forward accelerating movement on the surface.
- 6) Transitions to a normal climb airspeed, ± 10 knots, and power setting.
- 7) Remains aware of the possibility of wind shear and/or wake turbulence.
- 8) Maintains proper ground track with crosswind correction, if necessary.
- 9) Completes the prescribed checklist, if applicable.

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

7.6 TASK: CONFINED AREA OPERATION

Objective. To determine that the applicant—

- 1) Exhibits knowledge of the elements related to confined area operations.
- 2) Accomplishes a proper high and low reconnaissance.
- 3) Selects a suitable approach path, termination point, and departure path.

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

7.7 TASK: PINNACLE/PLATFORM OPERATIONS

Objective. To determine that the applicant—

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

7.8 TASK: SHALLOW APPROACH & RUNNING/ROLL-ON LANDING

Objective. To determine that the applicant—

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

7.9 TASK: GO-AROUND

Objective. To determine that the applicant—

- 1) Exhibits knowledge of the elements related to a go-around and when it is necessary.
- 2) Makes a timely decision to discontinue the approach to landing.
- 3) Maintains RPM within normal limits.
- 4) Establishes proper control input to stop descent and initiate climb.
- 5) Retracts the landing gear, if applicable, after a positive rate-of-climb indication.
- 6) Maintains proper ground track with crosswind correction, if necessary.
- 7) Transitions to a normal climb airspeed, ± 10 knots.
- 8) Completes the prescribed checklist, if applicable.

SECTION 8 AREA OF OPERATION: PERFORMANCE MANEUVERS

8.1 TASK: RAPID DECELERATION

Objective. To determine that the applicant—

- 1) Exhibits knowledge of the elements related to rapid deceleration.
- 2) Maintains RPM within normal limits.
- 3) Properly coordinates all controls throughout the execution of the maneuver.
- 4) Maintains an altitude that will permit safe clearance between the tail boom and the surface.
- 5) Decelerates and terminates in a stationary hover at the recommended hovering altitude.
- 6) Maintains heading throughout the maneuver, $\pm 10^\circ$.

The examiner shall select TASK 8.1 and at least one other TASK.

8.2 TASK: STRAIGHT IN AUTOROTATION

Objective. To determine that the applicant—

- 1) Exhibits knowledge of the elements related to a straight in autorotation terminating with a power recovery to a hover.
- 2) Selects a suitable touchdown area.
- 3) Initiates the maneuver at the proper point.
- 4) Establishes proper aircraft trim and autorotation airspeed, ± 5 knots.
- 5) Maintains rotor RPM within normal limits.
- 6) Compensates for wind speed and direction as necessary to avoid undershooting or overshooting the selected landing area.
- 7) Utilizes proper deceleration, collective pitch application to a hover.
- 8) Comes to a hover within 200 feet of a designated point.

8.3 TASK: 180° AUTOROTATION

Objective. To determine that the applicant—

- 1) Exhibits knowledge of the elements related to a 180° autorotation terminating with a power recovery to a hover.
- 2) Selects a suitable touchdown area.

- 3) Initiates the maneuver at the proper point.
- 4) Establishes proper aircraft trim and autorotation airspeed, ± 5 knots.
- 5) Maintains rotor RPM within normal limits.
- 6) Compensates for wind speed and direction as necessary to avoid undershooting or overshooting the selected landing area.
- 7) Utilizes proper deceleration, collective pitch application to a hover.
- 8) Comes to a hover within 200 feet of a designated point.

SECTION 9 AREA OF OPERATION: NAVIGATION

9.1 TASK: PILOTAGE & DEAD RECKONING

Objective. To determine that the applicant—

- 1) Exhibits knowledge of the elements related to pilotage and dead reckoning.
- 2) Follows the preplanned course by reference to landmarks.
- 3) Identifies landmarks by relating the surface features to chart symbols.
- 4) Navigates by means of precomputed headings, groundspeeds, and elapsed time.
- 5) Corrects for, and records, the differences between preflight fuel, groundspeed, and heading calculations and those determined en route.
- 6) Verifies the helicopter's position within three (3) nautical miles of the flight planned route.
- 7) Arrives at the en route checkpoints within five (5) minutes of the initial or revised ETA and provides a destination estimate.
- 8) Maintains the appropriate altitude, ± 200 feet and established heading, $\pm 15^\circ$.

9.2 TASK: NAVIGATION SYSTEMS & RADAR SERVICES

Objective. To determine that the applicant—

- 1) Exhibits knowledge of the elements related to radio navigation and ATC radar services.
- 2) Demonstrates the ability to use an airborne electronic navigation system.
- 3) Locates the helicopter's position using the navigation system.
- 4) Intercepts and tracks a given course, radial or bearing, as appropriate.
- 5) Recognizes and describes the indication of station or waypoint passage if appropriate.
- 6) Recognizes signal loss and takes appropriate action.
- 7) Uses proper communication procedures when utilizing radar services.
- 8) Maintains the appropriate altitude, ± 200 feet and headings $\pm 15^\circ$.

9.3 TASK: DIVERSION

Objective. To determine that the applicant—

- 1) Exhibits knowledge of the elements related to diversion.
- 2) Selects an appropriate alternate airport or heliport and route.
- 3) Promptly, diverts toward the alternate airport or heliport.

- 4) Makes an accurate estimate of heading, groundspeed, arrival time, and fuel consumption to the alternate airport or heliport.
- 5) Maintains the appropriate altitude, ± 200 feet and established heading, $\pm 15^\circ$.

9.4 TASK: LOST PROCEDURES

Objective. To determine that the applicant—

- 1) Exhibits knowledge of the elements related to lost procedures.
- 2) Selects an appropriate course of action.
- 3) Maintains an appropriate heading and climbs, if necessary.
- 4) Identifies prominent landmark(s).
- 5) Uses navigation systems/facilities and/or contacts an ATC facility for assistance as appropriate.
- 6) Plans a precautionary landing if deteriorating weather and/or fuel exhaustion is impending.

SECTION 10 AREA OF OPERATION: EMERGENCY OPERATIONS

10.1 TASK: POWER FAILURE AT A HOVER

Objective. To determine that the applicant—

- 1) Exhibits knowledge of the elements related to power failure at a hover.
- 2) Determines that the terrain below the aircraft is suitable for a safe touchdown.
- 3) Performs autorotation from a stationary or forward hover into the wind at recommended altitude, and RPM, while maintaining established heading, $\pm 10^\circ$.
- 4) Touches down with minimum sideward movement, and no rearward movement.
- 5) Exhibits orientation, division of attention, and proper planning.

TASKs 10.6 through 10.10 are knowledge only TASKs.

10.2 TASK: POWER FAILURE AT ALTITUDE

Objective. To determine that the applicant—

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

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

10.3 TASK: SYSTEMS & EQUIPMENT MALFUNCTIONS

Objective. To determine that the applicant—

- 1) Exhibits knowledge of the elements related to causes, indications, and pilot actions for various systems and equipment malfunctions.
- 2) Analyzes the situation and takes action, appropriate to the helicopter used for the practical test, in at least three of the following areas—
 - (a) Engine/oil and fuel.
 - (b) Hydraulic, if applicable.
 - (c) Electrical.
 - (d) Carburetor or induction icing.
 - (e) Smoke and/or fire.
 - (f) Flight control/trim.
 - (g) Pitot static/vacuum and associated flight instruments, if applicable.
 - (h) Rotor and/or antitorque.
 - (i) Various frequency vibrations and the possible components that may be affected.
 - (j) Any other emergency unique to the helicopter flown.

10.4 TASK: SETTLING-WITH-POWER

Objective. To determine that the applicant—

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

10.5 TASK: LOW ROTOR RPM RECOVERY

Objective. To determine that the applicant—

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

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

10.6 TASK: ANTITORQUE SYSTEM FAILURE

Objective. To determine that the applicant—

- 1) Exhibits knowledge of the elements related to anti-torque system failure by describing:
 - (a) The aerodynamic indications of the types of possible system failure(s) associate with the helicopter.
 - (b) Manufacturers recommended procedures for dealing with the different types of system(s) failure

10.7 TASK: DYNAMIC ROLLOVER

Objective. To determine that the applicant—

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

10.8 TASK: GROUND RESONANCE

Objective. To determine that the applicant—

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

10.9 TASK: LOW G CONDITIONS

Objective. To determine that the applicant—

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

10.10 TASK: EMERGENCY EQUIPMENT & SURVIVAL GEAR

Objective. To determine that the applicant—

- 1) Exhibits knowledge of the elements related to emergency equipment and survival gear appropriate to the helicopter environment encountered during flight.
- 2) Identifies appropriate equipment that should be aboard the helicopter.

SECTION 11 AREA OF OPERATION: NIGHT OPERATION**11.1 TASK: NIGHT PREPARATION**

Objective. To determine that the applicant exhibits knowledge of the elements related to night operations by explaining—

- 1) Physiological aspects of night flying as it relates to vision.
- 2) Lighting systems identifying airports/heliports, runways, taxiways and obstructions, and pilot controlled lighting.
- 3) Helicopter lighting systems.
- 4) Personal equipment essential for night flight.
- 5) Night orientation, navigation, and chart reading techniques.
- 6) Safety precautions and emergencies unique to night flying.

SECTION 12 AREA OF OPERATION: POST-FLIGHT PROCEDURES

12.1 TASK: AFTER LANDING & SECURING

Objective. To determine that the applicant—

- 1) Exhibits knowledge of the elements related to after-landing, parking and securing procedures
- 2) Minimizes the hazardous effects of rotor downwash during hovering.
- 3) Parks in an appropriate area, considering the safety of nearby persons and property.
- 4) Follows the appropriate procedure for engine shutdown.
- 5) Completes the appropriate checklist.
- 6) Conducts an appropriate post flight inspection and secures the aircraft.

End of Skill Test Standard

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