



SKILL TEST STANDARDS
PRIVATE PILOT – AEROPLANE MULTI-ENGINE

Purpose— This Skill Test Standard (STS) provides direction to individuals, organizations and examiners regarding the determination that an individual’s skill level is adequate for the issuance of a Private Pilot License with appropriate rating for—

- 1) **Aeroplane Multi Engine Land**
- 2) **Aeroplane Multi Engine Sea; and/or**
- 3) **An type-specific rating for a multi engine aeroplane.**

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- Advisory Circulars are intended to provide advice and guidance to illustrate a means, but not necessarily the only means, of complying with the Regulations, or to explain certain regulatory requirements by providing informative, interpretative and explanatory material.
- Where an AC is referred to in a 'Note' below the regulation, the AC remains as guidance material,
- ACs should always be read in conjunction with the referenced regulations.

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SECTION 1 GENERAL

1.1 STATUS OF THIS SKILL TEST STANDARD

This is original issuance [1]2017 to this STS.

1.2 BACKGROUND

- A. ICAO Standards in Annex 1, Personnel Licensing, require that, before issuing an Private Pilot License, the State must assess the knowledge and skill of the individual to perform such operations.
- B. RCAR Part 7 establishes the specific requirements for PPL testing that parallel the ICAO Standards.
- C. This STS provides amplified standards for a PPL applicant and the person assigned to conduct the skill test for license

1.3 APPLICABILITY

- A. This Skill Test Standard is 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.

1.4 RELATED REGULATIONS

The following regulations are directly applicable to the guidance contained in this STS—

- RCAR Part 7, Personnel Licensing
- RCAR Part 10, Operations of Aircraft

1.5 RELATED PUBLICATIONS

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

1) RCAA

- ◆ AC 07-001, Personnel Licensing
- ◆ AC 07-003, English Language Proficiency Standards
- ◆ AC 07-005, Flight Testing

Copies may be obtained from the RCAA.

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

- ◆ Pilot Operating Handbook, or
- ◆ Approved Flight Manual

3) United States Federal Aviation Administration (FAA)

- ◆ AC 00-45, Aviation Weather
- ◆ FAA-H-80-83-25, Pilot Handbook of Aeronautical Knowledge
- ◆ FAA-H-8083-3A, Airplane Flying Handbook
- ◆ FAA-H-8083-23, Seaplane Operations Handbook

- Copies are normally available through flight schools and instructors.
- Contact the RCAA if unable to readily 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.

1.6 DEFINITIONS & ACRONYMS

A. The following definitions are used in this STS—

- 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.

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- 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 RCAA to conduct a proficiency test, a skill test for an licence or rating, or a knowledge test under Rwanda regulations.
 - 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 STS, a portion of a skill test that includes Tasks that are normally accomplished while operating the aircraft.
 - 9) **Practical Test.** For the purpose of this STS, a portion of the skill test that includes Tasks accomplished before the flight portion.
 - 10) **Rating.** An authorisation entered on or associated with a licence and forming part thereof, stating special conditions, privileges or limitations pertaining to such licence.
 - 11) **Scenario.** A plan of action that includes the provision for accomplishing each Task specified in the skill test standards in practical and logical manner.
 - 12) **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
 - 13) **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 STS—
- 1) **AMEL** – Aeroplane Multi Engine Land
 - 2) **AMES** – Aeroplane Multi Engine Sea
 - 3) **AC** – Advisory Circular
 - 4) **FAC** – Formal Application Checklist
 - 5) **FSS** – Flight Safety Services
 - 6) **PEL** – Personnel Licensing
 - 7) **PPL** – Private Pilot License
 - 8) **RCAA** – Rwanda Civil Aviation Authority
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- 9) **RCAR** – Rwanda Civil Aviation Regulations
- 10) **STS** – Skill Test Standards
- 11) **V_{MC}** – Minimum Control with the Critical Engine Inoperative
- 12) **V_X** – Best Angle of Climb
- 13) **V_Y** – Best Rate of Climb
- 14) **V_{SSSE}** – Safe Single Engine Speed
- 15) **V_{YSE}** – Single-Engine Best Rate of Climb

SECTION 2 INTRODUCTORY INFORMATION

2.1 PRIVATE PILOT – AEROPLANE SKILL TEST PREREQUISITES

An applicant for the Private Pilot–Aeroplane 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 aeronautical knowledge test since the beginning of the 24th month before the month in which he or she takes the skill test;
- 4) Have satisfactorily accomplished the required training and obtained the aeronautical experience prescribed;
- 5) Possess at least a current Class 2 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 aeronautical knowledge 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.

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 RCAA 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 Airplane 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 RCAA Form 541, Application for Airman License, with Instructor's Signature (If applicable)
- 5) Aeronautical knowledge test report
- 6) Pilot Logbook with appropriate instructor endorsements
- 7) RCAA-Form 547, 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.
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B. **Tasks** are titles of knowledge areas, flight procedures, or maneuvers appropriate to an Area of Operation.

C. **Applicable to:** The abbreviation(s) immediately following a TASK refer to the category and/or class aircraft appropriate to that TASK. The meaning of each abbreviation is as follows.

- ASEL – Aeroplane-Single-Engine Land
- AMEL – Aeroplane Multi-engine Land
- ASES – Aeroplane-Single-Engine Sea
- AMES– Aeroplane Multi-engine Sea

D. 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 TASKs appropriate to the class aeroplane (ASEL, ASES, AMEL, or AMES) used for the test are specified in this STS.
- The absence of a class indicates the task is for all classes.
- An accompanying note may be used to emphasize special considerations required in the AREA OF OPERATION or TASK.

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 aeroplane category and 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 REGULATION

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 maneuvers with smoothness and accuracy;
- 4) Exercise good judgment 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 maneuver 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

Applicable To: AMEL & AMES

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/AFM.
 - (c) Weight and balance data and equipment list.

3.2 TASK: AIRWORTHINESS REQUIREMENTS

Applicable To: AMEL, AMES

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 aeroplane 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

Applicable To: AMEL, AMES

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) Convective outlook chart.
 - (g) AWOS, ASOS, and ATIS reports.
- 2) Makes a competent "go/no-go" decision based on available weather information.

The examiner shall develop a scenario based on real time weather to evaluate Tasks 3.3 and 3.4.

3.4 TASK: CROSS-COUNTRY FLIGHT PLANNING

Applicable To: AMEL /AMES

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.
 - 4) Selects easily identifiable en route checkpoints.
 - 5) Selects most favorable altitudes considering weather conditions and equipment capabilities.
 - 6) Computes headings, flight time, and fuel requirements.
 - 7) Selects appropriate navigation system/facilities and communication frequencies.
 - 8) Applies pertinent information from NOTAM's, AF/D, 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

Applicable To: AMEL, AMES

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 aeroplane 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 and other airspace areas.

3.6 TASK: PERFORMANCE & LIMITATIONS

Applicable To: AMEL/AMES

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 aeroplane's operating limitations and if the weight and center of gravity will remain within limits during all phases of flight.
- 3) Demonstrates use of the appropriate performance charts, tables and data.
- 4) Describes the effects of atmospheric conditions on the aeroplane's performance.

3.7 TASK: OPERATION OF SYSTEMS

Applicable To: AMEL, AMES

Objective. To determine that the applicant exhibits knowledge of the elements related to the operation of systems on the aeroplane provided for the flight test—

The applicant will be required to explain at least three (3) of the following systems

- 1) Primary flight controls and trim.
- 2) Flaps, leading edge devices, and spoilers.
- 3) Water rudders (AMES).
- 4) Engine and propeller.
- 5) Landing gear.
- 6) Fuel, oil, and hydraulic.
- 7) Electrical.
- 8) Avionics.

- 9) Pitot-static vacuum/pressure, and associated flight instruments.
- 10) Environmental.
- 11) Deicing and anti-icing.

3.8 TASK: PRINCIPLES OF FLIGHT – ENGINE INOPERATIVE

Applicable To: AMEL, AMES

Objective. To determine that the applicant exhibits knowledge of the elements related to engine inoperative principles of flight by explaining the—

- 1) Meaning of the term "critical engine."
- 2) Effects of density altitude on the VMC demonstration.
- 3) Effects of aeroplane weight and center of gravity on control.
- 4) Effects of angle of bank on VMC.
- 5) Relationship of VMC to stall speed.
- 6) Reasons for loss of directional control.
- 7) Indications of loss of directional control.
- 8) Importance of maintaining the proper pitch and bank attitude, and the proper coordination of controls.
- 9) Loss of directional control recovery procedure.
- 10) Engine failure during takeoff including planning, decisions, and single-engine operations.

3.9 TASK: WATER & SEAPLANE CHARACTERISTICS

Applicable To: AMES

Objective. To determine that the applicant exhibits knowledge of the elements related to water and seaplane characteristics by explaining—

- 1) The characteristics of a water surface as affected by features, such as—
 - (a) Size and location.
 - (b) Protected and unprotected areas.
 - (c) Surface wind.
 - (d) Direction and strength of water current.
 - (e) Floating and partially submerged debris.
 - (f) Sandbars, islands, and shoals.
 - (g) Vessel traffic and wakes.
 - (h) Other features peculiar to the area.
 - 2) Float and hull construction, and their effect on seaplane performance.
 - 3) Causes of porpoising and skipping, and the pilot action required to prevent or correct these occurrences.
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3.10 TASK: SEAPLANE BASES, MARITIME RULES, & AIDS TO MARINE NAVIGATION

Applicable To: AMES

Objective. To determine that the applicant exhibits knowledge of the elements related to seaplane bases, maritime rules, and aids to marine navigation by explaining—

- 1) How to locate and identify seaplane bases on charts or in directories.
- 2) Operating restrictions at various bases.
- 3) Right-of-way, steering, and sailing rules pertinent to seaplane operation.
- 4) Marine navigation aids such as buoys, beacons, lights, and sound signals.

3.11 TASK: AEROMEDICAL FACTORS

Applicable To: AMEL/AMES

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 medications.
- 3) The effects of excess nitrogen during scuba dives upon a pilot or passenger in flight.

SECTION 4 AREA OF OPERATION: PREFLIGHT PROCEDURES

4.1 TASK: PREFLIGHT INSPECTION

Applicable To: AMEL/AMES

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 aeroplane with reference to an appropriate checklist.
- 3) Verifies the aeroplane is in condition for safe flight.

4.2 TASK: COCKPIT MANAGEMENT

Applicable To: AMEL/AMES

Objective. To determine that the applicant:

- 1) Exhibits knowledge of the elements related to 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 occupants on the use of safety belts, shoulder harnesses, doors, and emergency procedures.

4.3 TASK: ENGINE STARTING

Applicable To: AMEL/AMES

Objective. To determine that the applicant—

- 1) Exhibits knowledge of the elements related to recommended engine starting procedures.
- 2) Positions the aeroplane properly considering structures, surface conditions, other aircraft, and the safety of nearby persons and property.
- 3) Utilizes the appropriate checklist for starting procedure.

This shall include the use of an external power source, and starting under various atmospheric conditions.

4.4 TASK: TAXIING

Applicable To: AMEL

Objective. To determine that the applicant—

- 1) Exhibits knowledge of the elements related to safe taxi procedures.
- 2) Performs a brake check immediately after the aeroplane begins moving.
- 3) Positions the flight controls properly for the existing wind conditions.
- 4) Controls direction and speed without excessive use of brakes.
- 5) Complies with airport/taxiway markings, signals, ATC clearances, and instructions.
- 6) Taxies so as to avoid other aircraft and hazards.

4.5 TASK: TAXIING & SAILING

Applicable To: AMES

Objective. To determine that the applicant—

- 1) Exhibits knowledge of the elements related to water taxi and sailing procedures.
 - 2) Positions the flight controls properly for the existing wind conditions.
 - 3) Plans and follows the most favorable course while taxi or sailing considering wind, water current, water conditions and maritime regulations.
 - 4) Uses the appropriate idle, plow, or step taxi technique.
 - 5) Uses flight controls, flaps, doors, water rudder, and power correctly so as to follow the desired course while sailing.
 - 6) Prevents and corrects for porpoising and skipping.
 - 7) Avoids other aircraft, vessels, and hazards.
 - 8) Complies with seaplane base signs, signals, and clearances.
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4.6 TASK: BEFORE TAKEOFF CHECK

Applicable To: AMEL/AMES

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 aeroplane properly considering other aircraft/vessel, wind and surface conditions.
- 3) Divides attention inside and outside the cockpit.
- 4) Ensures that engine temperatures and pressure are suitable for run-up and takeoff.
- 5) Accomplishes the before takeoff checklist and ensures the aeroplane is in safe operating condition.
- 6) Reviews takeoff performance airspeeds, takeoff distances, departures, and emergency procedures.
- 7) Avoids runway incursion and/or ensures no conflict with traffic prior to taxiing into takeoff position.

SECTION 5 AREA OF OPERATION: AIRPORT & SEAPLANE BASE OPERATIONS

5.1 TASK: RADIO COMMUNICATIONS & ATC LIGHT SIGNALS

Applicable To: AMEL/AMES

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

Applicable To: AMEL/AMES

Objective. To determine that the applicant—

- 1) Exhibits knowledge of the elements related to traffic patterns. This shall include procedures at airports 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 aircraft.
 - 4) Corrects for wind drift to maintain the proper ground track.
 - 5) Maintains orientation with the runway/landing area in use.
 - 6) Maintains traffic pattern altitude, ± 100 feet (30 meters), and the appropriate airspeed, ± 10 knots.
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5.3 TASK: AIRPORT/SEAPLANE BASE, RUNWAY, & TAXIWAY SIGNS, MARKINGS, & LIGHTING

Applicable To: AMEL/AMES

Objective. To determine that the applicant—

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

SECTION 6 AREA OF OPERATION: TAKEOFFS, LANDINGS, & GO-AROUNDS

6.1 TASK: NORMAL & CROSSWIND TAKEOFF & CLIMB

Applicable To: AMEL/AMES

Objective. To determine that the applicant—

If a crosswind condition does not exist, the applicant's knowledge of crosswind elements shall be evaluated through oral testing.

- 1) Exhibits knowledge of the elements related to a normal and crosswind takeoff, climb operations, and rejected takeoff procedures.
- 2) Positions the flight controls for the existing wind conditions.
- 3) Clears the area; taxies into the takeoff position and aligns the aeroplane on the runway center/takeoff path.
- 4) Retracts the water rudders as appropriate, (AMES) advances the throttles smoothly to takeoff power.
- 5) Establishes and maintains the most efficient planing/lift-off attitude and corrects for porpoising and skipping (AMES).
- 6) Lifts off at the recommended airspeed and accelerates to VY.
- 7) Establishes a pitch attitude that will maintain VY +10/-5 knots.
- 8) Retracts the landing gear, if appropriate, and flaps after a positive rate of climb is established.
- 9) Maintains takeoff power and VY +10/-5 knots to a safe maneuvering altitude.
- 10) Maintains directional control and proper wind-drift correction throughout the takeoff and climb.
- 11) Complies with noise abatement procedures.
- 12) Completes the appropriate checklist.

6.2 TASK: NORMAL & CROSSWIND APPROACH & LANDING

Applicable To: AMEL/AMES

Objective. To determine that the applicant—

If a crosswind condition does not exist, the applicant's knowledge of crosswind elements shall be evaluated through oral testing.

- 1) Exhibits knowledge of the elements related to a normal and crosswind approach and landing.
 - 2) Adequately surveys the intended landing area (AMES).
-

- 3) Considers the wind conditions, landing surface, obstructions, and selects a suitable touchdown point.
- 4) Establishes the recommended approach and landing configuration and airspeed, and adjusts pitch attitude and power as required.
- 5) Maintains a stabilized approach and recommended airspeed, or in its absence, not more than 1.3 VSO, +10/-5 knots, with wind gust factor applied.
- 6) Makes smooth, timely, and correct control application during the roundout and touchdown.
- 7) Contacts the water at the proper pitch attitude (AMES).
- 8) Touches down smoothly at approximate stalling speed (AMEL).
- 9) Touches down at or within 400 feet (120 meters) beyond a specified point, with no drift, and with the aeroplane's longitudinal axis aligned with and over the runway center/landing path.
- 10) Maintains crosswind correction and directional control throughout the approach and landing sequence.
- 11) Completes the appropriate checklist.

6.3 TASK: SHORT-FIELD (CONFINED AREA-AMES) TAKEOFF & MAXIMUM PERFORMANCE CLIMB

Applicable To: AMEL/AMES

Objective. To determine that the applicant—

- 1) Exhibits knowledge of the elements related to a short-field (confined area-AMES) takeoff and maximum performance climb.
- 2) Positions the flight controls for the existing wind conditions; sets the flaps as recommended.
- 3) Clears the area; taxies into takeoff position utilizing maximum available takeoff area and aligns the aeroplane on the runway center/take-off path.
- 4) Selects an appropriate take-off path for the existing conditions (AMES).
- 5) Applies brakes (if appropriate), while advancing the throttles smoothly to takeoff power.
- 6) Establishes and maintains the most efficient planing/lift-off attitude and corrects for porpoising and skipping (AMES).
- 7) Lifts off at the recommended airspeed, and accelerates to the recommended obstacle clearance airspeed or VX.
- 8) Establishes a pitch attitude that will maintain the recommended obstacle clearance airspeed, or VX, +10/-5 knots, until the obstacle is cleared, or until the aeroplane is 50 feet (20 meters) above the surface.
- 9) After clearing the obstacle, establishes the pitch attitude for VY accelerates to VY, and maintains VY, +10/-5 knots, during the climb.
- 10) Retracts the landing gear, if appropriate, and flaps after clear of any obstacles or as recommended by manufacturer.
- 11) Maintains takeoff power and VY +10/-5 knots to a safe maneuvering altitude.
- 12) Maintains directional control and proper wind-drift correction throughout the takeoff and climb.

- 13) Completes the appropriate checklist.

6.4 TASK: SHORT-FIELD APPROACH (CONFINED AREA-AMES) & LANDING

Applicable To: AMEL/AMES

Objective. To determine that the applicant—

- 1) Exhibits knowledge of the elements related to a short-field (confined area AMES) approach and landing.
- 2) Adequately surveys the intended landing area (AMES).
- 3) Considers the wind conditions, landing surface, obstructions, and selects the most suitable touchdown point.
- 4) Establishes the recommended approach and landing configuration and airspeed; adjusts pitch attitude and power as required.
- 5) Maintains a stabilized approach and recommended approach airspeed, or in its absence not more than 1.3 VSO, +10/-5 knots, with wind gust factor applied.
- 6) Makes smooth, timely, and correct control application during the roundout and touchdown.
- 7) Selects the proper landing path, contacts the water at the minimum safe airspeed with the proper pitch attitude for the surface conditions (AMES).
- 8) Touches down smoothly at minimum control airspeed (AMEL).
- 9) Touches down at or within 200 feet (60 meters) beyond a specified point, with no side drift, minimum float, and with the aeroplane's longitudinal axis aligned with and over the runway center/landing path.
- 10) Maintains crosswind correction and directional control throughout the approach and landing sequence.
- 11) Applies brakes, (AMEL) or elevator control (AMES), as necessary, to stop in the shortest distance consistent with safety.
- 12) Completes the appropriate checklist.

6.5 TASK: GLASSY WATER TAKEOFF & CLIMB

Applicable To: AMES

Objective. To determine that the applicant—

- 1) Exhibits knowledge of the elements related to glassy water takeoff and climb.
- 2) Positions the flight controls and flaps for the existing conditions.
- 3) Clears the area; selects an appropriate takeoff path considering surface hazards and/or vessels and surface conditions.
- 4) Retracts the water rudders as appropriate; advances the throttle smoothly to takeoff power.
- 5) Establishes and maintains an appropriate planing attitude, directional control, and corrects for porpoising, skipping, and increases in water drag.
- 6) Utilizes appropriate techniques to lift seaplane from the water considering surface conditions.

If a glassy water condition does not exist, the applicant shall be evaluated by simulating the TASK.

- 7) Establishes proper attitude/airspeed, and accelerates to VY, +10/- 5 knots during the climb.
- 8) Retracts the landing gear, if appropriate, and flaps after a positive rate of climb is established.
- 9) Maintains takeoff power and VY +10/-5 knots to a safe maneuvering altitude.
- 10) Maintains directional control and proper wind-drift correction throughout takeoff and climb.
- 11) Completes the appropriate checklist.

6.6 TASK: GLASSY WATER APPROACH & LANDING

Applicable To: AMES

Objective. To determine that the applicant—

- 1) Exhibits knowledge of the elements related to glassy water approach and landing.
- 2) Adequately surveys the intended landing area.
- 3) Considers the wind conditions, water depth, hazards, surrounding terrain, and other watercraft.
- 4) Selects the most suitable approach path and touchdown area.
- 5) Establishes the recommended approach and landing configuration and airspeed, and adjusts pitch attitude and power as required.
- 6) Maintains a stabilized approach and the recommended approach airspeed, +10/-5 knots and maintains a touchdown pitch attitude and descent rate from the last altitude reference until touchdown.
- 7) Makes smooth, timely, and correct power and control adjustments to maintain proper pitch attitude and rate of descent to touchdown.
- 8) Contacts the water in the proper pitch attitude, and slows to idle taxi speed.
- 9) Maintains crosswind correction and directional control throughout the approach and landing sequence.
- 10) Completes the appropriate checklist.

If a glassy water condition does not exist, the applicant shall be evaluated by simulating the TASK.

6.7 TASK: ROUGH WATER TAKEOFF & CLIMB

Applicable To: AMES

Objective. To determine that the applicant—

- 1) Exhibits knowledge of the elements related to rough water takeoff and climb.
- 2) Positions the flight controls and flaps for the existing conditions.
- 3) Clears the area; selects an appropriate takeoff path considering wind, swells surface hazards, and/or vessels.
- 4) Retracts the water rudders as appropriate; advances the throttle smoothly to takeoff power.

If a rough water condition does not exist, the applicant shall be evaluated by simulating the TASK.

- 5) Establishes and maintains an appropriate planing attitude, directional control, and corrects for porpoising, skipping, or excessive bouncing.
- 6) Lifts off at minimum airspeed and accelerates to VY, +10/-5 knots before leaving ground effect.
- 7) Retracts the landing gear, if appropriate, and flaps after a positive rate of climb is established.
- 8) Maintains takeoff power and VY +10/-5 knots to a safe maneuvering altitude.
- 9) Maintains directional control and proper wind-drift correction throughout takeoff and climb.
- 10) Completes the appropriate checklist.

6.8 TASK: ROUGH WATER APPROACH & LANDING

Applicable To: AMES

Objective. To determine that the applicant:—

- 1) Exhibits knowledge of the elements related to rough water approach and landing.
- 2) Adequately surveys the intended landing area.
- 3) Considers the wind conditions, water, depth, hazards, surrounding terrain, and other watercraft.
- 4) Selects the most suitable approach path, and touchdown area.
- 5) Establishes the recommended approach and landing configuration and airspeed, and adjusts pitch attitude and power as required.
- 6) Maintains a stabilized approach and the recommended approach airspeed, or in its absence not more than 1.3 V_{so} +10/-5 knots with wind gust factor applied.
- 7) Makes smooth, timely, and correct power and control application during the roundout and touch down.
- 8) Contacts the water in the proper pitch attitude, and at the proper airspeed, considering the type of rough water.
- 9) Maintains crosswind correction and directional control throughout the approach and landing sequence.
- 10) Completes the appropriate checklist.

If a rough water condition does not exist, the applicant shall be evaluated by simulating the TASK.

6.9 TASK: GO-AROUND/REJECTED LANDING

Applicable To: AMEL/AMES

Objective. To determine that the applicant—

- 1) Exhibits knowledge of the elements related to a go-around/rejected landing.
 - 2) Makes a timely decision to discontinue the approach to landing.
 - 3) Applies takeoff power immediately and transitions to climb pitch attitude for VY and maintains VY +10/-5 knots.
 - 4) Retracts the flaps, as appropriate.
 - 5) Retracts the landing gear, if appropriate, after a positive rate of climb is established.
-

- 6) Maneuvers to the side of the runway/landing area to clear and avoid conflicting traffic.
- 7) Maintains directional control and proper wind-drift correction throughout the climb.
- 8) Completes the appropriate checklist.

SECTION 7 AREA OF OPERATION: PERFORMANCE MANEUVER

7.1 TASK: STEEP TURNS

Applicable To: AMEL/AMES

The examiner shall select at least one task from this Area of Operations.

Objective. To determine that the applicant—

- 1) Exhibits knowledge of the elements related to steep turns.
- 2) Establishes the manufacturer's recommended airspeed or if one is not stated, a safe airspeed not to exceed V_A .
- 3) Rolls into a coordinated 360° turn; maintains a 45° bank.
- 4) Performs the task in the opposite direction, as specified by the examiner.
- 5) Divides attention between aeroplane control and orientation.
- 6) Maintains the entry altitude, ± 100 feet (30 meters), airspeed, ± 10 knots, bank, $\pm 5^\circ$; and rolls out on the entry heading, $\pm 10^\circ$.

7.2 TASK: RECTANGULAR COURSE

Applicable To: AMEL/AMES

Objective. To determine that the applicant—

- 1) Exhibits knowledge of the elements related to a rectangular course.
- 2) Selects a suitable reference area.
- 3) Plans the maneuver so as to enter a left or right pattern, 600 to 1,000 feet AGL (180 to 300 meters) at an appropriate distance from the selected reference area, 45° to the downwind leg.
- 4) Applies adequate wind-drift correction during straight-and-turning flight to maintain a constant ground track around the rectangular reference area.
- 5) Divides attention between aeroplane control and the ground track while maintaining coordinated flight.
- 6) Maintains altitude, ± 100 feet (30 meters); maintains airspeed, ± 10 knots.

7.3 TASK: S-TURNS

Applicable To: AMEL/AMES

Objective. To determine that the applicant—

- 1) Exhibits knowledge of the elements related to S-turns.
- 2) Selects a suitable ground reference line.
- 3) Plans the maneuver so as to enter at 600 to 1,000 feet (180 to 300 meters) AGL, perpendicular to the selected reference line.
- 4) Applies adequate wind-drift correction to track a constant radius turn on each side of the selected reference line.

- 5) Reverses the direction of turn directly over the selected reference line.
- 6) Divides attention between aeroplane control and the ground track while maintaining coordinated flight.
- 7) Maintains altitude, ± 100 feet (30 meters); maintains airspeed, ± 10 knots.

7.4 TASK: TURNS AROUND A POINT

Applicable To: AMEL & AMES

Objective. To determine that the applicant—

- 1) Exhibits knowledge of the elements related to turns around a point.
- 2) Selects a suitable ground reference point.
- 3) Plans the maneuver so as to enter left or right at 600 to 1,000 feet (180 to 300 meters) AGL, at an appropriate distance from the reference point.
- 4) Applies adequate wind-drift correction to track a constant radius turn around the selected reference point.
- 5) Divides attention between aeroplane control and the ground track while maintaining coordinated flight.
- 6) Maintains altitude, ± 100 feet (30 meters); maintains airspeed, ± 10 knots.

SECTION 8 AREA OF OPERATION: NAVIGATION

8.1 TASK: PILOTAGE & DEAD RECKONING

Applicable To: AMEL/AMES

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 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 groundspeed, and heading calculations and those determined en route.
- 6) Verifies the aeroplane'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 (60 meters) and heading, $\pm 15^\circ$.

8.2 TASK: NAVIGATION SYSTEMS & RADAR SERVICES

Applicable To: AMEL/AMES

Objective. To determine that the applicant—

- 1) Exhibits knowledge of the elements related to navigation systems and radar services.
 - 2) Demonstrates the ability to use an airborne electronic navigation system.
 - 3) Locates the aeroplane's position using the navigation system.
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- 4) Intercepts and tracks a given course, radial or bearing, as appropriate.
- 5) Recognizes and describes the indication of station 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 (60 meters) and heading $\pm 15^\circ$.

8.3 TASK: DIVERSION

Applicable To: AMEL/AMES

Objective. To determine that the applicant—

- 1) Exhibits knowledge of the elements related to diversion.
- 2) Selects an appropriate alternate airport and route.
- 3) Makes an accurate estimate of heading, groundspeed, arrival time, and fuel consumption to the alternate airport.
- 4) Maintains the appropriate altitude, ± 200 feet (60 meters) and headings, $\pm 15^\circ$.

8.4 TASK: LOST PROCEDURES

Applicable To: AMEL/AMES

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 landmarks.
- 5) Uses navigation systems/facilities and/or contacts an ATC facility for assistance, as appropriate.

SECTION 9 AREA OF OPERATION: SLOW FLIGHT & STALLS

9.1 TASK: MANEUVERING DURING SLOW FLIGHT

Applicable To: AMEL/AMES

Objective. To determine that the applicant—

- 1) Exhibits knowledge of the elements related to maneuvering during slow flight.
- 2) Selects an entry altitude that will allow the task to be completed no lower than 3,000 feet (920 meters) AGL.
- 3) Establishes and maintains an airspeed at which any further increase in angle of attack, increase in load factor, or reduction in power, would result in an immediate stall.
- 4) Accomplishes coordinated straight-and-level flight, turns, climbs, and descents with landing gear and flap configurations specified by the examiner.
- 5) Divides attention between aeroplane control and orientation.
- 6) Maintains the specified altitude, ± 100 feet (30 meters); specified heading, $\pm 10^\circ$; airspeed, $+10/-0$ knots and specified angle of bank, $\pm 10^\circ$.

9.2 TASK: POWER-OFF STALLS

Applicable To: AMEL/AMES

Objective. To determine that the applicant—

- 1) Exhibits knowledge of the elements related to power-off stalls.
- 2) Selects an entry altitude that allows the task to be completed no lower than 3,000 feet (460 meters) AGL.
- 3) Establishes a stabilized descent in the approach or landing configuration, as specified by the examiner.
- 4) Transitions smoothly from the approach or landing attitude to a pitch attitude that will induce a stall.
- 5) Maintains a specified heading, $\pm 10^\circ$, in straight flight; maintains a specified angle of bank not to exceed 20° , $\pm 10^\circ$; in turning flight, while inducing the stall.
- 6) Recognizes and recovers promptly after a stall occurs by simultaneously reducing the angle of attack, increasing power to maximum allowable, and leveling the wings to return to a straight-and-level flight attitude with a minimum loss of altitude appropriate for the aeroplane.
- 7) Retracts the flaps to the recommended setting; retracts the landing gear, if retractable, after a positive rate of climb is established.
- 8) Accelerates to VX or VY speed before the final flap retraction; returns to the altitude, heading, and airspeed specified by the examiner.

9.3 TASK: POWER-ON STALLS

Applicable To: AMEL/AMES

Objective. To determine that the applicant—

- 1) Exhibits knowledge of the elements related to power-on stalls.
- 2) Selects an entry altitude that allows the task to be completed no lower than 3,000 feet (460 meters) AGL.
- 3) Establishes the takeoff or departure configuration. Sets power to no less than 65 percent available power.
- 4) Transitions smoothly from the takeoff or departure attitude to the pitch attitude that will induce a stall.
- 5) Maintains a specified heading, $\pm 10^\circ$, in straight flight; maintains a specified angle of bank not to exceed 20° , $\pm 10^\circ$, in turning flight, while inducing the stall.
- 6) Recognizes and recovers promptly after the stall occurs by simultaneously reducing the angle of attack, increasing power to maximum allowable, and leveling the wings to return to a straight- and-level flight attitude with a minimum loss of altitude appropriate for the aeroplane.
- 7) Retracts the flaps to the recommended setting; retracts the landing gear if retractable, after a positive rate of climb is established.
- 8) Accelerates to VX or VY speed before the final flap retraction; returns to the altitude, heading, and airspeed specified by the examiner.

In some high performance aeroplanes the power setting may have to be reduced below the skill test standards guideline power setting to prevent excessively high pitch attitudes (greater than 30° nose up).

9.4 TASK: SPIN AWARENESS

Applicable To: AMEL/AMES

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

- 1) Aerodynamic factors related to spins.
- 2) Flight situations where unintentional spins may occur.
- 3) Procedures for recovery from unintentional spins.

SECTION 10 AREA OF OPERATION: BASIC INSTRUMENT MANEUVERS

10.1 TASK: STRAIGHT & LEVEL FLIGHT

Applicable To: AMEL/AMES

Objective. To determine that the applicant—

- 1) Exhibits knowledge of the elements related to attitude instrument flying during straight-and-level flight.
- 2) Maintains straight-and-level flight solely by reference to instruments using proper instrument cross-check and interpretation, and coordinated control application.
- 3) Maintains altitude, ± 200 feet (60 meters); heading, $\pm 20^\circ$; and airspeed, ± 10 knots.

- The examiner shall select TASK 10.5 and at least two other TASKs from this Area of Operation.
- If the applicant holds an instrument rating aeroplane he or she only needs to demonstrate TASK 10.5

10.2 TASK: CONSTANT AIRSPEED CLIMBS

Applicable To: AMEL/AMES

Objective. To determine that the applicant—

- 1) Exhibits knowledge of the elements related to attitude instrument flying during constant airspeed climbs.
- 2) Establishes the climb configuration specified by the examiner.
- 3) Transitions to the climb pitch attitude and power setting on an assigned heading using proper instrument cross-check and interpretation, and coordinated control application.
- 4) Demonstrates climbs solely by reference to instruments at a constant airspeed to specific altitudes in straight flight and turns.
- 5) Levels off at the assigned altitude and maintains that altitude, ± 200 feet (60 meters); maintains heading, $\pm 20^\circ$; maintains airspeed, ± 10 knots.

10.3 TASK: CONSTANT AIRSPEED DESCENTS

Applicable To: AMEL/AMES

Objective. To determine that the applicant—

- 1) Exhibits knowledge of the elements related to attitude instrument flying during constant airspeed descents.
- 2) Establishes the descent configuration specified by the examiner.
- 3) Transitions to the descent pitch attitude and power setting on an assigned heading using proper instrument cross-check and interpretation, and coordinated control application.

- 4) Demonstrates descents solely by reference to instruments at a constant airspeed to specific altitudes in straight flight and turns.
- 5) Levels off at the assigned altitude and maintains that altitude, ± 200 feet (60 meters); maintains heading, $\pm 20^\circ$; maintains airspeed, ± 10 knots.

10.4 TASK: TURNS TO HEADINGS

Applicable To: AMEL/AMES

Objective. To determine that the applicant—

- 1) Exhibits knowledge of the elements related to attitude instrument flying during turns to headings.
- 2) Transitions to the level-turn attitude using proper instrument cross-check and interpretation, and coordinated control application.
- 3) Demonstrates turns to headings solely by reference to instruments; maintains altitude, ± 200 feet (60 meters); maintains a standard rate turn and rolls out on the assigned heading, $\pm 10^\circ$; maintains airspeed, ± 10 knots.

10.5 TASK: RECOVERY FROM UNUSUAL FLIGHT ATTITUDES

Applicable To: AMEL/AMES

Objective. To determine that the applicant—

- 1) Exhibits knowledge of the elements related to attitude instrument flying during unusual attitudes.
- 2) Recognizes unusual flight attitudes solely by reference to instruments; recovers promptly to a stabilized level flight attitude using proper instrument cross-check and interpretation and smooth, coordinated control application in the correct sequence.

10.6 TASK: RADIO COMMUNICATIONS, NAVIGATION SYSTEMS/FACILITIES, & RADAR SERVICES

Applicable To: AMEL/AMES

Objective. To determine that the applicant—

- 1) Exhibits knowledge of the elements related to radio communications, navigation systems/facilities, and radar services available for use during flight solely by reference to instruments.
 - 2) Selects the proper frequency and identifies the appropriate facility.
 - 3) Follows verbal instructions and/or navigation systems/facilities for guidance.
 - 4) Determines the minimum safe altitude.
 - 5) Maintains altitude, ± 200 feet (60 meters); maintains heading, $\pm 20^\circ$; maintains airspeed, ± 10 knots.
-

SECTION 11 AREA OF OPERATION: EMERGENCY OPERATIONS

11.1 TASK: EMERGENCY DESCENT

Applicable To: AMEL/AMES

Objective. To determine that the applicant—

- 1) Exhibits knowledge of the elements related to an emergency descent.
- 2) Recognizes situations, such as depressurization, cockpit smoke and/ or fire that require an emergency descent.
- 3) Establishes the appropriate airspeed and configuration for the emergency descent.
- 4) Exhibits orientation, division of attention, and proper planning.
- 5) Maintains positive load factors during the descent.
- 6) Completes appropriate checklists.

- Examiners shall select an entry altitude that will allow the single engine demonstrations task to be completed no lower than 3,000 feet (920 meters) AGL or the manufacturer's recommended altitude, whichever is higher.
- At altitudes lower than 3,000 feet (920 meters) AGL, engine failure shall be simulating by reducing throttle to idle and then establishing zero thrust.

11.2 TASK: ENGINE FAILURE DURING TAKEOFF BEFORE VMC (SIMULATED)

Applicable To: AMEL/AMES

Objective. To determine that the applicant—

- 1) Exhibits knowledge of the elements related to the procedure used for engine failure during takeoff prior to reaching VMC.
- 2) Closes the throttles smoothly and promptly when simulated engine failure occurs.
- 3) Maintains directional control and applies brakes (AMEL) or flight controls (AMES), as necessary.

Engine failure (simulated) shall be accomplished before reaching 50 percent of the calculated VMC.

11.3 TASK: ENGINE FAILURE AFTER LIFT-OFF

Applicable To: SIMULATED-AMEL/AMES

Objective. To determine that the applicant—

- 1) Exhibits knowledge of the elements related to the procedure used for engine failure after lift-off.
- 2) Recognizes a simulated engine failure promptly, maintains control, and utilizes appropriate emergency procedures.
- 3) Reduces drag, identifies and verifies the inoperative engine after simulated engine failure.
- 4) Simulates feathering the propeller on the inoperative engine. Examiner shall then establish zero-thrust on the inoperative engine.
- 5) Establishes VYSE.
- 6) Banks toward the operating engine as required for best performance.
- 7) Monitors operating engine and makes adjustments as necessary.

If obstructions are present—

- Establishes VXSE or VMC +5 knots, whichever is greater, until obstructions are cleared.
- Then transitions to VYSE.

- 8) Recognizes the aeroplane's performance capabilities.
- 9) Secures the (simulated) inoperative engine.
- 10) Maintains heading, $\pm 10^\circ$, and airspeed, ± 5 knots.
- 11) Completes appropriate emergency checklist.

If a climb is not possible at VYSE—

- Maintains VYSE and return to the departure airport for landing, or
- Initiates an approach to the most suitable landing area available.

11.4 TASK: APPROACH & LANDING WITH AN INOPERATIVE ENGINE (SIMULATED)

Applicable To: AMEL/AMES

Objective. To determine that the applicant—

- 1) Exhibits knowledge of the elements related to an approach and landing with an engine inoperative to include engine failure on final approach.
- 2) Recognizes engine failure and takes appropriate action, maintains control, and utilizes recommended emergency procedures.
- 3) Banks toward the operating engine, as required, for best performance.
- 4) Monitors the operating engine and makes adjustments as necessary.
- 5) Maintains the recommended approach airspeed $+10/-5$, and landing configuration with a stabilized approach, until landing is assured.
- 6) Makes smooth, timely and correct control applications during roundout and touchdown.
- 7) Touches down on the first one-third of available runway, with no drift and the aeroplane's longitudinal axis aligned with and over the runway center/landing path.
- 8) Maintains crosswind correction and directional control throughout the approach and landing sequence.
- 9) Completes appropriate checklists.

11.5 TASK: SYSTEMS & EQUIPMENT MALFUNCTIONS

Applicable To: AMEL/AMES

Objective. To determine that the applicant—

- 1) Exhibits knowledge of the elements related to system and equipment malfunctions appropriate to the aeroplane provided for the practical test.
- 2) Analyzes the situation and takes the appropriate action for simulated emergencies appropriate to the aeroplane provided for the practical test—
 - (a) Partial or complete power loss.
 - (b) Engine roughness or overheat.
 - (c) Carburetor or induction icing.
 - (d) Loss of oil pressure.
 - (e) Fuel starvation.
 - (f) Electrical malfunction.

At least three (3) of the following emergencies will be tested.

- (g) Vacuum/pressure, and associated flight instruments malfunction.
 - (h) Pitot/static.
 - (i) Landing gear or flap malfunction.
 - (j) Inoperative trim.
 - (k) Inadvertent door or window opening.
 - (l) Structural icing.
 - (m) Smoke/fire/engine compartment fire.
 - (n) Any other emergency appropriate to the aeroplane.
- 3) Follows the appropriate checklist or procedure.

11.6 TASK: EMERGENCY EQUIPMENT & SURVIVAL GEAR

Applicable To: AMEL/AMES

Objective. To determine that the applicant—

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

SECTION 12 AREA OF OPERATION: MULTI-ENGINE OPERATIONS

12.1 TASK: MANEUVERING WITH ONE ENGINE INOPERATIVE

Applicable To: AMEL/AMES

Objective. To determine that the applicant—

- 1) Exhibits knowledge of the elements related to maneuvering with one engine inoperative.
- 2) Recognizes engine failure and maintains control.
- 3) Sets the engine controls, reduces drag, identifies and verifies the inoperative engine, and feathers appropriate propeller.
- 4) Establishes and maintains a bank toward the operating engine as required for best performance in straight and level flight.
- 5) Follows the prescribed checklists to verify procedures for securing the inoperative engine.
- 6) Monitors the operating engine and makes necessary adjustments.
- 7) Demonstrates coordinated flight with one engine inoperative (propeller feathered).
- 8) Restarts the inoperative engine using appropriate restart procedures.
- 9) Maintains altitude ± 100 feet (30 meters) or minimum sink as appropriate and heading $\pm 10^\circ$.

If the applicant is instrument rated, and has previously demonstrated instrument proficiency in a multi-engine aeroplane or does not hold an instrument rating aeroplane TASKS 3.3 and 3.5, need not be accomplished

- The feathering of one propeller shall be demonstrated in flight, in a multi-engine aeroplane equipped with propellers which can be safely feathered and unfeathered.
- The maneuver shall be performed at altitudes and positions where safe landings on established airports can be readily accomplished.
- In the event a propeller cannot be unfeathered during the practical test, it shall be treated as an emergency.

- 10) Completes the appropriate checklists.

12.2 TASK: VMC DEMONSTRATION

Applicable To: AMEL/AMES

Objective. To determine that the applicant—

- 1) Exhibits knowledge of the elements related to VMC by explaining the causes of loss of directional controls at airspeeds less than VMC, the factors affecting VMC and the safe recovery procedures.
- 2) Configures the aeroplane at VSSE/ VYSE, as appropriate—
 - (a) Landing gear retracted.
 - (b) Flaps set for takeoff.
 - (c) Cowl flaps set for takeoff.
 - (d) Trim set for takeoff.
 - (e) Propellers set for high RPM.
 - (f) Power on critical engine reduced to idle.
 - (g) Power on operating engine set to takeoff or maximum available power.
- 3) Establishes a single-engine climb attitude with the airspeed at approximately 10 knots above VSSE.

An applicant seeking a aeroplane-multi-engine land (AMEL) rating, "Limited to Center Thrust," is not required to be evaluated on this TASK.

- Aeroplanes with normally aspirated engines will lose power as altitude increases because of the reduced density of the air entering the induction system of the engine.
- This loss of power will result in a VMC lower than the stall speed at higher altitudes.
- Therefore, recovery should be made at the first indication of loss of directional control, stall warning, or buffet.



- Do not perform this maneuver by increasing the pitch attitude to a high angle with both engines operating and then reducing power on the critical engine.
- This technique is hazardous and may result in loss of aeroplane control.

- 4) Establishes a bank toward the operating engine, as required for best performance and controllability.
- 5) Increases the pitch attitude slowly to reduce the airspeed at approximately 1 knot per second while applying rudder pressure to maintain directional control until full rudder is applied.
- 6) Recognizes indications of loss of directional control, stall warning or buffet.
- 7) Recovers promptly by simultaneously reducing power sufficiently on the operating engine while decreasing the angle of attack as necessary to regain airspeed and directional control. Recovery SHOULD NOT be attempted by increasing the power on the simulated failed engine.
- 8) Recovers within 20° of the entry heading.
- 9) Advances power smoothly on operating engine and accelerates to VXSE/VYSE, as appropriate, +10/-5 knots, during the recovery.

12.3 TASK: ENGINE FAILURE DURING FLIGHT (BY REFERENCE TO INSTRUMENTS)

Applicable To: AMEL/AMES

Objective. To determine that the applicant—

- 1) Exhibits knowledge of the elements by explaining the procedures used during instrument flight with one engine inoperative.

- 2) Recognizes engine failure, sets the engine controls, reduces drag, identifies, and verifies the inoperative engine and feathers appropriate engine propeller.
- 3) Establishes and maintains a bank toward the operating engine as required for best performance in straight and level.
- 4) Follows the prescribed checklists to verify procedures for securing the inoperative engine.
- 5) Monitors the operating engine and makes necessary adjustments.
- 6) Demonstrates coordinated flight with one engine inoperative.
- 7) Maintains altitude ± 100 feet (30 meters), or minimum sink as appropriate and heading $\pm 10^\circ$, bank $\pm 5^\circ$, and levels off from climbs and descents within ± 100 feet (30 meters).

12.4 TASK: INSTRUMENT APPROACH – ONE ENGINE INOPERATIVE (BY REFERENCE TO INSTRUMENTS)

Applicable To: AMEL/AMES

Objective. To determine that the applicant—

- 1) Exhibits knowledge of the elements by explaining the procedures used during a published instrument approach with one engine inoperative.
- 2) Recognizes engine failure, sets the engine controls, reduces drag, identifies and verifies the inoperative engine, and feathers appropriate engine propeller.
- 3) Establishes and maintains a bank toward the operating engine, as required, for best performance in straight and level flight.
- 4) Follows the prescribed checklists to verify procedures for securing the inoperative engine.
- 5) Monitors the operating engine and makes necessary adjustments.
- 6) Requests and receives an actual or a simulated ATC clearance for an instrument approach.
- 7) Follows the actual or a simulated ATC clearance for an instrument approach.
- 8) Maintains altitude within 100 feet (30 meters), the airspeed within ± 10 knots if within the aircraft's capability, and heading $\pm 10^\circ$.
- 9) Establishes a rate of descent that will ensure arrival at the MDA or DH/DA, with the aeroplane in a position from which a descent to a landing, on the intended runway can be made, either straight in or circling as appropriate.
- 10) On final approach segment, no more than three-quarter-scale deflection of the CDI/glide slope indicator. For RMI or ADF indicators, within 10° of the course.
- 11) Avoids loss of aircraft control, or attempted flight contrary to the engine-inoperative operating limitations of the aircraft.
- 12) Complies with the published criteria for the aircraft approach category when circling.
- 13) Completes landing and appropriate checklists.

SECTION 13 AREA OF OPERATION: NIGHT OPERATION

13.1 TASK: NIGHT PREPARATION

Applicable To: AMEL/AMES

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, runways, taxiways and obstructions, and pilot controlled lighting.
- 3) Aeroplane 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 14 AREA OF OPERATION: POST-FLIGHT PROCEDURES

The examiner shall select TASK 14.1 and for AMES applicants at least one other TASK from this Area of Operation.

14.1 TASK: AFTER LANDING, PARKING, & SECURING

Applicable To: AMEL/AMES

Objective. To determine that the applicant—

- 1) Exhibits knowledge of the elements related to after landing, parking and securing procedures.
- 2) Maintains directional control after touchdown while decelerating to an appropriate speed.
- 3) Observes runway hold lines and other surface control markings and lighting.
- 4) Parks in an appropriate area, considering the safety of nearby persons and property.
- 5) Follows the appropriate procedure for engine shutdown.
- 6) Completes the appropriate checklist.
- 7) Conducts an appropriate post-flight inspection and secures the aircraft.

14.2 TASK: ANCHORING

Applicable To: AMES

Objective. To determine that the applicant—

- 1) Exhibits knowledge of the elements related to anchoring.
 - 2) Selects a suitable area for anchoring, considering seaplane movement, water depth, tide, wind, and weather changes.
 - 3) Uses an adequate number of anchors and lines of sufficient strength and length to ensure the seaplane's security.
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14.3 TASK: DOCKING & MOORING

Applicable To: AMES

Objective. To determine that the applicant—

- 1) Exhibits knowledge of the elements related to docking and mooring.
- 2) Approaches the dock or mooring buoy in the proper direction considering speed, hazards, wind, and water current.
- 3) Ensures seaplane security.

14.4 TASK: RAMPING/BEACHING

Applicable To: AMES

Objective. To determine that the applicant—

- 1) Exhibits knowledge of the elements related to ramping/beaching.
- 2) Approaches the ramp/beach considering persons and property, in the proper attitude and direction, at a safe speed, considering water depth, tide, current, and wind.

Ramps/beaches and secures the seaplane in a manner that will protect it from the harmful effect of wind, waves, and changes in water level.

End of Skill Test Standard

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