U.S. Department
of Transportation

**Federal Aviation
Administration**

FAA-S-8081-12A
with Changes 1, 2, and 3

COMMERCIAL PILOT

Practical Test Standards

for

AIRPLANE
(SEL, MEL, SES, MES)

MAY 1997

FLIGHT STANDARDS SERVICE
Washington, DC 20591

COMMERCIAL PILOT AIRPLANE

Practical Test Standards

1997

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NOTE

Material in FAA-S-8081-12A will be effective May 1, 1997. All previous editions of the Commercial Pilot — Airplane Practical Test Standards will be obsolete as of this date.

FOREWORD

The Commercial Pilot – Airplane Practical Test Standards (PTS) book has been published by the Federal Aviation Administration (FAA) to establish the standards for commercial pilot certification practical tests for the airplane category, single-engine, land and sea; and multiengine, land and sea classes. FAA inspectors and designated pilot examiners shall conduct practical tests in compliance with these standards. Flight instructors and applicants should find these standards helpful during training and when preparing for the practical test.

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Thomas C. Accardi
Director, Flight Standards Service

RECORD OF CHANGES

Change 1: 4/28/97
Reason: Text in all STEEP TURNS Tasks has been changed to emphasize steep turn entry speed at manufacturer's recommended speed, or one designated by the Examiner, not to exceed V_A. This provides an option of a slower entry speed, when operating a lower performance land or seaplane.

- **SINGLE-ENGINE LAND**
  AREA OF OPERATION: PERFORMANCE MANEUVERS
  TASK A: STEEP TURNS

- **MULTIENGINE LAND**
  AREA OF OPERATION: PERFORMANCE MANEUVER
  TASK: STEEP TURNS

- **SINGLE-ENGINE SEA**
  AREA OF OPERATION: PERFORMANCE MANEUVERS
  TASK A: STEEP TURNS

- **MULTIENGINE SEA**
  AREA OF OPERATION: PERFORMANCE MANEUVER
  TASK: STEEP TURNS

Change 2: 8/15/97
Reasons: Text changed in Introduction to agree with the new 14 CFR part 61 complex airplane definition.

Notes added to Rating Task Table to clarify required aircraft for added rating practical tests.

Appendixes 1 and 2 are expanded to include additional NOTES and conditions required for pilot certification in FTDs and simulators. Additional lower levels of FTD are now included for certain flight tasks.

- Introduction [Aircraft and Equipment Required for the Practic Test]

- Section 1, Single-engine land (SEL): Rating Task Table

- Appendix 1 (TASK VS. SIMULATION DEVICE CREDIT) Single-Engine Land (SEL)

Appendix 2 (TASK VS. SIMULATION DEVICE CREDIT) Multiengine Land (MEL)

Change 3: 12/4/97
Reasons: Text in Introduction changed to meet complex airplane requirement.

Text changed in Introduction to line up with the new 14 CFR part 61.

- Introduction [Aircraft and Equipment Required for the Practic Test]

- Introduction [Unsatisfactory Performance]]

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INTRODUCTION

General Information

The Flight Standards Service of the Federal Aviation Administration (FAA) has developed this practical test book as the standard to be used by FAA inspectors and designated pilot examiners when conducting commercial pilot — airplane (single-engine land, multiengine land, single-engine sea, and multiengine sea) practical tests. Flight instructors are expected to use this book when preparing applicants for practical test. Applicants should be familiar with this book and refer to these standards during their training.

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

The FAA gratefully acknowledges the valuable assistance provided by many individuals and companies who contributed their time and talent in assisting with the revision of these practical test standards.

This practical test standards may be accessed through the FedWorld Information System by computer modem at 703-321-3339. It may also be accessed on the Internet at http://www.fedworld.gov/pub/faa-att/faa-att.htm. This address goes to the index of training and testing files in the FAA-ATT Library on FedWorld. Subsequent changes to these standards, in accordance with AC 60-27, Announcement of Availability: Changes to Practical Test Standards, will be available through FedWorld and then later incorporated into a printed revision.

This publication may be purchased from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.

Comments regarding this publication should be sent to:

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

Practical Test Standard Concept

Title 14 of the Code of Federal Regulations (14 CFR) part 61 specifies the areas in which knowledge and skill must be demonstrated by the applicant before the issuance of a commercial pilot certificate. The CFRs provide the flexibility to permit the FAA to publish practical test standards containing specific TASKS in which pilot competency shall be demonstrated. The FAA will revise this book whenever it is determined that changes are needed in the interest of safety. Adherence to the provisions of the regulations and the practical test standards is mandatory for evaluation of commercial pilot applicants.

Practical Test Book Description

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

Section 1 Airplane, Single-Engine Land
Section 2 Airplane, Multiengine Land
Section 3 Airplane, Single-Engine Sea
Section 4 Airplane, Multiengine Sea

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

Practical Test Standard Description

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

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

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

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

References upon which this practical test book is based include:

14 CFR part 43	Maintenance, Preventive Maintenance, Rebuilding, and Alteration
14 CFR part 61	Certification: Pilots and Flight Instructors
14 CFR part 91	General Operating and Flight Rules
AC 00-6	Aviation Weather
AC 00-45	Aviation Weather Services
AC 61-21	Flight Training Handbook
AC 61-23	Pilot's Handbook of Aeronautical Knowledge
AC 61-27	Instrument Flying Handbook
AC 61-65	Certification: Pilots and Flight Instructors
AC 61-67	Stall and Spin Awareness Training
AC 61-84	Role of Preflight Preparation
AC 61-107	Operation of Aircraft at Altitudes Above 25,000 Feet MSL
AC 61-115	Positive Exchange of Flight Controls Program
AC 67-2	Medical Handbook for Pilots
AC 90-48	Pilots' Role in Collision Avoidance
AC 91-13	Cold Weather Operation of Aircraft
AC 91-23	Pilot's Weight and Balance Handbook
AC 91-55	Reduction of Electrical System Failures Following Aircraft Engine Starting
AIM	Aeronautical Information Manual
AFD	Airport/Facility Directory
NOTAM's	Notices to Airmen
FAA-P-8740-48	On Landings
FAA-S-8081-4	Instrument Rating Practical Test Standards
Other	Pertinent Pilot Operating Handbooks FAA-Approved Flight Manuals Navigation Charts Seaplane Supplement

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

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

Use of the Practical Test Standards Book

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

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

In preparation for each practical test, the examiner shall develop a written "plan of action." The "plan of action" shall include all TASKS in each AREA OF OPERATION. If the elements in one TASK have already been evaluated in another TASK, they need not be repeated. For example: the "plan of action" need not include evaluating the applicant on complying with markings, signals, and clearances at the end of the flight if that element was sufficiently observed at the beginning of the flight. Any TASKS selected for evaluation during a practical test shall be evaluated in its entirety.

The examiner is not required to follow the precise order in which the AREAS OF OPERATION and TASKS appear in this book. The examiner may change the sequence or combine TASKS with similar Objectives to have an orderly and efficient flow of the practical test. For example, emergency descents may be combined with high-altitude operations. The examiner's "plan of action" shall include the order and combination of TASKS to be demonstrated by the applicant in a manner that will result in an efficient and valid test.

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

The examiner is expected to use good judgment in the performance of simulated emergency procedures. The use of the safest means for simulation is expected. Consideration must be given to local conditions, both meteorological and topographical, at the time of the test, as well as the applicant's ATC workload, and the condition of the aircraft used. If the procedure being evaluated would put the maneuver in jeopardy, it is expected that the applicant will simulate that portion of the maneuver i.e. - hand cranking a gear.

Commercial Pilot — Airplane Practical Test Prerequisites

An applicant for the commercial pilot — airplane practical test is required by 14 CFR part 61 to:

1. possess a private pilot certificate with an airplane rating, if a commercial pilot certificate with an airplane rating is sought, or meet the flight experience required for a private pilot certificate (airplane rating) and pass the private airplane knowledge and practical test;
2. possess an instrument rating (airplane) or the following limitation will be placed on the commercial pilot certificate: "Carrying passengers in airplanes for hire is prohibited at night or on cross-country flights of more than 50 nautical miles;"
3. pass the appropriate airman knowledge test since the beginning of the 24th month before the month in which the practical test is taken;
4. obtain the applicable instruction and aeronautical experience prescribed for the pilot certificate or rating sought;
5. possess a current medical certificate appropriate to the certificate or rating sought;
6. meet the age requirement for the issuance of the certificate or rating sought; and
7. obtain a written statement from an authorized flight instructor certifying that the applicant has been given flight instruction in preparation for the practical test within 60 days preceding the date of application. The statement shall also state that the instructor finds the applicant competent to pass the practical test and that the applicant has satisfactory knowledge of the subject area(s) in which a deficiency was indicated by the airman knowledge test report.[1]

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

Aircraft and Equipment Required for the Practical Test

The commercial pilot applicant is required by 14 CFR part 61 section 61.45 to provide an airworthy, certificated aircraft for use during the practical test. This section further requires that the aircraft:

1. have fully functioning dual controls except as provided in this CFR Section;
2. be capable of performing ALL appropriate TASKS for the commercial pilot certificate or rating and have no operating limitations that prohibit the performance of those TASKS; and
3. must be a complex airplane furnished by the applicant for the performance of takeoffs, landings, and appropriate emergency procedures. A complex landplane is one having retractable landing gear, flaps, and controllable propeller. A complex seaplane is one having flaps and controllable propeller.

NOTE: A turbine powered airplane equipped with retractable landing gear and flaps may be used to meet the requirements in number 3 above.

Use of FAA-Approved Flight Simulator or Flight Training Device

An airman applicant for commercial pilot – airplane certification may be authorized to use an FAA-qualified and approved flight simulator or flight training device, to complete certain flight task requirements listed in this practical test standard. An applicant seeking such certification must complete the training and testing requirements at an approved pilot school or training center.

An airman applicant seeking an added airplane rating to a commercial certificate may also use a qualified and approved flight simulator or flight training device to complete the flight task requirements in accordance with Appendix 1 and 2 of these practical test standards. These appendices should be consulted to identify which flight tasks may be accomplished in an approved flight simulator or flight training device. The level of flight simulator or flight training device required for each maneuver or procedure will also be found in the appropriate appendix. An appropriate class airplane is required to complete the remaining flight TASKS for certification.

When flight tasks are accomplished in an aircraft, certain task elements may be accomplished through “simulated” actions in the interest of safety and practicality, but when accomplished in a flight simulator or flight training device, these same actions would not be “simulated.” For example, when in an aircraft, a simulated engine fire may be addressed by retarding the throttle to idle, simulating the shutdown of the engine, simulating the discharge of the fire suppression agent, if applicable, simulating the disconnect of associated electrical, hydraulic, and pneumatics systems, etc. However, when the same emergency

condition is addressed in a flight simulator or flight training device, all task elements must be accomplished as would be expected under actual circumstances.

Similarly, safety of flight precautions taken in the aircraft for the accomplishment of a specific maneuver or procedure (such as limiting altitude in an approach to stall or setting maximum airspeed for an engine failure expected to result in a rejected takeoff) need not be taken when a flight simulator or flight training device is used.

It is important to understand that whether accomplished in an aircraft, flight simulator or flight training device, all TASKS and elements for each maneuver or procedure shall have the same performance standards applied equally for determination of overall satisfactory performance.

Examiner[2] Responsibility

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

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

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

Satisfactory Performance

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

1. perform the approved areas of operation for the certificate or rating sought within the approved standards;
2. demonstrate mastery of the aircraft with the successful outcome of each task performed never seriously in doubt;

[2] The word "examiner" is used throughout the standard to denote either the FAA inspector or FAA designated pilot examiner who conducts an official practical test.

3. demonstrate sound judgment; and
4. demonstrate single-pilot competence if the aircraft is type certificated for single-pilot operations.

Unsatisfactory Performance

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

Typical areas of unsatisfactory performance and grounds for disqualification are:

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

When a disapproval notice is issued, the examiner shall record the applicant's unsatisfactory performance in terms of AREA OF OPERATIONS appropriate to the practical test conducted.

Crew Resource Management (CRM)

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

Applicant's Use of Checklists

Throughout the practical test, the applicant is evaluated on the use of an appropriate checklist. Proper use is dependent on the specific TASK being evaluated. The situation may be such that the use of the checklist, while accomplishing elements of an Objective, would be either unsafe or unfeasible, especially in a single-pilot operation. In this case, the method might demand the need to review the checklist after the elements have been met. In any case, use of a checklist must consider proper scanning vigilance and division of attention at all times.

Use of Distractions During Practical Tests

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

Metric Conversion Initiative

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

Positive Exchange of Flight Controls

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

When the instructor wishes the student to take control of the aircraft, he/she will say “You have the flight controls.” The student acknowledges immediately by saying, “I have the flight controls.” The flight instructor again says “You have the flight controls.” When control is returned to the instructor, follow the same procedure. A visual check is recommended to verify that the exchange has occurred. There should never be any doubt as to who is flying the aircraft.

Flight Instructor Responsibility

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

Throughout the applicant's training, the flight instructor is responsible for emphasizing the performance of effective visual scanning, collision avoidance, and runway incursion avoidance procedures. These areas are covered, in part, in AC 90-48, Pilot's Role in Collision Avoidance; AC 61-21, Flight Training Handbook; AC 61-23, Pilot's Handbook of Aeronautical Knowledge; and the Aeronautical Information Manual.

SECTION 1

COMMERCIAL PILOT — AIRPLANE

SINGLE-ENGINE LAND (ASEL)

Practical Test Standard

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Airplane Single-Engine Land

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RATING TASK TABLE

Airplane Single-Engine Land

Addition of an Airplane Single-Engine Land rating to an existing Commercial Pilot Certificate								
Area of Operation	Required TASKS are indicated by either the TASK letter(s) that apply(s) or an indication that all or none of the TASKS must be tested.							
	COMMERCIAL PILOT RATING(S) HELD							
	ASES	**AMEL**	**AMES**	**RH**	**RG**	**Glider**	**Balloon**	**Airship**
I	E,F	E,F	E,F	E,F	E,F	ALL	ALL	ALL
II	ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL
III	B,C	B	B,C	B	ALL	ALL	ALL	B
IV	ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL
V	NONE	ALL	ALL	ALL	ALL	ALL	ALL	ALL
VI	NONE	ALL	ALL	ALL	NONE	ALL	ALL	ALL
VII	NONE	NONE	NONE	NONE	NONE	ALL	ALL	NONE
VIII	ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL
IX	ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL
X	ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL
XI	ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL

NOTES:

1. If an applicant holds an AMEL rating, a complex airplane is not required for added ASEL rating.

2. If an applicant holds a single or multiengine sea rating, they must provide a complex airplane for applicable flight TASKS in AREA OF OPERATIONS, IV and IX.

APPLICANT'S PRACTICAL TEST CHECKLIST

APPOINTMENT WITH EXAMINER:

EXAMINER'S NAME_____

LOCATION _____

DATE/TIME _____

ACCEPTABLE AIRCRAFT

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

PERSONAL EQUIPMENT

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

PERSONAL RECORDS

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

EXAMINER'S PRACTICAL TEST CHECKLIST

Airplane Single-Engine Land

APPLICANT'S NAME_____

LOCATION_____

DATE/TIME_____

I. PREFLIGHT PREPARATION

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

II. PREFLIGHT PROCEDURES

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- **B.** COCKPIT MANAGEMENT
- **C.** ENGINE STARTING
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- **E.** BEFORE TAKEOFF CHECK

III. AIRPORT OPERATIONS

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

V. PERFORMANCE MANEUVERS

- **A.** STEEP TURNS
- **B.** CHANDELLES
- **C.** LAZY EIGHTS

VI. GROUND REFERENCE MANEUVER

- EIGHTS ON PYLONS

VII. NAVIGATION

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- **B.** NAVIGATION SYSTEMS AND ATC RADAR SERVICES
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VIII. SLOW FLIGHT AND STALLS

- **A.** MANEUVERING DURING SLOW FLIGHT
- **B.** POWER-OFF STALLS
- **C.** POWER-ON STALLS
- **D.** SPIN AWARENESS

IX. EMERGENCY OPERATIONS

- **A.** EMERGENCY DESCENT
- **B.** EMERGENCY APPROACH AND LANDING
- **C.** SYSTEMS AND EQUIPMENT MALFUNCTIONS
- **D.** EMERGENCY EQUIPMENT AND SURVIVAL GEAR

X. HIGH ALTITUDE OPERATIONS

- **A.** SUPPLEMENTAL OXYGEN
- **B.** PRESSURIZATION

XI. POSTFLIGHT PROCEDURES

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

I. AREA OF OPERATION: PREFLIGHT PREPARATION

A. TASK: CERTIFICATES AND DOCUMENTS

REFERENCES: 14 CFR parts 43, 61, 91; AC 61-21, AC 61-23; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to certificates and documents by explaining—

    a. commercial pilot certificate privileges and limitations.
    b. medical certificates, class and duration as related to commercial pilot privileges.
    c. pilot logbook or flight records.

2. Exhibits knowledge of the elements related to certificates and documents by locating and explaining—

    a. airworthiness and registration certificates.
    b. operating limitations, placards, instrument markings, Pilot's Operating Handbook and Airplane Flight Manual.
    c. weight and balance data, and equipment list.
    d. airworthiness directives, compliance records, maintenance/inspection requirements, tests, and other appropriate records.

3. Exhibits knowledge of the elements and procedures related to inoperative instruments and equipment by explaining—

    a. limitations imposed on airplane operations with inoperative instruments or equipment.
    b. when a special flight permit is required.
    c. procedures for obtaining a special flight permit.

B. TASK: WEATHER INFORMATION

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

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to weather information by analyzing weather reports, charts, and forecasts from various sources with emphasis on—

    a. convective SIGMET's.
    b. SIGMET's.
    c. AIRMET's.
    d. wind shear reports.
    e. PIREP's.

2. Makes a competent "go/no-go" decision based on available weather information.

C. TASK: CROSS-COUNTRY FLIGHT PLANNING

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

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. On the day of the test, the final flight plan shall include real-time weather to the first fuel stop. Computations shall be based on maximum allowable passenger, baggage and/or cargo loads.
2. Uses appropriate, current aeronautical charts.
3. Properly identifies airspace, obstructions, and terrain features.
4. Selects easily identifiable en route checkpoints.
5. Selects most favorable altitudes or flight levels, considering weather conditions and equipment capabilities.
6. Computes headings, flight time, and fuel requirements.
7. Selects appropriate navigation system/facilities and communication frequencies.
8. Extracts and records pertinent information from NOTAM's, Airport/Facility Directory, and other flight publications.
9. Completes a navigation log and simulates filing a VFR flight plan.

D. TASK: NATIONAL AIRSPACE SYSTEM

REFERENCES: 14 CFR part 91; AIM.

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

1. VFR Weather Minimums— for all classes of airspace.
2. Airspace classes— their boundaries, pilot certification and airplane equipment requirements for the following—

    a. Class A,
    b. Class B,
    c. Class C,
    d. Class D,
    e. Class E, and,
    f. Class G.

3. Special use airspace and other airspace areas.

E. TASK: PERFORMANCE AND LIMITATIONS

REFERENCES: AC 61-21, AC 61-23, AC 61-84, AC 91-23; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to performance and limitations by explaining the use of charts, tables, and appropriate data to determine performance, including takeoff, climb, cruise, endurance, landing distance, and the adverse effects of exceeding limitations.
2. Describes the effects of various atmospheric conditions on the airplane's performance, to include—

    a. calibrated airspeed.
    b. true airspeed.
    c. pressure altitude.
    d. density altitude.

3. Computes weight and balance, including adding, removing, and shifting weight. Determines if the weight and center of gravity will remain within limits during all phases of flight.
4. Determines whether the computed performance is within the airplane's capabilities and operating limitations.

F. TASK: OPERATION OF SYSTEMS

REFERENCES: AC 61-21, AC 61-23; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual.

Objective. To determine that the applicant exhibits knowledge of the elements related to the operation of systems on the airplane provided for the practical test by explaining at least five (5) of the following:

1. Primary flight controls and trim.
2. Flaps, leading edge devices, and spoilers.
3. Powerplant and propeller.
4 Landing gear system.
5. Fuel, oil, and hydraulic systems.
6. Electrical system.
7. Avionics systems.
8. Pitot-static system, vacuum/pressure system and associated flight instruments.
9. Environmental system.
10. Deicing and anti-icing systems.

G. TASK: AEROMEDICAL FACTORS

REFERENCES: AC 61-21, AC 61-23, AC 67-2; AIM.

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

1. The symptoms, causes, effects, and corrective actions of at least four (4) of the following—

    a. hypoxia.
    b. hyperventilation.
    c. middle ear and sinus problems.
    d. spatial disorientation.
    e. motion sickness.
    f. carbon monoxide poisoning.
    g. stress and fatigue.

2. The effects of alcohol and drugs, including over-the-counter drugs.
3. The effects of nitrogen excesses during scuba dives upon a pilot and/or passenger in flight.

H. TASK: PHYSIOLOGICAL ASPECTS OF NIGHT FLYING

REFERENCES: AC 61-21, AC 67-2; AIM.

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

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

I. TASK: LIGHTING AND EQUIPMENT FOR NIGHT FLYING

REFERENCES: 14 CFR part 91; AC 61-21; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual.

Objective. To determine that the applicant exhibits knowledge of the elements related to lighting and equipment for night flying by explaining:

1. Types and uses of various personal lighting devices.
2. Required equipment, additional equipment recommended, and location of external navigation lighting of the airplane.
3. Meaning of various airport and navigation lights, the method of determining their status, and the procedure for airborne activation of runway lights.

II. AREA OF OPERATION: PREFLIGHT PROCEDURES

A. TASK: PREFLIGHT INSPECTION

REFERENCES: AC 61-21; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual.

Objective. To determine that the applicant:

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1. Exhibits knowledge of the elements related to a preflight inspection including which items must be inspected, the reasons for checking each item, and how to detect possible defects.
2. Inspects the airplane with reference to an appropriate checklist.
3. Verifies that the airplane is in condition for safe flight, notes any discrepancy, and determines whether the airplane requires maintenance.
4. Locates and identifies switches, circuit breakers/fuses, and spare fuses, pertinent to day and night operations.

B. TASK: COCKPIT MANAGEMENT

REFERENCES: AC 61-21; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to efficient cockpit management procedures and related safety factors.
2. Organizes and arranges material and equipment in a manner that makes the items readily available.
3. Briefs or causes the briefing of occupants on the use of safety belts and emergency procedures.
4. Uses all appropriate checklists.

C. TASK: ENGINE STARTING

REFERENCES: AC 61-21, AC 61-23, AC 91-13, AC 91-55; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual.

Objective. To determine that the applicant:

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

D. TASK: TAXIING

REFERENCES: AC 61-21; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to recommended taxi procedures, including the effect of wind on the airplane during taxiing and the appropriate control position for such conditions.
2. Performs a brake check immediately after the airplane begins moving.
3. Positions flight controls properly, considering the wind.
4. Controls direction and speed without excessive use of brakes.
5. Complies with airport markings, signals, and ATC clearances.
6. Avoids other aircraft and hazards.
7. Completes the appropriate checklist.

E. TASK: BEFORE TAKEOFF CHECK

REFERENCES: AC 61-21; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to the before takeoff check, including the reasons for checking each item and how to detect malfunctions.
2. Positions the airplane properly considering other aircraft, wind and surface conditions.
3. Divides attention inside and outside the cockpit.
4. Ensures the engine temperatures and pressures are suitable for run-up and takeoff.
5. Accomplishes the before takeoff checks and ensures the airplane is in safe operating condition.
6. Reviews takeoff performance airspeeds, takeoff distances, departure and emergency procedures.
7. Ensures no conflict with traffic prior to taxiing into takeoff position.
8. Completes appropriate checklist.

III. AREA OF OPERATION: AIRPORT OPERATIONS

A. TASK: RADIO COMMUNICATIONS AND ATC LIGHT SIGNALS

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

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to radio communications, radio failure, and ATC light signals.
2. Demonstrates use of radio communications by—

    a. selecting appropriate frequencies for facilities to be used.
    b. transmitting using recommended phraseology.
    c. acknowledging and complying with radio communications and ATC instructions.

3. Uses appropriate procedures for simulated radio communications failure.
4. Complies with ATC light signals.

B. TASK: TRAFFIC PATTERNS

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

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to traffic pattern. This shall include procedures at controlled and uncontrolled airports, runway incursion and collision avoidance, wake turbulence avoidance, and approach procedure when wind shear is reported.
2. Complies with established traffic pattern procedures.
3. Maintains proper spacing from other traffic.
4. Establishes an appropriate distance from the runway/landing area.
5. Corrects for wind-drift to maintain proper ground track.
6. Remains oriented with runway and landing area in use.
7. Maintains and holds traffic pattern altitude ±100 feet (30 meters), and appropriate airspeed ±10 knots.
8. Completes appropriate checklists.

C. TASK: AIRPORT, TAXIWAY, AND RUNWAY SIGNS, MARKINGS, AND LIGHTING

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

Objective. To determine that the applicant:

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

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

A. TASK: NORMAL AND CROSSWIND TAKEOFF AND CLIMB

REFERENCES: AC 61-21; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual.

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

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to normal and crosswind takeoff and climb.
2. Positions the flight controls for the existing conditions.
3. Clears the area, taxies into the takeoff position, and aligns the airplane on the runway center.
4. Advances the throttle to takeoff power.
5. Rotates at recommended airspeed, and accelerates to V_Y, ±5 knots.
6. Retracts the landing gear after a positive rate of climb is established.
7. Maintains takeoff power to a safe maneuvering altitude, then sets climb power.
8. Maintains directional control and proper wind-drift correction throughout the takeoff and climb.
9. Complies with noise abatement procedures.
10. Completes appropriate checklists.

B. TASK: NORMAL AND CROSSWIND APPROACH AND LANDING

REFERENCES: AC 61-21; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual.

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

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to normal and crosswind approach and landing.
2. Considers the wind conditions, landing surface, and obstructions.

3. Selects a suitable touchdown point.
4. Establishes the recommended approach and landing configuration and adjusts power and attitude as required.
5. Maintains a stabilized approach and recommended airspeed with gust factor applied, ±5 knots.
6. Makes smooth, timely, and correct control application during the roundout and touchdown.
7. Remains aware of the possibility of wind shear and/or wake turbulence.
8. Touches down smoothly at approximate stalling speed, at a specified point at or within 200 feet (60 meters) beyond a specified point with no drift, and with the airplane's longitudinal axis aligned with and over the runway centerline.
9. Maintains crosswind correction and directional control throughout the approach and landing.
10. Completes appropriate checklists.

C. TASK: SOFT-FIELD TAKEOFF AND CLIMB

REFERENCES: AC 61-21; Pilot's Operating Handbook; FAA-Approved Airplane Flight Manual.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to a soft-field takeoff and climb.
2. Positions the flight controls and flaps for existing conditions to maximize lift as quickly as possible.
3. Clears the area, taxies onto the takeoff surface at a speed consistent with safety and aligns the airplane without stopping while advancing the throttle smoothly to takeoff power.
4. Establishes and maintains a pitch attitude that will transfer the weight of the airplane from the wheels to the wings.
5. Remains in ground effect after takeoff while accelerating to V_X or V_Y, as required.
6. Maintains V_Y, ±5 knots.
7. Retracts the landing gear and flaps after a positive rate of climb is established, or as specified by the manufacturer.
8. Maintains takeoff power to a safe maneuvering altitude, then sets climb power.
9. Maintains directional control and proper wind-drift correction throughout the takeoff and climb.
10. Completes appropriate checklists.

D. TASK: SOFT-FIELD APPROACH AND LANDING

REFERENCES: AC 61-21; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to a soft-field approach and landing.
2. Considers the wind conditions, landing surface, and obstructions.
3. Selects the most suitable touchdown point.
4. Establishes the recommended approach and landing configuration and adjusts power and pitch attitude as required.
5. Maintains a stabilized approach and recommended airspeed, or in its absence, not more than 1.3 V_{SO}, with gust factor applied, ±5 knots.
6. Makes smooth, timely, and correct control application during the roundout and touchdown.
7. Maintains crosswind correction and directional control throughout the approach and landing.
8. Touches down softly, with no drift, and with the airplane's longitudinal axis aligned with the landing surface.
9. Maintains proper position of the flight controls and sufficient speed to taxi on the soft surface.
10. Completes appropriate checklists.

E. TASK: SHORT-FIELD TAKEOFF AND CLIMB

REFERENCES: AC 61-21; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to a short-field takeoff and climb.
2. Positions the flight controls and flaps for the existing conditions.
3. Clears the area, taxies into position for maximum utilization of available takeoff area.
4. Advances the throttle smoothly to takeoff power while holding brakes, or as specified by the manufacturer.
5. Rotates at the recommended airspeed.
6. Climbs at manufacturer’s recommended airspeed and configuration, or in their absence at V_X, +5/-0 knots until the obstacle is cleared, or until the airplane is at least 50 feet (20 meters) above the surface.

7. After clearing the obstacle, accelerates to and maintains V_Y, ±5 knots.
8. Retracts the landing gear and flaps after a positive rate of climb is established, or as specified by the manufacturer.
9. Maintains takeoff power to a safe maneuvering altitude, then sets climb power.
10. Maintains directional control and proper wind-drift correction throughout the takeoff and climb.
11. Completes appropriate checklists.

F. TASK: SHORT-FIELD APPROACH AND LANDING

REFERENCES: AC 61-21; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to a short-field approach and landing.
2. Considers the wind conditions, landing surface, and obstructions.
3. Selects the most suitable touchdown point.
4. Establishes the recommended approach and landing configuration and adjusts power and pitch attitude as required.
5. Maintains a stabilized approach and recommended airspeed, or in its absence, not more than 1.3 V_{SO}, with gust factor applied, ±5 knots.
6. Makes smooth, timely, and correct control application during the roundout and touchdown.
7. Remains aware of the possibility of wind shear and/or wake turbulence.
8. Touches down at a specified point at or within 100 feet (30 meters) beyond the specified point, with little or no float, with no drift, and with the airplane's longitudinal axis aligned with and over the center of the landing surface.
9. Maintains crosswind correction and directional control throughout the approach and landing.
10. Applies brakes, as necessary, to stop in the shortest distance consistent with safety.
11. Completes appropriate checklists.

G. TASK: GO-AROUND

REFERENCES: AC 61-21; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to a go-around.
2. Makes a timely decision to discontinue the approach to landing.
3. Applies maximum allowable power immediately and establishes the pitch attitude that will stop the descent.
4. Retracts flaps to approach setting.
5. Retracts the landing gear after a positive rate of climb is established, or as specified by the manufacturer.
6. Trims the airplane to accelerate to V_Y before the final flap retraction then climbs at V_Y, $\pm$5 knots.
7. Maneuvers to the side of runway/landing area to clear and avoid (simulated) conflicting traffic.
8. Maintains maximum allowable power to a safe maneuvering altitude, then sets climb power.
9. Maintains proper wind-drift correction and obstruction clearance throughout the transition to climb.
10. Completes appropriate checklists.

V. AREA OF OPERATION: PERFORMANCE MANEUVERS

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A. TASK: STEEP TURNS

REFERENCES: AC 61-21; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to steep turns.
2. Selects an altitude that allows the task to be completed no lower than 1,500 feet AGL (460 meters) or the manufacturer's recommended altitude, whichever is higher.
3. Establishes the manufacturer's recommended airspeed or if one is not stated, the examiner may designate a safe airspeed not to exceed V_A.
4. Enters a smooth, coordinated 360° steep turn with a 50° bank, ±5°, immediately followed by a 360° steep turn in the opposite direction.
5. Divides attention between airplane control and orientation.
6. Rolls out on the entry heading ±10°.
7. Maintains the entry altitude throughout the maneuver, ±100 feet (30 meters), and airspeed ±10 knots.

B. TASK: CHANDELLES

REFERENCES: AC 61-21; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to performance factors associated with chandelles.
2. Selects an altitude that will allow the maneuver to be performed no lower than 1,500 feet AGL (460 meters) or the manufacturer's recommended altitude, whichever is higher.
3. Establishes the entry configuration at an airspeed no greater than the maximum entry speed recommended by the manufacturer (not to exceed V_A).
4. Establishes approximately, but does not exceed, 30° of bank.
5. Simultaneously applies specified power and pitch to maintain a smooth, coordinated climbing turn with constant bank to the 90° point.

6. Begins a coordinated constant rate of rollout from the 90° point to the 180° point maintaining specified power and a constant pitch attitude that will result in a rollout within ±10° of desired heading and airspeed within +5 knots of power-on stall speed.
7. Reduces pitch attitude to resume straight-and-level flight at the final altitude attained, ±50 feet (20 meters).

C. TASK: LAZY EIGHTS

REFERENCES: AC 61-21; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to performance factors associated with lazy eights.
2. Selects an altitude that will allow the task to be performed no lower than 1,500 feet AGL (460 meters) or the manufacturer's recommended altitude, whichever is higher.
3. Selects a prominent 90° reference point in the distance.
4. Establishes the recommended entry power and airspeed.
5. Plans and remains oriented while maneuvering the airplane with positive, accurate control, and demonstrates mastery of the airplane.
6. Achieves the following throughout the task—

    a. constant change of pitch, bank, and turn rate.
    b. altitude and airspeed consistent at the 90° points, ±100 feet (30 meters) and ±10 knots respectively.
    c. through proper power setting, attains the starting altitude and airspeed at the completion of the maneuver, ±100 feet (30 meters) and ±10 knots respectively.
    d. heading tolerance ±10° at each 180° point.

7. Continues the task through at least two 180° circuits and resumes straight-and-level flight.

VI. AREA OF OPERATION: GROUND REFERENCE MANEUVER

TASK: EIGHTS ON PYLONS

REFERENCE: AC 61-21.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to eights on pylons including the relationship of groundspeed change to the performance of the maneuver.
2. Determines the approximate pivotal altitude.
3. Selects suitable pylons, considering emergency landing areas, that will permit approximately 3 to 5 seconds of straight-and-level flight between them.
4. Attains proper configuration and airspeed prior to entry.
5. Applies the necessary corrections so that the line-of-sight reference line remains on the pylon with minimum longitudinal movement.
6. Exhibits proper orientation, division of attention, and planning.
7. Applies the necessary wind-effect correction to track properly between pylons.
8. Holds pylon using appropriate pivotal altitude avoiding slips and skids.

VII. AREA OF OPERATION: NAVIGATION

A. TASK: PILOTAGE AND DEAD RECKONING

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

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to pilotage and dead reckoning.
2. Correctly flies to at least the first planned checkpoint to demonstrate accuracy in computations, considers available alternates, and suitable action for various situations including possible route alteration by the examiner.
3. Follows the preplanned course by reference to landmarks.
4. Identifies landmarks by relating the surface features to chart symbols.
5. Navigates by means of precomputed headings, groundspeed, and elapsed time.
6. Verifies the airplane's position within 1 nautical mile (1.85 km) of flight planned route at all times.
7. Arrives at the en route checkpoints or destination within 3 minutes of the ETA.
8. Corrects for, and records, the differences between preflight fuel, groundspeed, and heading calculations and those determined en route.
9. Maintains appropriate altitude, ±100 feet (30 meters), and headings, ±10°.
10. Completes appropriate checklists.

B. TASK: NAVIGATION SYSTEMS AND ATC RADAR SERVICES

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

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to navigation systems and ATC radar services.
2. Selects and identifies the appropriate navigation system/facility.
3. Locates the airplane's position using radials, bearings, or coordinates, as appropriate.
4. Intercepts and tracks a given radial or bearing, if appropriate.
5. Recognizes and describes the indication of station passage.
6. Recognizes signal loss and takes appropriate action.

7. Utilizes proper communication procedures when utilizing ATC radar services.
8. Maintains the appropriate altitude, ±100 feet (30 meters), heading, ±10°.

C. TASK: DIVERSION

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

Objective. To determine that the applicant:

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

D. TASK: LOST PROCEDURE

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

Objective. To determine that the applicant:

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

VIII. AREA OF OPERATION: SLOW FLIGHT AND STALLS

A. TASK: MANEUVERING DURING SLOW FLIGHT

REFERENCES: AC 61-21; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to flight characteristics and controllability associated with maneuvering during slow flight.
2. Selects an entry altitude that will allow the task to be completed no lower than 1,500 feet (460 meters) AGL or the manufacturer's recommended altitude, whichever is higher.
3. Stabilizes and maintains the airspeed at 1.2 V_{S1}, ±5 knots.
4. Establishes straight-and-level flight and level turns, with gear and flaps selected as specified by the examiner.
5. Maintains the specified altitude, ±50 feet (20 meters).
6. Maintains the specified heading during straight flight ±10°.
7. Maintains specified bank angle, ±10°, during turning flight.
8. Rolls out on specified headings, ±10°.
9. Divides attention between airplane control and orientation.

B. TASK: POWER-OFF STALLS

REFERENCES: AC 61-21, AC 61-67; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to aerodynamic factors associated with power-off stalls and how this relates to actual approach and landing situations.
2. Selects an entry altitude that allows the task to be completed no lower than 1,500 feet (460 meters) AGL or the manufacturer's recommended altitude, whichever is higher.
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 the specified heading ±10°, in straight flight; maintains a specified angle of bank, not to exceed 30°, +0/-10°, in turning flight, while inducing a stall.
6. Recognizes and announces the onset of the stall by identifying the first aerodynamic buffeting or decay of control effectiveness.

7. Recovers promptly as the stall occurs by simultaneously decreasing the pitch attitude, increasing power and leveling the wings, with a minimum loss of altitude.
8. Retracts flaps to the recommended setting, and retracts landing gear after a positive rate of climb is established.
9. Accelerates to V_X or V_Y speed before final flap retraction, or as recommended by the manufacturer.
10. Returns to the altitude, heading, and airspeed specified by the examiner.

C. TASK: POWER-ON STALLS

REFERENCES: AC 61-21, AC 61-67; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual.

NOTE: In some high performance airplanes**,** the power setting may have to be reduced below the practical test standards guideline power setting to prevent excessively high pitch attitudes (greater than 30° nose up).

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to aerodynamic factors associated with power-on stalls and how this relates to actual takeoff and departure situations.
2. Selects an entry altitude that allows the task to be completed no lower than 1,500 feet (460 meters) AGL or the manufacturer's recommended altitude, whichever is higher.
3. Establishes the takeoff configuration and slows the airplane to normal lift-off speed.
4. Sets power to manufacturer's recommended power-on stall power setting while establishing the climb attitude (in the absence of a manufacturer recommended power setting, use no less than approximately 55-60 percent of full power as a guideline).
5. Maintains the specified heading ±10°, in straight flight; maintains a specified angle of bank, not to exceed a 20° angle of bank, ±10°, in turning flight.
6. Recognizes and announces the onset of the stall by identifying the first aerodynamic buffeting or decay of control effectiveness.
7. Recovers promptly as the stall occurs, by simultaneously decreasing the pitch attitude, increasing power and leveling the wings, with a minimum loss of altitude.

8. Retracts flaps (if applicable) and landing gear after a positive rate of climb is established.
9. Returns to the altitude, heading, and airspeed specified by the examiner.

D. TASK: SPIN AWARENESS

REFERENCES: AC 61-21, AC 61-67; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual.

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

1. Aerodynamic conditions required for a spin.
2. Flight situations and conditions where unintentional spins may occur.
3. Instrument indications during a spin and/or spiral.
4. Techniques and procedures used to recognize and recover from unintentional spins.

IX. AREA OF OPERATION: EMERGENCY OPERATIONS

A. TASK: EMERGENCY DESCENT

REFERENCES: AC 61-21; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to an emergency descent.
2. Recognizes situations, such as decompression, cockpit smoke and/or fire, that require an emergency descent.
3. Establishes the emergency descent configuration and airspeed, and maintains that airspeed, ±5 knots.
4. Uses proper engine control settings.
5. Exhibits orientation, division of attention, and proper planning.
6. Maintains positive load factors during the descent.
7. Completes appropriate checklists.

B. TASK: EMERGENCY APPROACH AND LANDING

REFERENCES: AC 61-21; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual.

NOTE: Emergency landings shall be evaluated over favorable terrain in the event an actual emergency landing becomes necessary.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to emergency approach procedures.
2. Establishes recommended best-glide airspeed, ±10 knots, and configuration during simulated emergencies.
3. Selects a suitable landing area, considering the possibility of an actual emergency landing.
4. Attempts to determine the reason for the simulated malfunction.
5. Varies airspeed, descent, and flight pattern as necessary, so as to arrive at selected landing area, considering altitude, wind, terrain, obstructions, and other factors.
6. Prepares for low approach, landing, or go-around, as specified by the examiner.
7. Completes appropriate checklists.

C. TASK: SYSTEMS AND EQUIPMENT MALFUNCTIONS

REFERENCES: AC 61-21; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual.

NOTE: Examiners shall relate the required applicant's knowledge in this TASK to the most complex airplane (as defined in the Introduction) used for the practical test.

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 appropriate action for at least five (5) of the following simulated emergencies—

    a. partial power loss.
    b. engine failure during various phases of flight.
    c. engine roughness or overheat.
    d. loss of oil pressure.
    e. fuel starvation.
    f. smoke and fire.
    g. icing.
    h. pitot static/vacuum system and associated flight instruments.
    i. electrical.
    j. landing gear.
    k. flaps (asymmetrical position).
    l. inadvertent door opening.
    m. emergency exits open.
    n. any other emergency unique to the airplane flown.

3. Follows the appropriate emergency checklists or procedures.

D. TASK: EMERGENCY EQUIPMENT AND SURVIVAL GEAR

REFERENCES: AC 61-21; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to emergency equipment appropriate to the airplane used for the practical test by describing—

    a. location in the airplane.
    b. method of operation.
    c. servicing requirements.
    d. method of safe storage.

2. Exhibits knowledge of the elements related to survival gear by describing—

    a. survival gear appropriate for operation in various climatological and topographical environments.
    b. location in the airplane.
    c. method of operation.
    d. servicing requirements.
    e. method of safe storage.

X. AREA OF OPERATION: HIGH ALTITUDE OPERATIONS

A. TASK: SUPPLEMENTAL OXYGEN

REFERENCES: 14 CFR part 91; AC 61-107; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual, AIM.

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

1. Supplemental oxygen requirements for flight crew and passengers when operating non-pressurized airplanes.
2. Distinctions between "aviators' breathing oxygen" and other types.
3. Method of determining oxygen service availability.
4. Operational characteristics of continuous flow, demand, and pressure-demand oxygen systems.
5. Care and storage of high-pressure oxygen bottles.

B. TASK: PRESSURIZATION

REFERENCES: 14 CFR part 91; AC 61-21, AC 61-107; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual, AIM.

NOTE: This TASK applies only if the flight test airplane is equipped for pressurized flight operations.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to pressurization by explaining—

    a. fundamental concept of cabin pressurization.
    b. supplemental oxygen requirements when operating airplanes with pressurized cabins.
    c. physiological hazards associated with high altitude flight and decompression.
    d. operational and physiological reasons for completing emergency descents.
    e. need for wearing safety belts and for rapid access to supplemental oxygen.

2. Operates the pressurization system properly, and reacts promptly and properly to simulated pressurization malfunctions.

XI. AREA OF OPERATION POSTFLIGHT PROCEDURES

A. TASK: AFTER LANDING

REFERENCES: AC 61-21; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to after-landing procedures, including local and ATC procedures.
2. Clears runway/landing area, taxies to suitable parking/refueling area using proper wind correction and obstacle clearance procedures.
3. Completes appropriate checklists.

B. TASK: PARKING AND SECURING

REFERENCES: AC 61-21; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to ramp safety, parking hand signals, shutdown, securing, and postflight inspection.
2. Parks the airplane properly, considering the safety of nearby persons and property.
3. Follows the recommended procedure for engine shutdown, securing the cockpit, and deplaning passengers.
4. Secures the airplane properly.
5. Performs a satisfactory postflight inspection.
6. Completes appropriate checklists.

APPENDIX 1

TASK VS. SIMULATION DEVICE CREDIT

Single-Engine Land (SEL)

APPENDIX 1

AIRPLANE SINGLE-ENGINE LAND
TASK VS. SIMULATION DEVICE CREDIT

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

1. The device must be evaluated, determined to meet the appropriate standards, and assigned the appropriate qualification level by the National Simulator Program Manager. The device must continue to meet qualification standards through continuing evaluations as outlined in the appropriate advisory circular (AC). For airplane flight training devices (FTD's), AC 120-45 (as amended), Airplane Flight Training Device Qualifications, will be used. For simulators, AC 120-40 (as amended), Airplane Simulator Qualification, will be used.
2. The FAA must approve the device for training and checking the specific flight TASKS listed in this appendix.
3. The device must continue to support the level of student or applicant performance required by this PTS.

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

USE OF CHART

X Creditable.

A Creditable if appropriate systems are installed and operating.

* Asterisk items require use of FTD or simulator visual reference.

NOTES:
1. Use of Level 2 or Level 3 FTD's authorized only for those airplanes not requiring a type rating.
2. For practical tests, not more than 50 % of the maneuvers may be accomplished in an FTD or simulator UNLESS:
   a. each maneuver has been satisfactorily accomplished for an instructor, in the appropriate airplane, not less than three (3) times, OR
   b. the applicant has logged not less than 500 hours of flight time as a pilot in airplanes.
3. Not all AREAS OF OPERATIONS (AOAs) and TASKS required by this PTS are listed in the appendix. The remaining AOAs and TASKS must be accomplished in an airplane.
4. Standards for and use of Level 1 FTD's have not been determined.

APPENDIX 1

AIRPLANE SINGLE-ENGINE LAND

FLIGHT TASK Areas of Operation :	FLIGHT SIMULATION DEVICE LEVEL 1	2	3	4	5	6	7	A	B	C	D
II. Preflight Procedures											
A. Preflight Inspection (Cockpit Only)	__	A	X	A	A	X	X	X	X	X	X
B. Cockpit Management	__	A	X	A	A	X	X	X	X	X	X
C. Engine Starting	__	A	X	A	A	X	X	X	X	X	X
D. Taxiing	__	__	__	__	__	__	__	__	__	X	X
E. Before Takeoff Check	__	A	X	A	A	X	X	X	X	X	X
IV. Takeoffs, Landings, and Go-Arounds											
A. Normal and Crosswind Takeoff and Climb	__	__	__	__	__	__	__	__	__	X	X
B. Normal and Crosswind Approach and Landing	__	__	__	__	__	__	__	__	__	X	X
E. Short-Field Takeoff and Climb	__	__	__	__	__	__	__	X	X	X	X
F. Short-Field Approach and Landing	__	__	__	__	__	__	__	__	__	X	X
G. Go-Around *	__	__	X	__	__	X	X	X	X	X	X
V. Performance Maneuvers											
A. Steep Turns	__	__	X	__	__	X	X	X	X	X	X
VII. Navigation *											
B. Navigation Systems and ATC Radar Services	__	A	__	__	A	X	X	X	X	X	X
C. Diversion	__	A	X	__	A	X	X	X	X	X	X
D. Lost Procedures	__	A	X	__	A	X	X	X	X	X	X

APPENDIX 1

AIRPLANE SINGLE-ENGINE LAND

FLIGHT TASK	FLIGHT SIMULATION DEVICE LEVEL										
Areas of Operation :	1	2	3	4	5	6	7	A	B	C	D
VIII. Slow Flight and Stalls											
A. Maneuvering During Slow Flight	__	__	X	__	__	X	X	X	X	X	X
IX. Emergency Operations											
A. Emergency Descent	__	__	X	__	__	X	X	X	X	X	X
B. Emergency Approach and Landing	__	__	__	__	__	__	__	__	__	X	X
C. Systems and Equipment Malfunctions	__	A	X	A	A	X	X	X	X	X	X
X. High Altitude Operations											
B. Pressurization	__	A	X	A	A	X	X	X	X	X	X
XI. Postflight Procedures											
A. After Landing	__	A	X	A	A	X	X	X	X	X	X

SECTION 2

COMMERCIAL PILOT — AIRPLANE

MULTIENGINE LAND
(AMEL)

Practical Test Standard

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RATING TASK TABLE

Airplane Multiengine Land

Addition of an Airplane Multiengine Land rating to an existing Commercial Pilot Certificate								
Area of Operation	Required TASKS are indicated by either the TASK letter(s) that apply(s) or an indication that all or none of the TASKS must be tested.							
	COMMERCIAL PILOT RATING(S) HELD							
	ASEL	**ASES**	**AMES**	**RH**	**RG**	**Glider**	**Balloon**	**Airship**
I	E,F,G	E,F,G	E,F,G	A,E,F,G	A, E,F,G	A,E,F,G	A,E,FG	A,E,F,G
II	ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL
III	B	B,C	B,C	B	B	B	ALL	B
IV	ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL
V	ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL
VI	NONE	NONE	NONE	NONE	NONE	NONE	ALL	NONE
VII	ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL
VIII	ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL
IX *	ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL
X	A	A	A	ALL	ALL	ALL	ALL	ALL
XI	ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL

* If the applicant is instrument rated, and instrument compentency has been previously demonstrated in a multiengine airplane, AREA OF OPERATION IX, TASKS A, B, and C need not be demonstrated.

Example: Private pilot AMEL and instrument rated (no "VFR only" limitation). Applicant need not accomplish TASKS A, B, and C.

Deletion of Airplane Multiengine Land Limitation "Limited to Center Thrust"	
Required TASKS are indicated by either the TASK letter(s) that apply(s) or an indication that all or none of the TASKS must be tested.	
COMMERCIAL PILOT RATING HELD	
Area of Operation	**AMEL** Limited to Center Thrust
I	E, F, G
II	ALL
III	NONE
IV	ALL
V	NONE
VI	NONE
VII	ALL
VIII	ALL
IX *	ALL
X	NONE
XI	ALL

* If the applicant is instrument rated, and instrument competency has only been previously demonstrated in a “Center Thrust Airplane,” all TASKS in AREA OF OPERATION IX must be demonstrated.

APPLICANT'S PRACTICAL TEST CHECKLIST

APPOINTMENT WITH EXAMINER:

EXAMINER'S NAME_____

LOCATION _____

DATE/TIME _____

ACCEPTABLE AIRCRAFT

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

PERSONAL EQUIPMENT

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

PERSONAL RECORDS

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

EXAMINER'S PRACTICAL TEST CHECKLIST

Airplane Multiengine Land

APPLICANT'S NAME_____

LOCATION_____

DATE/TIME_____

I. PREFLIGHT PREPARATION

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

II. PREFLIGHT PROCEDURES

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

III. AIRPORT OPERATIONS

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

IV. TAKEOFFS, LANDINGS, AND GO-AROUNDS

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

V. PERFORMANCE MANEUVER

- STEEP TURNS

VI. NAVIGATION

- **A.** PILOTAGE AND DEAD RECKONING
- **B.** NAVIGATION SYSTEMS AND ATC RADAR SERVICES
- **C.** DIVERSION
- **D.** LOST PROCEDURE

VII. SLOW FLIGHT AND STALLS

- **A.** MANEUVERING DURING SLOW FLIGHT
- **B.** POWER-OFF STALLS
- **C.** POWER-ON STALLS
- **D.** SPIN AWARENESS

VIII. EMERGENCY OPERATIONS

- **A.** EMERGENCY DESCENT
- **B.** MANEUVERING WITH ONE ENGINE INOPERATIVE
- **C.** ENGINE INOPERATIVE — LOSS OF DIRECTIONAL CONTROL DEMONSTRATION
- **D.** ENGINE FAILURE DURING TAKEOFF BEFORE V_{MC}
- **E.** ENGINE FAILURE AFTER LIFT-OFF (SIMULATED)
- **F.** APPROACH AND LANDING WITH AN INOPERATIVE ENGINE (SIMULATED)
- **G.** SYSTEMS AND EQUIPMENT MALFUNCTIONS
- **H.** EMERGENCY EQUIPMENT AND SURVIVAL GEAR

IX. MULTIENGINE OPERATIONS

- **A.** ENGINE FAILURE DURING FLIGHT (By Reference To Instruments)
- **B.** INSTRUMENT APPROACH - ALL ENGINES OPERATING (By Reference To Instruments)
- **C.** INSTRUMENT APPROACH - ONE ENGINE INOPERATIVE (By Reference To Instruments)

X. HIGH ALTITUDE OPERATIONS

- **A.** SUPPLEMENTAL OXYGEN
- **B.** PRESSURIZATION

XI. POSTFLIGHT PROCEDURES

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

I. AREA OF OPERATION: PREFLIGHT PREPARATION

A. TASK: CERTIFICATES AND DOCUMENTS

REFERENCES: 14 CFR parts 43, 61, 91; AC 61-21, AC 61-23; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to certificates and documents by explaining—

    a. commercial pilot certificate privileges and limitations.
    b. medical certificates, class and duration as related to commercial pilot privileges.
    c. pilot logbook or flight records.

2. Exhibits knowledge of the elements related to certificates and documents by locating and explaining—

    a. airworthiness and registration certificates.
    b. operating limitations, placards, instrument markings, Pilot's Operating Handbook and Airplane Flight Manual.
    c. weight and balance data, and equipment list.
    d. airworthiness directives, compliance records, maintenance/inspection requirements, tests, and other appropriate records.

3. Exhibits knowledge of the elements and procedures related to inoperative instruments and equipment by explaining—

    a. limitations imposed on airplane operations with inoperative instruments or equipment.
    b. when a special flight permit is required.
    c. procedures for obtaining a special flight permit.

B. TASK: WEATHER INFORMATION

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

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to weather information by analyzing weather reports, charts, and forecasts from various sources with emphasis on—

   a. convective SIGMET's.
   b. SIGMET's.
   c. AIRMET's.
   d. wind shear reports.
   e. PIREP's.

2. Makes a competent "go/no-go" decision based on the available weather information.

C. TASK: CROSS-COUNTRY FLIGHT PLANNING

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

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. On the day of the test, the final flight plan shall include real-time weather to the first fuel stop. Computations shall be based on maximum allowable passenger, baggage and/or cargo loads.
2. Uses appropriate, current aeronautical charts.
3. Properly identifies airspace, obstructions, and terrain features.
4. Selects easily identifiable en route checkpoints.
5. Selects most favorable altitudes or flight levels, considering weather conditions and equipment capabilities.
6. Computes headings, flight time, and fuel requirements.
7. Selects appropriate navigation system/facilities and communication frequencies.
8. Extracts and records pertinent information from NOTAM's, Airport/Facility Directory, and other flight publications.
9. Completes a navigation log and simulates filing a VFR flight plan.

D. TASK: NATIONAL AIRSPACE SYSTEM

REFERENCES: 14 CFR part 91; AIM.

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

1. VFR Weather Minimums - for all classes of airspace.
2. Airspace classes - their boundaries, pilot certification and airplane equipment requirements for the following—

    a. Class A,
    b. Class B,
    c. Class C,
    d. Class D,
    e. Class E, and,
    f. Class G.

3. Special use airspace and other airspace areas.

E. TASK: PERFORMANCE AND LIMITATIONS

REFERENCES: AC 61-21, AC 61-23, AC 61-84, AC 91-23; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to performance and limitations by explaining the use of charts, tables, and appropriate data to determine performance, including takeoff, climb, cruise, endurance, landing distance, and the adverse effects of exceeding limitations.
2. Describes the effects of various atmospheric conditions on the airplane's performance, to include—

    a. calibrated airspeed.
    b. true airspeed.
    c. pressure altitude.
    d. density altitude.

3. Computes weight and balance, including adding, removing, and shifting weight. Determines if the weight and center of gravity will remain within limits during all phases of flight.
4. Determines whether the computed performance is within the airplane's capabilities and operating limitations.

F. TASK: PRINCIPLES OF FLIGHT – ENGINE INOPERATIVE

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

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

1. Importance of reducing drag and banking properly into the good engine(s) for best performance.
2. Importance of establishing and maintaining proper airspeed.
3. Importance of maintaining proper pitch and bank attitudes, and proper coordination of controls.
4. Performance available based on the following drag configurations—

    a. extension of landing gear.
    b. extension of flaps.
    c. extension of both landing gear and flaps.
    d. windmilling propeller on the inoperative engine.

G. TASK: OPERATION OF SYSTEMS

REFERENCES: AC 61-21; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual.

Objective. To determine that the applicant exhibits knowledge of the elements related to the operation of systems on the airplane provided for the practical test by explaining at least five (5) of the following:

1. Primary flight controls and trim.
2. Flaps, leading edge devices, and spoilers.
3. Powerplants and propellers.
4. Landing gear system.
5. Fuel, oil, and hydraulic systems.
6. Electrical system.
7. Avionics systems.
8. Pitot-static system, vacuum/pressure system and associated flight instruments.
9. Environmental system.
10. Deicing and anti-icing systems.

H. TASK: AEROMEDICAL FACTORS

REFERENCES: AC 61-21, AC 61-23, AC 67-2; AIM.

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

1. The symptoms, causes, effects, and corrective actions of at least four (4) of the following—

    a. hypoxia.
    b. hyperventilation.
    c. middle ear and sinus problems.
    d. spatial disorientation.
    e. motion sickness.
    f. carbon monoxide poisoning.
    g. stress and fatigue.

2. The effects of alcohol and drugs, including over-the-counter drugs.
3. The effects of nitrogen excesses during scuba dives upon a pilot and/or passenger in flight.

I. TASK: PHYSIOLOGICAL ASPECTS OF NIGHT FLYING

REFERENCES: AC 61-21, AC 67-2; AIM.

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

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

J. TASK: LIGHTING AND EQUIPMENT FOR NIGHT FLYING

REFERENCES: 14 CFR part 91; AC 61-21; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual.

Objective. To determine that the applicant exhibits knowledge of the elements related to lighting and equipment for night flying by explaining:

1. Types and uses of various personal lighting devices.
2. Required equipment, additional equipment recommended, and location of external navigation lighting of the airplane.
3. Meaning of various airport and navigation lights, the method of determining their status, and the procedure for airborne activation of runway lights.

II. AREA OF OPERATION: PREFLIGHT PROCEDURES

A. TASK: PREFLIGHT INSPECTION

REFERENCES: AC 61-21; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to a preflight inspection including which items must be inspected, the reason for checking each item, and how to detect possible defects.
2. Inspects the airplane with reference to an appropriate checklist.
3. Verifies that the airplane is in condition for safe flight, notes any discrepancy, and determines whether the airplane requires maintenance.
4. Locates and identifies switches, circuit breakers/fuses, and spare fuses, pertinent to day and night operations.

B. TASK: COCKPIT MANAGEMENT

REFERENCES: AC 61-21; Pilot's Operating Handbook, FAA-Approved Flight Manual.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to efficient cockpit management procedures, and related safety factors.
2. Organizes and arranges material and equipment in a manner that makes the items readily available.
3. Briefs or causes the briefing of occupants on the use of safety belts and emergency procedures.
4. Briefs crew, if applicable.
5. Uses all appropriate checklists.

C. TASK: ENGINE STARTING

REFERENCES: AC 61-21, AC 61-23, AC 91-13, AC 91-55; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual.

Objective. To determine that the applicant:

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

D. TASK: TAXIING

REFERENCES: AC 61-21; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to recommended taxi procedures, including the effect of wind on the airplane during taxiing and the appropriate control position for such conditions.
2. Performs a brake check immediately after the airplane begins movement.
3. Positions flight controls properly, considering the wind.
4. Controls direction and speed without excessive use of brakes.
5. Complies with airport markings, signals, and ATC clearances.
6. Avoids other aircraft and hazards.
7. Completes the appropriate checklist.

E. TASK: BEFORE TAKEOFF CHECK

REFERENCES: AC 61-21; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to the before takeoff check, including the reasons for checking each item and how to detect malfunctions.
2. Positions the airplane properly considering other aircraft, wind and surface conditions.
3. Divides attention inside and outside the cockpit.
4. Ensures that engine temperatures and pressures are suitable for run-up and takeoff.
5. Accomplishes the before takeoff checks and ensures that the airplane is in safe operating condition.
6. Reviews takeoff performance airspeeds, takeoff distances, departure and emergency procedures.
7. Briefs crew on duties, if applicable.
8. Ensures no conflict with traffic prior to taxiing into takeoff position.
9. Completes appropriate checklist.

III. AREA OF OPERATION: AIRPORT OPERATIONS

A. TASK: RADIO COMMUNICATIONS AND ATC LIGHT SIGNALS

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

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to radio communications, radio failure, and ATC light signals.
2. Demonstrates use of radio communications by—

    a. selecting appropriate frequencies for facilities to be used.
    b. transmitting using recommended phraseology.
    c. acknowledging and complying with radio communications and ATC instructions.

3. Uses appropriate procedures for simulated radio communications failure.
4. Complies with ATC light signals.

B. TASK: TRAFFIC PATTERNS

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

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to traffic pattern. This shall include procedures at controlled and uncontrolled airports, runway incursion and collision avoidance, wake turbulence avoidance, and approach procedure when wind shear is reported.
2. Complies with established traffic pattern procedures.
3. Maintains proper spacing from other traffic.
4. Establishes an appropriate distance from the runway/landing area.
5. Corrects for wind-drift to maintain proper ground track.
6. Remains oriented with runway and landing area in use.
7. Maintains and holds traffic pattern altitude ±100 feet (30 meters), and appropriate airspeed ±10 knots.
8. Completes appropriate checklists.

C. TASK: AIRPORT, TAXIWAY, AND RUNWAY SIGNS, MARKINGS, AND LIGHTING

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

Objective. To determine that the applicant:

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

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

A. TASK: NORMAL AND CROSSWIND TAKEOFF AND CLIMB

REFERENCES: AC 61-21; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual.

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

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to normal and crosswind takeoff and climb.
2. Positions the flight controls for the existing conditions.
3. Clears the area, taxies into the takeoff position, and aligns the airplane on the runway centerline.
4. Advances the throttles to takeoff power.
5. Rotates and accelerates to climb speed at manufacturer's recommended airspeeds. In their absence, rotate at V_{MC} plus 5 knots and climb at V_Y, $\pm$5 knots.
6. Retracts the landing gear after a positive rate of climb is established.
7. Maintains takeoff power to a safe maneuvering altitude, then sets climb power.
8. Maintains directional control and proper wind-drift correction throughout takeoff and climb.
9. Complies with noise abatement procedures.
10. Completes appropriate checklists.

B. TASK: NORMAL AND CROSSWIND APPROACH AND LANDING

REFERENCES: AC 61-21; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual.

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

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to normal and crosswind approach and landing.
2. Considers the wind conditions, landing surface, and obstructions.
3. Selects a suitable touchdown point.
4. Establishes the recommended approach and landing configuration and adjusts power and pitch attitude as required.
5. Maintains a stabilized approach and recommended airspeed, with gust factor applied, ±5 knots.
6. Makes smooth, timely, and correct control applications during the roundout and touchdown.
7. Remains aware of the possibility of wind shear and/or wake turbulence.
8. Touches down smoothly at approximate stalling speed, at a specified point at or within 200 feet (60 meters) beyond a specified point with no drift, and with the airplane's longitudinal axis aligned with the runway centerline.
9. Maintains crosswind correction and directional control throughout the approach and landing.
10. Completes appropriate checklists.

C. TASK: SHORT-FIELD TAKEOFF AND CLIMB

REFERENCES: AC 61-21; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual.

NOTE: In airplanes with V_X values within 5 knots of V_{MC} the use of V_Y or the manufacturer's recommended procedures may be more appropriate for this demonstration.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to short-field takeoff and climb.
2. Positions the flight controls and flaps for the existing conditions.
3. Clears the area, taxies into position for maximum utilization of available takeoff area.
4. Advances the throttles smoothly to takeoff power while holding brakes, or as specified by the manufacturer.
5. Rotates at the recommended airspeed.
6. Climbs at manufacturer's recommended airspeed and configuration, or in their absence at V_X, +5/-0 knots until the obstacle is cleared, or until the airplane is at least 50 feet (20 meters) above the surface.
7. After clearing the obstacle, accelerates to and maintains V_Y, ±5 knots.
8. Retracts landing gear and flaps after a positive rate of climb is established, or as specified by the manufacturer.
9. Maintains takeoff power to a safe maneuvering altitude, then sets climb power.
10. Maintains directional control and proper wind-drift correction throughout the takeoff roll and climb.
11. Completes appropriate checklists.

D. TASK: SHORT-FIELD APPROACH AND LANDING

REFERENCES: AC 61-21; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to short-field approach and landing.
2. Considers the wind conditions, landing surface, and obstructions.
3. Selects the most suitable touchdown point.

4. Establishes the recommended approach and landing configuration and adjusts power and pitch attitude as required.
5. Maintains a stabilized approach, controlled rate of descent, and recommended airspeed, or in its absence, not more than 1.3 V_{SO}, with gust factor applied, ±5 knots.
6. Makes smooth, timely, and correct control applications during the roundout and touchdown.
7. Remains aware of the possibility of wind shear and/or wake turbulence.
8. Touches down at a specified point at or within 100 feet (30 meters) beyond a specified point, with little or no float, with no drift, and with the airplane's longitudinal axis aligned with and over the center of the landing surface.
9. Maintains crosswind correction and directional control throughout the approach and landing.
10. Applies brakes, as necessary, to stop in the shortest distance consistent with safety.
11. Completes appropriate checklists.

E. TASK: GO-AROUND

REFERENCES: AC 61-21; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to a go-around.
2. Makes a timely decision to discontinue the approach to landing.
3. Applies maximum allowable power immediately and establishes the pitch attitude that will stop the descent.
4. Retracts flaps to approach setting.
5. Retracts the landing gear after a positive rate of climb is established, or as specified by the manufacturer.
6. Trims the airplane to accelerate to best single-engine climb speed or V_Y, whichever is greater, before the final flap retraction then climbs at the appropriate airspeed, ±5 knots.
7. Maneuvers to the side of runway/landing area to clear and avoid (simulated) conflicting traffic.
8. Maintains maximum allowable power to a safe maneuvering altitude, then sets climb power.
9. Maintains proper wind-drift correction and obstruction clearance throughout the transition to climb.
10. Completes appropriate checklists.

V. AREA OF OPERATION: PERFORMANCE MANEUVER

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TASK: STEEP TURNS

REFERENCES: AC 61-21; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to steep turns.
2. Selects an altitude that allows the task to be completed no lower than 3,000 feet (920 meters) AGL or the manufacturer's recommended altitude, whichever is higher.
3. Establishes the manufacturer's recommended airspeed or if one is not stated, the examiner may designate a safe airspeed not to exceed V_A.
4. Enter a smooth, coordinated 360° steep turn with a 50° bank, ±5°, immediately followed by a 360° steep turn in the opposite direction.
5. Divides attention between airplane control and orientation.
6. Rolls out on the entry heading ±10°.
7. Maintains the entry altitude throughout the maneuver, ±100 feet (30 meters), and airspeed ±10 knots.

VI. AREA OF OPERATION: NAVIGATION

A. TASK: PILOTAGE AND DEAD RECKONING

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

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to pilotage and dead reckoning.
2. Correctly flies to at least the first planned checkpoint to demonstrate accuracy in computations, considers available alternates, and suitable action for various situations including possible route alteration by the examiner.
3. Follows the preplanned course by reference to landmarks.
4. Identifies landmarks by relating the surface features to chart symbols.
5. Navigates by means of precomputed headings, groundspeed, and elapsed time.
6. Verifies the airplane's position within 1 nautical mile (1.85 km) of flight planned route at all times.
7. Arrives at the en route checkpoints or destination within 3 minutes of the ETA.
8. Corrects for, and records, the difference between preflight fuel, groundspeed, and heading calculations and those determined en route.
9. Maintains appropriate altitude, ±100 feet (30 meters) and heading, ±10°.
10. Completes appropriate checklists.

B. TASK: NAVIGATION SYSTEMS AND ATC RADAR SERVICES

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

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to navigation systems and ATC radar services.
2. Selects and identifies the appropriate navigation system/facility.
3. Locates the airplane's position using radials, bearings, or coordinates, as appropriate.
4. Intercepts and tracks a given radial or bearing, as appropriate.
5. Recognizes and describes the indication of station passage.
6. Recognizes signal loss and takes appropriate action.
7. Utilizes proper communication procedures when using ATC radar services.
8. Maintains the appropriate altitude, ±100 feet (30 meters), and heading ±10°.

C. TASK: DIVERSION

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

Objective. To determine that the applicant:

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

D. TASK: LOST PROCEDURE

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

Objective. To determine that the applicant:

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

VII. AREA OF OPERATION: SLOW FLIGHT AND STALLS

A. TASK: MANEUVERING DURING SLOW FLIGHT

REFERENCES: AC 61-21; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to flight characteristics and controllability associated with maneuvering during slow flight.
2. Selects an entry altitude that will allow the task to be completed no lower than 3,000 feet (920 meters) AGL or the manufacturer's recommended altitude, whichever is higher.
3. Stabilizes and maintains the airspeed at 1.2 V_{S1}, ±5 knots.
4. Establishes straight-and-level flight and level turns, with gear and flaps selected as specified by the examiner.
5. Maintains the specified altitude, ±50 feet (20 meters).
6. Maintains the specified heading during straight flight ±10°.
7. Maintains specified bank angle, ±10°, during turning flight.
8. Rolls out on specified headings, ±10°.
9. Divides attention between airplane control and orientation.

B. TASK: POWER-OFF STALLS

REFERENCES: AC 61-21, AC 61-67; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to aerodynamic factors associated with power-off stalls and how this relates to actual approach and landing situations.
2. Selects an entry altitude that allows the task to be completed no lower than 3,000 feet (920 meters) AGL or the manufacturer's recommended altitude, whichever is higher.
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 the specified heading ±10°, in straight flight; maintains a specified angle of bank, not to exceed 30°, +0/-10°, in turning flight, while inducing the stall.
6. Recognizes and announces the onset of the stall by identifying the first aerodynamic buffeting or decay of control effectiveness.

7. Recovers promptly as the stall occurs by simultaneously decreasing the pitch attitude, increasing power and leveling the wings, with a minimum loss of altitude.
8. Retracts flaps to the recommended setting, and retracts landing gear after a positive rate of climb is established.
9. Accelerates to V_X or V_Y speed before final flap retraction, or as recommended by the manufacturer.
10. Returns to the altitude, heading, and airspeed specified by the examiner.

C. TASK: POWER-ON STALLS

REFERENCES: AC 61-21, AC 61-67; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual.

NOTE: In some high performance airplanes**,** the power setting may have to be reduced below the practical test standard guideline power setting to prevent excessively high pitch attitudes (greater than 30° nose up).

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to aerodynamic factors associated with power-on stalls and how this relates to actual takeoff and departure situations.
2. Selects an entry altitude that allows the task to be completed no lower than 3,000 feet (920 meters) AGL or the manufacturer's recommended altitude, whichever is higher.
3. Establishes the takeoff configuration and slows the airplane to normal lift-off speed.
4. Sets power to manufacturer's recommended power-on stall power setting while establishing the climb attitude (in the absence of a manufacturer recommended power setting, use no less than approximately 55-60 percent of full power as a guideline).
5. Maintains the specified heading ±10°, in straight flight; a 20° angle of bank, ±10°, in turning flight.
6. Recognizes and announces the onset of the stall by identifying the first aerodynamic buffeting or decay of control effectiveness.
7. Recovers promptly as the stall occurs by simultaneously decreasing the pitch attitude, increasing power and leveling the wings, with a minimum loss of altitude.
8. Retracts flaps (if applicable) and landing gear after a positive rate of climb is established.
9. Returns to the altitude, heading, and airspeed specified by the examiner.

D. TASK: SPIN AWARENESS

REFERENCES: AC 61-21, AC 61-67; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual.

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

1. Aerodynamic conditions required for a spin.
2. Flight situations and conditions where unintentional spins may occur.
3. Instrument indications during a spin and/or spiral.
4. Techniques and procedures used to recognize and recover from unintentional spins.

VIII. AREA OF OPERATION: EMERGENCY OPERATIONS

A. TASK: EMERGENCY DESCENT

REFERENCES: AC 61-21; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual.

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 prescribed airspeed and configuration for the emergency descent as recommended by the manufacturer without exceeding safety limitations.
4. Uses proper engine control settings.
5. Exhibits orientation, division of attention, and proper planning.
6. Maintains positive load factors during the descent.
7. Completes appropriate checklists.

B. TASK: MANEUVERING WITH ONE ENGINE INOPERATIVE

REFERENCES: AC 61-21; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual.

NOTE: The feathering of one propeller shall be demonstrated in flight, in a multiengine airplane 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 a treated as an emergency.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to maneuvering with one engine inoperative.
2. Selects an entry altitude that will allow the task to be completed no lower than 3,000 feet (920 meters) AGL or the manufacturer's recommended altitude, whichever is higher.
3. Sets the engine controls, identifies and verifies the inoperative engine, feathers appropriate propeller, and reduces drag.
4. Attains the best engine inoperative airspeed and appropriately trims the airplane and maintains control.

5. Follows the prescribed checklist to verify procedures for securing the inoperative engine.
6. Establishes a bank toward the operating engine, as necessary, for best performance.
7. Monitors the operating engine and updates decisions based on observational feedback.
8. Restarts the inoperative engine using appropriate restart procedures.
9. Maintains the specified altitude ±100 feet (30 meters) and heading ±10°, when straight-and-level; levels off from climbs and descents, at specified altitudes, ±100 feet (30 meters).
10. Completes the appropriate checklist.

C. TASK: ENGINE INOPERATIVE - LOSS OF DIRECTIONAL CONTROL DEMONSTRATION

REFERENCES: AC 61-21; FAA-Approved Airplane Flight Manual, Pilot Operating Handbook.

NOTE: Airplanes 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 V_{MC} lower than the stall speed at higher altitudes. Also, some airplanes have such an effective rudder that even at sea level V_{MC} is lower than stall speed. For these airplanes, a demonstration of loss of directional control may be safely conducted by limiting travel of the rudder pedal to simulate maximum available rudder. Limiting travel of the rudder pedal should be accomplished at a speed well above the power-off stall speed (approximately 20 knots). This will avoid the hazards of stalling one wing with maximum allowable power applied to the engine on the other wing. In the event of any indication of stall prior to loss of directional control, recover to the entry airspeed. The demonstration should then be accomplished with the rudder pedal blocked at a higher airspeed.

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 airplane control.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to engine inoperative loss of directional control by explaining the—

    a. Meaning of the term ‘‘critical engine.’’
    b. Effects of density altitude on the V_{MC} demonstration.

c. Effects of airplane weight and center of gravity on control.
d. Reasons for variations in V_{MC}.
e. Relationship of V_{MC} to stall speed.
f. Reasons for loss of directional control.
g. Indications of loss of directional control.
h. Importance of maintaining proper pitch and bank attitude, and proper coordination of controls.
i. Loss of directional control recovery procedure.
j. Engine failure during takeoff including; planning, decisions, and single-engine operations.

2. Exhibits skills in performing an engine inoperative-loss of directional control demonstration—

   a. Selects an entry altitude that will allow the task to be completed no lower than 3,000 feet (920 meters) AGL or the manufacturer's recommended altitude, whichever is higher.
   b. Configures the airplane at V_{SSE}/V_{YSE}, as appropriate, as follows:

      (1) Landing gear retracted.
      (2) Flaps set for takeoff.
      (3) Cowl flaps set for takeoff.
      (4) Trim set for takeoff.
      (5) Propellers set for high RPM.
      (6) Power on critical engine reduced to idle.
      (7) Power on operating engine set to takeoff or maximum available power.

   c. Establishes a single-engine climb attitude with the airspeed at approximately 10 knots above V_{SSE}.
   d. Establishes a bank toward the operating engine, as required for best performance and controllability.
   e. 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.
   f. Recognizes and announces the first indications of loss of directional control, stall warning or buffet.
   g. 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 with a minimum loss of altitude. Recovery SHOULD NOT be attempted by increasing the power on the simulated failed engine.
   h. Recovers within 20° of the entry heading.

i. Advances power smoothly on operating engine and accelerates to V_{XSE}/V_{YSE}, as appropriate, ±5 knots, during the recovery.

D. TASK: ENGINE FAILURE DURING TAKEOFF BEFORE V_{MC}

REFERENCES: AC 61-21; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual.

NOTE: A simulated engine failure shall be accomplished before reaching 50 percent of the calculated V_{MC}.

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 V_{MC}.
2. Utilizes the appropriate emergency procedures.
3. Promptly and smoothly closes the throttle(s) when simulated engine failure occurs.
4. Maintains directional control within 15 feet (5 meters) of the runway center while applying the brakes and nosewheel steering as necessary.

E. TASK: ENGINE FAILURE AFTER LIFT-OFF (SIMULATED)

REFERENCES: AC 61-21; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual.

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 V_{YSE} or V_{XSE} as required, if obstructions are present, establishes V_{XSE} or V_{MC} +5 knots, whichever is greater, until obstruction is cleared, then V_{YSE}.
6. Follows the engine failure takeoff checklist after reaching 400 feet (120 meters) or safe obstruction clearance altitude.
7. Establishes a bank toward the operating engine, as necessary, for best performance.
8. Attempts to determine the reason for the engine malfunction.

9. Determines if it is feasible to restart the affected engine; If so, follows appropriate restart procedures.
10. Returns for landing at the airport or other suitable landing area.
11. Completes appropriate checklists.

F. TASK: APPROACH AND LANDING WITH AN INOPERATIVE ENGINE (SIMULATED)

REFERENCES: AC 61-21; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to approach and landing procedures to be used in various emergency situations.
2. Recognizes a simulated engine failure, maintains control and utilizes recommended emergency procedures.
3. Sets the engine controls, reduces drag, and identifies and verifies the inoperative engine.
4. Simulates feathering the propeller of the inoperative engine. The examiner shall establish zero-thrust on the simulated inoperative engine.
5. Establishes the best engine inoperative airspeed, ±5 knots.
6. Banks toward the operating engine, as necessary, for best performance and trims airplane.
7. Determines if it is feasible to restart the affected engine.
8. Plans and follows a flight pattern to the selected airport or landing area.
9. Establishes the best engine inoperative approach, landing configuration, and airspeed.
10. Maintains a stabilized approach and the recommended approach airspeed, ±5 knots, until landing is assured.
11. Maintains crosswind correction and directional control throughout the approach and landing.
12. Makes smooth, timely and correct control applications during roundout and touchdown.
13. Touches down within first one-third of available runway, with no drift and the airplane's longitudinal axis aligned with the runway centerline.
14. Completes appropriate checklists.

G. TASK: SYSTEMS AND EQUIPMENT MALFUNCTIONS

REFERENCES: AC 61-21; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to causes, indications, and pilot actions for various systems and equipment malfunctions.
2. Analyzes the situation and takes appropriate action for at least five (5) of the following simulated emergencies—

    a. partial power loss.
    b. engine roughness or overheat.
    c. loss of oil pressure.
    d. fuel starvation.
    e. smoke and fire.
    f. icing.
    g. pitot-static system, vacuum/pressure system and associated flight instruments.
    h. electrical.
    i. landing gear.
    j. flaps (asymmetrical position).
    k. inadvertent door opening.
    l. emergency exits open.
    m. any other emergency unique to the airplane flown.

3. Follows the appropriate emergency checklists or procedures.

H. TASK: EMERGENCY EQUIPMENT AND SURVIVAL GEAR

REFERENCES: AC 61-21; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to emergency equipment appropriate to the airplane used for the practical test by describing—

    a. location in the airplane.
    b. method of operation.
    c. servicing requirements.
    d. method of safe storage.

2. Exhibits knowledge of the elements related to survival gear by describing—

    a. survival gear appropriate for operation in various climatological and topographical environments.
    b. location in the airplane.
    c. method of operation.
    d. servicing requirements.
    e. method of safe storage.

IX. AREA OF OPERATION: MULTIENGINE OPERATIONS

NOTE: If the applicant has previously demonstrated instrument proficiency in a multiengine airplane, TASKS A, B, and C, need not be accomplished (See RATING TASK TABLE, page 2-v).

A. TASK: ENGINE FAILURE DURING FLIGHT (By Reference to Instruments)

REFERENCES: 14 CFR part 61; AC 61-21, AC 61-27; FAA-S-8081-4.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to engine failure during flight.
2. Recognizes simulated engine failure promptly during straight-and-level flight and turns to predetermined headings.
3. Sets the engine controls, reduces drag, and identifies and verifies the inoperative engine.
4. Attains the best engine inoperative airspeed and appropriately trims the airplane and maintains control.
5. Follows the prescribed checklist to verify procedures for securing the inoperative engine.
6. Establishes a bank toward the operating engine(s), as necessary, for best performance.
7. Attempts to determine the reason for the engine malfunction.
8. Monitors the operating engine(s) and updates decisions based on observational feedback.
9. Determines if it is feasible to restart the affected engine; if so, follows appropriate restart procedures.
10. Demonstrates coordinated flight while flying straight-and-level and while turning in both directions.
11. Maintains the specified altitude ±100 feet (30 meters), if within the airplane's capability, the specified airspeed ±10 knots, and the specified heading ±10°, if straight-and-level, or the specified bank within ±10° of the standard rate bank angle, if in a turn.

B. TASK: INSTRUMENT APPROACH - ALL ENGINES OPERATING (By Reference to Instruments)

REFERENCES: 14 CFR part 61; AC 61-21, AC 61-27; FAA-S-8081-4.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to a published instrument approach with all engines operating.
2. Sets the navigation and communication equipment used during the approach and uses the proper communications technique.
3. Requests and receives an actual or simulated ATC clearance for an instrument approach.
4. Follows instructions and instrument approach procedures correctly.
5. Maintains a specified airspeed within 10 knots and an altitude within 100 feet (30 meters), prior to the final approach fix.
6. Establishes a rate of descent that will ensure arrival at the MDA or DH, whichever is appropriate, in a position from which a normal landing can be made either straight-in or circling.
7. Allows, while on the final approach segment, no more than three-quarter-scale deflection of the localizer/glide slope indicators, CDI, or within 10° in the case of RMI or ADF indicators.
8. Avoids descent below the published minimum altitude on straight-in approaches or exceeding the visibility criteria for the aircraft approach category on circling approaches.
9. Completes the appropriate checklist.

C. TASK: INSTRUMENT APPROACH - ONE ENGINE INOPERATIVE (By Reference to Instruments)

REFERENCES: 14 CFR part 61; AC 61-21, AC 61-27; FAA-S-8081-4.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to multiengine procedures used during a published instrument approach with one engine inoperative.
2. Sets the navigation and communication equipment used during the approach and uses the proper communications technique.
3. Requests and receives an actual or simulated ATC clearance for an instrument approach.
4. Recognizes simulated engine failure and maintains control.
5. Sets the engine controls, reduces drag, and identifies and verifies the inoperative engine. The examiner shall establish zero-thrust on the inoperative engine.
6. Follows the appropriate checklist to verify procedures for securing the inoperative engine.
7. Establishes a bank toward the operating engine, as necessary, for best performance.
8. Establishes the best engine inoperative airspeed, ±5 knots and trims the airplane.
9. Monitors the operating engine(s) and updates decisions based on observational feedback.
10. Attempts to determine the reason for the engine malfunction.
11. Determines if it is feasible to restart the affected engine; if so, follows appropriate restart procedures.
12. Follows instructions and instrument approach procedures correctly.
13. Maintains a specified airspeed within 10 knots and an altitude within 100 feet (30 meters), prior to the final approach fix.
14. Establishes a rate of descent that will ensure arrival at the MDA or DH, whichever is appropriate, in a position from which a normal landing can be made either straight-in or circling.
15. Allows, while on final approach segment, no more than three-quarter-scale deflection of the localizer/glide slope indicators, CDI, or within 10° in the case of RMI or ADF indicators.
16. Avoids descent below the published minimum altitude on straight-in approaches or exceeding the visibility criteria for the aircraft approach category on circling approaches.
17. Completes appropriate checklists.

X. AREA OF OPERATION: HIGH ALTITUDE OPERATIONS

A. TASK: SUPPLEMENTAL OXYGEN

REFERENCES: 14 CFR part 91; AC 61-107; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual, AIM.

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

1. Supplemental oxygen requirements for flight crew and passengers when operating non-pressurized airplanes.
2. Distinctions between ‘‘aviators' breathing oxygen’’ and other types.
3. Method of determining oxygen service availability.
4. Operational characteristics of continuous flow, demand, and pressure-demand oxygen systems.
5. Care and storage of high-pressure oxygen bottles.

B. TASK: PRESSURIZATION

REFERENCES: 14 CFR part 91; AC 61-21, AC 61-107; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual, AIM.

NOTE: This TASK applies only, if the flight test airplane is equipped for pressurized flight operations.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to pressurization by explaining—

    a. fundamental concept of cabin pressurization.
    b. supplemental oxygen requirements when operating airplanes with pressurized cabins.
    c. physiological hazards associated with high altitude flight and decompression.
    d. operational and physiological reasons for completing emergency descents.
    e. need for wearing safety belts and for rapid access to supplemental oxygen.

2. Operates the pressurization system properly, and reacts promptly and properly to simulated pressurization malfunctions.

XI. AREA OF OPERATION: POSTFLIGHT PROCEDURES

A. TASK: AFTER LANDING

REFERENCES: AC 61-21; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to after-landing procedures, including local and ATC procedures.
2. Clears runway/landing area and taxies to suitable parking/refueling area while using proper wind correction and obstacle clearance procedures.
3. Completes appropriate checklists.

B. TASK: PARKING AND SECURING

REFERENCES: AC 61-21; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to ramp safety, parking hand signals, shutdown, securing, and postflight inspection.
2. Parks the airplane properly, considering the safety of nearby persons and property.
3. Follows the recommended procedure for engine shutdown, securing the cockpit, and deplaning passengers.
4. Secures the airplane properly.
5. Performs a satisfactory postflight inspection.
6. Completes appropriate checklists.

APPENDIX 2

TASK VS. SIMULATION DEVICE CREDIT

Multiengine Land (MEL)

APPENDIX 2

AIRPLANE MULTIENGINE LAND
TASK VS. SIMULATION DEVICE CREDIT

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

1. The device must be evaluated, determined to meet the appropriate standards, and assigned the appropriate qualification level by the National Simulator Program Manager. The device must continue to meet qualification standards through continuing evaluations as outlined in the appropriate advisory circular (AC). For airplane flight training devices (FTD's), AC 120-45 (as amended), Airplane Flight Training Device Qualifications, will be used. For simulators, AC 120-40 (as amended), Airplane Simulator Qualification, will be used.
2. The FAA must approve the device for training and checking the specific flight TASKS listed in this appendix.
3. The device must continue to support the level of student or applicant performance required by the PTS.

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

USE OF CHART

X	Creditable.
A	Creditable if appropriate systems are installed and operating.
*	Asterisk items require use of FTD or Simulator visual reference.

NOTES:
1. Use of Level 2 or Level 3 FTD's authorized only for those airplanes not requiring a type rating.
2. For practical tests, not more than 50 % of the maneuvers may be accomplished in an FTD or simulator UNLESS:
   a. each maneuver has been satisfactorily accomplished for an instructor, in the appropriate airplane, not less than three (3) times, OR
   b. the applicant has logged not less than 500 hours of flight time as a pilot in airplanes.
3. Not all AREAS OF OPERATIONS (AOAs) and TASKS required by this PTS are listed in the appendix. The remaining AOAs and TASKS must be accomplished in an airplane.
4. Standards for and use of Level 1 FTD's have not been determined.

APPENDIX 2

AIRPLANE MULTIENGINE LAND

FLIGHT TASK Areas of Operation :	FLIGHT SIMULATION DEVICE LEVEL 1	2	3	4	5	6	7	A	B	C	D
II. Preflight Procedures											
A. Preflight Inspection (Cockpit Only)	__	A	X	A	A	X	X	X	X	X	X
B. Cockpit Management	__	A	X	A	A	X	X	X	X	X	X
C. Engine Starting	__	A	X	A	A	X	X	X	X	X	X
D. Taxiing	__	__	__	__	__	__	__	__	__	X	X
E. Before Takeoff Check	__	A	X	A	A	X	X	X	X	X	X
IV. Takeoffs, Landings, and Go-Arounds											
A. Normal and Crosswind Takeoff and Climb	__	__	__	__	__	__	__	__	__	X	X
B. Normal and Crosswind Approach and Landing	__	__	__	__	__	__	__	__	__	X	X
C. Short-Field Takeoff and Climb	__	__	__	__	__	__	__	X	X	X	X
D. Short-Field Approach and Landing	__	__	__	__	__	__	__	__	__	X	X
E. Go-Around *	__	__	X	__	__	X	X	X	X	X	X
V. Performance Maneuver											
Steep Turns	__	__	X	__	__	X	X	X	X	X	X
VI. Navigation *											
B. Navigation Systems and ATC Radar Services	__	A	__	__	A	X	X	X	X	X	X
C. Diversion	__	A	X	__	A	X	X	X	X	X	X
D. Lost Procedures	__	A	X	__	A	X	X	X	X	X	X

APPENDIX 2

AIRPLANE MULTIENGINE LAND

FLIGHT TASK Areas of Operation :	FLIGHT SIMULATION DEVICE LEVEL 1	2	3	4	5	6	7	A	B	C	D
VII. Slow Flight and Stalls											
A. Maneuvering During Slow Flight	__	__	X	__	__	X	X	X	X	X	X
VIII. Emergency Operations											
A. Emergency Descent	__	__	X	__	__	X	X	X	X	X	X
B. Maneuvering with One Engine Inoperative	__	__	__	__	__	__	__	X	X	X	X
C. Engine Inoperative—Loss of Directional Control Demonstration	__	__	__	__	__	__	__	X	X	X	X
D. Engine Failure During Takeoff Before V_{MC}	__	__	__	__	__	__	__	X	X	X	X
E. Engine Failure After Lift-Off (Simulated)	__	__	__	__	__	__	__	X	X	X	X
F. Approach and Landing with an Inoperative Engine (Simulated)	__	__	__	__	__	__	__	__	__	__	__
G. Systems and Equipment Malfunctions	__	A	X	A	A	X	X	X	X	X	X
IX. Multiengine Operations											
A. Engine Failure During Flight (By reference to instruments)	__	__	X	__	__	X	X	X	X	X	X
B. Instrument Approach - All Engines Operating (By reference to instruments)	__	A	X	__	A	X	X	X	X	X	X
C. Instrument Approach - One Engine Inoperative (By reference to instruments)	__	__	__	__	__	__	__	X	X	X	X

APPENDIX 2

AIRPLANE MULTIENGINE LAND

FLIGHT TASK	FLIGHT SIMULATION DEVICE LEVEL										
Areas of Operation :	1	2	3	4	5	6	7	A	B	C	D
X. High Altitude Operations											
B. Pressurization	__	A	X	A	A	X	X	X	X	X	X
XI. Postflight Procedures											
A. After Landing	__	A	X	A	A	X	X	X	X	X	X

SECTION 3

COMMERCIAL PILOT — AIRPLANE

SINGLE-ENGINE SEA (ASES)

Practical Test Standard

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RATING TASK TABLE

Airplane Single-Engine Sea

Addition of an Airplane Single-Engine Sea rating to an existing Commercial Pilot Certificate								
Area of Operation	Required TASKS are indicated by either the TASK letter(s) that apply(s) or an indication that all or none of the TASKS must be tested.							
	COMMERCIAL PILOT RATING(S) HELD							
	ASEL	**AMEL**	**AMES**	**RH**	**RG**	**Glider**	**Balloon**	**Airship**
I	E,F,H, I	E,F,H, I,	E,F	E,F,H, I,	E,F,H, I,	E,F,G,H, I,J,K,	E,F,G,H, I,J,K,	E,F,G, H,I,J
II	ALL	ALL	A,B,C, D,F	ALL	ALL	ALL	ALL	ALL
III	B,C	B,C	B	B,C	B,C	ALL	ALL	B,C
IV	ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL
V	NONE	ALL	ALL	ALL	ALL	ALL	ALL	ALL
VI	NONE	ALL	ALL	ALL	ALL	ALL	ALL	ALL
VII	NONE	NONE	NONE	NONE	NONE	ALL	ALL	NONE
VIII	ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL
IX	ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL
X	ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL
XI	ALL	ALL	A,F	ALL	ALL	ALL	ALL	ALL

APPLICANT'S PRACTICAL TEST CHECKLIST

APPOINTMENT WITH EXAMINER:

EXAMINER'S NAME_____

LOCATION _____

DATE/TIME _____

ACCEPTABLE AIRCRAFT

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

PERSONAL EQUIPMENT

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

PERSONAL RECORDS

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

EXAMINER'S PRACTICAL TEST CHECKLIST

Airplane Single-Engine Sea

APPLICANT'S NAME_____

LOCATION_____

DATE/TIME_____

I. PREFLIGHT PREPARATION

- **A.** CERTIFICATES AND DOCUMENTS
- **B.** WEATHER INFORMATION
- **C.** CROSS-COUNTRY FLIGHT PLANNING
- **D.** NATIONAL AIRSPACE SYSTEM
- **E.** PERFORMANCE AND LIMITATIONS
- **F.** OPERATION OF SYSTEMS
- **G.** AEROMEDICAL FACTORS
- **H.** WATER AND SEAPLANE CHARACTERISTICS
- **I.** SEAPLANE BASES, MARITIME RULES, AND AIDS TO MARINE NAVIGATION
- **J.** PHYSIOLOGICAL ASPECTS OF NIGHT FLYING
- **K.** LIGHTING AND EQUIPMENT FOR NIGHT FLYING

II. PREFLIGHT PROCEDURES

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

III. SEAPLANE BASE AND WATER LANDING SITE OPERATIONS

- **A.** RADIO COMMUNICATION AND ATC LIGHT SIGNALS
- **B.** TRAFFIC PATTERNS
- **C.** SEAPLANE BASE/WATER LANDING SITE MARKINGS AND LIGHTING

IV. TAKEOFFS, LANDINGS, AND GO-AROUNDS

- **A.** NORMAL AND CROSSWIND TAKEOFF AND CLIMB
- **B.** NORMAL AND CROSSWIND APPROACH AND LANDING
- **C.** GLASSY WATER TAKEOFF AND CLIMB
- **D.** GLASSY WATER APPROACH AND LANDING
- **E.** ROUGH WATER TAKEOFF AND CLIMB
- **F.** ROUGH WATER APPROACH AND LANDING
- **G.** CONFINED-AREA TAKEOFF AND CLIMB
- **H.** CONFINED-AREA APPROACH AND LANDING
- **I.** GO-AROUND

V. PERFORMANCE MANEUVERS

- **A.** STEEP TURNS
- **B.** LAZY EIGHTS

VI. GROUND REFERENCE MANEUVER

- EIGHTS ON PYLONS

VII. NAVIGATION

- **A.** PILOTAGE AND DEAD RECKONING
- **B.** NAVIGATION SYSTEMS AND ATC RADAR SERVICES
- **C.** DIVERSION
- **D.** LOST PROCEDURE

VIII. SLOW FLIGHT AND STALLS

- **A.** MANEUVERING DURING SLOW FLIGHT
- **B.** POWER-OFF STALLS
- **C.** POWER-ON STALLS
- **D.** SPIN AWARENESS

IX. EMERGENCY OPERATIONS

- **A.** EMERGENCY DESCENT
- **B.** EMERGENCY APPROACH AND LANDING
- **C.** SYSTEMS AND EQUIPMENT MALFUNCTIONS
- **D.** EMERGENCY EQUIPMENT AND SURVIVAL GEAR

X. HIGH ALTITUDE OPERATION

- SUPPLEMENTAL OXYGEN

XI. POSTFLIGHT PROCEDURES

- **A.** AFTER LANDING
- **B.** ANCHORING
- **C.** DOCKING AND MOORING
- **D.** BEACHING
- **E.** RAMPING
- **F.** PARKING AND SECURING

I. AREA OF OPERATION: PREFLIGHT PREPARATION

A. TASK: CERTIFICATES AND DOCUMENTS

REFERENCES: 14 CFR parts 43, 61, 91; AC 61-21, AC 61-23; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual, Seaplane Supplement.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to certificates and documents by explaining—

    a. commercial pilot certificate privileges and limitations.
    b. medical certificates, class and duration as related to commercial pilot privileges.
    c. pilot logbook or flight records.

2. Exhibits knowledge of the elements related to certificates and documents by locating and explaining—

    a. airworthiness and registration certificates.
    b. operating limitations, placards, instrument markings, Pilot's Operating Handbook and Airplane Flight Manual, Seaplane Supplement.
    c. weight and balance data, and equipment list.
    d. airworthiness directives, compliance records, maintenance/inspection requirements, tests, and other appropriate records.

3. Exhibits knowledge of the elements and procedures related to inoperative instruments and equipment by explaining—

    a. limitations imposed on airplane operations with inoperative instruments or equipment.
    b. when a special flight permit is required.
    c. procedures for obtaining a special flight permit.

B. TASK: WEATHER INFORMATION

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

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. convective SIGMET's.
    b. SIGMET's.
    c. AIRMET's.
    d. wind shear report's.
    e. PIREP's.

2. Makes a competent "go/no-go" decision based on available weather information.

C. TASK: CROSS-COUNTRY FLIGHT PLANNING

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

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. On the day of the test, the final flight plan shall include real time weather to the first fuel stop. Computations shall be based on maximum allowable passenger, baggage and/or cargo loads.
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 or flight levels, considering weather conditions and equipment capabilities.
6. Computes headings, flight time, and fuel requirements.
7. Selects appropriate navigation system/facilities and communication frequencies.
8. Confirms availability of alternate seaplane bases or water landing sites.
9. Extracts and records pertinent information from NOTAM's, Airport/Facility Directory, and other flight publications.
10. Completes a navigation log and simulates filing a VFR flight plan.

D. TASK: NATIONAL AIRSPACE SYSTEM

REFERENCES: 14 CFR part 91; AIM.

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

1. Basic VFR Weather Minimums – for all classes of airspace.
2. Airspace classes – their boundaries, pilot certification and seaplane equipment requirements for the following—

    a. Class B,
    b. Class C,
    c. Class D,
    d. Class E, and,
    e. Class G.

3. Special use airspace and other airspace areas.

E. TASK: PERFORMANCE AND LIMITATIONS

REFERENCES: AC 61-21, AC 61-23, AC 61-84, AC 91-23; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual, Seaplane Supplement.

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 appropriate data, available from the manufacturer, to determine performance, including climb, cruise, range, endurance, and the adverse effects of exceeding limitations.
2. Describes the effects of various atmospheric conditions on the seaplane's performance, to include at least—

    a. takeoff distance.
    b. rate of climb.
    c. groundspeed.
    d. landing distance.
    e. drag on touchdown.

3. Computes weight and balance, including adding, removing, and shifting weight. Determines if the weight and center of gravity will remain within limits during all phases of flight.
4. Determines whether the computed performance is within the seaplane's capabilities and operating limitations.

F. TASK: OPERATION OF SYSTEMS

REFERENCES: AC 61-21, AC 61-23; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual, Seaplane Supplement.

Objective. To determine that the applicant exhibits knowledge of the elements related to the operation of systems on the seaplane provided for the practical test by explaining at least five (5) of the following:

1. Primary flight controls and trim.
2. Flaps, leading edge devices, and spoilers.
3. Powerplant and propeller.
4. Landing gear, if applicable.
5. Floats or hull.
6. Water rudder(s).
7. Fuel, oil, and hydraulic systems.
8. Electrical system.
9. Avionics systems.
10. Pitot-static system, vacuum/pressure system and associated flight instruments.

G. TASK: AEROMEDICAL FACTORS

REFERENCES: AC 61-21, AC 61-23, AC 67-2; AIM.

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

1. The symptoms, causes, effects, and corrective actions of at least four (4) of the following—

    a. hypoxia.
    b. hyperventilation.
    c. middle ear and sinus problems.
    d. spatial disorientation.
    e. motion sickness.
    f. carbon monoxide poisoning.
    g. stress and fatigue.

2. The effects of alcohol and drugs, including over-the-counter drugs.
3. The effects of nitrogen excesses during scuba dives upon a pilot and/or passenger in flight.

H. TASK: WATER AND SEAPLANE CHARACTERISTICS

REFERENCE: AC 61-21.

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. direction and strength of the water current.
    c. presence of floating and partially submerged debris.
    d. protected and unprotected areas.
    e. effect of surface wind and method of determining its force.
    f. operating near sandbars, islands, and shoals.
    g. other pertinent characteristics deemed important by the examiner.

2. Float and hull construction and their effect on seaplane/flying boat performance.
3. Causes of porpoising and skipping, and pilot action to prevent or correct these occurrences.

I. TASK: SEAPLANE BASES, MARITIME RULES, AND AIDS TO MARINE NAVIGATION

REFERENCES: AC 61-21; AIM.

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 identify and locate seaplane bases on charts or in directories.
2. Operating restrictions at seaplane bases.
3. Right-of-way, steering, and sailing rules pertinent to seaplane operation.
4. Purpose and identification of marine navigation aids such as buoys, beacons, lights, and range markers.

J. TASK: PHYSIOLOGICAL ASPECTS OF NIGHT FLYING

REFERENCES: AC 61-21, AC 67-2; AIM.

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

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

K. TASK: LIGHTING AND EQUIPMENT FOR NIGHT FLYING

REFERENCES: AC 61-21; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual, Seaplane Supplement.

Objective. To determine that the applicant exhibits knowledge of the elements related to lighting and equipment for night flying by explaining:

1. Types and uses of various personal lighting devices.
2. Required equipment, additional equipment recommended, location of external navigation lighting, and anchor lighting for the seaplane.
3. Meaning of various waterway and navigation lights.

II. AREA OF OPERATION: PREFLIGHT PROCEDURES

A. TASK: PREFLIGHT INSPECTION

REFERENCES: AC 61-21; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual, Seaplane Supplement.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to a preflight inspection including which items must be inspected, the reasons for checking each item, and how to detect possible defects.
2. Inspects the seaplane with reference to an appropriate checklist.
3. Verifies that the seaplane is in condition for safe flight, notes any discrepancy, and determines whether the seaplane requires maintenance.
4. Locates and identifies switches, circuit breakers/fuses, pertinent to day and night operations.

B. TASK: COCKPIT MANAGEMENT

REFERENCES: AC 61-21; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual, Seaplane Supplement.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to efficient cockpit management procedures, and related safety factors.
2. Organizes and arranges material and equipment in a manner that makes the items readily available.
3. Briefs, or causes the briefing of occupants on the use of safety belts and emergency procedures.
4. Uses all appropriate checklists.

C. TASK: ENGINE STARTING

REFERENCES: AC 61-21, AC 61-23, AC 91-13, AC 91-55; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual, Seaplane Supplement.

Objective. To determine that the applicant:

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

D. TASK: TAXIING

REFERENCES: AC 61-21; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual, Seaplane Supplement.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to recommended taxi procedures.
2. Positions the flight controls properly for the existing wind conditions.
3. Plans and follows the most favorable course and speeds considering wind, current, hazards, and maritime regulations.
4. Utilizes appropriate idle, plow or step taxi technique.
5. Prevents and corrects for porpoising and skipping.
6. Complies with seaplane base/facility markings, signals, and ATC clearances.
7. Avoids other aircraft, vessels, and hazards.
8. Completes the appropriate checklist.

E. TASK: SAILING

REFERENCES: AC 61-21; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual, Seaplane Supplement.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to sailing by explaining the techniques used in this procedure.
2. Recognizes the circumstance when sailing should be used.
3. Plans and follows the most favorable course considering wind, water current, obstructions, debris, and other vessels.
4. Uses flight controls, flaps, doors, and water rudders, as appropriate, to follow the desired course.
5. Controls speed appropriate to conditions.

F. TASK: BEFORE TAKEOFF CHECK

REFERENCES: AC 61-21; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual, Seaplane Supplement.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to the before takeoff check, including the reasons for checking each item and how to detect malfunctions.
2. Briefs passengers on the operation of safety belts, doors, and flotation devices.
3. Divides attention inside and outside the cockpit.
4. Positions the seaplane properly considering hazards, wind conditions, other aircraft, water surface conditions and depth, surrounding terrain, and other watercraft.
5. Ensures that the engine temperature and pressure are suitable for run-up and takeoff.
6. Accomplishes the before takeoff checks and ensures that the seaplane is in safe operating condition.
7. Reviews takeoff performance airspeeds, departure and emergency procedures.
8. Ensures no conflict with air or water traffic prior to taxiing into takeoff position.
9. Completes appropriate checklist.

III. AREA OF OPERATION: SEAPLANE BASE AND WATER LANDING SITE OPERATIONS

A. TASK: RADIO COMMUNICATION AND ATC LIGHT SIGNALS

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

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to radio communications, radio failure, and ATC light signals.
2. Demonstrates use of radio communications by—

    a. selecting appropriate frequencies for facilities to be used.
    b. transmitting using recommended phraseology.
    c. acknowledging and complying with radio communications and ATC instructions.

3. Uses appropriate procedures for simulated radio communications failure.
4. Interprets and complies with ATC light signals.

B. TASK: TRAFFIC PATTERNS

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

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to traffic pattern procedures at seaplane bases and water landing sites.
2. Complies with recommended traffic pattern procedures.
3. Selects the most appropriate departure and approach path considering alignment with the wind, landing area congestion, and shoreline population.
4. Maintains proper spacing from other traffic.
5. Establishes an appropriate pattern distance from landing area, considering possibility of engine failure.
6. Remains oriented with landing area.
7. Maintains and holds traffic pattern altitude ±100 feet (30 meters), and appropriate airspeed ±10 knots.
8. Completes appropriate checklists.

C. TASK: SEAPLANE BASE/WATER LANDING SITE MARKINGS AND LIGHTING

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

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to seaplane base/water landing site markings and lighting.
2. Identifies and interprets seaplane base/water landing site markings and lighting.

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

A. TASK: NORMAL AND CROSSWIND TAKEOFF AND CLIMB

REFERENCES: AC 61-21; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual, Seaplane Supplement.

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

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to normal and crosswind takeoff and climb.
2. Positions flight controls and flaps for existing conditions.
3. Clears the area, notes any surface hazards and/or vessels prior to selecting a takeoff path.
4. Retracts the water rudders, if applicable.
5. Advances the throttle to takeoff power.
6. Avoids excessive water spray on the propeller.
7. Establishes and maintains an appropriate planing attitude, directional control, and corrects for porpoising and skipping.
8. Establishes and maintains proper lift-off attitude/airspeed and accelerates to V_Y, ±5 knots.
9. Reduces the flaps after a positive rate of climb is established and at a safe altitude.
10. Maintains takeoff power to a safe maneuvering altitude, then sets climb power.
11. Maintains directional control and proper wind-drift correction throughout takeoff and climb.
12. Uses noise abatement procedures, as required.
13. Completes appropriate checklists.

B. TASK: NORMAL AND CROSSWIND APPROACH AND LANDING

REFERENCES: AC 61-21; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual, Seaplane Supplement.

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

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to normal and crosswind approach and landing.
2. Considers the wind conditions, surrounding terrain, surface condition, water depth, debris, and other watercraft.
3. Selects a suitable approach path and touchdown point.
4. Ensures that the landing gear and water rudders are retracted, if applicable.
5. Establishes the recommended approach and landing configuration and adjusts power while maintaining the proper attitude as required.
6. Maintains a stabilized approach and recommended airspeed with gust factor applied, ±5 knots.
7. Makes smooth, timely, and correct power and control application during roundout and touchdown.
8. Touches down at the recommended airspeed and pitch attitude, beyond and within 200 feet (60 meters) of a specified area.
9. Maintains crosswind correction and directional control throughout the approach and landing.
10. Completes appropriate checklists.

C. TASK: GLASSY WATER TAKEOFF AND CLIMB

REFERENCES: AC 61-21; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual, Seaplane Supplement.

NOTE: If a glassy water condition does not exist, the applicant's knowledge of glassy water elements shall be evaluated through oral testing. The applicant's skill shall be evaluated by simulating the TASK.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to a glassy water takeoff and climb.

2. Positions the flight controls and flaps for the existing conditions.
3. Selects a takeoff path that maximizes safety should a powerplant failure occur.
4. Clears the area, notes any surface hazards and/or vessels prior to takeoff.
5. Retracts the water rudders, if applicable.
6. Advances the throttle to takeoff power.
7. Establishes and maintains an appropriate planing attitude, directional control, and corrects for porpoising, skipping, and increases in water drag.
8. Utilizes appropriate techniques to lift seaplane from the water surface.
9. Establishes proper attitude/airspeed, lifts off and accelerates to V_Y, ±5 knots during the climb.
10. Reduces the flaps after a positive rate of climb is established and at a safe altitude.
11. Maintains takeoff power to a safe maneuvering altitude, then sets climb power.
12. Maintains directional control and proper wind-drift correction throughout takeoff and climb.
13. Uses noise abatement procedures, as required.
14. Completes appropriate checklists.

D. TASK: GLASSY WATER APPROACH AND LANDING

REFERENCES: AC 61-21; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual, Seaplane Supplement.

NOTE: If a glassy water condition does not exist, the applicant's knowledge of glassy water elements shall be evaluated through oral testing. The applicant's skill shall be evaluated by simulating the TASK.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to a glassy water approach and landing.
2. Considers the surrounding terrain, visual attitude references, water depth, debris, and other watercraft.
3. Selects a suitable approach path and touchdown area.
4. Ensures that the landing gear and water rudders are retracted, if applicable.
5. Establishes the recommended approach and landing configuration and adjusts power and pitch attitude as required.

6. Maintains a slightly nose-high stabilized approach, at the recommended airspeed, ±5 knots, and descent rate from the last altitude reference, until touchdown.
7. Makes smooth, timely, and correct power and control adjustments to maintain proper attitude and rate of descent to touchdown.
8. Contacts the water at the correct pitch attitude and slows to idle taxi speed.
9. Completes appropriate checklists.

E. TASK: ROUGH WATER TAKEOFF AND CLIMB

REFERENCES: AC 61-21; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual, Seaplane Supplement.

NOTE: If a rough water condition does not exist, the applicant's knowledge of rough water elements shall be evaluated through oral testing. The applicant's skill shall be evaluated by simulating the TASK.

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 the proper takeoff path, considering wind, swells, surface hazards and/or vessels.
4. Retracts the water rudders, if applicable.
5. Advances the throttle to takeoff power.
6. Avoids excessive water spray on the propeller.
7. Establishes and maintains an appropriate planing/lift-off attitude, directional control, and corrects for porpoising, skipping, or excessive bouncing.
8. Establishes and maintains proper attitude to lift-off at minimum airspeed and accelerates to $V_{Y,}$ ±5 knots before leaving ground effect.
9. Retracts the flaps after a positive rate of climb is established and at a safe altitude.
10. Maintains takeoff power to a safe maneuvering altitude, then sets climb power.
11. Maintains directional control and proper wind-drift correction throughout takeoff and climb.
12. Uses noise abatement procedures, as required.
13. Completes appropriate checklists.

F. TASK: ROUGH WATER APPROACH AND LANDING

REFERENCES: AC 61-21; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual, Seaplane Supplement.

NOTE*:* If a rough water condition does not exist, the applicant's knowledge of rough water elements shall be evaluated through oral testing. The applicant's skill shall be evaluated by simulating the TASK.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to a rough water approach and landing.
2. Considers the wind conditions, surrounding terrain, water depth, debris, and other watercraft.
3. Selects a suitable approach direction and touchdown area.
4. Establishes the recommended approach and landing configuration and adjusts power and pitch attitude as required.
5. Ensures that the landing gear and water rudders are retracted, if applicable.
6. Maintains a stabilized approach and recommended airspeed with gust factor applied, ±5 knots.
7. Contacts the water at the correct pitch attitude and touchdown speed.
8. Makes smooth, timely, and correct power and control application during the landing while remaining alert for a go-around should conditions be too rough.
9. Maintains positive after-landing control.
10. Completes appropriate checklists.

G. TASK: CONFINED-AREA TAKEOFF AND CLIMB

REFERENCES: AC 61-21; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual, Seaplane Supplement.

NOTE: This TASK simulates a takeoff from a small pond, which would require a takeoff and spiral climb; or a straight ahead takeoff and climb from a narrow waterway with obstructions at either end. The examiner must evaluate both takeoff situations for this TASK.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to a confined-area takeoff and climb.
2. Positions the flight controls and flaps for the existing conditions.
3. Clears the area, notes any surface hazards, vessels and/or obstructions prior to selecting a takeoff path.
4. Selects a takeoff path that will allow maximum safe utilization of wind, water, and low terrain.
5. Advances the throttle to takeoff power.
6. Ensures that the water rudders are retracted when no longer needed.
7. Maintains the most efficient alignment and planing angle, without skidding, porpoising, and skipping.
8. Lifts off at the recommended airspeed and accelerates to no higher than V_X, if obstacle clearance is required.
9. Climbs at manufacturer's recommended configuration and airspeed, or in their absence, at V_X, +5/-0 knots until the obstacle is cleared.
10. After clearing all obstacles, accelerates to and maintains V_Y, $\pm$5 knots, retracts flaps and maintains safe bank angles while turning and/or providing best terrain clearance.
11. Maintains takeoff power to a safe altitude, then sets climb power.
12. Uses noise abatement procedures, as required.
13. Completes appropriate checklists.

H. TASK: CONFINED-AREA APPROACH AND LANDING

REFERENCES: AC 61-21; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual, Seaplane Supplement.

NOTE: This TASK simulates an approach and landing to a small pond, which would require a spiral approach, wings level landing, and step turn upon landing; and a straight ahead approach and landing to a narrow waterway with obstructions at either end. The examiner must evaluate both landing situations for this TASK.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to a confined-area approach and landing.
2. Considers the wind conditions, surrounding terrain, surface condition, water depth, debris, and other watercraft.
3. Selects a suitable approach path and touchdown area.
4. Establishes the recommended approach and landing configuration and airspeed, and adjusts pitch attitude and power as required.
5. Ensures that the landing gear and water rudders are retracted, if applicable.
6. Maintains a stabilized approach and recommended approach airspeed with gust factor applied, ±5 knots.
7. Makes smooth, timely, and correct power and control application during the roundout and touchdown.
8. Touches down smoothly at the recommended airspeed and pitch attitude, beyond and within 100 feet (30 meters) of a specified point/area.
9. Maintains crosswind correction and directional control throughout the approach and landing.
10. Completes appropriate checklists.

I. TASK: GO-AROUND

REFERENCES: AC 61-21; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual, Seaplane Supplement.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to a go-around.
2. Makes a timely decision to discontinue the approach to landing.
3. Applies takeoff power immediately and establishes the pitch attitude that will stop the descent.
4. Retracts landing flaps, as appropriate.
5. Trims the seaplane to accelerate to V_Y before the final flap retraction.
6. Maintains takeoff power and climbs at V_Y, ±5 knots to a safe maneuvering altitude, then sets climb power.
7. Maintains proper wind-drift correction and obstruction clearance throughout the transition to climb.
8. Completes appropriate checklists.

V. AREA OF OPERATION: PERFORMANCE MANEUVERS

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A. TASK: STEEP TURNS

REFERENCES: AC 61-21; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual, Seaplane Supplement.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to steep turns.
2. Selects an altitude that allows the task to be completed no lower than 1,500 feet AGL (460 meters) or the manufacturer's recommended altitude, whichever is higher.
3. Establishes the manufacturer's recommended airspeed or if one is not stated, the examiner may designate a safe airspeed not to exceed V_A.
4. Smoothly enters a coordinated 360° steep turn with a 50° bank, ±5°, immediately followed by a 360° steep turn in the opposite direction.
5. Divides attention between seaplane control and orientation.
6. Rolls out on the entry heading, ±10°.
7. Maintains the entry altitude throughout the maneuver, ±100 feet (30 meters), and airspeed ±10 knots.

B. TASK: LAZY EIGHTS

REFERENCES: AC 61-21; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual, Seaplane Supplement.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to performance factors associated with lazy eights.
2. Selects an altitude that will allow the task to be performed no lower than 1,500 feet AGL (460 meters) or the manufacturer's recommended altitude, whichever is higher.
3. Selects a prominent 90° reference point in the distance.
4. Establishes the recommended entry power and airspeed.
5. Plans and remains oriented while maneuvering the seaplane with positive, accurate control, and demonstrates mastery of the seaplane.
6. Achieves the following throughout the task—

    a. constant change of pitch, bank, and turn rate.
    b. altitude and airspeed consistent at the 90° points, ±100 feet (30 meters) and ±10 knots respectively.
    c. through proper power setting, attains the starting altitude and airspeed at the completion of the maneuver, ±100 feet (30 meters) and ±10 knots respectively.
    d. heading tolerance ±10° at each 180° point.

7. Continues the task through at least two 180° circuits and resumes straight-and-level flight.

VI. AREA OF OPERATION: GROUND REFERENCE MANEUVER

EIGHTS ON PYLONS

REFERENCE: AC 61-21; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual, Seaplane Supplement.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to eights on pylons including the relationship of groundspeed change to the performance of the maneuver.
2. Determines the approximate pivotal altitude.
3. Selects suitable pylons, considering emergency landing areas, that will permit approximately 3 to 5 seconds of straight-and-level flight between them.
4. Attains proper configuration and airspeed prior to entry.
5. Applies the necessary corrections so that the line-of-sight reference line remains on the pylon with minimum longitudinal movement.
6. Exhibits proper orientation, division of attention, and planning.
7. Applies the necessary wind-effect correction to track properly between pylons.
8. Holds pylon using appropriate pivotal altitude avoiding slips and skids.

VII. AREA OF OPERATION: NAVIGATION

A. TASK: PILOTAGE AND DEAD RECKONING

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

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to pilotage and dead reckoning.
2. Correctly flies to at least the first planned checkpoint to demonstrate accuracy in computations, considers available alternates, and suitable action for various situations including possible route alteration by the examiner.
3. Follows the preplanned course solely by reference to landmarks.
4. Identifies landmarks by relating the surface features to chart symbols.
5. Navigates by means of precomputed headings, groundspeed, and elapsed time.
6. Verifies the seaplane's position within 1 nautical mile (1.85 Km) of flight planned route at all times.
7. Arrives at the en route checkpoints or destination within 3 minutes of the ETA.
8. Corrects for, and records, the differences between preflight fuel, groundspeed, and heading calculations and those determined en route.
9. Maintains appropriate altitude ±100 feet (30 meters) and established heading, ±10°.
10. Completes appropriate checklists.

B. TASK: NAVIGATION SYSTEMS AND ATC RADAR SERVICES

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

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to navigation systems and ATC radar services.
2. Selects and identifies the appropriate facilities.
3. Locates the seaplane's position using radials, bearings, or coordinates, as appropriate.
4. Intercepts and tracks a given radial on a low altitude airway.
5. Recognizes and describes the indication of station passage or arrival at a checkpoint, if using Area Navigation.
6. Recognizes signal loss and takes appropriate action.
7. Utilizes proper communication procedures when using ATC radar services.
8. Maintains the appropriate altitude, ±100 feet (30 meters), heading ± 10°.

C. TASK: DIVERSION

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

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to procedures for diversion.
2. Selects an appropriate alternate water landing site and route.
3. Diverts toward the alternate seaplane water landing site.
4. Makes an accurate estimate of heading, groundspeed, arrival time and fuel consumption to the alternate base/water landing site.
5. Maintains the appropriate altitude, ± 100 feet (30 meters) and established heading ±10°.

D. TASK: LOST PROCEDURE

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

Objective. To determine that the applicant:

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

VIII. AREA OF OPERATION: SLOW FLIGHT AND STALLS

A. TASK: MANEUVERING DURING SLOW FLIGHT

REFERENCES: AC 61-21; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual, Seaplane Supplement.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to flight characteristics and controllability associated with maneuvering during slow flight.
2. Selects an entry altitude that will allow the task to be completed no lower than 1,500 feet (460 meters) AGL or the manufacturer's recommended altitude, whichever is higher.
3. Stabilizes and maintains the airspeed at 1.2 V_{S1}, ±5 knots.
4. Establishes straight-and-level flight and level turns, with gear and flaps selected as specified by the examiner.
5. Maintains the specified altitude, ±50 feet (20 meters).
6. Maintains the specified heading during straight flight ±10°.
7. Maintains specified bank angle, ±10°, during turning flight.
8. Rolls out on specified headings, ±10°.
9. Divides attention between seaplane control and orientation.

B. TASK: POWER-OFF STALLS

REFERENCES: AC 61-21; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual, Seaplane Supplement.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to the aerodynamic factors associated with power-off stalls and how this relates to actual approach and landing situations.
2. Selects an entry altitude that allows the task to be completed no lower than 1,500 feet (460 meters) AGL or the manufacturer's recommended altitude, whichever is higher.
3. Establishes a stabilized descent, in the approach configuration, as specified by the examiner.
4. Transitions slowly and smoothly from the approach or landing attitude, to a pitch attitude that will induce a stall.
5. Maintains the specified heading ±10°, in straight flight; maintains a specified angle of bank, not to exceed 30°, +0/-10°, in turning flight, while inducing a stall.
6. Recognizes and announces the onset of the stall by identifying the first aerodynamic buffeting or decay of control effectiveness.

7. Recovers promptly as the stall occurs by simultaneously decreasing the pitch attitude, increasing power and leveling the wings, with a minimum loss of altitude.
8. Retracts flaps to the recommended setting.
9. Accelerates to V_X or V_Y speed before final flap retraction, or follows manufacturer's recommended procedures.
10. Returns to the altitude, heading, and airspeed specified by the examiner.

C. TASK: POWER-ON STALLS

REFERENCES: AC 61-21, AC 61-67; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual, Seaplane Supplement.

NOTE: In some high performance seaplanes**,** the power setting may have to be reduced below the practical test standard guideline power setting to prevent excessively high pitch attitudes (greater than 30° nose up).

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to aerodynamic factors associated with power-on stalls and how this relates to actual takeoff and departure situations.
2. Selects an entry altitude that allows the task to be completed no lower than 1,500 feet (460 meters) AGL or the manufacturer's recommended altitude, whichever is higher.
3. Establishes the takeoff configuration and slows the seaplane to normal lift-off speed.
4. Sets power to manufacturer's recommended climb power setting while establishing the climb attitude. In the absence of a manufacturer recommended power setting, use no less than approximately 55-60 percent of full power as a guideline.
5. Maintains the specified heading ±10°, in straight flight; a 20° angle of bank, ±10°, in turning flight.
6. Recognizes and announces the onset of the stall by identifying the first aerodynamic buffeting or decay of control effectiveness.
7. Recovers promptly as the stall occurs by simultaneously decreasing the pitch attitude, increasing power and leveling the wings, with a minimum loss in altitude.
8. Retracts flaps (if applicable) after a positive rate of climb is established.
9. Returns to the altitude, heading, and airspeed specified by the examiner.

D. TASK: SPIN AWARENESS

REFERENCES: AC 61-21, AC 61-67; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual, Seaplane Supplement.

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

1. Aerodynamic conditions required for a spin.
2. Flight situations and conditions where unintentional spins may occur.
3. Instrument indications during a spin and/or spiral.
4. Techniques and procedures used to recognize and recover from unintentional spins.

IX. AREA OF OPERATION: EMERGENCY OPERATIONS

A. TASK: EMERGENCY DESCENT

REFERENCES: AC 61-21; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual, Seaplane Supplement.

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 prescribed airspeed and configuration for the emergency descent as recommended by the manufacturer without exceeding safety limitations.
4. Uses proper engine control settings.
5. Exhibits orientation, division of attention, and proper planning.
6. Maintains positive load factors during the descent.
7. Completes the appropriate checklist.

B. TASK: EMERGENCY APPROACH AND LANDING

REFERENCES: AC 61-21; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual, Seaplane Supplement.

NOTE: Emergency landings shall be evaluated over water in the event an actual emergency landing becomes necessary.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to emergency approach and landing procedures.
2. Establishes the recommended best-glide airspeed, ±10 knots, and configuration during simulated emergencies.
3. Selects a suitable landing area, considering the possibility of an actual emergency landing and the post-landing effect of wind and current if on water without power.
4. Attempts to determine the reason for the simulated malfunction.
5. Varies airspeed, descent, and flight pattern, as necessary, so as to arrive at selected landing area, considering altitude, wind, terrain, obstructions, and other factors.
6. Follows the appropriate emergency checklist.

C. TASK: SYSTEMS AND EQUIPMENT MALFUNCTIONS

REFERENCES: AC 61-21; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual, Seaplane Supplement.

NOTE: Examiners shall relate the required applicant knowledge in this TASK to the seaplane used for the practical test.

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 appropriate action for at least five (5) of the following simulated emergencies—

    a. partial power loss.
    b. engine failure during various phases of flight.
    c. engine roughness or overheat.
    d. loss of oil pressure.
    e. fuel starvation.
    f. smoke and fire.
    g. icing.
    h. pitot static/vacuum system and associated flight instruments.
    i. electrical.
    j. landing gear.
    k. flaps (asymmetrical position).
    l. inadvertent door opening.
    m. emergency exits open.
    n. any other emergency unique to the seaplane flown.

3. Follows the appropriate emergency checklist or procedures.

D. TASK: EMERGENCY EQUIPMENT AND SURVIVAL GEAR

REFERENCES: AC 61-21; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual, Seaplane Supplement.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to emergency equipment appropriate to the seaplane used for the practical test by describing—

    a. location in the seaplane.
    b. method of operation.
    c. servicing requirements.
    d. method of safe storage.

2. Exhibits knowledge of the elements related to survival gear by describing—

    a. survival gear appropriate for operation in various climatological and topographical environments.
    b. location in the seaplane.
    c. method of operation.
    d. servicing requirements.
    e. method of safe storage.

X. AREA OF OPERATION: HIGH ALTITUDE OPERATION

SUPPLEMENTAL OXYGEN

REFERENCES: 14 CFR part 91; AC 61-107; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual, Seaplane Supplement, AIM.

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

1. Supplemental oxygen requirements for flight crew and passengers when operating non-pressurized seaplanes.
2. Distinctions between ‘‘aviators' breathing oxygen’’ and other types.
3. Method of determining oxygen service availability.
4. Operational characteristics of continuous flow, demand, and pressure-demand oxygen systems.
5. Care and storage of high-pressure oxygen bottles.

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XI. AREA OF OPERATION POSTFLIGHT PROCEDURES

A. TASK: AFTER LANDING

REFERENCES: AC 61-21; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual, Seaplane Supplement.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to after-landing procedures, including maritime courtesy, local and ATC procedures.
2. Clears the water landing area, taxies to a suitable parking/refueling area while using proper taxi techniques considering wind, water current, and obstacles.
3. Completes the appropriate checklist.

B. TASK: ANCHORING

REFERENCES: AC 61-21; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual, Seaplane Supplement.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to anchoring in lakes, rivers, and tidal areas.
2. Selects a suitable area for anchoring considering seaplane movement, water depth, tides, wind, and weather changes.
3. Uses an adequate number of anchors and lines of sufficient strength and length to ensure the seaplane's security.

C. TASK: DOCKING AND MOORING

REFERENCES: AC 61-21; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual, Seaplane Supplement.

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.

D. TASK: BEACHING

REFERENCES: AC 61-21; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual, Seaplane Supplement.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to beaching.
2. Selects a suitable area for beaching, considering water depth, current, tide, and wind.
3. Approaches from the proper direction and at a suitable speed for the beach condition.
4. Beaches and secures the seaplane in a manner that will protect it from harmful effects of wind, waves, and changes in water level.
5. Departs the beach in a safe manner, considering wind, current, traffic, and hazards.

E. TASK: RAMPING

REFERENCES: AC 61-21; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual, Seaplane Supplement.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to ramping.
2. Approaches the ramp from the proper direction and at a safe speed, considering current, wind, and type of ramp.
3. Ramps the seaplane at the proper speed and attitude.
4. Secures the seaplane on the ramp in a manner that will protect it from the harmful effects of wind, waves, and changes in water level.
5. Departs the ramp in a manner that does not endanger other persons or watercraft in the area.
6. Re-enters the water.

F. TASK: PARKING AND SECURING

REFERENCES: AC 61-21; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual, Seaplane Supplement.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to ramp safety, parking hand signals, shutdown, securing, and postflight inspection.
2. Parks the seaplane properly, considering prop blast and the safety of persons and property.
3. Follows the recommended procedure for engine shutdown, securing the cockpit, and deplaning passengers.
4. Secures the seaplane properly.
5. Performs a satisfactory postflight inspection.
6. Completes the appropriate checklist.

SECTION 4

COMMERCIAL PILOT — AIRPLANE

MULTIENGINE SEA
(AMES)

Practical Test Standard

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Airplane Multiengine Sea

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RATING TASK TABLE

Airplane Multiengine Sea

Addition of an Airplane Multiengine Sea rating to an existing Commercial Pilot Certificate								
Area of Operation	Required TASKS are indicated by either the TASK letter(s) that apply(s) or an indication that all or none of the TASKS must be tested.							
	COMMERCIAL PILOT RATING(S) HELD							
	AMEL	**ASEL**	**ASES**	**RH**	**RG**	**Glider**	**Balloon**	**Airship**
I	E,G	E,G	E, F	E,F,G	E,F,G	E,F,G, I,J	E,F,G, I,J	E,F,G, I,J
II	ALL	ALL	A,B,C, D,F	ALL	ALL	ALL	ALL	ALL
III	B,C	B,C	B	B,C	B,C	ALL	ALL	B,C
IV	ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL
V	A	A	A	A	A	A	A	A
VI	NONE	NONE	NONE	NONE	NONE	ALL	ALL	NONE
VII	ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL
VIII	ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL
IX *	ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL
X	ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL
XI	ALL	ALL	A,F	ALL	ALL	ALL	ALL	ALL

* If the applicant is instrument rated and instrument competency has not been previously demonstrated in a multiengine airplane, AREA OF OPERATION IX, TASKS A, B, and C may be performed at this time. Otherwise a VFR Restriction shall be specified on this issued certificate.

APPLICANT'S PRACTICAL TEST CHECKLIST

APPOINTMENT WITH EXAMINER:

EXAMINER'S NAME_____

LOCATION _____

DATE/TIME _____

ACCEPTABLE AIRCRAFT

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

PERSONAL EQUIPMENT

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

PERSONAL RECORDS

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

EXAMINER'S PRACTICAL TEST CHECKLIST

Airplane Multiengine Sea

APPLICANT'S NAME_____

LOCATION_____

DATE/TIME_____

I. PREFLIGHT PREPARATION

- **A.** CERTIFICATES AND DOCUMENTS
- **B.** WEATHER INFORMATION
- **C.** CROSS-COUNTRY FLIGHT PLANNING
- **D.** NATIONAL AIRSPACE SYSTEM
- **E.** PERFORMANCE AND LIMITATIONS
- **F.** PRINCIPLES OF FLIGHT- ENGINE INOPERATIVE
- **G.** OPERATION OF SYSTEMS
- **H.** AEROMEDICAL FACTORS
- **I.** WATER AND SEAPLANE CHARACTERISTICS
- **J.** SEAPLANE BASES, MARITIME RULES, AND AIDS TO MARINE NAVIGATION
- **K.** PHYSIOLOGICAL ASPECTS OF NIGHT FLYING
- **L.** LIGHTING AND EQUIPMENT FOR NIGHT FLYING

II. PREFLIGHT PROCEDURES

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

III. SEAPLANE BASE AND WATER LANDING SITE OPERATIONS

- **A.** RADIO COMMUNICATION AND ATC LIGHT SIGNALS
- **B.** TRAFFIC PATTERNS
- **C.** SEAPLANE BASE/WATER SITE MARKINGS AND LIGHTING

IV. TAKEOFFS, LANDINGS, AND GO-AROUNDS

- **A.** NORMAL AND CROSSWIND TAKEOFF AND CLIMB
- **B.** NORMAL AND CROSSWIND APPROACH AND LANDING
- **C.** GLASSY WATER TAKEOFF AND CLIMB
- **D.** GLASSY WATER APPROACH AND LANDING
- **E.** ROUGH WATER TAKEOFF AND CLIMB
- **F.** ROUGH WATER APPROACH AND LANDING
- **G.** CONFINED-AREA TAKEOFF AND CLIMB
- **H.** CONFINED-AREA APPROACH AND LANDING
- **I.** GO-AROUND

V. PERFORMANCE MANEUVER

- STEEP TURNS

VI. NAVIGATION

- **A.** PILOTAGE AND DEAD RECKONING
- **B.** NAVIGATION SYSTEMS AND ATC RADAR SERVICES
- **C.** DIVERSION
- **D.** LOST PROCEDURE

VII. SLOW FLIGHT AND STALLS

- **A.** MANEUVERING DURING SLOW FLIGHT
- **B.** POWER-OFF STALLS
- **C.** POWER-ON STALLS
- **D.** SPIN AWARENESS

VIII. EMERGENCY OPERATIONS

- **A.** EMERGENCY DESCENT
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IX. MULTIENGINE OPERATIONS

- **A.** ENGINE FAILURE DURING FLIGHT (By Reference to Instruments)
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- **C.** INSTRUMENT APPROACH - ONE ENGINE INOPERATIVE (By Reference to Instruments)

X. HIGH ALTITUDE OPERATIONS

- SUPPLEMENTAL OXYGEN

XI. POSTFLIGHT PROCEDURES

- **A.** AFTER LANDING
- **B.** ANCHORING
- **C.** DOCKING AND MOORING
- **D.** BEACHING
- **E.** RAMPING
- **F.** PARKING AND SECURING

I. AREA OF OPERATION: PREFLIGHT PREPARATION

A. TASK: CERTIFICATES AND DOCUMENTS

REFERENCES: CFR 14 parts 43, 61, 91; AC 61-21, AC 61-23; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual, Seaplane Supplement.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to certificates and documents by explaining—

    a. commercial pilot certificate privileges and limitations.
    b. medical certificates, class and duration as related to commercial pilot privileges.
    c. pilot logbook or flight records.

2. Exhibits knowledge of the elements related to certificates and documents by locating and explaining—

    a. airworthiness and registration certificates.
    b. operating limitations, placards, instrument markings, Pilot’s Operating Handbook and Airplane Flight Manual, Seaplane Supplement.
    c. weight and balance data, and equipment list.
    d. airworthiness directives, compliance records, maintenance/inspection requirements, tests, and other appropriate records.

3. Exhibits knowledge of the elements and procedures related to inoperative instruments and equipment by explaining—

    a. limitations imposed on airplane operations with inoperative instruments or equipment.
    b. when a special flight permit is required.
    c. procedures for obtaining a special flight permit.

B. TASK: WEATHER INFORMATION

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

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. convective SIGMET's.
    b. SIGMET's.
    c. AIRMET's.
    d. wind shear reports.
    e. PIREP's.

2. Makes a competent "go/no-go" decision based on the available weather information.

C. TASK: CROSS-COUNTRY FLIGHT PLANNING

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

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. On the day of the test, the final flight plan shall include real time weather to the first fuel stop. Computations shall be based on maximum allowable passenger, baggage and/or cargo loads.
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 or flight levels, considering weather conditions and equipment capabilities.
6. Computes headings, flight time, and fuel requirements.
7. Selects appropriate navigation systems/facilities and communication frequencies.
8. Confirms availability of alternate seaplane bases or water landing sites.
9. Extracts and records pertinent information from NOTAM's, Airport/Facility Directory, and other flight publications.
10. Completes a navigation log and simulates filing a VFR flight plan.

D. TASK: NATIONAL AIRSPACE SYSTEM

REFERENCES: 14 CFR part 91; AIM.

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

1. Basic VFR Weather Minimums – for all classes of airspace.
2. Airspace classes – their boundaries, pilot certification and seaplane equipment requirements for the following—

    a. Class B,
    b. Class C,
    c. Class D,
    d. Class E, and,
    e. Class G.

3. Special use airspace and other airspace areas.

E. TASK: PERFORMANCE AND LIMITATIONS

REFERENCES: AC 61-21, AC 61-23, AC 61-84, AC 91-23; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual, Seaplane Supplement.

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 appropriate data available from the manufacturer, to determine performance, including climb, cruise, range, endurance, and the adverse effects of exceeding limitations.
2. Describes the effects of various atmospheric conditions on the seaplane's performance, to include at least—

    a. takeoff distance.
    b. rate of climb.
    c. groundspeed.
    d. landing distance.
    e. drag on touchdown.

3. Computes weight and balance, including adding, removing, and shifting weight. Determines if the weight and center of gravity will remain within limits during all phases of flight.
4. Determines whether the computed performance is within the seaplane's capabilities and operating limitations.

F. TASK: PRINCIPLES OF FLIGHT – ENGINE INOPERATIVE

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

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

1. Importance of reducing drag and banking properly into the good engine(s) for best performance.
2. Importance of establishing and maintaining proper airspeed.
3. Importance of maintaining proper pitch and bank attitudes, and proper coordination of controls.
4. Performance available, based on the following drag configurations—

    a. extension of flaps.
    b. windmilling propeller on the inoperative engine.

G. TASK: OPERATION OF SYSTEMS

REFERENCES: AC 61-21, AC 61-23; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual, Seaplane Supplement.

Objective. To determine that the applicant exhibits knowledge of the elements related to the operation of systems on the seaplane provided for the practical test by explaining at least five (5) of the following:

1. Primary flight controls and trim.
2. Flaps, leading edge devices, and spoilers.
3. Powerplants and propellers.
4. Landing gear, if applicable.
5. Floats or hull.
6. Water rudders.
7. Fuel, oil, and hydraulic systems.
8. Electrical system.
9. Avionics systems.
10. Pitot-static system, vacuum/pressure system and associated flight instruments.
11. Environmental system.
12. Deicing and anti-icing systems.

H. TASK: AEROMEDICAL FACTORS

REFERENCES: AC 61-21, AC 61-23, AC 67-2; AIM.

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

1. The symptoms, causes, effects, and corrective actions of at least four (4) of the following—

    a. hypoxia.
    b. hyperventilation.
    c. middle ear and sinus problems.
    d. spatial disorientation.
    e. motion sickness.
    f. carbon monoxide poisoning.
    g. stress and fatigue.

2. The effects of alcohol and drugs, including over-the-counter drugs.
3. The effects of nitrogen excesses during scuba dives upon a pilot and/or passenger in flight.

I. TASK: WATER AND SEAPLANE CHARACTERISTICS

REFERENCE: AC 61-21.

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. direction and strength of the water current.
    c. presence of floating and partially submerged debris.
    d. protected and unprotected areas.
    e. effect of surface wind and method of determining its force.
    f. operating near sandbars, islands, and shoals.
    g. other pertinent characteristics deemed important by the examiner.

2. Float and hull construction and their effect on seaplane/flying boat performance.
3. Causes of porpoising and skipping, and pilot action to prevent or correct these occurrences.

J. TASK: SEAPLANE BASES, MARITIME RULES, AND AIDS TO MARINE NAVIGATION

REFERENCES: AC 61-21; AIM.

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 identify and locate seaplane bases on charts or in directories.
2. Operating restrictions at seaplane bases.
3. Right-of-way, steering, and sailing rules pertinent to seaplane operation.
4. Purpose and identification of marine navigation aids such as buoys, beacons, lights, and range markers.

K. TASK: PHYSIOLOGICAL ASPECTS OF NIGHT FLYING

REFERENCES: AC 61-21, AC 67-2, AIM.

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

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

L. TASK: LIGHTING AND EQUIPMENT FOR NIGHT FLYING

REFERENCES: 14 CFR part 91; AC 61-21; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual, Seaplane Supplement.

Objective. To determine that the applicant exhibits knowledge of the elements related to lighting and equipment for night flying by explaining:

1. Types and uses of various personal lighting devices.
2. Required equipment, additional equipment recommended, location of external navigation lighting, and anchor lighting for the seaplane.
3. Meaning of various waterway and navigation lights.

II. AREA OF OPERATION: PREFLIGHT PROCEDURES

A. TASK: PREFLIGHT INSPECTION

REFERENCES: AC 61-21; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual, Seaplane Supplement.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to a preflight inspection including which items must be inspected, the reasons for checking each item, and how to detect possible defects.
2. Inspects the seaplane with reference to an appropriate checklist.
3. Verifies that the seaplane is in condition for safe flight, notes any discrepancy, and determines whether the seaplane requires maintenance.
4. Locates and identifies switches, circuit breakers/fuses, pertinent to day and night operations.

B. TASK: COCKPIT MANAGEMENT

REFERENCES: AC 61-21; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual, Seaplane Supplement.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to efficient cockpit management procedures, and related safety factors.
2. Organizes and arranges material and equipment in a manner that makes the items readily available.
3. Briefs or causes the briefing of occupants on the use of safety belts and emergency procedures.
4. Briefs crew, if applicable.
5. Uses all appropriate checklists.

C. TASK: ENGINE STARTING

REFERENCES: AC 61-21, AC 61-23, AC 91-13, AC 91-55; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual, Seaplane Supplement.

Objective. To determine that the applicant:

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

D. TASK: TAXIING

REFERENCES: AC 61-21; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual, Seaplane Supplement.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to recommended taxi procedures.
2. Positions the flight controls properly for the existing wind conditions.
3. Plans and follows the most favorable course considering wind, current, hazards, and maritime regulations.
4. Utilizes appropriate idle, plow or step taxi technique.
5. Prevents and corrects for porpoising and skipping.
6. Complies with seaplane base/facility markings, signals, and ATC clearances.
7. Avoids other aircraft, vessels, and hazards.
8. Completes the appropriate checklist.

E. TASK: SAILING

REFERENCES: AC 61-21; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual, Seaplane Supplement.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to sailing by explaining the techniques used in this procedure.
2. Recognizes the circumstance when sailing should be used.
3. Plans and follows the most favorable course considering wind, water current, obstructions, debris, and other vessels.

4. Uses flight controls, flaps, doors, and water rudders as appropriate, to follow the desired course.
5. Controls speed appropriate to conditions.

F. TASK: BEFORE TAKEOFF CHECK

REFERENCES: AC 61-21; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual, Seaplane Supplement.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to the before takeoff check, including the reasons for checking each item and how to detect malfunctions.
2. Briefs passengers on the operation of safety belts, doors, and flotation devices.
3. Divides attention inside and outside the cockpit.
4. Positions the seaplane properly considering hazards, wind conditions, other aircraft, water surface conditions and depth, surrounding terrain, and other watercraft.
5. Ensures that the engine temperatures and pressures are suitable for run-up and takeoff.
6. Accomplishes the before takeoff checks and ensures that the seaplane is in safe operating condition.
7. Reviews takeoff performance airspeeds, departure and emergency procedures.
8. Briefs crew on duties, if applicable.
9. Ensures no conflict with air or water traffic prior to taxiing into takeoff position.
10. Completes appropriate checklist.

III. AREA OF OPERATION: SEAPLANE BASE AND WATER LANDING SITE OPERATIONS

A. TASK: RADIO COMMUNICATION AND ATC LIGHT SIGNALS

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

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to radio communications, radio failure, and ATC light signals.
2. Demonstrates use of radio communications by—

    a. selecting appropriate frequencies for facilities to be used.
    b. transmitting using recommended phraseology.
    c. acknowledging and complying with radio communications and ATC instructions.

3. Uses appropriate procedures for simulated radio communications failure.
4. Interprets and complies with ATC light signals.

B. TASK: TRAFFIC PATTERNS

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

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to traffic pattern procedures at seaplane bases and water landing sites.
2. Complies with recommended traffic pattern procedures.
3. Selects the most appropriate departure and approach path considering alignment with the wind, waterway congestion, and shoreline population.
4. Maintains proper spacing from other traffic.
5. Establishes an appropriate pattern distance from the landing area.
6. Remains oriented with landing area.
7. Maintains and holds traffic pattern altitude ±100 feet (30 meters), and appropriate airspeed ±10 knots.
8. Completes appropriate checklists.

C. TASK: SEAPLANE BASE/WATER LANDING SITE MARKINGS AND LIGHTING

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

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to seaplane base/water landing site markings and lighting.
2. Identifies and interprets seaplane base/water landing site markings and lighting.

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

A. TASK: NORMAL AND CROSSWIND TAKEOFF AND CLIMB

REFERENCES: AC 61-21; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual, Seaplane Supplement.

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

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to normal and crosswind takeoff and climb.
2. Positions flight controls and flaps for existing conditions.
3. Clears the area, notes any surface hazards and/or vessels prior to selecting a takeoff path.
4. Retracts the water rudders, if applicable.
5. Advances the throttles to takeoff power.
6. Avoids excessive water spray on the propellers.
7. Establishes and maintains an appropriate planing attitude, directional control, and corrects for porpoising and skipping.
8. Establishes and maintains proper lift-off attitude/airspeed and accelerates to the best single-engine climb speed or V_Y, whichever is greater, ±5 knots during the climb.
9. Reduces the flaps after a positive rate of climb is established and at a safe altitude.
10. Maintains takeoff power to a safe maneuvering altitude, then sets climb power.
11. Maintains directional control and proper wind-drift correction throughout takeoff and climb.
12. Uses noise abatement procedures, as required.
13. Completes appropriate checklists.

B. TASK: NORMAL AND CROSSWIND APPROACH AND LANDING

REFERENCES: AC 61-21; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual, Seaplane Supplement.

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

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to normal and crosswind approach and landing.
2. Considers the wind conditions, surrounding terrain, surface condition, water depth, debris, and other watercraft.
3. Selects a suitable approach path and touchdown point.
4. Ensures that the landing gear and water rudders are retracted, if applicable.
5. Establishes the recommended approach and landing configuration and adjusts power while maintaining the proper attitude as required.
6. Maintains a stabilized approach and recommended airspeed with gust factor applied, ±5 knots.
7. Makes smooth, timely, and correct power and control application during the touchdown.
8. Touches down at the recommended airspeed and pitch attitude, beyond and within 200 feet (60 meters) of a specified area.
9. Maintains crosswind correction and directional control throughout the approach and landing.
10. Completes appropriate checklists.

C. TASK: GLASSY WATER TAKEOFF AND CLIMB

REFERENCES: AC 61-21; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual, Seaplane Supplement.

NOTE: If a glassy water condition does not exist, the applicant's knowledge of glassy water elements shall be evaluated through oral testing. The applicant's skill shall be evaluated by simulating the TASK.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to a glassy water takeoff and climb.
2. Positions the flight controls and flaps for the existing conditions.
3. Clears the area, notes any surface hazards and/or vessels prior to selecting a takeoff path.
4. Retracts the water rudders, if applicable.
5. Advances the throttles to takeoff power.
6. Avoids excessive water spray on the propellers.
7. Establishes and maintains an appropriate planing attitude, directional control, and corrects for porpoising, skipping, and increases in water drag.
8. Utilizes appropriate techniques to lift seaplane from the water surface.
9. Establishes proper attitude/airspeed, lifts off and accelerates to best single-engine climb speed or V_Y, whichever is greater, ±5 knots during the climb.
10. Reduces the flaps after a positive rate of climb is established and at a safe altitude.
11. Maintains takeoff power to a safe maneuvering altitude, then sets climb power.
12. Maintains directional control and proper wind-drift correction throughout takeoff and climb.
13. Uses noise abatement procedures, as required.
14. Completes appropriate checklists.

D. TASK: GLASSY WATER APPROACH AND LANDING

REFERENCES: AC 61-21; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual, Seaplane Supplement.

NOTE: If a glassy water condition does not exist, the applicant's knowledge of glassy water elements shall be evaluated through oral testing. The applicant's skill shall be evaluated by simulating the TASK.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to a glassy water approach and landing.
2. Considers the surrounding terrain, visual attitude references, water depth, debris, and other watercraft.
3. Selects a suitable approach path and touchdown area.
4. Ensures that the landing gear and water rudders are retracted, if applicable.
5. Establishes the recommended approach and landing configuration and adjusts power and pitch attitude as required.
6. Maintains a slightly nose-high stabilized approach at the recommended airspeed, ±5 knots and descent rate from last altitude reference, until touchdown.
7. Makes smooth, timely, and correct power and control adjustments to maintain proper attitude and rate of descent to touchdown.
8. Contacts the water at the correct pitch attitude and slows to idle taxi speed.
9. Completes appropriate checklists.

E. TASK: ROUGH WATER TAKEOFF AND CLIMB

REFERENCES: AC 61-21; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual, Seaplane Supplement.

NOTE: If a rough water condition does not exist, the applicant's knowledge of rough water elements shall be evaluated through oral testing. The applicant's skill shall be evaluated by simulating the TASK.

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 the proper takeoff path, considering wind, swells, surface hazards and/or vessels.
4. Retracts the water rudders, if applicable.
5. Advances the throttles to takeoff power.
6. Avoids excessive water spray on the propellers.
7. Establishes and maintains an appropriate planing/lift-off attitude, directional control, and corrects for porpoising, skipping, or excessive bouncing.
8. Establishes and maintains proper attitude to lift-off at minimum airspeed and accelerates to best single-engine climb speed or V_Y, whichever is greater, ±5 knots before leaving ground effect.
9. Retracts the flaps after a positive rate of climb is established and at a safe altitude.
10. Maintains takeoff power to a safe maneuvering altitude, then sets climb power.
11. Maintains directional control and proper wind-drift correction throughout takeoff and climb.
12. Uses noise abatement procedures, as required.
13. Completes appropriate checklists.

F. TASK: ROUGH WATER APPROACH AND LANDING

REFERENCES: AC 61-21; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual; Seaplane Supplement.

NOTE: If a rough water condition does not exist, the applicant's knowledge of rough water elements shall be evaluated through oral testing. The applicant's skill shall be evaluated by simulating the TASK.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to a rough water approach and landing.
2. Considers the wind conditions, surrounding terrain, water depth, debris, and other watercraft.
3. Selects a suitable approach direction and touchdown area.
4. Establishes the recommended approach and landing configuration and adjusts power and pitch attitude as required.
5. Ensures that the landing gear and water rudders are retracted, if applicable.
6. Maintains a stabilized approach and recommended airspeed with gust factor applied, ±5 knots.
7. Contacts the water at the correct pitch attitude and touchdown speed.
8. Makes smooth, timely, and correct power and control application during the landing while remaining alert for a go-around should conditions be too rough.
9. Maintains positive after-landing control.
10. Completes appropriate checklists.

G. TASK: CONFINED-AREA TAKEOFF AND CLIMB

REFERENCES: AC 61-21; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual, Seaplane Supplement.

NOTE: This TASK simulates a takeoff from a small pond, which would require a takeoff and spiral climb; or a straight ahead takeoff and climb from a narrow waterway with obstructions at either end. The examiner must evaluate both takeoff situations for this TASK. In multiengine seaplanes with V_X values within 5 knots of V_{MC}, the use of V_Y or the manufacturer's recommendation may be more appropriate for this demonstration.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to a confined-area takeoff and climb.
2. Positions the flight controls and flaps for the existing conditions.
3. Clears the area, notes any surface hazards, vessels, and/or obstructions prior to selecting a takeoff path.
4. Selects a takeoff path that will allow maximum safe utilization of wind, water, and low terrain.
5. Advances the throttles to takeoff power.
6. Ensures that the water rudders are retracted when no longer needed.
7. Maintains the most efficient alignment and planing angle, without skidding, porpoising, and skipping.
8. Lifts off at recommended airspeed and accelerates to manufacturer's recommended climb airspeed.
9. Climbs at manufacturer's recommended configuration and airspeed, or in their absence at V_X, +5/-0 knots until the obstacle is cleared.
10. After clearing all obstacles, accelerates to and maintains V_Y, ±5 knots, retracts flaps and maintains safe bank angles while turning and/or providing best terrain clearance.
11. Maintains takeoff power to a safe altitude, and then sets climb power.
12. Uses noise abatement procedures, as required.
13. Completes appropriate checklists.

H. TASK: CONFINED-AREA APPROACH AND LANDING

REFERENCES: AC 61-21; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual, Seaplane Supplement.

NOTE: This TASK simulates an approach and landing to a small pond, which would require a spiral approach, wings level landing, and step turn upon landing; and a straight ahead approach and landing to a narrow waterway with obstructions at either end. The examiner must evaluate both landing situations for this TASK.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to a confined-area approach and landing.
2. Considers the wind conditions, surrounding terrain, surface condition, water depth, debris, and other watercraft.
3. Selects a suitable approach path and touchdown area.
4. Establishes the recommended approach and landing configuration and airspeed, and adjusts pitch attitude and power as required.
5. Ensures that the landing gear and water rudders are retracted, if applicable.
6. Maintains a stabilized approach and recommended approach airspeed with gust factor applied, ±5 knots.
7. Makes smooth, timely, and correct power and control application during the roundout and touchdown.
8. Touches down smoothly at the recommended airspeed and pitch attitude, beyond and within 100 feet (30 meters) of a specified point/area.
9. Maintains crosswind correction and directional control throughout the approach and landing.
10. Completes appropriate checklists.

I. TASK: GO-AROUND

REFERENCES: AC 61-21; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual, Seaplane Supplement.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to a go-around.
2. Makes a timely decision to discontinue the approach to landing.
3. Applies takeoff power immediately and establishes the pitch attitude that will stop the descent.
4. Retracts landing flaps, as recommended.
5. Trims the seaplane to accelerate to best single-engine climb speed or V_Y, whichever is greater, before the final flap retraction, then climbs at the recommended airspeed, ±5 knots.
6. Maintains takeoff power to a safe maneuvering altitude, then sets climb power.
7. Maintains proper wind-drift correction and obstruction clearance throughout the transition to climb.
8. Completes appropriate checklists.

V. AREA OF OPERATION: PERFORMANCE MANEUVER

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TASK: STEEP TURNS

REFERENCES: AC 61-21; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual, Seaplane Supplement.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to steep turns.
2. Selects an altitude that allows the task to be completed no lower than 3,000 feet (920 meters) AGL or the manufacturer's recommended altitude, whichever is higher.
3. Establishes the manufacturer's recommended airspeed or if one is not stated, the examiner may designate a safe airspeed not to exceed V_A.
4. Smoothly enters a coordinated 360° steep turn with a 50° bank, ±5°, immediately followed by a 360° steep turn in the opposite direction.
5. Divides attention between seaplane control and orientation.
6. Rolls out on the entry heading, ±10°.
7. Maintains the entry altitude throughout the maneuver, ±100 feet (30 meters), and airspeed ±10 knots.

VI. AREA OF OPERATION: NAVIGATION

A. TASK: PILOTAGE AND DEAD RECKONING

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

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to pilotage and dead reckoning.
2. Correctly flies to at least the first planned checkpoint to demonstrate accuracy in computations, considers available alternates, and suitable action for various situations including possible route alteration by the examiner.
3. Follows the preplanned course solely by reference to landmarks.
4. Identifies landmarks by relating the surface features to chart symbols.
5. Navigates by means of precomputed headings, groundspeed, and elapsed time.
6. Verifies the seaplane's position within 1 nautical mile (1.85 km) of flight planned route at all times.
7. Arrives at the en route checkpoints or destination within 3 minutes of the ETA.
8. Corrects for, and records, the difference between preflight fuel, groundspeed, and heading calculations and those determined en route.
9. Maintains appropriate altitude, ±100 feet (30 meters) and established heading, ±10°.
10. Completes appropriate checklists.

B. TASK: NAVIGATION SYSTEMS AND ATC RADAR SERVICES

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

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to navigation systems and ATC radar services.
2. Selects and identifies the appropriate facilities.
3. Locates the seaplane's position using radials, bearings, or coordinates, as appropriate.
4. Intercepts and tracks a given radial on a low altitude airway.
5. Recognizes and describes the indication of station passage or arrival at a checkpoint, if using Area Navigation.
6. Recognizes signal loss and takes appropriate action.
7. Utilizes proper communication procedures when using ATC radar services.
8. Maintains the appropriate altitude, ±100 feet (30 meters) heading ± 10°.

C. TASK: DIVERSION

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

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to procedures for diversion.
2. Selects an appropriate alternate water landing site and route.
3. Diverts toward the alternate seaplane water landing site.
4. Makes an accurate estimate of heading, groundspeed, arrival time and fuel consumption to the alternate base/water landing site.
5. Maintains the appropriate altitude, ±100 feet (30 meters) and established heading ±10.

D. TASK: LOST PROCEDURE

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

Objective. To determine that the applicant:

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

VII. AREA OF OPERATION: SLOW FLIGHT AND STALLS

A. TASK: MANEUVERING DURING SLOW FLIGHT

REFERENCES: AC 61-21; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual, Seaplane Supplement.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to flight characteristics and controllability associated with maneuvering during slow flight.
2. Selects an entry altitude that will allow the task to be completed no lower than 3,000 feet (920 meters) AGL or the manufacturer's recommended altitude, whichever is higher.
3. Stabilizes and maintains the airspeed at 1.2 V_{S1}, ±5 knots.
4. Establishes straight-and-level flight and level turns, with gear and flaps selected as specified by the examiner.
5. Maintains the specified altitude, ±50 feet (20 meters).
6. Maintains the specified heading during straight flight ±10°.
7. Maintains specified bank angle, ±10°, during turning flight.
8. Rolls out on specified headings, ±10°.
9. Divides attention between seaplane control and orientation.

B. TASK: POWER-OFF STALLS

REFERENCES: AC 61-21, AC 61-67; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual, Seaplane Supplement.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to aerodynamic factors associated with power-off stalls and how this relates to actual approach and landing situations.
2. Selects an entry altitude that allows the task to be completed no lower than 3,000 feet (920 meters) AGL or the manufacturer's recommended altitude, whichever is higher.
3. Establishes a stabilized descent, in the approach or landing configuration, as specified by the examiner.
4. Transitions slowly and smoothly from the approach or landing attitude, to a pitch attitude that will induce a stall.
5. Maintains the specified heading ±10°, in straight flight; maintains a specified angle of bank, not to exceed 30°, +0/-10°, in turning flight, while inducing a stall.
6. Recognizes and announces the onset of the stall by identifying the first aerodynamic buffeting or decay of control effectiveness.

7. Recovers promptly as the stall occurs by simultaneously decreasing the pitch attitude, increasing power and leveling the wings, with a minimum loss of altitude.
8. Retracts flaps to the recommended setting.
9. Accelerates to V_X or V_Y speed before final flap retraction, or follows manufacturer's recommended procedures.
10. Returns to the altitude, heading, and airspeed specified by the examiner.

C. TASK: POWER-ON STALLS

REFERENCES: AC 61-21, AC 61-67; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual, Seaplane Supplement.

NOTE: In some high performance seaplanes, the power setting may have to be reduced below the practical test standard guideline power setting to prevent excessively high pitch attitudes (greater than 30° nose up).

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to aerodynamic factors associated with power-on stalls and how this relates to actual takeoff and departure situations.
2. Selects an entry altitude that allows the task to be completed no lower than 3,000 feet (920 meters) AGL or the manufacturer's recommended altitude, whichever is higher.
3. Establishes the takeoff configuration and slows the seaplane to normal lift-off speed.
4. Sets power to manufacturer's recommended climb power setting while establishing the climb attitude. In the absence of a manufacturer recommended power setting, use no less than approximately 55-60 percent of full power as a guideline.
5. Maintains the specified heading ±10°, in straight flight; a 20° angle of bank, ±10°, in turning flight.
6. Recognizes and announces the onset of the stall by identifying the first aerodynamic buffeting or decay of control effectiveness.
7. Recovers promptly as the stall occurs by simultaneously decreasing the pitch attitude, increasing power and leveling the wings, with a minimum loss of altitude.
8. Retracts flap (if applicable) after a positive rate of climb is established.
9. Returns to the altitude, heading and airspeed specified by the examiner.

D. TASK: SPIN AWARENESS

REFERENCES: AC 61-21, AC 61-67; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual, Seaplane Supplement.

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

1. Aerodynamic conditions required for a spin.
2. Flight situations and conditions where unintentional spins may occur.
3. Instrument indications during a spin and/or spiral.
4. Techniques and procedures used to recognize and recover from unintentional spins.

VIII. AREA OF OPERATION: EMERGENCY OPERATIONS

A. TASK: EMERGENCY DESCENT

REFERENCES: AC 61-21; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual, Seaplane Supplement.

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 prescribed airspeed and configuration for the emergency descent as recommended by the manufacturer without exceeding safety limitations.
4. Uses proper engine control settings.
5. Exhibits orientation, division of attention, and proper planning.
6. Maintains positive load factors during the descent.
7. Completes the appropriate checklist.

B. TASK: MANEUVERING WITH ONE ENGINE INOPERATIVE

REFERENCES: AC 61-21; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual, Seaplane Supplement.

NOTE: The feathering of one propeller shall be demonstrated in flight, in a multiengine seaplane 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, seaplane bases, and/or water landing sites, can be readily accomplished. In the event a propeller cannot be unfeathered during the practical test, it shall be treated as an emergency.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to maneuvering with one engine inoperative.
2. Selects an entry altitude that will allow the task to be completed no lower than 3,000 feet (920 meters) AGL or the manufacturer's recommended altitude, whichever is higher.
3. Sets the engine controls, identifies and verifies the inoperative engine, feathers appropriate propeller, and reduces drag.

4. Attains the best engine inoperative airspeed and appropriately trims the seaplane and maintains control.
5. Follows the prescribed checklist to verify procedures for securing the inoperative engine.
6. Establishes a bank toward the operating engine, as necessary, for best performance.
7. Monitors the operating engine(s) and updates decisions based on observational feedback.
8. Restarts the inoperative engine; using appropriate restart procedures.
9. Maintains the specified altitude ±100 feet (30 meters), heading ±10°, when straight-and-level, and levels off from climbs and descents, at specified altitudes, ±100 feet (30 meters).
10. Completes the appropriate checklist.

C. TASK: ENGINE INOPERATIVE - LOSS OF DIRECTIONAL CONTROL DEMONSTRATION

REFERENCES: AC 61-21; Pilot Operating Handbook, FAA-Approved Airplane Flight Manual, Seaplane Supplement.

NOTE: Seaplanes 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 V_{MC} lower than the stall speed at higher altitudes. Also, some seaplanes have such an effective rudder that even at sea level V_{MC} is lower than stall speed. For these seaplanes, a demonstration of loss of directional control may be safely conducted by limiting travel of the rudder pedal to simulate maximum available rudder. Limiting travel of the rudder pedal should be accomplished at a speed well above the power-off stall speed (approximately 20 knots). This will avoid the hazards of stalling one wing with maximum allowable power applied to the engine on the other wing. In the event of any indication of stall prior to loss of directional control, recover to the entry airspeed. The demonstration should then be accomplished with the rudder pedal blocked at a higher airspeed.

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 seaplane control.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to engine inoperative loss of directional control by explaining the–

    a. Meaning of the term "critical engine."
    b. Effects of density altitude on the V_{MC} demonstration.
    c. Effects of seaplane weight and center of gravity on control.
    d. Reasons for variations in V_{MC}.
    e. Relationship of V_{MC} to stall speed.
    f. Reasons for loss of directional control.
    g. Indications of loss of directional control.
    h. Importance of maintaining proper pitch and bank attitude, and proper coordination of controls.
    i. Loss of directional control recovery procedure.
    j. Engine failure during takeoff including; planning, decisions, and single-engine operations.

2. Exhibits skills in performing an engine inoperative-loss of directional control demonstration—

    a. Selects an entry altitude that will allow the task to be completed no lower than 3,000 feet (920 meters) AGL or the manufacturer's recommended altitude, whichever is higher.
    b. Configures the seaplane at V_{SSE}/V_{YSE}, as appropriate, as follows:

        (1) Landing gear retracted.
        (2) Flaps set for takeoff.
        (3) Cowl flaps set for takeoff.
        (4) Trim set for takeoff.
        (5) Propellers set for high RPM.
        (6) Power on critical engine reduced to idle.
        (7) Power on operating engine set to takeoff or maximum available power.

    c. Establishes a single-engine climb attitude with the airspeed at approximately 10 knots above V_{SSE}.
    d. Establishes a bank toward the operating engine, as required for best performance and controllability.
    e. 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.
    f. Recognizes and announces the first indications of loss of directional control, stall warning or buffet.

g. 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 with a minimum loss of altitude. Recovery SHOULD NOT be attempted by increasing the power on the simulated failed engine.
h. Recovers within 20° of the entry heading.
i. Advances power smoothly on operating engine and accelerates to V_{XSE}/V_{YSE}, as appropriate, ±5 knots, during the recovery.

D. TASK: ENGINE FAILURE DURING TAKEOFF BEFORE V_{MC}

REFERENCES: AC 61-21; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual, Seaplane Supplement.

NOTE: A simulated engine failure shall be accomplished before reaching 50 percent of the calculated V_{MC}.

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 V_{MC}.
2. Utilizes the appropriate emergency procedures.
3. Promptly and smoothly closes the throttle(s) when simulated engine failure occurs.
4. Maintains directional control and slows to idle taxi speed.

E. TASK: ENGINE FAILURE AFTER LIFT-OFF (SIMULATED)

REFERENCES: AC 61-21; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual, Seaplane Supplement.

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 the 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. The examiner shall then establish zero-thrust on the inoperative engine.
5. Establishes V_{YSE}, or V_{XSE} as required, if obstructions are present, establishes V_{YSE} or V_{MC} +5 knots, whichever is greater, until obstruction is cleared, then V_{YSE}.

6. Follows the prescribed engine failure takeoff checklist after reaching 400 feet (120 meters) or safe obstruction clearance altitude.
7. Establishes a bank toward the operating engine, as necessary, for best performance.
8. Attempts to determine the reason for the engine malfunction.
9. Determines if it is feasible to restart the affected engine; if so, follows appropriate restart procedures.
10. Returns for landing at the airport or suitable landing area.
11. Completes appropriate checklists.

F. TASK: APPROACH AND LANDING WITH AN INOPERATIVE ENGINE (SIMULATED)

REFERENCES: AC 61-21; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual, Seaplane Supplement.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to approach and landing procedures to be used in various emergency situations.
2. Recognizes a simulated engine failure, maintains control, and utilizes recommended emergency procedures.
3. Sets the engine controls, reduces drag, and identifies and verifies the inoperative engine.
4. Simulates feathering the propeller of the inoperative engine. The examiner shall establish zero-thrust on the simulated inoperative engine.
5. Establishes the best engine inoperative airspeed, ±5 knots,
6. Banks toward the operating engine, as necessary, for best performance and trims seaplane.
7. Determines if it is feasible to restart the affected engine; if so, follows appropriate restart procedures.
8. Plans and follows a flight pattern to the selected water landing area.
9. Establishes the best engine inoperative approach, landing configuration, and airspeed.
10. Maintains a stabilized approach and the recommended approach airspeed, ±5 knots, until landing is assured.
11. Maintains crosswind correction and directional control throughout the approach and landing.
12. Makes smooth, timely and correct control applications during roundout and touchdown.
13. Touches down within available water landing area.
14. Completes appropriate checklists.

G. TASK: SYSTEMS AND EQUIPMENT MALFUNCTIONS

REFERENCES: AC 61-21; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual, Seaplane Supplement.

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 appropriate action for at least five (5) of the following simulated emergencies—

    a. partial power loss.
    b. engine roughness or overheat.
    c. loss of oil pressure.
    d. fuel starvation.
    e. smoke and fire.
    f. icing.
    g. pitot-static system, vacuum/pressure system and associated flight instruments.
    h. electrical.
    i. flaps.
    j. inadvertent door opening.
    k. emergency exits open.
    l. any other emergency unique to the seaplane flown.

3. Follows the appropriate emergency checklists or procedures.

H. TASK: EMERGENCY EQUIPMENT AND SURVIVAL GEAR

REFERENCES: AC 61-21; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual, Seaplane Supplement.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to emergency equipment appropriate to the seaplane used for the practical test by describing—

    a. location in the seaplane.
    b. method of operation.
    c. servicing requirements.
    d. method of safe storage.

2. Exhibits knowledge of the elements related to survival gear by describing—

    a. survival gear appropriate for operation in various climatological and topographical environments.
    b. location in the seaplane.
    c. method of operation.
    d. servicing requirements.
    e. method of safe storage.

IX. AREA OF OPERATION: MULTIENGINE OPERATIONS

NOTE: If the applicant has previously demonstrated instrument proficiency in a multiengine airplane, TASKS A, B, and C, need not be accomplished. (See RATING TASK TABLE, page 4-v).

A. TASK: ENGINE FAILURE DURING FLIGHT (By Reference to Instruments)

REFERENCES: 14 CFR part 61**;** AC 61-21, AC 61-27; FAA-S-8081-4.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to engine failure during straight-and-level flight and turns.
2. Recognizes simulated engine failure promptly during straight-and-level flight and turns to predetermined headings.
3. Sets the engine controls, reduces drag, and identifies and verifies the inoperative engine.
4. Attains the best engine inoperative airspeed and appropriately trims the seaplane and maintains control.
5. Follows the prescribed checklist to verify procedures for securing the inoperative engine.
6. Establishes a bank toward the operating engine(s), as necessary, for best performance.
7. Attempts to determine the reason for the engine malfunction.
8. Determines if it is feasible to restart the affected engine; if so, follows appropriate restart procedures.
9. Demonstrates coordinated flight while flying straight-and-level and while turning in both directions.
10. Maintains the specified altitude ±100 feet (30 meters), if within the seaplane's capability, the specified airspeed ±10 knots, and the specified heading ±10°, if straight-and-level, or the specified bank within ±10° of the standard rate bank angle, if in a turn.

B. TASK: INSTRUMENT APPROACH - ALL ENGINES OPERATING (By Reference to Instruments)

REFERENCES: 14 CFR part 61; AC 61-21, AC 61-27; FAA-S-8081-4.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to a published instrument approach with all engines operating.
2. Sets the navigation and communication equipment used during the approach and uses the proper communications technique.
3. Requests and receives an actual or simulated ATC clearance for an instrument approach.
4. Follows instructions and instrument approach procedures correctly.
5. Maintains a specified airspeed within 10 knots and an altitude within 100 feet (30 meters), prior to the final approach fix.
6. Establishes a rate of descent that will ensure arrival at the MDA or DH, whichever is appropriate, in a position from which a normal landing can be made either straight-in or circling.
7. Allows, while on the final approach segment, no more than three-quarter-scale deflection of the localizer/glide slope indicators, CDI, or within 10° in the case of RMI or ADF indicators.
8. Avoids descent below the published minimum altitude on straight-in approaches or exceeding the visibility criteria for the aircraft approach category on circling approaches.
9. Completes the appropriate checklist.

C. TASK: INSTRUMENT APPROACH - ONE ENGINE INOPERATIVE (By Reference to Instruments)

REFERENCES: 14 CFR part 61; AC 61-21, AC 61-27; FAA-S-8081-4.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to multiengine procedures used during a published instrument approach with one engine inoperative.
2. Sets the navigation and communication equipment used during the approach and uses the proper communications technique.
3. Requests and receives an actual or simulated ATC clearance for an instrument approach.
4. Recognizes simulated engine failure promptly.
5. Sets the engine controls, reduces drag, and identifies and verifies the inoperative engine. The examiner shall then establish zero-thrust on the inoperative engine.
6. Attains the best engine inoperative airspeed and appropriately trims the seaplane and maintains control.
7. Follows the prescribed checklist to verify procedures for securing the inoperative engine.
8. Establishes a bank toward the operating engine, as necessary, for best performance.
9. Attempts to determine the reason for the engine malfunction.
10. Determines if it is feasible to restart the affected engine; if so, follows appropriate restart procedures.
11. Follows instructions and instrument approach procedures correctly.
12. Maintains a specified airspeed within 10 knots and an altitude within 100 feet (30 meters), prior to the final approach fix.
13. Establishes a rate of descent that will ensure arrival at the MDA or DH, whichever is appropriate, in a position from which a normal landing can be made either straight-in or circling.
14. Allows, while on final approach segment, no more than three-quarter-scale deflection of the localizer/glide slope indicators, CDI, or within 10° in the case of RMI or ADF indicators.
15. Descends to published minimum altitude and arrives at a point where a normal landing could be made.
16. Completes the appropriate checklist.

X. AREA OF OPERATION: HIGH ALTITUDE OPERATIONS

SUPPLEMENTAL OXYGEN

REFERENCES: 14 CFR part 91; AC 61-107; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual, Seaplane Supplement; AIM.

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

1. Supplemental oxygen requirements for flight crew and passengers when operating non-pressurized seaplanes.
2. Distinction between ‘‘aviators' breathing oxygen’’ and other types.
3 Method of determining oxygen service availability.
4. Operational characteristics of continuous flow, demand, and pressure-demand oxygen systems.
5. Care and storage of high-pressure oxygen bottles.

XI. AREA OF OPERATION: POSTFLIGHT PROCEDURES

A. TASK: AFTER LANDING

REFERENCES: AC 61-21; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual, Seaplane Supplement.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to after-landing procedures, including maritime courtesy, local and ATC procedures.
2. Clears the water landing area, taxies to a suitable parking/refueling area while using proper taxi techniques considering wind, water current, and obstacles.
3. Completes the appropriate checklist.

B. TASK: ANCHORING

REFERENCES: AC 61-21; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual, Seaplane Supplement.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to anchoring in lakes, rivers, and tidal areas.
2. Selects a suitable area for anchoring considering seaplane movement, water depth, tides, wind, and weather changes.
3. Uses an adequate number of anchors and lines of sufficient strength and length to ensure the seaplane's security.

C. TASK: DOCKING AND MOORING

REFERENCES: AC 61-21; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual, Seaplane Supplement.

Objective. To determine that the applicant:

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

D. TASK: BEACHING

REFERENCES: AC 61-21; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual, Seaplane Supplement.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to beaching.
2. Selects a suitable area for beaching, considering water depth, current, tide, and wind.
3. Approaches from the proper direction and at a suitable speed for the beach condition.
4. Beaches and secures the seaplane in a manner that will protect it from harmful effects of wind, waves, and changes in water level.
5. Departs the beach in a safe manner, considering wind, current, traffic, and hazards.

E. TASK: RAMPING

REFERENCES: AC 61-21; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual, Seaplane Supplement.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to ramping.
2. Approaches the ramp from the proper direction and at a safe speed, considering current, wind, and type of ramp.
3. Ramps the seaplane at the proper speed and attitude.
4. Secures the seaplane on the ramp in a manner that will protect it from the harmful effects of wind, waves, and changes of water level.
5. Departs the ramp in a manner that does not endanger other persons or watercraft in the area.
6. Re-enters the water.

F. TASK: PARKING AND SECURING

REFERENCES: AC 61-21; Pilot's Operating Handbook, FAA-Approved Airplane Flight Manual, Seaplane Supplement.

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to ramp safety, parking hand signals, shutdown, securing, and postflight inspection.
2. Parks the seaplane properly, considering prop blast and the safety of nearby persons and property.
3. Follows the recommended procedure for engine shutdown, securing the cockpit, and deplaning passengers.
4. Secures the seaplane properly.
5. Performs a satisfactory postflight inspection.
6. Completes the appropriate checklist.