



U.S. Department  
of Transportation

Federal Aviation  
Administration

**PRIVATE PILOT**

**Practical Test Standards**

for

**LIGHTER-THAN-AIR**

***BALLOON***

***AIRSHIP***

**JUNE 1996**

**FLIGHT STANDARDS SERVICE**  
**Washington, DC 20591**

**PRIVATE PILOT  
LIGHTER-THAN-AIR  
Practical Test Standards**

**1996**

**FLIGHT STANDARDS SERVICE  
Washington, DC 20591**

## **NOTE**

Material in FAA-S-8081-17 will be effective June 1, 1996. All previous editions of the Private Pilot – Lighter-Than-Air (Balloon and Airship) Practical Test Standards will be obsolete as of this date.

## FOREWORD

The Private Pilot – Lighter-Than-Air (Ballon and Airship) Practical Test Standards (PTS) book has been published by the Federal Aviation Administration (FAA) to establish the standards for private pilot certification practical tests for the lighter-than-air category, balloon and airship 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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Deputy Director, Flight Standards Service

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## INTRODUCTION

The Flight Standards Service of the Federal Aviation Administration (FAA) has developed this practical test book as a standard to be used by FAA inspectors and designated pilot examiners when conducting private pilot – lighter-than-air (balloon and airship) practical tests. Flight instructors are expected to use this book when preparing applicants for practical tests. 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 the many individuals and organizations who contributed their time and talent in assisting with the revision of these practical test standards.

This practical test standard may be accessed through the FedWorld Information System. It may also be accessed via the Internet using the following addresses:

Telenet access via Internet:      [fedworld.gov](http://fedworld.gov)

FTP site access access via Internet:      <ftp://ftp.fedworld.gov/pub/faa>

World Wide Web:      <http://www.fedworld.gov>

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Federal Aviation Administration  
Flight Standards Service  
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## **PRACTICAL TEST STANDARDS CONCEPT**

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

## **PRIVATE PILOT LIGHTER-THAN-AIR PRACTICAL TEST STANDARDS BOOK DESCRIPTION**

This test book contains the following private pilot practical test standards:

<b>Section 1</b>	Lighter-Than-Air, Balloon
<b>Section 2</b>	Lighter-Than-Air, Airship

The Private Pilot Lighter-Than-Air Practical Test Standards include the AREAS OF OPERATION and TASKS for the issuance of an initial private pilot certificate and for the addition of category and/or class ratings to that certificate.

## **PRACTICAL TEST STANDARDS DESCRIPTION**

AREAS OF OPERATION are phases of the practical test arranged in a logical sequence. 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. The roman numerals preceding each AREA OF OPERATION relate that AREA OF OPERATION to the corresponding regulatory requirement.

TASKS represent knowledge, flight procedures, and/or maneuvers appropriate to an AREA OF OPERATION.

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, if their content conveys substantially the same meaning as the listed publications.



Reference list:

<b>14 CFR part 43</b>	Maintenance, Preventive Maintenance, Rebuilding, and Alteration
<b>14 CFR part 61</b>	Certification: Pilots and Flight Instructors
<b>14 CFR part 67</b>	Medical Standards and Certification
<b>14 CFR part 91</b>	General Operating and Flight Rules
<b>NTSB Part 830</b>	Notification and Reporting of Aircraft Accidents and Incidents
<b>AC 00-2</b>	Advisory Circular Checklist
<b>AC 00-6</b>	Aviation Weather
<b>AC 00-45</b>	Aviation Weather Services
<b>AC 61-21</b>	Flight Training Handbook
<b>AC 61-23</b>	Pilot's Handbook of Aeronautical Knowledge
<b>AC 61-84</b>	Role of Preflight Preparation
<b>AC 91-13</b>	Cold Weather Operation of Aircraft
<b>AC 91-23</b>	Pilot's Weight and Balance Handbook
<b>AIM</b>	Aeronautical Information Manual
<b>AFD</b>	Airport Facility Directory
<b>NOTAM's</b>	Notices to Airmen
	Balloon Flight Manual
	Airship Flight Manual
	Industry Related Manuals

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 minimum acceptable standards of performance.

## USE OF THE PRACTICAL TEST STANDARDS BOOK

The FAA requires that all private pilot practical tests be conducted in accordance with the appropriate Private Pilot Practical Test Standards and the policies set forth in this INTRODUCTION. Private pilot applicants shall be evaluated in **ALL TASKS** included in the **AREAS OF OPERATION** of the appropriate practical test standard.

In preparation for the practical test, the examiner shall develop a written “plan of action.” The “plan of action” shall include all **TASKS** in each **AREA OF OPERATION**. Each **TASK** selected shall be evaluated in its entirety. However, if the elements in one **TASK** have already been evaluated in another **TASK**, they need not be repeated.

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 meet the orderly and efficient flow of the practical test. For example, a rectangular course may be combined with an airport traffic pattern or lost procedures may be combined with radio navigation. However, the Objectives of all **TASKS** must be demonstrated and evaluated at some time during the practical test. 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 areas 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. **THE EXAMINER SHALL ALSO EMPHASIZE WAKE TURBULENCE AVOIDANCE, LOW LEVEL WIND SHEAR, IN-FLIGHT COLLISION AVOIDANCE, RUNWAY INCURSION AVOIDANCE, AND CHECKLIST USAGE.**

## **PRIVATE PILOT LIGHTER-THAN-AIR PRACTICAL TEST PREREQUISITES**

An applicant for the private pilot lighter-than-air practical test is required by Title 14 of the Code of Federal Regulations to:

1. pass the appropriate private pilot knowledge test since the beginning of the 24th month before the month in which the practical test is taken;
2. obtain the applicable instruction and aeronautical experience prescribed for the private pilot certificate or training sought;
3. hold at least a current third-class medical certificate issued under 14 CFR part 67; or possess a Medical Statement declaring that they have no known physical defect which makes them unable to pilot a free balloon;
4. meet the age requirement for the issuance of the certificate or rating sought; (16 years of age for the free balloon, 17 years of age for the airship), and;
5. obtain a written statement from an appropriately certificated 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, if any, was indicated by the airman knowledge test report.

**NOTE:** AC 61-65, Certification: Pilots and Flight Instructors, states that the instructor may sign the instructor's recommendation on the reverse side of FAA Form 8710-1, Airman Certificate and/or Rating Application, in lieu of the previous statement, provided all appropriate 14 CFR part 61 requirements are substantiated by reliable records.

### **AIRCRAFT AND EQUIPMENT REQUIRED FOR THE PRACTICAL TEST**

The private pilot applicant is required by 14 CFR section 61.45 to provide an appropriate, airworthy, certificated aircraft for use during the practical test. The aircraft must be equipped for, and its operating limitations must not prohibit, the performance of all TASKS required on the test.

## **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 the practical test, there must always be a clear understanding of who has control of the aircraft. Prior to the 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 recommended.

When the examiner wishes to take the controls to allow the applicant to adjust the seat, headset, etc., he/she will say "I have the flight controls." The applicant will acknowledge immediately by saying, "You have the flight controls." The examiner again says, "I have the flight controls." When control is returned to the applicant, 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.

## **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.

## **APPLICANT'S USE OF CHECKLISTS**

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

## **CREW RESOURCE MANAGEMENT (CRM)**

CRM “...refers to the effective use of ALL available resources; human resources, hardware, and information.” Human resources “...includes all 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, dispatchers, cabin crewmembers, maintenance personnel, air traffic controllers, and weather services.” CRM is not a single TASK, it is a set of knowledge and skill competencies that must be evident in all TASKS in this PTS as applied to either single pilot or a crew operation.

## **MANUFACTURER’S RECOMMENDATION**

The term “recommended” refers to the manufacturer’s recommendation. If the manufacturer’s recommendation is not available, the description in AC 61-21 shall be used.

## **FLIGHT INSTRUCTOR RESPONSIBILITY**

An appropriately rated flight instructor is responsible for training the private pilot applicant to acceptable standards in **all** subject matter areas, procedures, and maneuvers included in the TASKS within the appropriate private 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 ability.

Additionally, the flight instructor must certify that the applicant is able to perform safely as a private 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.

## **EXAMINER<sup>1</sup> 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.

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

Throughout 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;
3. demonstrate sound judgment, aeronautical decision making, and skill competencies in CRM.

## **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 TASKS satisfactorily performed. However, during the retest and at the discretion of the examiner, any TASK may be re-evaluated including those previously passed.

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<sup>1</sup> The word "examiner" denotes either the FAA inspector or FAA designated pilot examiner who conducts the practical test.

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





**SECTION 1**

**PRIVATE PILOT  
LIGHTER-THAN-AIR**

**BALLOON**

**Practical Test Standards**

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**APPLICANT'S PRACTICAL TEST CHECKLIST  
(BALLOON)**

**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 Flight Manual
- FCC Station License (if applicable)

**PERSONAL EQUIPMENT**

- PTS
- Current Aeronautical Charts
- Computer and Plotter
- Flight Logs
- Current AIM

**PERSONAL RECORDS**

- Identification - Photo/Signature ID
- Pilot Certificate
- Current and Appropriate Medical Certificate or Statement
- Completed FAA Form 8710-1, Airman Certificate and/or Rating Application with Instructor's Signature
- 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  
PRIVATE PILOT - LIGHTER-THAN-AIR  
(BALLOON)**

**APPLICANT'S NAME** \_\_\_\_\_

**LOCATION** \_\_\_\_\_

**DATE/TIME** \_\_\_\_\_

**I. PREFLIGHT PREPARATION**

- A.** Certificates and Documents
- B.** Weather Information
- C.** Flight Planning
- D.** National Airspace System
- E.** Performance and Limitations
- F.** Operations of Systems
- G.** Aeromedical Factors

**II. PREFLIGHT PROCEDURES**

- A.** Launch Site Selection
- B.** Crew Briefing and Preparation
- C.** Layout and Assembly
- D.** Preflight Inspection
- E.** Inflation
- F.** Basket/Gondola Management
- G.** Pre-launch Check

**III. AIRPORT OPERATIONS**

- Radio Communications and ATC Light Signals

**IV. LAUNCHES AND LANDINGS**

- A.** Normal Launch
- B.** Launch Over Obstacle
- C.** Approach to Landing
- D.** Normal Landing
- E.** High-wind Landing

**V. PERFORMANCE MANEUVERS**

- A.** Ascents
- B.** Altitude control (Level Flight)
- C.** Descents
- D.** Contour Flying
- E.** Obstruction Clearance
- F.** Tethering
- G.** Winter Flying
- H.** Mountain Flying

**VI. NAVIGATION**

- Navigation

**VII. EMERGENCY OPERATIONS**

- A.** Systems and Equipment Malfunctions
- B.** Emergency Equipment and Survival Gear
- C.** Water Landing
- D.** Thermal Flight

**VIII. POSTFLIGHT PROCEDURES**

- A.** Recovery
- B.** Deflation and Packing
- C.** Refueling

# **I. AREA OF OPERATION: PREFLIGHT PREPARATION**

## **A. TASK: CERTIFICATES AND DOCUMENTS**

REFERENCES: 14 CFR parts 43, 61, 91; AC 61-21, AC 61-23; Balloon Flight Manual.

**Objective.** To determine that the applicant:

1. Exhibits knowledge of the elements related to certificates and documents by explaining the appropriate—
  - a. pilot certificate privileges and limitations.
  - b. medical statement.
  - c. pilot logbook or flight record, required entries.
2. Exhibits knowledge of the elements related to certificates and documents by locating and explaining the—
  - a. airworthiness and registration certificates.
  - b. operating limitations, placards, instrument markings, handbooks, and manuals.
  - c. weight data, including the equipment list as appropriate.
  - d. airworthiness directives and compliance records, maintenance/inspection requirements and appropriate records.

## **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 and forecasts from various sources with emphasis on—
  - a. surface wind.
  - b. winds aloft.
  - c. wind shear.
  - d. PIREP's.
  - e. SIGMET's and AIRMET's.

2. Exhibits knowledge of the elements related to weather information by explaining various atmospheric conditions, and their effect on balloon flight, including—
  - a. temperature and pressure variations.
  - b. atmospheric stability.
  - c. cloud formations.
  - d. thunderstorms and associated turbulence.
  - e. thermals.
  - f. land and sea or lake breezes.
  - g. orographic winds.
3. Makes a competent “go/no-go” decision based on available weather information.

### **C. TASK: FLIGHT PLANNING**

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

**Objective.** To determine that the applicant:

1. Exhibits knowledge of the elements related to flight planning by presenting and explaining a preplanned flight of maximum duration, appropriate to the balloon used for the flight test, as previously assigned by the examiner. The final flight plan shall include real-time weather.
2. Uses appropriate, current aeronautical charts and appropriate, current local road/street maps.
3. Plots a course for the intended route of flight based on the winds aloft forecast.
4. Selects the appropriate VHF communication frequencies, if radio equipped.
5. Identifies airspace, obstructions, and terrain features.
6. Selects suitable landing areas.
7. Extracts and applies pertinent information from NOTAM's, Airport/Facility Directory, and AIM as necessary.



## **D. TASK: NATIONAL AIRSPACE SYSTEM**

REFERENCES: 14 CFR part 91; Navigation Charts; 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 equipment requirements for the following—
  - a. Class A.
  - b. Class B.
  - c. Class C.
  - d. Class D.
  - e. Class E.
  - f. Class G.
3. Special use airspace and other airspace areas.

## **E. TASK: PERFORMANCE AND LIMITATIONS**

REFERENCES: AC 61-21, AC 61-23, AC 61-84, AC 91-23; Balloon Flight Manual.

**Objective.** To determine that the applicant:

1. Exhibits knowledge of the elements related to performance and limitations by explaining the use of appropriate data, if available from the manufacturer, to determine performance. This shall include operational characteristics and loading, and the adverse effects of exceeding limitations.
2. Computes operating weight, maximum load, and expected envelope temperature, as related to maximum envelope temperature.
3. Determines balloon performance, considering density altitude, wind, other weather related conditions, and terrain.
4. Determines normal and maximum rates of ascent and descent, and the altitude required to arrest high rates of descent.
5. Determines envelope temperatures, including never-exceed temperature and maximum continuous temperature, if appropriate.
6. Determines whether the computed performance is within the balloon's capabilities and operating limitations.

## F. TASK: OPERATION OF SYSTEMS

REFERENCE: Balloon Flight Manual.

**Objective.** To determine that the applicant exhibits knowledge of the elements related to the operation of systems on the balloon provided for the practical test by explaining the following:

1. Fuel system and associated gauges.
2. Venting and/or deflation systems.
3. Flight instruments and gauges.
4. Avionics/communications system, as appropriate.

## G. TASK: AEROMEDICAL FACTORS

REFERENCES: AC 61-21; 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 three of the following—
  - a. hypoxia.
  - b. hyperventilation.
  - c. middle ear and sinus problems.
  - d. spatial disorientation.
  - e. 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.

## II. AREA OF OPERATION: PREFLIGHT PROCEDURES

### A. TASK: LAUNCH SITE SELECTION

REFERENCE: Balloon Flight Manual.

**Objective.** To determine that the applicant:

1. Exhibits knowledge of the elements related to launch site selection.
2. Arranges to launch with adequate time to complete the flight safely considering wind, weather conditions, and landing sites.
3. Selects a launch site with emphasis on—
  - a. suitable landing areas.
  - b. airspace considerations.
  - c. surface wind and winds aloft.
  - d. accessibility.
  - e. surface condition.
  - f. size.
  - g. hazards and obstacles in the vicinity of the site.
4. Makes a competent “go/no-go” decision considering all of the factors involved in the selection of a safe launch site.

### B. TASK: CREW BRIEFING AND PREPARATION

REFERENCE: Balloon Flight Manual.

**Objective.** To determine that the applicant:

1. Exhibits knowledge of the elements related to crew briefing and preparation.
2. Designates a crew chief, if appropriate, and assigns each crewmember specific duties and responsibilities, considering the experience level of each crewmember.
3. Briefs crewmembers in all areas of the flight, including layout and assembly; tie-off, if appropriate; inflation; in-flight; landing; recovery; and emergency procedures.
4. Establishes a common means of communication such as hand signals and/or two-way radio.
5. Describes the proposed direction of flight and the estimated time aloft.
6. Ensures that all necessary equipment is on board.
7. Supervises and coordinates all activities.
8. Completes the appropriate checklist.

**C. TASK: LAYOUT AND ASSEMBLY**

REFERENCE: Balloon Flight Manual.

**Objective.** To determine that the applicant:

1. Exhibits knowledge of the elements related to layout and assembly.
2. Positions balloon properly, considering wind conditions and obstacles.
3. Checks fuel system for security, leaks, and correct fuel pressure.
4. Uses tie-off, if appropriate.
5. Assembles balloon as appropriate.
6. Completes the appropriate checklist.

**D. TASK: PREFLIGHT INSPECTION**

REFERENCE: Balloon Flight Manual.

**Objective.** To determine that the applicant:

1. Exhibits knowledge of the elements related to visual inspection. This shall include which items must be inspected, the reasons for checking each item, and how to detect possible defects.
2. Inspects the balloon with reference to the checklist emphasizing the—
  - a. basket.
  - b. fuel system.
  - c. flight instruments.
  - d. items.
  - e. envelope.
  - f. venting and/or deflation systems.
3. Verifies the balloon is in condition for safe flight.
4. Completes the appropriate checklist.

## **E. TASK: INFLATION**

REFERENCE: Balloon Flight Manual.

**Objective.** To determine that the applicant:

1. Exhibits knowledge of the elements related to inflation.
2. Accomplishes the proper tie-off procedure, if appropriate.
3. Inflates the balloon to equilibrium as appropriate.
4. Positions and secures the vent/deflation lines.
5. Completes the appropriate checklist.

## **F. TASK: BASKET/GONDOLA MANAGEMENT**

REFERENCE: Balloon Flight Manual.

**Objective.** To determine that the applicant:

1. Exhibits knowledge of the elements related to basket/gondola management procedures.
2. Ensures all loose items in the basket/gondola are secured.
3. Briefs passengers on the proper boarding, in-flight, and landing behavior and procedures.
4. Organizes material and equipment in a logical, efficient manner.
5. Utilizes all appropriate checklists.

## **G. TASK: PRE-LAUNCH CHECK**

REFERENCE: Balloon Flight Manual.

**Objective.** To determine that the applicant:

1. Exhibits knowledge of the elements related to the pre-launch check. This shall include the reasons for checking each item and how to detect malfunctions.
2. Reviews the wind conditions, temperatures, and obstructions.
3. Divides attention inside and outside the basket/gondola.
4. Performs final instrument check.
5. Ensures that the vent/deflation lines are positioned and secured properly.
6. Determines equilibrium.
7. Accomplishes the pre-launch check and confirms that the balloon is in safe operating condition.
8. Accomplishes final coordination with the ground crew, including signals and emergency procedures.
9. Assures no conflict with traffic prior to launch.
10. Completes the appropriate checklist.

### **III. AREA OF OPERATION AIRPORT OPERATIONS**

#### **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 and ATC light signals.
2. Selects appropriate frequencies.
3. Transmits using recommended phraseology.
4. Acknowledges radio communications and complies with instructions.
5. Interprets and complies with ATC light signals, as appropriate.

#### **IV. AREA OF OPERATION LAUNCHES AND LANDINGS**

##### **A. TASK: NORMAL LAUNCH**

REFERENCE: Balloon Flight Manual.

**Objective.** To determine that the applicant:

1. Exhibits knowledge of the elements related to a normal launch.
2. Directs ground crew to clear the area.
3. Recognizes equilibrium.
4. Uses tie-off quick release line correctly, if appropriate.
5. Recognizes presence of false lift and wind conditions.
6. Coordinates lift-off and initial ascent.
7. Completes the appropriate checklist.

##### **B. TASK: LAUNCH OVER OBSTACLE**

REFERENCE: Balloon Flight Manual.

**Objective.** To determine that the applicant:

1. Exhibits knowledge of the elements related to a launch over an obstacle.
2. Determines the height of the obstacle.
3. Considers the distance to the obstacle relative to the wind conditions.
4. Recognizes the presence of false lift.
5. Acts decisively so as to clear the obstacle safely.
6. Completes the appropriate checklist.

##### **C. TASK: APPROACH TO LANDING**

REFERENCE: Balloon Flight Manual.

**Objective.** To determine that the applicant:

1. Exhibits knowledge of the elements related to an approach to landing.
2. Considers the wind conditions, landing area, obstructions, and surface, and selects the most suitable touchdown point.
3. Establishes the appropriate approach profile and rate(s) of descent.
4. Ensures that each passenger is thoroughly briefed and positioned properly in accordance with landing conditions.
5. Stows loose articles and secures equipment, as appropriate.
6. Makes a timely decision to abort the approach, if necessary.
7. Completes the appropriate checklist.

**D. TASK: NORMAL LANDING**

REFERENCE: Balloon Flight Manual.

**Objective.** To determine that the applicant:

1. Exhibits knowledge of the elements related to a normal landing.
2. Prepares vent/deflation system for use.
3. Touches down within the designated area or aborts the landing and ascends as specified by the examiner.
4. Uses burner controls, vent/deflation system properly to stabilize balloon on touchdown.
5. Stabilizes balloon prior to passengers exiting.
6. Completes the appropriate checklist.

**E. TASK: HIGH-WIND LANDING**

**NOTE:** If a high-wind condition does not exist, the applicant's knowledge of the TASK shall be evaluated through oral testing.

REFERENCE: Balloon Flight Manual.

**Objective.** To determine that the applicant:

1. Exhibits knowledge of the elements related to a high-wind landing.
2. Identifies hazards associated with a high-wind landing.
3. Prepares vent/deflation system for use.
4. Uses burner controls and vent/deflation system to land the balloon and control ground travel.
5. Touches down within the designated area or aborts the landing and ascends as specified by the examiner.
6. Extinguishes pilot lights at the appropriate time.
7. Completes the appropriate checklist.



**V. AREA OF OPERATION:  
PERFORMANCE MANEUVERS**

**A. TASK: ASCENTS**

REFERENCE: Balloon Flight Manual.

**Objective.** To determine that the applicant:

1. Exhibits knowledge of the elements related to ascents.
2. Transitions from level flight to ascent, as specified by the examiner.
3. Ascends at an appropriate rate,  $\pm 100$  feet (30 meters) per minute.
4. Transitions from ascent to level flight at an altitude specified by the examiner,  $\pm 100$  feet (30 meters).
5. Completes the appropriate checklist.

**B. TASK: ALTITUDE CONTROL (LEVEL FLIGHT)**

REFERENCE: Balloon Flight Manual.

**Objective.** To determine that the applicant:

1. Exhibits knowledge of the elements related to altitude control.
2. Recognizes vertical movement.
3. Maintains equilibrium by smooth use of burner controls.
4. Uses instruments to assist in altitude control.
5. Maintains assigned altitudes,  $\pm 100$  feet (30 meters).
6. Completes the appropriate checklist.

**C. TASK: DESCENTS**

REFERENCE: Balloon Flight Manual.

**Objective.** To determine that the applicant:

1. Exhibits knowledge of the elements related to descents.
2. Transitions from level flight to descent, as specified by the examiner.
3. Descends at a specified rate,  $\pm 100$  feet (30 meters) per minute.
4. Transitions from descent to level flight at an altitude specified by the examiner,  $\pm 100$  feet (30 meters).
5. Completes the appropriate checklist.

**D. TASK: CONTOUR FLYING**

REFERENCE: Balloon Flight Manual.

**Objective.** To determine that the applicant:

1. Exhibits knowledge of the elements related to contour flying.
2. Uses all controls properly to maintain the desired altitude, based on the appropriate clearance over terrain and obstacles.
3. Considers the effects of wind gusts, wind shear, thermal activity and orographic conditions.
4. Allows adequate clearance for livestock and other animals.
5. Divides attention between balloon control, ground track, and forward surveillance.

**E. TASK: OBSTRUCTION CLEARANCE**

REFERENCE: Balloon Flight Manual.

**Objective.** To determine that the applicant:

1. Exhibits knowledge of the elements related to obstruction clearance.
2. Recognizes obstructions, including powerlines, and allows time to take appropriate action.
3. Uses proper procedures to avoid obstructions, including powerlines.
4. Uses proper procedures when collision is imminent.

**F. TASK: TETHERING**

REFERENCE: Balloon Flight Manual.

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

1. The proper recognition of wind conditions and obstructions.
2. The recognition of the effects of false lift and wind gusts.
3. The recommended tethering procedure with emphasis on utilizing an adequate number of appropriate tether lines of adequate strength, in the proper location.
4. The briefing for ground crewmembers, to include crowd control.

## **G. TASK: WINTER FLYING**

REFERENCE: Balloon Flight Manual.

**Objective.** To determine that the applicant exhibits knowledge of the elements related to winter flying by explaining:

1. The proper preparation, equipment, and survival supplies necessary for flight in cold temperatures.
2. The proper methods for pressurizing fuel tanks.
3. The added concerns for fuel vaporization, leaks, and risk of fire during cold weather.

## **H. TASK: MOUNTAIN FLYING**

REFERENCE: Balloon Flight Manual.

**Objective.** To determine that the applicant exhibits knowledge of the elements related to mountain flying by explaining:

1. The proper preparation, equipment, and survival supplies necessary for flight over mountainous terrain.
2. The accessibility to landing areas.
3. The recognition of cloud formations and descending air currents on the leeward side of mountains as evidence of possible turbulence.
4. The caution required in regard to windshear encounters and possible rapid weather changes.

## **VI. AREA OF OPERATION: NAVIGATION**

### **TASK: NAVIGATION**

REFERENCE: Balloon Flight Manual.

**Objective.** To determine that the applicant:

1. Exhibits knowledge of the elements related to navigation.
2. Identifies airspace and altitude restrictions.
3. Recognizes the preplanned course by reference to landmarks.
4. Identifies landmarks by relating surface features to chart symbols.
5. Verifies the balloon's position at all times.
6. Manages fuel properly.
7. Determines the duration of the flight, considering—
  - a. availability of suitable landing areas.
  - b. fuel consumption.
  - c. wind and other atmospheric conditions.
  - d. obstructions.
  - e. payload.
8. Notes the differences, if any, between preflight flight planning and the actual flight.
9. Completes the appropriate checklist.

## **VII. AREA OF OPERATION: EMERGENCY OPERATIONS**

### **A. TASK: SYSTEMS AND EQUIPMENT MALFUNCTIONS**

REFERENCE: Balloon Flight Manual.

**Objective.** To determine that the applicant:

1. Exhibits knowledge of the elements related to systems and equipment malfunctions appropriate to the balloon used for the practical test.
2. Analyzes the situation and takes the appropriate action for simulated emergencies, such as—
  - a. pilot light flameout or failure
  - b. blast valve failure.
  - c. fuel exhaustion.
  - d. propane leak.
  - e. envelope failure.
  - f. any other systems and equipment malfunction appropriate to the balloon provided for the flight test.
3. Follows the appropriate emergency checklist.

### **B. TASK: EMERGENCY EQUIPMENT AND SURVIVAL GEAR**

REFERENCE: Balloon Flight Manual.

**Objective.** To determine that the applicant:

1. Exhibits knowledge of the elements related to emergency equipment and survival gear appropriate to the balloon provided for the practical test, such as—
  - a. location and purpose.
  - b. method of operation or use.
  - c. servicing requirements.
  - d. method of safe storage.
  - e. equipment and survival gear appropriate for operation in various climates and topographical environments.
2. Follows the appropriate emergency checklist.

**C. TASK: WATER LANDING**

REFERENCE: Balloon Flight Manual.

**Objective.** To determine that the applicant exhibits knowledge of the elements related to a water landing by explaining:

1. The emergency conditions under which water landings are necessary.
2. The effect of wind direction and speed, and water current.
3. The preparation required for contact with water, to include briefing passengers.
4. The procedure to be used for actual water landing.

**D. TASK: THERMAL FLIGHT**

REFERENCE: Balloon Flight Manual.

**Objective.** To determine that the applicant exhibits knowledge of the elements related to thermal flight by explaining:

1. The conditions that cause thermal activity.
2. The recognition of convective conditions and associated hazards.
3. The effects of thermal activity on balloon flight.
4. The procedures to be used upon encountering thermal activity.

## **VIII. AREA OF OPERATION: POSTFLIGHT PROCEDURES**

### **A. TASK: RECOVERY**

REFERENCE: Balloon Flight Manual.

**Objective.** To determine that the applicant:

1. Exhibits knowledge of the elements related to recovery.
2. Coordinates landing and recovery with landowner, as appropriate.
3. Minimizes property damage during recovery.
4. Supervises ground crew during recovery, including vehicle and spectator control.
5. Completes the appropriate checklist.

### **B. TASK: DEFLATION AND PACKING**

REFERENCE: Balloon Flight Manual.

**Objective.** To determine that the applicant:

1. Exhibits knowledge of the elements related to deflation and packing.
2. Ensures the fuel system is secure.
3. Deflates envelope properly, considering wind conditions and obstacles.
4. Disassembles envelope and basket components, as appropriate.
5. Packs and stores envelope, basket and components, and fuel system, as appropriate.
6. Performs satisfactory postflight inspection.
7. Completes the appropriate checklist.

### **C. TASK: REFUELING**

REFERENCE: Balloon Flight Manual.

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

1. A crewmember briefing on safety precautions.
2. The danger of explosion and burns when handling propane.
3. The need for adequate ventilation.
4. Water contamination.
5. The proper method of filling the cylinders, as appropriate.





**SECTION 2**

**PRIVATE PILOT  
LIGHTER-THAN-AIR**

**AIRSHIP**

**Practical Test Standards**

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# APPLICANT'S PRACTICAL TEST CHECKLIST (AIRSHIP)

## 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 Flight Manual
- FCC Station License

### PERSONAL EQUIPMENT

- PTS
- Current Aeronautical Charts
- Computer and Plotter
- Flight Plan and Flight Log Forms
- 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  
PRIVATE PILOT - LIGHTER-THAN-AIR  
(AIRSHIP)**

**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

**II. PREFLIGHT PROCEDURES**

- A.** Preflight Inspection
- B.** Cockpit Management
- C.** Engine Starting
- D.** Unmasting and Positioning for Takeoff
- E.** Ground Handling
- F.** Before Takeoff Check

**III. AIRPORT OPERATIONS**

- A.** Radio Communications and ATC Light Signals
- B.** Traffic Patterns
- C.** Airport and Runway Markings and Lighting

**IV. TAKEOFFS, LANDINGS, AND GO-AROUND**

- A.** Ground Weigh-off
- B.** Up-Ship Takeoff
- C.** Wheel Takeoff
- D.** Approach and Landing
- E.** Go-around

**V. PERFORMANCE MANEUVERS**

- A.** Straight-and-Level Flight
- B.** Ascents and Descents
- C.** Level Turns
- D.** In-flight Weigh-off
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**VI. GROUND REFERENCE MANEUVERS**

- A.** Rectangular Course
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- A.** Engine Fire During Flight
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- D.** Ditching and Emergency Landing
- E.** Systems and Equipment Malfunctions

**IX. POSTFLIGHT PROCEDURES**

- A.** Masting
- B.** Post-Masting

# **I. AREA OF OPERATION: PREFLIGHT PREPARATION**

## **A. TASK: CERTIFICATES AND DOCUMENTS**

REFERENCES: 14 CFR parts 43, 61, 91; AC 61-21, AC 61-23; Airship Flight Manual.

**Objective.** To determine that the applicant:

1. Exhibits knowledge of the elements related to certificates and documents by explaining the appropriate—
  - a. pilot certificate privileges and limitations.
  - b. medical certificate, class and duration.
  - c. pilot logbook or flight record, required entries.
2. Exhibits knowledge of the elements related to certificates and documents by locating and explaining the—
  - a. airworthiness and registration certificates.
  - b. operating limitations, placards, instrument markings, handbooks, and manuals.
  - c. weight and lift data, including the equipment list.
  - d. airworthiness directives and compliance records, maintenance/inspection requirements, and appropriate records.

## **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 and forecasts from various sources with emphasis on—
  - a. PIREP's.
  - b. SIGMET's and AIRMET's.
  - c. wind shear reports.

2. Exhibits knowledge of the elements related to weather information by explaining various atmospheric conditions, and their effect on airship flight, including—
  - a. atmospheric influence.
  - b. atmospheric stability.
  - c. pressure and temperature changes.
  - d. terrain effect on winds.
  - e. cloud formations.
3. 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 preplanned VFR cross-country flight of maximum duration, appropriate to the airship used for the flight test, as previously assigned by the examiner. The final flight plan shall include real-time weather to the first fuel stop, with maximum allowable passenger and baggage loads.
2. Uses appropriate, current aeronautical charts.
3. Plots a course for the intended route of flight, considering terrain and service ceiling.
4. Identifies airspace, obstructions, and alternate airports.
5. Selects easily identifiable en route checkpoints.
6. Selects the most favorable altitudes, considering weather conditions and equipment capabilities.
7. Computes headings, flight time, and fuel requirements.
8. Selects appropriate navigation systems/facilities and communication frequencies.
9. Considers availability of facilities and ground crew at destination.
10. Extracts and applies pertinent information from NOTAM's, the Airport/Facility Directory, and other flight publications.
11. Completes a navigation log and simulates filing a VFR flight plan.



## **D. TASK: NATIONAL AIRSPACE SYSTEM**

REFERENCES: 14 CFR part 91; Navigation Charts; 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 equipment requirements for the following—
  - a. Class A.
  - b. Class B.
  - c. Class C.
  - d. Class D.
  - e. Class E.
  - f. Class G.
3. Special use airspace and other airspace areas.

## **E. TASK: PERFORMANCE AND LIMITATIONS**

REFERENCES: AC 61-21, AC 61-23, AC 61-84, AC 91-23; Airship 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, if available from the manufacturer, to determine performance in various phases of flight, including operational characteristics and loading, and the adverse effects of exceeding limitations.
2. Computes operating weight, maximum load, and trim condition.
3. Determines airship performance under the following conditions—
  - a. weight limitations.
  - b. static and dynamic lift capability.
  - c. effect of superheat on ballonets(s) and percent of fullness.
  - d. effect of gas purity and superheat on lift.
  - e. temperature and humidity changes on performance and lift.
  - f. temperature inversion on descents.
  - g. leaks in ballonet(s) and envelope.
  - h. average ballonet volume with respect to total envelope volume and service ceiling.
  - i. loss of gross lift when above pressure height.

- j. relationship of ballonnet fullness to pressure height.
- 4. Determines airship performance, considering the effects of the following conditions—
  - a. weights and lift (static and dynamic).
  - b. relationship of ballonnet fullness to pressure height.
  - c. superheat on percent of fullness.
  - d. average ballonnet volume with respect to total envelope volume.
  - e. loss of gross lift when above pressure height.
  - f. leaks in ballonnets and envelope.
  - g. gas purity on lift.
  - h. superheat on lift.
  - i. maximum rate climb and descent limitations.

## **F. TASK: OPERATION OF SYSTEMS**

REFERENCE: Airship Flight Manual.

**Objective.** To determine that the applicant exhibits knowledge of the elements related to the operation of systems on the airship provided for the flight test by explaining at least three of the following:

- 1. Surface control systems.
- 2. Flight instruments and associated controls.
- 3. Landing gear.
- 4. Engines.
- 5. Propellers.
- 6. Fuel and oil system.
- 7. Electrical system.
- 8. Envelope/ballonnet pressure systems.
- 9. Environmental system.
- 10. Avionics and auxiliary equipment.
- 11. Any system unique to the airship flown.
- 12. Ground support equipment.

## **G. TASK: AEROMEDICAL FACTORS**

REFERENCES: AC 61-21; 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 three 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.

## **II. AREA OF OPERATION PREFLIGHT PROCEDURES**

### **A. TASK: PREFLIGHT INSPECTION**

REFERENCES: AC 61-21; Airship Flight Manual.

**Objective.** To determine that the applicant:

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

### **B. TASK: COCKPIT MANAGEMENT**

REFERENCES: AC 61-21; Airship Flight Manual.

**Objective.** To determine that the applicant:

1. Exhibits knowledge of the elements related to cockpit management procedures.
2. Ensures all loose items in the cockpit and passenger area are secured.
3. Briefs passengers on the use of safety belts and emergency procedures.
4. Organizes essential material and equipment in a logical, efficient flow pattern.
5. Maintains orderly records reflecting progress of the flight, as appropriate.
6. Utilizes all appropriate checklists

### **C. TASK: ENGINE STARTING**

REFERENCES: AC 61-21, AC 61-23, AC 91-13; Airship Flight Manual.

**Objective.** To determine that the applicant:

1. Exhibits knowledge of the elements related to engine starting. This shall include the use of an external power source and starting under various atmospheric conditions, as appropriate.
2. Observes safety precautions related to starting, considering open hangars, other aircraft, and the safety of nearby persons and property on the ramp.

3. Accomplishes the correct starting procedure including proper adjustment of engine controls.
4. Prevents movement of airship during and after start.
5. Completes the appropriate checklist.

**D. TASK: UNMASTING AND POSITIONING FOR TAKEOFF**

REFERENCE: Airship Flight Manual.

**Objective.** To determine that the applicant:

1. Briefs ground crew and coordinates hand signals and voice commands.
2. Prevents airship from riding up on the mast.
3. Ensures proper envelope pressure and trim before coming off the mast.
4. Uses ground crew and airship controls properly to move away from the mast and into position for takeoff.
5. Divides attention inside and outside the cockpit so as to avoid possible immediate takeoff after coming off the mast.
6. Completes the appropriate checklist.

**E. TASK: GROUND HANDLING**

REFERENCE: Airship Flight Manual.

**Objective.** To determine that the applicant:

1. Exhibits knowledge of the elements related to ground handling, appropriate to the airship provided for the practical test.
2. Determines the required number of crew members, considering the weather conditions, the status of the airship, and the method of handling.
3. Briefs the ground crew on all pertinent phases of ground handling procedures.
4. Maintains coordination with the crew chief and the proper use of hand signals and voice commands with the crew.
5. Recognizes undesirable airship movement and takes appropriate action.
6. Maintains proper envelope pressure and trim and alertness for wind shifts.
7. Maintains proper position while controlled by the ground crew.

## **F. TASK: BEFORE TAKEOFF CHECK**

REFERENCES: AC 61-21; Airship Flight Manual.

**Objective.** To determine that the applicant:

1. Exhibits knowledge of the elements related to the before takeoff check.
2. Positions the airship properly to avoid hazards.
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 check and confirms that the airship is in safe operating condition.
6. Reviews takeoff performance, wind direction and speed, expected takeoff distance, emergency procedures, and the departure procedure.
7. Ensures that the takeoff path is clear of obstacles.
8. Assures no conflict with traffic prior to takeoff.
9. Completes the 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 and ATC light signals.
2. Selects appropriate frequencies.
3. Transmits using recommended phraseology.
4. Acknowledges radio communications and complies with instructions.
5. Uses prescribed procedures following radio communications failure.
6. 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 patterns. This shall include operations at controlled and uncontrolled airports, runway incursion and collision avoidance, wake turbulence avoidance, and wind shear.
2. Complies with traffic pattern procedures.
3. Maintains proper spacing from other traffic.
4. Corrects for wind drift to maintain the proper ground track.
5. Maintains orientation with the runway or landing area to be used.
6. Establishes a final approach at an appropriate distance from the runway or landing area.
7. Maintains the appropriate traffic pattern altitude,  $\pm 200$  feet (60 meters).
8. Maintains airspeed for the current static condition of the airship.
9. Completes the appropriate checklist.

**C. TASK: AIRPORT AND RUNWAY 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 and runway markings and lighting.
2. Identifies and interprets airport, runway and taxiway markings.
3. Identifies and interprets airport, runway and taxiway lighting.



## **IV. AREA OF OPERATION: TAKEOFFS, LANDINGS, AND GO-AROUND**

### **A. TASK: GROUND WEIGH-OFF**

REFERENCE: Airship Flight Manual.

**Objective.** To determine that the applicant:

1. Exhibits knowledge of the elements related to ground weigh-off.
2. Determines the static and trim condition.
3. Maintains zero inclination and heading into the wind.
4. Prevents fore-and-aft surge.
5. Checks weigh-off and trim with neutral elevators when HANDS OFF command is given.
6. Ballasts the airship according to the conditions and type of flight contemplated without exceeding the weight limits.
7. Completes the appropriate checklist.

### **B. TASK: UP-SHIP TAKEOFF**

REFERENCE: Airship Flight Manual.

**Objective.** To determine that the applicant:

1. Exhibits knowledge of the elements related to an upwind takeoff.
2. Determines heaviness limitations and weather conditions under which an up-ship takeoff may be made.
3. Ensures that sufficient ground crew are available so as to obtain adequate upward velocity.
4. Idles engines and uses the rudder as necessary during weigh-off.
5. Remains within the takeoff heaviness limits.
6. Uses proper and timely hand signals and voice commands with ground crew.
7. Applies up elevator pressure as ground crew lifts airship and transitions to a nose-up attitude keeping tail clear of the ground.
8. Applies power as the airship nears the top of its upward thrust.
9. Prevents the tail from striking the ground.
10. Increases airspeed sufficiently to carry the load dynamically.
11. Completes the appropriate checklist.

### **C. TASK: WHEEL TAKEOFF**

REFERENCE: Airship Flight Manual.

**Objective.** To determine that the applicant:

1. Exhibits knowledge of the elements related to a wheel takeoff. This shall include a wheel takeoff under various degrees of heaviness, including maximum heavy conditions.
2. Determines the approximate takeoff roll and ensures that the area is clear and sufficient, considering wind conditions and field surface.
3. Positions the airship to utilize the maximum available takeoff area and maintains trim.
4. Uses the proper hand signals and voice commands with the ground crew.
5. Applies power slowly, in a timely manner.
6. Attains sufficient airspeed to carry the load dynamically while on the wheel.
7. Uses elevators to assist the airship in lifting dynamically.
8. Maintains directional control and the proper inclination to keep the tail off the ground.
9. Completes the appropriate checklist.

### **D. TASK: APPROACH AND LANDING**

REFERENCE: Airship Flight Manual.

**Objective.** To determine that the applicant:

1. Exhibits knowledge of the elements related to an approach and landing, including light and heavy airships.
2. Accomplishes static weigh-off prior to commencing the approach.
3. Adjusts trim, as necessary, for landing, considering weight and condition of air.
4. Coordinates flight and power controls, as necessary.
5. Makes smooth and gradual approach maintaining direction and angle of descent.
6. Recognizes and adheres to waveoff signals.
7. Lands at a speed appropriate for approaching the ground crew.
8. Reverses thrust, if applicable.
9. Completes the appropriate checklists.

**E. TASK: GO-AROUND**

REFERENCE: Airship Flight Manual.

**Objective.** To determine that the applicant:

1. Makes a timely decision to discontinue the approach to landing.
2. Uses correct procedures for a light or heavy airship, as appropriate.
3. Coordinates use of power and flight controls to effect a smooth transition to a climb attitude.
4. Completes the appropriate checklist.

## **V. AREA OF OPERATION: PERFORMANCE MANEUVERS**

### **A. TASK: STRAIGHT-AND-LEVEL FLIGHT**

REFERENCE: Airship Flight Manual.

**Objective.** To determine that the applicant

1. Exhibits knowledge of the elements related to straight-and-level flight.
2. Uses the flight controls in a smooth, coordinated manner with minimum pitching and yawing.
3. Adjusts and maintains dynamic trim.
4. Maintains the specified altitude,  $\pm 200$  feet (60 meters) and the specified heading,  $\pm 20^\circ$ .

### **B. TASK: ASCENTS AND DESCENTS**

REFERENCE: Airship flight Manual.

**Objective.** To determine that the applicant:

1. Exhibits knowledge of the elements related to ascents and descents, including limitations.
2. Ascends and descends while keeping the gas pressure within operating limits.
3. Demonstrates proper pressure control and makes smooth altitude changes.
4. Controls rates of ascent and descent,  $\pm 300$  feet (90 meters) per minute.

### **C. TASK: LEVEL TURNS**

REFERENCE: Airship Flight Manual.

**Objective.** To determine that the applicant:

1. Exhibits knowledge of the elements related to level turns.
2. Enters, maintains, and rolls out of level turns with smooth, coordinated control application.
3. Uses elevators and rudders properly to control effects of rolling tendency, loss of dynamic lift.
4. Maintains the specified altitude,  $\pm 200$  feet (60 meters) and rolls out on the assigned heading,  $\pm 20^\circ$ .

**D. TASK: IN-FLIGHT WEIGH-OFF**

REFERENCE: Airship Flight Manual.

**Objective.** To determine that the applicant:

1. Exhibits knowledge of the elements related to in-flight weigh-off.
2. Steers the airship into the wind in level flight at a minimum altitude of at least 500 feet (150 meters) AGL.
3. Reduces the power to the specified airspeed and stabilizes the airship.
4. Determines if the airship is being affected by updrafts or downdrafts.
5. Neutralizes the elevator and rudder controls.
6. Observes the attitude of the airship and pressure differential in the ballonets.
7. Determines trim and static condition.
8. Adjusts trim properly.

**E. TASK: MANUAL PRESSURE CONTROL**

REFERENCE: Airship Flight Manual.

**Objective.** To determine that the applicant:

1. Exhibits knowledge of the elements related to manual pressure control.
2. Controls the pressure manually as recommended by the manufacturer to a predetermined valve(s) setting.
3. Monitors operation of pressure valves and system.
4. Maintains a constant altitude,  $\pm 200$  feet (60 meters).

**F. TASK: STATIC AND DYNAMIC TRIM**

REFERENCE: Airship Flight Manual.

**Objective.** To determine that the applicant:

1. Exhibits knowledge of the elements related to static and dynamic trim.
2. Establishes static trim for various weight conditions.
3. Establishes dynamic trim for various flight conditions.

## **VI. AREA OF OPERATION: GROUND REFERENCE MANEUVERS**

### **A. TASK: RECTANGULAR COURSE**

REFERENCES: AC 61-21; Airship Flight Manual.

**Objective.** To determine that the applicant:

1. Exhibits knowledge of the elements related to a rectangular course.
2. Selects a suitable altitude and ground reference.
3. Plans the maneuver so as to enter at traffic pattern altitude, at an appropriate distance from the selected reference area.
4. Applies adequate wind drift correction during straight-and-turning flight to maintain a constant ground track around the rectangular reference area.
5. Divides attention between coordinated airship control and the ground track.
6. Maintains altitude,  $\pm 200$  feet (60 meters).

### **B. TASK: TURNS AROUND A POINT**

REFERENCES: AC 61-21; Airship Flight Manual.

**Objective.** To determine that the applicant:

1. Exhibits knowledge of the elements related to turns around a point.
2. Selects the ground reference point.
3. Plans the maneuver so as to enter at 600 to 1,000 feet (180 to 300 meters) AGL at an appropriate distance from the reference point.
4. Applies adequate wind drift correction to track a constant radius circle around the selected reference point.
5. Divides attention between airship control and the ground track, and maintains coordinated flight.
6. Maintains altitude,  $\pm 200$  feet (60 meters).

## 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. Follows the preplanned course solely by visual reference to landmarks.
3. Identifies landmarks by relating the surface features to chart symbols.
4. Navigates by means of precomputed headings, groundspeed, and elapsed time.
5. Makes a reasonable estimate of heading, groundspeed, arrival time, and fuel consumption to the destination.
6. Corrects for, and records, the differences between preflight fuel, groundspeed, and heading calculations and those determined en route.
7. Verifies the airship's position within 3 nautical miles of the flight planned route at all times.
8. Arrives at the en route checkpoints or destination within 5 minutes of the ETA.
9. Maintains the appropriate altitude,  $\pm 200$  feet (60 meters) and established heading,  $\pm 20^\circ$ .
10. Completes all appropriate checklists.

### B. TASK: NAVIGATION SYSTEMS AND RADAR SERVICES

REFERENCES: AC 61-21, AC 61-23; Navigation Equipment Operation Manuals.

**Objective.** To determine that the applicant:

1. Exhibits knowledge of the elements related to navigation systems and radar services.
2. Selects and identifies the appropriate navigation system/facility.
3. Locates the airship'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, if appropriate.
6. Recognizes signal loss and takes appropriate action.

7. Uses proper communication procedures when utilizing ATC radar services.
8. Maintains the appropriate altitude,  $\pm 200$  feet (60 meters).

**C. TASK: DIVERSION**

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

**Objective.** To determine that the applicant:

1. Exhibits knowledge of the elements related to diversion.
2. Selects an appropriate alternate airport and route.
3. Diverts promptly toward the alternate airport.
4. Makes a reasonable estimate of heading, groundspeed, arrival time, and fuel consumption to the alternate airport.
5. Maintains the appropriate altitude,  $\pm 200$  feet (60 meters) and established heading,  $\pm 20^\circ$ .

**D. TASK: LOST PROCEDURES**

REFERENCES: AC 61-21, AC-23.

**Objective.** To determine that the applicant:

1. Exhibits knowledge of the elements related to lost procedures.
2. Selects the best course of action when given a lost situation.
3. Maintains the original or an appropriate heading and climbs, if necessary.
4. Identifies the nearest concentration of prominent landmarks.
5. Uses navigation systems/facilities and/or contacts an appropriate ATC facility for assistance.



## VIII. AREA OF OPERATION: EMERGENCY OPERATIONS

### A. TASK: ENGINE FIRE DURING FLIGHT

REFERENCE: Airship Flight Manual.

**Objective.** To determine that the applicant exhibits knowledge of the elements related to engine fire during flight by explaining the procedures used for:

1. Applying full power in an attempt to blow out the fire in the affected engine.
2. Extinguishing the fire.
3. Shutting down the engine, using the checklist, if the fire persists.
4. Preparing to land at the earliest opportunity.

### B. TASK: ENVELOPE EMERGENCIES

REFERENCE: Airship Flight Manual.

**Objective.** To determine that the applicant exhibits knowledge of the elements related to envelope emergencies by explaining the procedures used for:

1. A puncture or rip in the gas envelope and/or in a ballonnet.
2. An excessive helium loss.
3. Rain /icing on the envelope.
4. Emergency valve operations.
5. Emergency air-to-helium operations.

### C. TASK: FREE BALLOONING

REFERENCE: Airship Flight Manual.

**Objective.** To determine that the applicant:

1. Exhibits knowledge of the elements related to free ballooning.
2. Assesses airship static condition and determines ballast needs.
3. Establishes equilibrium in a timely manner.
4. Turns off all nonessential electrical equipment.
5. Determines cause of engine failure and attempts restart.
6. Selects suitable landing site and establishes communications with the crew.
7. Uses minimum helium valving and ballast dumping during descent.
8. Secures loose equipment.

9. Completes the appropriate emergency checklist.

**D. TASK: DITCHING AND EMERGENCY LANDING**

REFERENCE: Airship Flight Manual.

**Objective.** To determine that the applicant:

1. Exhibits knowledge of the elements related to ditching and emergency landing.
2. Simulates jettisoning ballast, considering potential fire hazard when dumping fuel.
3. Instructs passengers in safety procedures.
4. Ensures life jackets are on correctly, if ditching.
5. Secures loose equipment.
6. Simulates securing all systems to minimize chance of fire or other damage.
7. Completes the appropriate emergency checklist.

**E. TASK: SYSTEMS AND EQUIPMENT MALFUNCTIONS**

REFERENCE: Airship Flight Manual.

**NOTE:** The examiner shall not simulate a system or equipment malfunction in a manner that may jeopardize safe flight or result in possible damage to the airship.

**Objective.** To determine that the applicant:

1. Exhibits knowledge of the elements related to systems and equipment malfunctions appropriate to the airship used for the practical test.
2. Takes appropriate action for simulated emergencies such as—
  - a. Control system/actuator malfunction.
  - b. Fuel starvation.
  - c. Electrical system malfunction.
  - d. Propeller malfunction.
  - e. Pressure system malfunction.
  - f. Engine or nacelle fire.
  - g. APU fire.

## **IX. AREA OF OPERATION: POSTFLIGHT PROCEDURES**

### **A. TASK: MASTING**

REFERENCE: Airship Flight Manual.

**Objective.** To determine that the applicant:

1. Exhibits knowledge of the elements related to masting.
2. Maintains coordination with crew chief through use of proper hand signals and voice commands.
3. Remains in control of airspeed and positions airship properly.
4. Coordinates use of power and flight controls.
5. Places airship in proper trim and ballast when approaching the mast.
6. Completes the appropriate checklist.

### **B. TASK: POST-MASTING**

REFERENCE: Airship Flight Manual.

**Objective.** To determine that the applicant:

1. Exhibits knowledge of the elements related to post-masting, appropriate to the airship used for the practical test.
2. Uses proper engine shutdown procedures.
3. Complies with equipment requirements for maintaining envelope pressure.
4. Ensures mast security relative to weather conditions.
5. Gives consideration to weather with the airship on the mast.
6. Completes the appropriate checklist.