INTERAGENCY

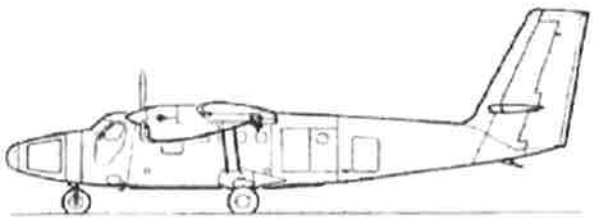
AIRPLANE PILOT

PRACTICAL TEST

STANDARDS

2012

Revision 2.0



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INTRODUCTION

Practical Test Standards Concept

A Federal Aviation Administration (FAA) commercial pilot certificate with instrument rating or airline transport pilot-airplane certificate has been identified as the minimum pilot performance standard for interagency Government pilots and interagency vendor pilots. The standards required to obtain an FAA pilot certificate with instrument rating are outlined in the FAA's *Practical Test Standards* (FAA PTS).

Some flight missions called for by interagency pilot mission statements, interagency contracts, and/or aircraft rental agreements call for pilot skills and proficiency not covered by the FAA PTS.

The *Interagency Practical Test Standards* (IPTS) is a supplement to the FAA PTS. This standard identifies and establishes the additional pilot knowledge and skills that are expected for each specific interagency airplane pilot qualification. This IPTS is applicable to Government (fleet) pilots and vendor pilots under contract with the Government.

The content of this IPTS includes a combination of requirements for interagency airplane pilot qualification, a matrix of interagency mission titles, and a set of definitions for the terms that are unique to interagency operations. Any task not included in this package will be found in the FAA PTS. All applicable FAA practical test standards are incorporated by reference into this IPTS.

The IPTS is a dynamic document to be reviewed annually and updated as needed. Please forward suggested changes to IPTS@nbc.gov. When changes occur, the document's revision history log will reflect an updated version number, date, and change description.

Publication on the following website is authorized: http://amd.nbc.gov. Only the current version of the IPTS will be available online. In addition, bound format is authorized and available at the Aviation Management Directorate of the U.S. Department of the Interior's National Business Center, 300 E. Mallard Drive, Suite 200, Boise, Idaho 83706.

Notice to the Applicant

The tasks in the IPTS require knowledge and skills beyond FAA certification. It is expected that applicants procure training for any desired pilot authorization listed in the IPTS prior to attempting an evaluation by an interagency-approved inspector pilot. Training shall be furnished by company training personnel or in the case of Government personnel may be obtained by finding a mentor for these tasks. The applicant is expected to demonstrate the appropriate pilot operations based on the following:

1. Executing procedures and maneuvers within the aircraft's performance capabilities and limitations including the use of the aircraft's equipment and systems.
2. Executing emergency procedures and maneuvers appropriate to the aircraft.
3. Piloting the aircraft with smoothness and accuracy.
4. Exercising good judgment.
5. Applying aeronautical knowledge.
6. Showing that the pilot is master of the aircraft with the successful outcome of a procedure or maneuver never seriously in doubt.

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REVISION LOG

Date	Version	Summary of Changes
February 2008	1.0	Initial Release
October 2012	2.0	Major revision, all pages affected.

INSTRUCTIONS TO THE INSPECTOR PILOT

The specific tasks necessary for completion of an interagency pilot authorization signoff are found in the IPTS Authorization Table. Each task called for in the table for the desired pilot authorization shall be completed fully. The inspector pilot may combine tasks when appropriate. During the flight evaluation, the pilot is expected to perform all maneuvers to the minimum standards established by the FAA PTS and/or the IPTS even if a particular maneuver was not specifically requested by the inspector pilot.

Example: During the evaluation while flying to a location to do low level operation, the pilot is expected to meet the tolerances identified in the FAA PTS for straight and level flight, climbs, turns, and descents.

The IPTS is not meant to duplicate the FAA 14 CFR Parts 135.293 and 135.297 evaluations for contract or aircraft rental agreement applicants. Historically, however, it has been found that some applicants did not meet basic commercial pilot proficiency standards despite having current FAA flight evaluation forms. The inspector pilot is not expected to accept that a pilot is proficient simply based on a paperwork presentation. The inspector pilot shall ask the pilot to demonstrate those tasks, whether found in the IPTS or the FAA PTS, to the extent necessary to determine the proper level of proficiency for the interagency pilot authorization sought.

It should be noted that if the inspector pilot identifies deficiencies in airmanship or operational knowledge areas (not directly addressed in the mission evaluation) that could adversely affect contract performance, it will be at the inspector's discretion to further explore those areas and/or terminate the evaluation.

Each pilot, whether contract or Government pilot, shall be approved for Government use by an appropriate fixed wing inspector pilot. The following administrative procedures will be followed:

Records and Documents

A. The applicant is required to produce records and documents to show that he/she meets the requirements under which he/she will be approved. These will include but not be limited to:

   1. Valid commercial or airline transport pilot certificate with appropriate ratings.
   2. Current Class I or Class II medical certificate, as required.
   3. Current pilot logbook, military flight records, and/or other acceptable documentation of pilot experience.

B. The following documents will be provided for the approving agency files:

   1. Completed Pilot Qualifications and Approval Record as required.
   2. Current copy of pilot certificate (initial approval or when a pilot certificate has been upgraded).
   3. Copy of current medical certificate.
   4. Copy of the following, whichever is applicable:

a. Current 14 CFR Part 135, "Airman Competency/Proficiency Check" (FAA 8410-3) or FAA-approved equivalent form. Required for all vendor pilots, except SEATs.
b. Current 14 CFR Part 61.58, "Proficiency Check." For pilots of aircraft requiring more than one pilot flight crewmember. Not applicable to pilots approved under 14 CFR 121, 135, or 137.
c. Current 14 CFR Part 137, "Competency Endorsement."

C. The flight check recipient must demonstrate abilities to perform the appropriate pilot operations based on the following:

1. Executing procedures and maneuvers within the aircraft's performance capabilities and limitations, includes the use of the aircraft's equipment and systems.
2. Executing emergency procedures and maneuvers appropriate to the aircraft.
3. Piloting the aircraft with smoothness and accuracy.
4. Exercising good judgment.
5. Applying aeronautical knowledge, showing that the pilot is master of the aircraft, with the successful outcome of a procedure or maneuver never seriously in doubt.

Note: 1. Additional instructions, Tasks, and pilot skill and knowledge requirements are listed for several interagency pilot qualifications.
2. The focus of this list is to supplement the contents of the FAA PTS with interagency requirements.

Special Emphasis Areas

Inspectors shall place special emphasis upon areas of aircraft operation considered critical to flight safety. Among these are:

1. Cooperation, professionalism, and positive attitude toward aviation safety.
2. Risk assessment and risk management.
3. Crew resource management.
4. Checklist usage.

Although these areas may not be specifically addressed under each Task, they are essential to flight safety and will be evaluated during the practical test. In all instances, the applicant's actions will relate to the complete situation.

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 impractical, especially in a single pilot operation. In this case, a review of the checklist after the elements have been accomplished would be appropriate. Division of attention and proper visual scanning should be considered when using a checklist.

Satisfactory Performance

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

1. Perform the Tasks specified in the Areas of Operation for the authorization(s) sought.
2. Meet the specifications within the contract or policy as appropriate.

A pilot qualification card will be issued after satisfactory performance has been demonstrated.

Unsatisfactory Performance

When in the judgment of a qualified airplane inspector pilot the applicant does not meet the standard, the practical test is failed. The applicant will not receive a pilot qualification card. The company, bureau, or agency the pilot is employed by will be notified of the unsatisfactory performance. When a retest is administered, as a minimum those Tasks that were determined to be unsatisfactory will be reevaluated. Additional Tasks may be retested at the discretion of the inspector. An inspector pilot may provide on-the-spot training to a fleet pilot (not applicable to a vendor pilot) and then retest immediately.

AUTHORIZATION TABLE

IPTS Areas of Operation	INTERAGENCY AIRPLANE PILOT AUTHORIZATION TABLE												
	Pilot/Special Use Authorization Sought												
	All Pilots	Air Tactical	Air-Tanker	Resource Recon	Para-cargo	Smoke-jumper	Low Level	Unprep Landing Site	Ski Plane	Cat IV Airstrip	Glacier Landing	Mountain	Aerial Map
I	ALL	ALL	ALL	ALL	ALL	ALL	NONE	NONE	NONE	NONE	NONE	NONE	NONE
II	ALL	ALL	ALL	ALL	ALL	ALL	NONE	NONE	NONE	NONE	NONE	NONE	NONE
III	NONE	NONE	NONE	NONE	NONE	NONE	NONE	A	C	B	C, D	NONE	NONE
IV	A	ALL	A,B,C	ALL	A,B,C	A,B,C	NONE	NONE	NONE	NONE	NONE	NONE	NONE
V	NONE	NONE	ALL	NONE	ALL	ALL	ALL	NONE	NONE	NONE	NONE	NONE	NONE
VI	NONE	ALL	NONE	NONE	NONE	ALL	NONE	NONE	NONE	NONE	NONE	NONE	NONE
VII	NONE	ALL	NONE	ALL	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE
VIII	NONE	NONE	B	NONE	B	B	NONE	NONE	NONE	ALL	NONE	ALL	NONE
IX	NONE	NONE	NONE	NONE	A,B,C,F	ALL	NONE	NONE	NONE	NONE	NONE	NONE	NONE
X	NONE	NONE	ALL	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE
XI	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	ALL
XII	ALL	ALL	ALL	ALL	ALL	ALL	NONE	NONE	NONE	NONE	NONE	NONE	NONE
XIII	ALL	ALL	ALL	ALL	ALL	ALL	NONE	NONE	NONE	NONE	NONE	NONE	NONE
Notes	2,6	5	5	2,5	5	5	1,3	1,3	1	1,4	1,3	1,5	1,4

Notes:

1. These special use operations are normally checked in conjunction with a pilot check or one of the special use checks that require areas I, II, XII, and XIII
2. Area I-Task E and Area IV-Task C are fire specific, not required for nonfire missions.
3. DOI function, evaluation to be conducted by a DOI-authorized inspector only.
4. Forest Service function, evaluation to be conducted by a Forest Service-authorized inspector only.
5. DOI does not require a mountainous terrain signoff; however, knowledge and skill of mountainous terrain may be evaluated depending on the Area of Operation. Pilots operating for the Forest Service may need a mountainous terrain signoff depending on the Area of Operation.
6. Any special use activities will also apply as required. The appropriate FAA PTS must also be applied.

CONTENTS

INTRODUCTION i

REVISION LOG ii

INSTRUCTIONS TO THE INSPECTOR PILOT iii

Records and Documents iii
Special Emphasis Areas iv
Use of Checklists iv
Satisfactory Performance v
Unsatisfactory Performance v

AUTHORIZATION TABLE vi

AREAS OF OPERATION (and TASKS)

I. PREFLIGHT PREPARATION

A. Interagency Records, Certificates, and Documents 1
B. Obtaining Weather/Flight Information 2
C. Operation of Airplane Systems 2
D. FM Radio Equipment Briefing 2
E. Incident Organization 3

II. PREFLIGHT PROCEDURES

A. Initial Dispatch 3
B. Global Positioning System (GPS) Equipment Operation 4
C. Personal Protective Equipment (PPE) 5

III. TAKEOFFS AND LANDINGS

A. Wheel Operations on Unprepared Landing Sites 6
B. Category IV Airstrip Operation 8
C. Skiplane Operations 9
D. High Altitude Glacier Operations (Skiplane) 10

IV. EN ROUTE AND ON SCENE

A. Flight Following 11
B. Divert Dispatch (Route Change While En Route) 11
C. Fire Traffic Area (FTA) 12
D. Over-Incident Procedures 12
E. Perform Observation Pass 13

V. LOW LEVEL ACTIVITIES

A. Flight Below 500 Feet AGL 13
B. System and Equipment Malfunctions While Low Level 15

VI. AIR TACTICAL 16

VII. RECONNAISSANCE

A. Precision Reconnaissance, Resource/Fire 16

VIII. MOUNTAINOUS TERRAIN

A. Perform Mountainous Escape Maneuver 17
B. Mountain Flying/Terrain Avoidance 18

IX. SMOKEJUMPER OPERATIONS

A. En Route Procedures 19
B. Arrival at Incident 19
C. Streamer Drops 20
D. Smokejumper Drops 20
E. Paracargo Operations 21

X. AIRTANKER

A. Fire Behavior 21
B. Loading and Refueling 22
C. Initial/Extended Attack Procedures 22
D. Retardant/Water Dropping 23

XI. AERIAL SKETCH MAPPING

A. Contour 23
B. Grid 24

XII. EMERGENCY/ABNORMAL OPERATIONS

A. Emergency Procedures 25
B. SAFECOM Procedures 25

XIII. POSTFLIGHT PROCEDURES

A. Agency Ramp 26
B. Aircraft Security 26
C. Maintenance 26
D. Post-Action Debrief 26

GLOSSARY 27

AREAS OF OPERATION

I. PREFLIGHT PREPARATION

A. TASK: INTERAGENCY RECORDS, CERTIFICATES, AND DOCUMENTS

1. Objective. To determine that the applicant:

a. Exhibits knowledge by explaining:

(1) Pilot privileges and limitations applicable to Government flights.
(2) Personal pilot logbook or flight record.
(3) Contract requirements including special equipment if applicable.
(4) Use Report recordkeeping requirements (AUR, OAS-23 or FS 5700E, FS 6500-122).
(5) Flight and duty limitations.

b. Exhibits knowledge by locating and explaining the significance and importance of the:

(1) Aircraft Data Card and Airplane Pilot Qualification Card.
(2) Operating limitations, handbooks, and manuals.
(3) Equipment list/minimum equipment list (as appropriate).
(4) Weight and balance data.
(5) Maintenance requirements, tests, and appropriate records applicable to contract flights, including preventive maintenance.
(6) Contract or rental agreement and any special equipment requirements or additional pilot requirements.

2. Action. The applicant will:

a. Explain the appropriate pilot and medical certificates and personal flight records applicable to contract flights.
b. Locate and explain the applicable mission handbook or applicable guides.
c. Locate and explain airplane documents, lists, and other required data including airplane maintenance records, contract requirements, and the *Interagency Aviation Transport of Hazardous Materials Handbook and Guide*.

B. TASK: OBTAINING WEATHER/FLIGHT INFORMATION

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

   a. Exhibits knowledge of the elements related to preflight briefing information by analyzing NOTAMs, temporary flight restrictions (TFR), weather reports, charts, and forecasts from various sources; i.e., Internet-accessible weather sources with emphasis on:

      (1) National Weather Service and Flight Service Station.
      (2) Weather webcams for airports and passes for current weather.
      (3) Gathering preflight briefing/weather from interagency field personnel and/or civil resources to supplement official weather.

2. **Action.** The applicant will:

   a. Gather preflight briefing/weather information from various sources and interpret formal weather briefings, unofficial weather reports, and written weather reports.

C. TASK: OPERATION OF AIRPLANE SYSTEMS

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

   a. Exhibits knowledge of the airplane's special use equipment required for contract compliance or mission specifications, which may include:

      (1) Portable Automated Flight Following (AFF)/satellite tracking equipment.
      (2) Cargo containers: pods, racks, or tanks.
      (3) Telemetry antennas and receivers.
      (4) Camera mounts, computer mounts, and auxiliary power requirements.
      (5) Smokejumper/paracargo equipment.
      (6) Hopper Gate computer controller activation system and emergency dump system.

2. **Action.** The applicant will:

   a. Explain normal operating procedures and limitations of the airplane special use systems using correct terminology in identifying components.
   b. Explain how special use equipment could adversely affect the performance characteristics of the aircraft or the pilot's workload in flight.

D. TASK: FM RADIO EQUIPMENT BRIEFING

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

   a. Exhibits the knowledge of and the ability to operate the required radio equipment installed in the aircraft used in the evaluation.
   b. Exhibits complete understanding of FM operational procedures including frequency programming, transmit selection, and possible interferences.
   c. Exhibits complete understanding of interagency communication procedures including dispatch, flight following, fire tactical, and guard as applicable.

d. Demonstrates, without tutoring, programming complete, appropriate frequency couplings.
e. Demonstrates the actual use of the transceiver with dispatch, guard, etc.

2. Action. The applicant will (using the actual FM transceiver):

a. Describe wideband vs. narrowband and explain:

(1) What is meant by kHz spacing.
(2) How mixed use of both causes frequency overlap and incomplete transmission and reception quality.
(3) How mixed use of both causes repeater disruption.
(4) How mixed use of both causes problems with volume control in the field.

b. Demonstrate how to program transmit (Tx) and receive (Rx) tones and explain what function they perform.
c. Demonstrate how to program duplex frequencies and explain what they are.
d. Demonstrate how to program Guard frequency and be able to use it wideband or narrowband.
e. Explain the applicable interagency communications matrix including:

(1) Local and central dispatch: whom to call, on what frequency, and how often.
(2) Use of AFF and radio communications, using Safety Alert IA-06-05 as a guide (http://amd.nbc.gov/safety/salerts.htm).
(3) National flight following.
(4) Fire tactical.
(5) Guard and its intended uses:

(a) Aircraft emergency.
(b) Initial contact/lost communications.
(c) Aircraft recall.

f. Explain and demonstrate the onboard avionics communications system including:

(1) Switching the audio panels between the FM transceiver and other transceivers located on board the aircraft.
(2) Setting up and switching between the auxiliary FM transmit locations in the aircraft.
(3) The aircraft intercom system isolating pilot and crew, etc.

E. TASK: INCIDENT ORGANIZATION

1. Objective. Determine if the applicant:

a. Exhibits knowledge of the elements of the incident organization:

(1) Describes the purpose and function of the Incident Command System (ICS).
(2) Describes the air operations positions in the ICS for initial attack or large fire incidents.

II. PREFLIGHT PROCEDURES

A. TASK: INITIAL DISPATCH

1. Objective. To determine that the applicant:

a. Exhibits knowledge by explaining and demonstrating the appropriate:

(1) Aircraft security procedures and the associated cockpit checklist.
(2) Availability, standby, and readiness status.
(3) Method for collecting dispatch information applicable to Government flight operations including:

(a) Appropriate phone numbers and frequencies for contact personnel.
(b) Arrangement of logistical support prior to departure.

(4) Procedures for flight following.
(5) Procedures for radio communication and lost communication when utilizing the Government dispatch system.
(6) Use of a hazard map (if low level operations are to be conducted).
(7) Ramp procedures.

2. Action. The applicant will:

a. Perform a passenger briefing to include interagency items:

(1) Emergency locator transmitter (ELT) location, access, activation, and remote activation switch operation (if installed).
(2) Fuel and electrical shutoff.
(3) Aviation life support equipment (PPE, survival kit, fire extinguishers, and seatbelts).
(4) First aid kit.
(5) Contract-specific items.
(6) Mission goals, timelines, and decision points during normal operations or in case of emergency.
(7) Duties that may be assigned by flight crewmembers.

b. Perform a crew briefing to include interagency/mission equipment items when applicable (other than point-to-point):

(1) Operation of installed radios transceiver(s) and/or global positioning system (GPS) navigation equipment.
(2) Location of external antenna connection(s).
(3) Operation of mission equipment (if installed).
(4) Mission goals, timelines, completion standards, and individual crew responsibilities during mission operations.

B. TASK: GLOBAL POSITIONING SYSTEM (GPS) EQUIPMENT OPERATION

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

   a. Exhibits the knowledge of, and the ability to, operate the required GPS equipment installed in the aircraft used in the evaluation.
   b. Exhibits complete understanding of the aircraft's GPS system, its uses, limitations, and possible technical problems.
   c. Exhibits knowledge and ability to use the aircraft GPS interchangeably with other navigation or charting formats.
   d. Demonstrates ability to initially program, reprogram in-flight, and use as the primary navigation tool the aircraft's GPS system.

2. **Action.** The applicant will:

   a. Explain the general use of GPS and possible equipment limitations including:

      (1) Signal loss due to terrain or aircraft attitude obstructions or degradation of signal due to atmospheric conditions.
      (2) Interference from non-Technical Standard Order (TSO), outdated, or poorly maintained electronics such as:

         (a) Signal loss from high power or poorly shielding transceivers that may be legally installed (FAA Supplemental Type Certificate (STC) or 337) but usually not TSO'd. These may be marine band radios or lower quality FM transceivers.
         (b) Signal loss from poorly installed or maintained universal access transmitters (UAT) or transponders.
         (c) Disruption of signal integrity from electromagnetic interference (EMI) emissions from such things as portable electronic devices (iPod, Game Boy, handheld GPS units).

   b. Demonstrate the ability to extrapolate position information (latitude, longitude coordinates) from various sources and program them in the aircraft GPS. These sources may include:

      (1) Pilot guides, supplements, airport facility directory, or general wall charts.
      (2) Voice-relayed information from dispatch, agency personnel, etc.

   c. Demonstrate the ability to convert coordinate information between "degrees, minutes, seconds" and "degrees, minutes, decimal seconds."
   d. Demonstrate ability to plot GPS-derived information position on a chart (sectional, topographical, etc.).
   e. Demonstrate the ability to program and use the aircraft's GPS unit for:

      (1) Primary navigation including diversions to alternate destinations.
      (2) Locating present position.
      (3) Navigation for survey work (transect lines).
      (4) Finding and navigating to the nearest airport.

Note: Applicant must maintain vigilance for other aircraft and terrain while operating the navigation unit. Request aircraft occupants to assist in looking for other traffic and identifying the location over the landmark. Determine and fly a safe direction over the landmark.

C. TASK: PERSONAL PROTECTIVE EQUIPMENT (PPE)

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

   a. Exhibits knowledge of the required PPE.
   b. Exhibits knowledge of inspection requirements, proper use, and care of PPE.

2. **Action.** The applicant will:

   a. Identify what PPE is required for the mission.
   b. Inspect required PPE and determine serviceability.
   c. Demonstrate proper use of PPE throughout the flight inspection
   d. Explain how to clean and service PPE as required.

III. TAKEOFFS AND LANDINGS

A. TASK: WHEEL OPERATIONS ON UNPREPARED LANDING SITES

Note: Pilots are required to be qualified for low level flight operations as a prerequisite or obtain low level approval in conjunction with this activity (DOI PPE safety requirements apply to this task).

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

   a. Exhibits knowledge and ability to safely conduct wheel plane operations on unprepared landing sites in a variety of environments.
   b. Exhibits knowledge by explaining general procedures for safe operation on a variety of surfaces, including items such as:

      (1) Special preflight considerations including PPE and *ALSE Handbook* requirements.
      (2) Aircraft tiedown and securing gear.
      (3) Communication procedures in remote areas.
      (4) Consequences and possible courses of action if mishap occurs.

   c. Exhibits knowledge by discussing procedures for operations in confined areas including:

      (1) High reconnaissance to identify obstructions to approach and departure corridors.
      (2) Low level reconnaissance to identify obstruction on landing surface and verify approach and departure corridors.
      (3) Decision points on approach, go-around courses, and one-way in and out scenarios.

(4) Decision points on departure, go/no-go points, overrun areas, and climb gradients.
(5) Density altitude and effects on takeoff and climb performance.

d. Exhibits knowledge by discussing substrate differences in soils and terrain especially:

(1) The effects of standing water/saturated ground on rolling resistance, braking action, and takeoff performance.
(2) The effects of various rock/cobble size on different landing gear types, tire sizes, and tire pressures.
(3) The effects of steep upslope/downslope on stopping and takeoff performance.
(4) The effects of sideslope on directional control.

e. Exhibits knowledge by discussing beach operations specifically:

(1) Determining substrate composition (cobble, gravel, mud, or sand) while airborne.
(2) Tidal ranges, how to read a tide book, effects of holdup tides or small tidal ranges, choosing proper tide height for safe operation.
(3) The effects of heavy rain, large surf, or large freshwater runoff over beach environment.
(4) The effects of lateral erosion and displacement of substrate along beach front.
(5) Depth perception on large flat beaches.

f. Exhibits knowledge by discussing gravel bar operations including:

(1) Determining usable length of gravel bar while airborne.
(2) Determining substrate composition: cobble, gravel, mud, or sand and size of cobble.
(3) Waterskiing: when and when not to, cutbanks, and on and off ramp areas.

2. Action. The applicant will:

a. Plan a mission to a nearby unprepared operations area.
b. Conduct a mission preflight including:

(1) Inventory of and briefing on use of special survival and PPE gear.
(2) Obtaining weather information for remote areas and interpreting forecasts for the intended Area of Operation.
(3) Calculating weight and balance and expected takeoff and landing performance.

c. Establish the airplane over the intended landing area at safe altitude (high reconnaissance), airspeed, and configuration that allows for effective selection of a suitable landing site considering wind, slope, hidden obstructions, and surface conditions to include considerations of safe egress/escape routes.

d. If possible, communicate landing site location and expected time on ground to dispatch, other agency aircraft or personnel, flight service, or other responsible party.
e. Make a low level reconnaissance of the site to confirm observations made during the high reconnaissance and to additionally check for:

    (1) Cutbanks, gullies, ruts, or standing water on intended landing area.
    (2) Size of cobble, if any.
    (3) Debris, brush, or logs not seen from high reconnaissance.

f. Maintain a stabilized approach and the recommended airspeed (minimum 1.2 Vso or Vmc, whichever is higher) with gust correction factor applied within 5 knots.
g. Explain and demonstrate techniques for ensuring that the aircraft can be safely flown into and out of an intended landing site.
h. Touch down smoothly at the approximate stalling speed, within the acceptable limits beyond a specified point (within 50 feet) with no drift, and the airplane's longitudinal axis aligned with the landing track.
i. Complete the prescribed checklist.
j. Make improvements to the landing area to remove any hazards prior to taxi and takeoff operations.
k. Perform a thorough postflight inspection of the airplane to ensure debris or rock damage has not affected safety of flight.

B. TASK: CATEGORY IV AIRSTRIP OPERATION

1. Objective. Determine that the applicant:

a. Exhibits knowledge by explaining how performance is enhanced by reducing aircraft loads in order to accomplish operations into turf or gravel airstrips.
b. Exhibits knowledge by explaining how density altitude affects takeoff and landing performance.
c. Exhibits knowledge by explaining mountain flying techniques.
d. Exhibits knowledge by explaining how to accurately assess backcountry weather conditions and hazards.

2. Action. The applicant will:

a. Explain the elements of the Category IV operation.
b. Correctly load the aircraft for the forecast/expected conditions at the Category IV airstrip.
c. Perform a reconnaissance evaluation and takeoff/landing operations on the Category IV airstrip.
d. Establish the airplane over the Category IV airstrip at safe altitude (high reconnaissance), airspeed, and configuration that allow for effective reconnaissance of hazards and will develop potential escape routes.
e. Recognize slope, hidden obstructions, surface conditions, and approach/departure paths to include considerations of obstructions along these routes. The touchdown zone will be communicated and the target touchdown spot will be established prior to descent for the low reconnaissance.

f. Make a low level reconnaissance of the site to confirm observations made during the high reconnaissance and adjust (if necessary) the position of the touchdown spot and alignment of the landing roll to fit in the most suitable landing area.
g. Maintain a stabilized approach and recommended airspeed with gust correction factor applied, ±5 knots.
h. Demonstrate radio communication procedures related to position reporting and flight following in remote areas.

C. TASK: SKIPLANE OPERATIONS

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

a. Exhibits knowledge by explaining how to operate an airplane safely in snow conditions including required equipment.
b. Exhibits knowledge by explaining how to measure a proposed landing area using timing flight lines over the proposed landing/takeoff area.
c. Exhibits knowledge in parking and securing the airplane using anchors, dead man, and the proper use of cleats.
d. Exhibits proper taxi, takeoff, and departure procedures emphasizing takeoff decision points.
e. Exhibits knowledge by explaining the hazards of operating in snow conditions such as flat light or whiteouts, blowing snow, sloping terrain, hidden obstructions, crusted snow, etc.
f. Exhibits knowledge by explaining approach and landing techniques into flat light or whiteout conditions where depth perception is in question.

2. **Action.** The applicant will:

a. Perform a thorough preflight inspection of the skis to ensure the airplane is in condition for safe flight, emphasizing:

(1) Ski rigging condition and attachment.
(2) Associated equipment (retract mechanisms and fluid levels).
(3) Flight manual supplement instructions and limitations.
(4) Weight and balance considerations.

b. Explain and demonstrate techniques for ensuring that the aircraft can be flown into and out of an intended landing site.
c. Explain and demonstrate taxi, takeoff, and departure procedures to include unsticking frozen skis, cooling skis, laying tracks, and checking for overflow conditions and obstructions and by explaining the relationship between snow conditions and required takeoff run.
d. Select proper landing site considering slope, hidden obstructions, snow conditions (overflow potential), and any other variables unique to that site.
e. Initiate approach and landing, laying tracks as required and ensuring landing and takeoff area is firmly packed.
f. Exhibit proper judgment in parking the airplane where it can be safely stopped and easily repositioned for takeoff.
g. Complete the prescribed checklist.

h. Perform a thorough postflight inspection of the airplane to ensure that no debris or ice damage has occurred and that no ice or snow has adhered to the airplane affecting safety of flight.

D. TASK: HIGH ALTITUDE GLACIER OPERATIONS (SKIPLANE)

1. Objective. To determine that the applicant:

a. Exhibits knowledge by explaining how to operate an airplane safely in glacier operations including required equipment.
b. Exhibits knowledge by explaining how to operate an airplane safely in mountainous operations including required equipment.
c. Exhibits a thorough knowledge of flight in mountainous environments including flat light conditions and whiteout phenomenon.
d. Exhibits knowledge of landing areas and terrain associated with mountain geography including ridges, confined areas, saddles, cirques, glaciers, snow fields, and canyons.
e. Exhibits thorough knowledge of the effects of temperatures and pressure altitudes (density altitude) on the performance of aircraft in mountainous terrain.
f. Exhibits thorough knowledge of winds and turbulence that are common to mountain flight (including both vertical and horizontal components) and how they affect aircraft performance.
g. Exhibits knowledge of weather associated with mountain geography (i.e., thunderstorms and convective, mechanical, wind shear turbulence, and micro climates associated with glaciers).
h. Exhibits knowledge by explaining the hazards of operating in snow conditions such as flat light or whiteouts, blowing snow, sloping terrain, hidden obstructions, crusted snow, etc.
i. Exhibits knowledge by explaining approach and landing techniques into flat light or whiteout conditions where depth perception is in question.
j. Exhibits knowledge by explaining and demonstrating techniques for ensuring that the aircraft can be flown into and out of an intended landing site.
k. Exhibits knowledge by explaining and demonstrating taxi, takeoff, and departure procedures to include unsticking frozen skis, cooling skis, laying tracks, and checking for crevasse and obstructions and by explaining the relationship between snow conditions and required takeoff run.
l. Exhibits knowledge by explaining hazards related to operating near glaciers and glacier's microclimate, by identifying and avoiding areas with crevasse, and by identifying personnel safety considerations when pioneering glaciers.

2. Action. The applicant will:

a. Perform a thorough preflight inspection of the skis to ensure the airplane is in condition for safe flight emphasizing:

(1) Ski rigging condition and attachment.
(2) Associated equipment (retract mechanisms and fluid levels).
(3) Flight manual supplement instructions and limitations.
(4) Weight and balance considerations.

b. Demonstrate proper reconnaissance techniques in determining suitability of the landing area, winds, obstacles, approach and departure paths, forced landing areas, and escape routes.
c. Select appropriate approach path and angle to the intended landing area while demonstrating proper power management.
d. Complete low reconnaissance during approach considering additional obstacles, slopes, and the intended touchdown point. Selects go-around point prior to descending below the height of the barriers.
e. Select proper landing site considering slope, hidden obstructions, snow conditions (crevasse), and any other variables unique to that site.
f. Initiate approach downslope when possible, laying tracks as required and ensuring landing and takeoff area is firmly packed.
g. Exhibit proper judgment in parking the airplane where it can be safely stopped and easily repositioned for takeoff.
h. Verify performance and power are available for successful departure from the landing area prior to takeoff.
i. Select appropriate takeoff procedures, departure path, obstacle clearance, and forced landing areas.
j. Demonstrate proper judgment and risk management in relation to the mission being performed.
k. Exhibit proper taxi, takeoff, and departure procedures.
l. Complete the prescribed checklist.
m. Perform a thorough postflight inspection of the airplane to ensure that no debris or ice damage has occurred and that no ice or snow has adhered to the airplane affecting safety of flight.

IV. EN ROUTE AND ON SCENE

A. TASK: FLIGHT FOLLOWING

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

   a. Exhibits knowledge of flight following requirements and procedures.

2. **Action.** The applicant will:

   a. Initiate flight following at the beginning of the flight.
   b. Check in at proper intervals throughout the flight.
   c. Terminate flight following after landing.

B. TASK: DIVERT DISPATCH (Route Change While En Route)

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

   a. Exhibits the knowledge and ability to effectively alter course to a new location to include fuel reserve requirement determination and planning a new course to be flown.

b. Exhibits the knowledge and ability to utilize GPS equipment (if installed) for a routing change.
c. Exhibits the knowledge and ability to collect dispatch information applicable to Government flight operations.

2. Action. The applicant will:

a. Provide a new estimated time of arrival and destination to the crew and the passengers.
b. Effectively utilize the FM transceiver if installed.
c. Effectively evaluate hazards along the new route.
d. Brief the passengers and/or crewmembers on the new course and estimated time of arrival.

C. TASK: FIRE TRAFFIC AREA (FTA)

1. Objective. To determine that the applicant:

a. Exhibits knowledge of wildland fire operations.
b. Exhibits knowledge of communications and coordination required with other aircraft and ground forces.
c. Exhibits knowledge of the FTA.
d. Exhibits knowledge of FTA procedures.
e. Exhibits knowledge of FAA TFRs and the fire environment.

2. Action. The Applicant will:

a. Identify when and where an FTA is in effect.
b. Describe procedure for operating in and around TFRs.
c. Establish communication with the controlling aircraft/incident commander prior to entry of FTA.
d. Comply with instructions while operating within an FTA.
e. Maintain assigned altitude ±100 feet while operating within an FTA.
f. Demonstrate the ability to communicate in clear text about the fire environment.
g. Explain the role of air-to-air communications between pilots and the Air Attack Group Supervisor (ATGS) and/or Lead Plane/Aerial Supervision Module (ASM).
h. Explain which frequencies in the FTA pilots should be monitoring and the proper management of monitoring those frequencies.
i. Explain hazards of operating in fire environments where smoke, terrain, and other meteorological factors compete with mission activities.

D. TASK: OVER-INCIDENT PROCEDURES

1. Objective. To determine that the applicant:

a. Orbits at an altitude no lower than 1,000 feet above the terrain in the vicinity of the Area of Operation.
b. Maintains an orbit altitude within ±100 feet.
c. Maintains an orbit that keeps the landmark in view of the inspector pilot.

d. Maintains airspeed above Vs1+20 KIAS or Vy, whichever is greater.
e. Maintains a bank angle no greater than 30°.

Note: Vs1 – gear and flaps

2. **Action. The applicant will:**

a. Maintain focus outside the airplane and keep the Area of Operation cleared by vigilantly looking for other traffic during the maneuver.
b. Use appropriate navigation charts to determine a minimum altitude to enter the Area of Operation.
c. Determine wind drift in the Area of Operation and adjust the orbit to maintain an appropriate pattern and preclude excessive bank angles.

E. TASK: PERFORM OBSERVATION PASS

Note: Not applicable to airtankers.

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

a. Makes passes that result in flying in a direction toward lowering terrain.
b. Uses proper offset in making the pass so as to keep the landmark in view of the inspector pilot or observer.
c. Maintains the landmark on the right side of the aircraft unless safety considerations require making the pass on the left side of the aircraft.
d. Maintains airspeed above Vy.
e. Maintains a bank angle no greater than 30°.
f. Maintains an altitude no lower than 500 feet AGL at any time.

2. **Action.** The applicant will:

a. Maintain focus outside of the airplane keeping the Area of Operation cleared by vigilantly looking for other traffic during the maneuver.
b. Determine the direction and path of escape and the direction of the observation pass before descending from the orbit altitude.
c. Verbally describe the intended observation pass.
d. Demonstrate good judgment in complying with objectives a, b, and c.

V. LOW LEVEL ACTIVITIES

A. TASK: FLIGHT BELOW 500 FEET AGL

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

a. Is knowledgeable and proficient in low level (below 500 feet AGL).
b. Is safely able to manage the increased pilot workload associated with such missions.

2. Action. The applicant will:

Note: Airtanker pilots will not be evaluated on elements a(6), d, e, and f. Smokejumper and paracargo pilots will not be evaluated on elements a(6) and f.

a. Explain the elements of low level operations (below 500 feet AGL) including the following factors:

(1) The hazards of operating in the vicinity of mountainous terrain and large bodies of water including sloping or rising terrain, windy conditions, natural and manmade obstructions, and the use of hazard maps.
(2) Weather, especially surface winds and various types of turbulence encountered while circling over uneven terrain and/or next to vertical slopes and the hazards related to environmental conditions such as glare, precipitation, flat light, and whiteout.
(3) The hazards of wake turbulence while circling, the effect of wind drift on wake turbulence, how to avoid wake turbulence, and how to escape it once in it.
(4) Slow flight and stall avoidance and/or recovery at low levels including flight "behind the power curve."
(5) Limitations to low level flight as listed in 14 CFR 91.119, Minimum Safe Altitude.
(6) How to apply for and acquire a low level waiver from the controlling Flight Standards District Office.
(7) How to determine military training routes (MTR) on the VFR sectional chart and associated hazards with MTRs

b. Explain the elements of low level circling, compensating for wind drift and geophysical obstructions.
c. Explain the reduction of flight load factors with flaps extended and consequences of exceeding the limiting load factors.
d. Explain the use of personal protective equipment and the requirements set forth in the *Aviation Life Support Equipment (ALSE) Handbook* or contract and any applicable waivers.
e. Perform a thorough preflight briefing of personnel to include:

(1) Personal protective equipment requirements.
(2) Intercom communication procedures.
(3) Designated crewmember duties and crewmember actions in the event of a hazardous situation or a nonhazardous equipment malfunction.

f. Perform a thorough preflight inspection determining that all mission equipment, wires/cables, and antennas are installed properly and required logbook entries have been made.
g. While dividing attention among airplane control, coordination, and providing collision avoidance through visual scanning:

Note: These three elements are to be evaluated at a safe altitude before evaluating low level activities.

(1) Demonstrate precision steep turns ±10 knots of maneuvering speed while maintaining altitude within ±100 feet and roll out on entry heading ±10 degrees.
(2) Maneuver the aircraft at 1.1 Vso with flaps down and 1.1 Vs with flaps up (for multiengine aircraft: Vyse for flaps down and Vyse flaps up, or V2, as applicable to the aircraft) maintaining airspeed at +10, -5 knots and altitude within 50 feet. This will include both turns to heading and straight and level flight.
(3) Demonstrate full stalls and recoveries in all of the configurations that the aircraft will be flown during the proposed low level missions. Minimum loss of altitude and precise control of the aircraft during recovery shall be demonstrated.

h. Demonstrate high altitude reconnaissance over intended area of low level activity identifying hazards, navigation aids, landmarks, and possible escape routes.
i. Demonstrate low level operation along a river, beach, tree line, mountain, ridge, and/or other reference while:

(1) Maintaining separation from persons, structures, and vehicles.
(2) Maintaining smooth, coordinated control of aircraft, altitude within ±100 feet, airspeed within 10 knots, and 0 degree deviation from intended course line.
(3) Presenting best possible view of subject area to the observer taking into account wind speed and direction, surface glare/shadows, and obstructions such as trees or ridges.
(4) Simultaneously following a GPS-derived track, line, or transect or navigating between transects or establishing aircraft on new transect.
(5) Performing simulated or actual electronic tracking, including target direction determination, target acquisition, recording of information, and target search procedures.

j. Negotiate and cross high tension power lines and towers correctly.
k. Identify, plan, and fly a safe distance from large antennas (over 200 feet AGL) with guy wire supports.

B. TASK: SYSTEM AND EQUIPMENT MALFUNCTIONS WHILE LOW LEVEL

1. Objective. To determine that the applicant:

a. Exhibits knowledge by explaining causes, indications, and pilot actions for various system and equipment malfunctions.

2. Action. The applicant will:

Note: Element "d" is not required for SEATs.

a. Explain the causes, indications, and pilot action for selected systems and equipment malfunctions and determine that the applicant's knowledge meets the objective.

b. Be proactive in preventing pilot errors through proper use of checklists and procedures.
c. Respond to simulated system and equipment malfunctions and remove the airplane from low level flight when any system performance deviates from normal.
d. Perform where practical at an airport or suitable landing area simulated emergency landing procedures from low level flight (below 200 feet AGL) while in mission configuration (single engine).

VI. AIR TACTICAL

Note: Reference Authorization Table for required Areas of Operation and Tasks.

Reference: *Interagency Aerial Supervision Guide.*

VII. RECONNAISSANCE

A. TASK: PRECISION RECONNAISSANCE, RESOURCE/FIRE

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

   a. Exhibits knowledge by explaining the elements of flight and equipment required for the reconnaissance mission including dispatch, communication, and flight following requirements.
   b. Exhibits knowledge of the reduction in flight load factors with flaps extended and consequences of exceeding the limiting load factors.
   c. Exhibits knowledge by explaining equipment requirements for the mission.
   d. Exhibits knowledge by completing the prescribed reconnaissance mission checklist.

2. **Action.** The applicant will:

   a. Explain the elements of the reconnaissance mission.
   b. Perform a reconnaissance operation along a river, beach, tree line, mountain, ridge, and/or other reference.
   c. Safely manage the pilot workload and prevent distractions from compromising control of the aircraft.
   d. Explain the operation of the avionics package and mission equipment.
   e. Perform a thorough preflight briefing of personnel to include equipment requirements, intercom communications procedures, and crewmember actions in the event of a hazardous situation (unplanned event; i.e., conflicting traffic, unseen structures, persons, obstacles, survey equipment malfunction).
   f. Explain how to determine military training routes (MTR) on the VFR sectional chart and associated hazards with MTRs.
   g. Perform a thorough preflight inspection to include determining that all mission equipment, wires/cables, and antennas are installed/stowed properly (both internally and externally), required placards displayed, and required logbook entries are made.

h. Demonstrate precision steep turns within ±10 knots of maneuvering speed, maintain altitude within ±100 feet, and roll out on entry heading ±10°. Divides attention among airplane control, coordination, and providing collision avoidance through visual scanning. This will be accomplished at or above 1,500 feet AGL.
i. Maneuver the airplane at an airspeed of 1.4 Vso for flaps down or 1.4 Vs for flaps up maintaining airspeed at ±5 knots and altitude of ±50 feet. This will include both turns to heading and straight and level flight. This will be accomplished at a safe altitude.
j. Maintain altitude above 500 feet AGL and separation from persons or property on the surface (person, vessel, vehicle, structure) as required in 14 CFR Part 91.
k. Maintain positive control of the aircraft throughout the reconnaissance flight while maintaining specified altitude within ±50 feet, airspeed within ±10 knots, and heading within ±5°.
l. Simultaneously fly the aircraft smoothly with moderate bank angles and comfortable G-loads, presenting obstruction-free view of the survey subject to the observer (s). Use flat turn techniques and limited use of circling to optimize the observation run.
m. Make smooth, timely, and correct control application to accomplish the reconnaissance mission.
n. Discontinue the reconnaissance mission when any factor creates increased pilot/crewmember workload to a level that creates a hazard to flight.

VIII. MOUNTAINOUS TERRAIN

A. TASK: PERFORM MOUNTAINOUS ESCAPE MANEUVER

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

a. Can make an expedited course reversal in an area identified by the inspector pilot in mountainous terrain.

Note: The premaneuver flight path shall be flown parallel to and on either side of the drainage.

b. Maintains a maneuvering altitude ±100 feet.
c. Maintains airspeed to prevent any indication of stall.
d. Maintains a bank angle of 45° throughout the maneuver.
e. Completes the maneuver within ±10° of the 180° course reversal unless otherwise directed by the inspector pilot.

Note: This objective is intended for the evaluation of pilot judgment, knowledge, and skill. In actual situations, this standard may not be the applicable response to an emergency situation.

2. **Action.** The applicant will:

   a. Maintain focus outside the airplane and keep the Area of Operation cleared by vigilantly looking for other traffic during the maneuver.
   b. Demonstrate good judgment and knowledge by describing the safety issues of approaching mountainous terrain.
   c. Approach drainages to one side in order to facilitate a turn towards the middle of the drainage during the escape maneuver.
   d. Conduct the maneuver in a conservative manner that at no time compromises safety.

B. TASK: MOUNTAIN FLYING/TERRAIN AVOIDANCE

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

   a. Exhibits thorough knowledge of the effects of temperatures and pressure altitudes (density altitude) on the performance of aircraft in mountainous terrain.
   b. Exhibits thorough knowledge of winds and turbulence that are common to mountain flight (including both vertical and horizontal components) and effect on aircraft performance.
   c. Exhibits knowledge of weather associated with mountain geography (i.e., thunderstorms and convective, mechanical, and wind shear turbulence).

2. **Action.** The applicant will:

   a. Demonstrate proper reconnaissance techniques in determining suitability of the drop area/flight path, winds, obstacles, approach, and departure paths, forced landing areas, escape routes, and aircraft performance.
   b. Select appropriate approach path and angle to the intended drop area/flight path while demonstrating proper power management.
   c. Complete low reconnaissance during approach considering additional obstacles, slopes, and the intended aim point. Go-around decision should take place prior to descending below the height of the barriers and the drop area/flight path.
   d. Demonstrate proper judgment and understand the importance of evaluating risks in relation to the mission being performed.
   e. Demonstrate how to jettison/emergency dump load when appropriate.

IX. SMOKEJUMPER OPERATIONS

Note: The Tasks in this Area of Operation are required in addition to the specified Tasks in Areas of Operation I, II, IV, V, VI, VIII, XII, and XIII.

Reference: *Interagency Smokejumper Pilots Operations Guide.*

A. TASK: EN ROUTE PROCEDURES

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

   a. Exhibits knowledge of en route procedures.

2. **Action.** The applicant will:

   a. Inform the spotter when it is acceptable for the jumpers to remove seatbelts and move about the cabin.
   b. Inform the spotter when radio usage is acceptable.
   c. Provide the spotter time en route, fuel on board, and if a fuel stop prior to going to the fire is necessary.
   d. Notify the spotter of time to fire in accordance with agency policy; i.e., 20 minutes out.
   e. Brief with spotter prior to arrival at the fire.

      (1) Maximum time on scene.
      (2) Other aircraft on scene.
      (3) Radios and frequencies as required.
      (4) Point of contact for clearance into FTA.

B. TASK: ARRIVAL AT INCIDENT

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

   a. Exhibits the ability to position the aircraft such that the spotter has an adequate view to complete a fire size-up.
   b. Exhibits the ability to use the GPS to get corrected coordinates if necessary.
   c. Exhibits knowledge of smokejumper operating speeds/limitations and maintains airspeed of 1.3 Vso -0+10.
   d. Exhibits knowledge of smokejumper operating altitudes.
   e. Exhibits knowledge by planning an escape route in the event of an engine failure.

2. **Action.** The applicant will:

   a. Demonstrate the ability to execute a low pass which provides an adequate view of the jumpspot and/or fire for the smokejumpers and spotter while:

      (1) Maintaining airspeed of 1.3 Vso -0+10.
      (2) Maintaining altitude of 200 AGL -0+300.
      (3) Maintaining awareness of terrain and ground obstacles.
      (4) Maneuvering aircraft in a manner to be able to provide an escape path in the event of an engine failure at any time.

   b. Demonstrate awareness of and maintain safe distance from terrain and ground obstacles.

Note: The pilot-in-command (PIC) and/or inspector pilot have the discretion to increase reference speeds due to terrain, weather, or other factors as long as it is briefed prior to the maneuver and does not exceed aircraft limitations.

C. TASK: STREAMER DROPS

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

   a. Exhibits the ability to establish and maintain the proper altitude above the jumpspot.
   b. Exhibits the ability to smoothly maneuver the aircraft with attention divided between flying the aircraft and observing the streamers.
   c. Exhibits knowledge and correct usage of standard callouts.
   d. Exhibits the ability to maneuver the aircraft to provide the spotter with an adequate view of the streamers.
   e. Exhibits the ability to consistently identify the point where the streamers land and identify the wind line.

2. **Action.** The applicant will:

   a. Demonstrate the ability to maintain airspeed of 1.3 Vso -0+10 (90 knots minimum).
   b. Demonstrate the ability to maintain an altitude of 1,500 feet above the jumpspot -0+100.
   c. Demonstrate the ability to make smooth and timely control corrections to position the aircraft on final as the spotter commands.
   d. Demonstrate the ability to routinely keep the bank angle 30 degrees or less.

Note: The PIC and/or inspector pilot have the discretion to increase reference speeds due to terrain, weather, or other factors as long as it is briefed prior to the maneuver and does not exceed aircraft limitations.

D. TASK: SMOKEJUMPER DROPS

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

   a. Exhibits knowledge of standard callouts and correct usage.
   b. Exhibits the ability to fly the proper drop pattern as requested by the spotter.
   c. Exhibits awareness of environmental conditions (up air, down air, turbulence, wind shear, wind shifts, etc.) and the ability to communicate them to the spotter.

2. **Action.** The applicant will:

   a. Demonstrate the ability to maintain proper airspeed of 1.3Vso (90 knots minimum, 115 knots maximum).
   b. Demonstrate the ability to maintain specified altitude or 1,500 feet AGL -0 +100 above the jumpspot or exit point (whichever is higher) for round parachutes.
   c. Demonstrate the ability to maintain specified altitude of 3,000 feet AGL -0 +100 above the jumpspot or exit point (whichever is higher) for ram-air parachutes.
   d. Demonstrate the ability to maintain bank angle routinely less than 30 degrees.

Note: The PIC and/or inspector pilot have the discretion to increase reference speeds due to terrain, weather, or other factors as long as it is briefed prior to the maneuver and does not exceed aircraft limitations.

E. TASK: PARACARGO OPERATIONS

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

   a. Exhibits awareness of terrain, ground hazards, and weather conditions to safely fly this low level mission.
   b. Exhibits the ability to plan and execute a flight pattern which will not endanger persons, vehicles, or structures in the event of paracargo malfunctions.
   c. Exhibits knowledge of paracargo operations, configuration, and the need to set aircraft airspeed for best single engine performance in the event of engine failure (multiengine aircraft) and maneuvers aircraft in a manner as to always be able to escape at any time.
   d. Exhibits knowledge of optimum drop airspeed of 1.3Vso -0+15 (90 knots minimum)(not to exceed aircraft limitations).
   e. Maintains a bank angle routinely less than 30 degrees.
   f. Exhibits knowledge of optimum drop altitudes of 150 feet AGL (minimum).
   g. Exhibits knowledge of standard callouts and correct usage.
   h. Exhibits knowledge of environmental conditions (up air, down air, turbulence, wind shear, wind shifts, etc.) and the ability to communicate them to the spotter.

2. **Action.** The applicant will:

   a. Explain and demonstrate paracargo procedures and the ability to plan and execute a flight pattern which will not endanger persons, vehicles, or structures in the event of paracargo malfunctions.
   b. Demonstrate the ability to maintain airspeed of 1.3Vso -0+15 (90 knots minimum) (not to exceed aircraft limitations).
   c. Demonstrate the ability to maintain a bank angle of less than 30 degrees.
   d. Exhibit the ability to establish minimum drop altitudes of 150 feet AGL.

Note: The PIC and/or inspector pilot have the discretion to increase reference speeds due to terrain, weather, or other factors as long as it is briefed prior to the maneuver and does not exceed aircraft limitations.

X. AIRTANKER

Note: This Area of Operation is applicable to all airtankers including SEATs. The Tasks in this Area of Operation are required in addition to the specified Tasks in Areas of Operation I, II, IV, V, VIII, XII, and XIII.

References: http://www.blm.gov/nifc/st/en/prog/fire/Aviation/Airops/seat.html.
http://www.fs.fed.us/fire/contracting/airtankers/airtankers.htm.

A. TASK: FIRE BEHAVIOR

Reference: www.iat.gov, SEAT training.

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

   a. Exhibits knowledge of how environmental factors affect fire behavior.

2. **Action.** The applicant will:

   a. Describe and explain the effect of fuel types and composition.
   b. Describe common terminology used to describe and identify fire behavior over the radio.
   c. Identify the key points for reporting fire size-up information to controlling units or the Incident Commander (IC).

B. TASK: LOADING AND REFUELING

References: *Interagency Aerial Supervision Guide* (IASG).
Interagency Single Engine Airtanker Operations Guide (ISOG).

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

   a. Exhibits knowledge of airtanker base procedures.
   b. Exhibits knowledge of portable/remote site procedures.
   c. Exhibits knowledge of types of retardant/suppressants.

2. **Action.** The applicant will:

   a. Describe initial arrival procedures for utilizing an airtanker base.
   b. Describe hot loading operations and locally established ramp procedures.
   c. Describe requirements for hot refueling. (SEAT)
   d. Explain the possible site-specific requirements for hot refueling (SEAT)/hot loading.
   e. Remain at the controls during hot refueling (SEAT)/hot loading operations.
   f. Describe emergency procedures for incidents while loading/refueling.
   g. Demonstrate ability to operate mixing/loading equipment. (SEAT)
   h. Describe the types of retardant and suppressants approved for aerial firefighting operations and advantages/disadvantages of each.

C. TASK: INITIAL/EXTENDED ATTACK PROCEDURES

References: *Interagency Aerial Supervision Guide* (IASG).
Interagency Single Engine Airtanker Operations Guide (ISOG).

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

   a. Exhibits knowledge of initial attack procedures with and without additional resources on scene.
   b. Exhibits knowledge of extended attack procedures.

2. **Action.** The applicant will:

   a. Explain arrival communications when other aircraft are not yet on scene.
   b. Give an initial size-up briefing to the appropriate resources.

c. Demonstrate elements of a tactical briefing for other arriving aircraft.
d. Describe the proper use of retardant firefighting tactics for different situations with and without ground support. Include anchor, flank, mid slope, ridge, shoulder, and head attacks.

D. TASK: RETARDANT/WATER DROPPING

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

   a. Exhibits knowledge of aircraft delivery systems, normal and emergency procedures.
   b. Exhibits knowledge of coverage levels.
   c. Exhibits knowledge of restricted category operations.

2. **Action.** The applicant will:

   a. Demonstrate (on the ground) knowledge of drop system controls, control sequencing (takeoff, en route, pre-drop), and actuation (normal and emergency).
   b. Demonstrate (on the ground) knowledge of drop system circuit breaker locations, tank wiring and fill system operation, and preflight of the tank.
   c. Explain the relationship between airspeed and altitude and its effect on coverage level.
   d. Maintain appropriate altitude and route of flight while operating in restricted category.
   e. Maintain minimum obstacle clearance at all times. (60 feet for SEAT; 150 feet for large airtanker (LAT).)
   f. Use smooth control inputs to keep aircraft in trim and maintain appropriate en route altitude and airspeed.
   g. Select suitable fill site(s) including hazard recon and recognizing hazards of moving water if applicable (scooper).
   h. Stabilize aircraft on water for fill in an area clear of hazards (scooper).
   i. Determine target/hazard/wind prior to descend for drop.
   j. Maintain reserve power/airspeed in event of a go-around.
   k. Maintain escape route.
   l. Maintain approach angle that ensures obstacle clearance (60 feet for SEAT; 150 feet for LAT.)
   m. Maintain heading (±10°) and ground track.
   n. Release retardant/water on desired target with desired dispersal rate.
   o. Perform a minimum of two water drops.
   p. Demonstrate an emergency jettison.

XI. AERIAL SKETCH MAPPING

A. TASK: CONTOUR

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

   a. Exhibits knowledge by explaining the elements of contour sketch mapping by planning and executing aerial sketch mapping mission in mountainous terrain in a safe and efficient manner.

b. Exhibits knowledge by utilizing a topographical map for planning to fly each drainage in a clockwise manner,
c. Exhibits knowledge by computing aircraft climb performance at high density altitudes.

2. Action. The applicant will:

a. Explain the elements of the aerial sketch mapping mission.
b. Demonstrate the ability to efficiently and safely perform contour sketch mapping.
c. Demonstrate the skill and ability by smoothly adjusting heading, power, and pitch changes to meet the existing conditions.
d. Establish the aircraft over the terrain in a position where the area of interest is within visual range of the observer.
e. Maneuver the aircraft so that secondary drainages are flown before completing the survey of the main drainage.
f. Perform a survey operation in a manner where the overall watershed is flown counterclockwise, when practical, for efficient survey operation.
g. Smoothly maneuver the aircraft utilizing medium-banked turns while the altitude varies depending on terrain, temperature, and winds.
h. Select a safe altitude no lower than 500 feet AGL and up to 1,000 feet AGL or higher as the observer selects. Selected altitude will be maintained within ±100 feet.

B. TASK: GRID

1. Objective. To determine that the applicant:

a. Exhibits knowledge by explaining the use of a topographical chart, setting up a grid or series of parallel GPS transect lines over a defined geographical area including the determination of latitude and longitude of each end point of the transects.
b. Exhibits proper judgment by selecting a safe altitude based on terrain, wind, and mission requirements of no less than 500 feet AGL, altitude within ±100 feet.

2. Action. The applicant will:

a. Explain the elements of the grid sketch mapping mission.
b. Demonstrate the skill and ability to efficiently and safely perform grid sketch mapping.
c. Demonstrate skill and ability by smoothly adjusting heading, power, and pitch changes to meet the existing conditions.
d. Demonstrate skills and abilities by starting transects precisely over the start waypoint, on course, at altitude, and within groundspeed parameters of ±10 knots (a target groundspeed of 100 knots is common).
e. Demonstrate skills and abilities by precisely flying GPS transect lines while correcting for wind drift and compensating for any terrain obstructions.
f. Demonstrate skills and abilities by ending transect precisely, initiating smooth turn to next transect while selecting subsequent waypoints.

XII. EMERGENCY/ABNORMAL OPERATIONS

A. TASK: EMERGENCY PROCEDURES

References: http://amd.nbc.gov/safety/library/iamrp.html.

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

   a. Exhibits knowledge by correctly explaining the applicable emergency procedures that may differ from the FAA standards due to mission procedures or required mission equipment, to include:

      (1) Structural failure of auxiliary equipment (mission equipment).
      (2) Emergency exits.
      (3) ELT including remote switching and 406 MHz procedures.
      (4) Knowledge of checklist immediate/memory items when specified by the aircraft manual.
      (5) Knowledge of MISHAP notification form.
      (6) Knowledge of MISHAP reporting requirements and procedures.
      (7) Knowledge of emergency procedures in the event of a two-way radio communications failure including nonstandard communication procedures in remote areas.
      (8) Delegation of duties to noncrewmembers.
      (9) Aviation life support equipment use (PPE, first aid kit, survival kit, and fire extinguishers).

2. **Action.** The applicant will:

   a. Explain selected emergency procedures.

B. TASK: SAFECOM PROCEDURES

References: https://www.safecom.gov.

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

   a. Exhibits knowledge of SAFECOM system.
   b. Understands the purpose of the SAFECOM.

2. **Action.** The applicant will:

   a. Demonstrate how to file a SAFECOM.
   b. Explain when a SAFECOM should be filed.
   c. Explain who to involve when filing a SAFECOM.

XIII. POSTFLIGHT PROCEDURES

A. TASK: AGENCY RAMP

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

   a. Exhibits knowledge of agency ramp procedures.

2. **Action.** The applicant will:

   a. Establish communication with appropriate agency personnel prior to ramp entry.
   b. Demonstrate knowledge of hand signals from ramp agent.
   c. Demonstrate knowledge of procedure to be followed when communications fail.

B. TASK: AIRCRAFT SECURITY

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

   a. Exhibits knowledge of required aircraft security measures.

2. **Action.** The applicant will:

   a. Demonstrate how to secure aircraft via two acceptable methods.
   b. Follow checklist for applying security measures.

C. TASK: MAINTENANCE

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

   a. Exhibits knowledge of determining when maintenance or required inspections are required.
   b. Exhibits knowledge of how to obtain maintenance or required inspections.
   c. Exhibits knowledge of who can perform maintenance and required inspections.

2. **Action.** The applicant will:

   a. Identify inoperative equipment and determine if it can be deferred in accordance with a minimum equipment list (MEL).
   b. Demonstrate knowledge of deferring inoperative equipment.
   c. Demonstrate knowledge of determining when required inspections are due.
   d. Identify what maintenance or required inspections a pilot or pilot/mechanic may perform.
   e. Explain privileges and limitations the pilot or pilot/mechanic has regarding performing maintenance or required inspections.

D. TASK: POST-ACTION DEBRIEF

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

   a. Exhibits knowledge of post-action debriefs.

2. **Action.** The applicant will:

   a. Identify when a post-action debrief is required.
   b. Identify who to involve in a post-action debrief.

GLOSSARY

Aerial Sketch Map (two types of sketch mapping)

Paper maps or digital sketch mapping systems (DASM) can be used for either method.

Contour mapping is generally used in mountainous terrain where the pilot positions the aircraft so the sketch mapper can capture the forest change event. Contour flying involves flying up drainages slightly to the left of the drainage following each drainage to the end or tree line.

Grid sketch mapping requires the use of GPS to fly latitude/longitude lines, and is used when flying over flat or gently rolling terrain. Grid lines are typically 3 miles apart so the sketch mappers (grid mapping is accomplished by a crew of three, a pilot, and two mappers, one on each side of the aircraft) look out 1½ miles on each line. The pilot usually provides the navigation by flying GPS routes or true north/south, east/west lines freeing the sketch mapper to concentrate on his/her mapping duties (USDA FS).

Air Tactical

The air tactical mission consists of flying an aircraft over an incident, typically a fire with an air tactical group supervisor (ATGS) on board. The pilot must set up an orbit as directed by the ATGS so the ATGS can execute the command and control mission.

Air Tactical Group Supervisor (ATGS)

The ATGS manages incident airspace and controls incident air traffic. The ATGS is an airborne firefighter who coordinates, assigns, and evaluates the use of aerial resources in support of incident objectives. The ATGS is the link between ground personnel and incident aircraft.

Category IV Airstrip

USDA FS: These are mountain/remote airstrips and are restricted by the FS to day-VFR flight only. Use authorization must be obtained from the appropriate national forest dispatch office. Pilots must have an endorsement on their Pilot Qualification Card and meet specific currency requirements. These airstrips can be found in chapter 6 of the *Interagency Smokejumper Pilots Operations Guide* (ISPOG).

Divert Dispatch (route change while en route)

This term is used to identify a Governmental mission dispatch that may be provided via verbal assignment by a dispatcher or resource management personnel. An alternate plan of action is requested while the aircraft is airborne. The pilot will have to make changes to flight plan, navigation, and/or changes to the initial dispatch communication plan.

Fire Reconnaissance

Operations conducted in aircraft flying at a distance greater than 500 feet from the terrain patrolling in search of fire.

Fire Traffic Area (FTA)

Acronym only.

High Altitude Glacier

Skiplane operations requiring special pilot knowledge and techniques; landing on glaciers and snowfields above 3,500 feet pressure altitude; slope of the terrain and landing area may exceed 6% slope.

High Reconnaissance

A route of flight which includes reconnaissance and is conducted above 500 feet above ground level (AGL). This reconnaissance does not include any aircraft maneuvers which are in excess of commercial pilot skills, maneuvering below 1.4 V_{so}, or climbs/turns/descents greater than standard rate. This does not include any type of precise maneuvering or specialized equipment.

Initial Dispatch

This term is used to identify a Governmental mission dispatch that may be provided by a written resource order, verbal assignment by a dispatcher, or resource management personnel.

Inspector Pilot

Designated inspector approved by Government agencies participating in the interagency agreement.

Instructor Pilot

Federal Aviation Administration certified flight instructor with authorization to conduct aviation training for aircraft pilot operations.

Interagency Aerial Supervision Guide (IASG)

Acronym only.

Landing Decision Point

A point selected prior to final approach to landing. A location on an approach to a landing that is preselected as a go/no-go point. The continued approach to landing will be either continued or rejected at this point (examples: tree, rock, runway marker, or other readily identifiable landmark). The landing decision point may be predicated on surrounding terrain (canyon or rapidly rising terrain in the vicinity of the landing area) and/or a point where a continued approach will not provide a safe landing.

Low Level

Flight within 500 feet of the surface.

Low Reconnaissance

A route of flight, which includes reconnaissance and is conducted below 500 feet above ground level (AGL). This reconnaissance does not include any aircraft maneuvers which are in excess of commercial pilot skills; however, this flight activity may require skills and knowledge beyond those trained and tested by the FAA. Some activities require maneuvering below 1.4 V_{so}, and climbs/turns/descents greater than standard rate. This set of flight activities may require precise maneuvering and/or specialized equipment.

Mentor Pilot

The mentor pilot will be authorized for use by DOI. Both the agency and the DOI will designate the mentor pilot for use and will assign training operations for the mentor. Mentors are commonly utilized when an inspector pilot or instructor pilot is not available and the mentor is judged to have specialized knowledge of the resource management mission and the aircraft to be flown. A mentor pilot is not required to hold FAA certification as a flight instructor, but will be required to attend training provided by DOI prior to appointment as a mentor.

Mission Checklist

Includes items typically found on the descent, approach, and selected items from the landing checklist that are needed during the operation that enhance safe flight and aid in accomplishing the mission. Items such as pulselites, fuel selection, and boost pump selection (if applicable) are likely to be on a low level "pre-mission checklist." On exit from a low level mission, the after-takeoff and climb checklists can be used as a guide for compiling a "post-mission checklist."

Mission Guide

Handbook or guide issued to facilitate compliance with policy or standard operating procedures.

Mountainous Terrain

That area depicted in chapter 5 of the *Aeronautical Information Manual* and described in 14 CFR Part 95, subpart B.

Original Equipment Manufacturer (OEM)

If Boeing built a component for its airplane and had the installation approved under its manufacturer's certificate, the OEM acronym will fit. If another company built the component, it would likely be an aftermarket component, part, instruction, etc.

Pilot In Command (PIC)

Acronym only.

Point-To-Point

Flights between airports (excluding operations defined in 351 DM 1 as "special use") for which the route of flight is determined only by the pilot(s) based on navigational requirements.

Precision Reconnaissance (including Fire Recon)

This type of reconnaissance is conducted above 500 feet AGL. Transect type operations, utilization of specialized equipment, or missions not normally conducted in the commercial sector are examples of specific tasks which require special consideration and which make this a special use activity.

Required Aircraft Documents

Aircraft operated for interagency, DOI, or USDA FS require documents to be carried on board the aircraft in addition to those required by the Federal Aviation Administration and the Federal Communications Commission. The requirements are:

Required Documents

1. Airworthiness certificate (as required) (utility, standard, restricted)
2. Current weight and balance (including supplements)
3. Aircraft registration (required)
4. Current equipment list (equipment list at last weighing plus supplements)
5. Radio station license (International Civil Aviation Organization (ICAO) and Canadian requirement)
6. Current interagency data card (issued by authorized interagency partner)
7. Operating handbook or approved flight manual (as required)
8. Required interagency handbooks and procurement documents

Additional Documents (if required)

1. Flight manual supplements (per STC)
2. FAA Form 337 for external loads (as required by FAA)
3. FAA Form 337 for auxiliary fuel (as required by FAA)

Resource Reconnaissance

This type of reconnaissance shall be conducted in aircraft flying at a distance greater than 500 feet from the terrain. Natural resource survey, transect type operations, utilization of specialized equipment, or missions not normally conducted in the commercial sector are examples of specific tasks that require special consideration. Resource Reconnaissance I refers to operations utilizing panel-mounted GPS and airframe wiring for tracking antenna/receiver operations. Resource Reconnaissance II refers to operations utilizing other avionics or auxiliary equipment.

Ski Rigging/Cables

Safety cables and rigging cables maintain proper ski position. These cables may include Nicopress sleeves, clevis, turnbuckles, bungee cords, springs, and swage-type terminals.

Special Use (Activity)

Operations involving the utilization of airplanes and helicopters in support of DOI programs which are not point-to-point flight activities and which require special control measures due to their inherently higher risk. This may require deviation from normal operating practices where authorized by OAS. Special pilot qualifications and techniques, special aircraft equipment, and personal protective equipment are required to minimize risk to personnel and property.

Stall Recoveries (Minimum Loss of Altitude)

Resource flying may include flying for extended periods of time at airspeeds well below cruise speed and within 10 to 20 knots of the stall speed. The reference to minimum loss of altitude refers to recovering from a stall with less altitude lost than noted by the manufacturer of the aircraft. For example, a light plane pilot would be expected to recover within 200 feet and within 10 degrees of heading if the airplane is noted to lose no more than 200 feet in a stall by the manufacturer. Pilots applying for low level endorsements need greater skill and a maximum of a 100-foot loss of altitude needs to be a target goal for the same light plane (light plane refers to airplanes with maximum total gross weight (MTGW) less than 7,500 lb).

Supplemental Type Certificate (STC)

A supplemental type certificate is used when an aircraft is modified to keep the aircraft or component within FAA certification standards. There may be a flight manual supplement that must be referred to when operating aircraft with STCs installed.

Takeoff Decision Point

A point on the takeoff area preselected as a go/no-go point where the takeoff will be either continued or rejected. One school of thought provides that 70% or 80% of the flying speed must be attained at the midpoint of the runway length.

Tundra Tires

Roughly defined as tires installed on an airplane that are one or two sizes larger than those approved under the airplane's type certificate (8.50 by 6 or larger). Large tundra tires are 26 to 31 inches in diameter and 8 or more inches wide. These tires not only create more traction, but also increase loads on the landing gear and the airframe.

Wheel Ski

Landing gear component that has capabilities of operating on wheels or skis independently. A retraction system may consist of cables and springs or hydraulically operated mechanism to shift between skis-down or skis-up operations.