

## 5.0 Training Curriculum

PNNL training for pilots and the Director of Maintenance, with one exception, is contracted to FlightSafety International (FSI). The exception is the ASPOC training that will be provided by DOE as described in Section 5.6. The following curriculum is an example of the PNNL and FSI basic introduction, emergency, aircraft-ground, and aircraft flight training.

### 5.1 Ground Training

This section includes:

- A. FAR Part 1 - Definitions and Abbreviations
- B. FAR Part 61 - Certification: Pilots and Flight Instructors
- C. FAR Part 91 - General Operating and Flight Rules
  - 1. Responsibility and authority of the Pilot in Command (PIC) (FAR 91.3)
  - 2. Fuel requirements for flight in Instrument Flight Rules (IFR) conditions (FAR 91.167)
  - 3. VOR equipment check for IFR operations (FAR 91.117)
  - 4. Powered civil aircraft with standard category U.S. airworthiness certificates, and instrument and equipment requirements (FAR 91.203 through 205)
  - 5. Right-of-way rules (FAR 91.113)
  - 6. Aircraft lights (FAR 91.209)
  - 7. Compliance with Air Traffic Controller (ATC) clearances and instruments (FAR 91.123)
  - 8. Minimum safe altitudes, general (FAR 91.119)
  - 9. Basic Visual Flight Rules (VFR) weather minimums (FAR 91.155)
  - 10. Special VFR weather minimums (FAR 91.157)
  - 11. Takeoff and landing under IFR, general (FAR 91.175)
  - 12. Minimum altitudes for IFR operations (FAR 91.177)
  - 13. IFR radio communications (FAR 91.183)

14. Inspections (FAR 91.409)

15. Maintenance records (FAR 91.417)

D. FAR Part 135 - Air Taxi and Commercial Operations

1. Rules applicable to operations subject to this part (FAR 135.1 and 135.3)

2. Emergency operations (FAR 135.19)

3. Record keeping requirements (FAR 135.63)

4. Reporting mechanical irregularities (FAR 135.65)

5. Airworthiness check (FAR 135.71)

6. Operating information required (FAR 135.83)

7. Carriage of persons without compliance with the passenger-carrying provisions of FAR Part 135 (FAR 135.85)

8. Pilot requirements: use of oxygen (FAR 135.89)

9. Auto Pilot: minimum altitudes for use (FAR 135.93)

10. Second-in-command required in IFR conditions (FAR 135.101)

11. Exception to second-in-command requirements: IFR operations (FAR 135.103)

12. Exception to second-in-command requirement: approval for use of Auto Pilot system (FAR 135.105)

13. Briefing of passengers before flight (FAR 135.117)

14. Prohibition against carriage of weapons (FAR 135.119)

15. Equipment requirements: general (FAR 135.149)

16. Fire extinguisher: passenger-carrying aircraft (FAR 135.155)

17. Oxygen equipment requirements (FAR 135.157)

18. Equipment requirements: carrying passengers under VFR at night or under VFR over-the-top conditions (FAR 135.159)

19. Radio and navigational equipment: carrying passengers under VFR at night or under VFR over-the-top (FAR 135.161)
20. Equipment requirements: airplanes carrying passengers under IFR (FAR 135.163)
21. Radio and navigational equipment: extended over water or IFR operations (FAR 135.165)
22. Emergency equipment: extended over water operations (FAR 135.167)
23. Shoulder harness installation at flight crew member stations (FAR 135.171)
24. Inoperable instruments and equipment for multi-engine aircraft (FAR 135.179)
25. Performance requirements: aircraft operated over-the-top or in IFR conditions (FAR 135.181)
26. Empty weight and center of gravity: currency requirement (FAR 135.185)
27. VFR: minimum altitudes (FAR 135.203)
28. VFR: visibility requirements (FAR 135.205)
29. VFR: fuel supply (FAR 135.209)
30. VFR: over-the-top carrying passengers: operating limitations (FAR 135.211)
31. Weather reports and forecasts (FAR 135.213)
32. IFR: operating limitations (FAR 135.215)
33. IFR: takeoff limitations (FAR 135.217)
34. IFR: destination airport weather minimums (FAR 135.219)
35. IFR: alternate airport weather minimums (FAR 135.221)
36. IFR: alternate airport requirements (FAR 135.223)
37. IFR: takeoff, approach and landing minimums (FAR 135.225)
38. Icing conditions: operating limitations (FAR 135.227)
39. Airport requirements (FAR 135.229)
40. Flight crew member requirements (FAR 135, Subpart E)

41. Flight crew member flight and duty time limitations (FAR 135, Subpart F)

42. Crew member testing requirements (FAR 135, Subpart G)

43. Training (FAR 135, Subpart H)

E. Operations Specifications

1. Authorized area of operations

2. Manual requirements

3. Company policies, forms, records, and procedures

4. Training and testing requirements

5. Route and airport qualifications procedure

6. Weight and balance and loading procedure: computations, compliance, and limitations for takeoff, landing, and en route operation

a. Aircraft owner's manual

b. FAA-approved flight manual

c. Weight and balance charts, graphs, and computers

7. Copilot requirement

8. Refueling procedures

9. Flight locating procedures

10. Cargo restraint

11. Landing distance limitations

12. Required inspection procedures

13. En route maintenance procedures

14. Emergency procedures

15. Accident notification procedures

16. Communication procedures

17. Passenger safety and comfort procedures

18. IFR takeoff minimums - lower-than-standard IFR takeoff minimums

- a. Equivalent to the lowest straight-in landing minimums authorized at the particular departure airport
- b. No lower than 1800 ft runway visual range (RVR) or ½ mile

19. IFR takeoff minimums - additional lower than standard

Pilots qualified under FAR 135.297 and 135.343 while operating multi-engine aircraft that meet the performance requirements of FAR 135.181 must have the following training:

- a. ½ mile or RVR 1600 ft
- b. RVR 1200 ft with RVR 1000 ft on rollout
- c. RVR 700 ft with mid-RVR 700 ft (if operative) and RVR 600 ft on rollout
- d. Review of IFR takeoff limitations in operations specifications

20. Area Navigation Equipment (RNAV) Procedures

- a. Limitations
- b. Emergency procedures: detection of malfunctions
- c. Normal procedures
- d. System description: theory of operation

F. Navigation and ATC Procedures

1. General, air traffic control systems, procedures, and phraseology
2. IFR takeoff minimums (lower than standard IFR takeoff minimums)
3. Use of navigational aids, including RNAV
4. Instrument approach procedures

5. Area procedures, including normal and emergency communication procedures
6. Visual cues before and during descent below DH or MDA
7. Source of study
  - a. Airman's Information Manual
  - b. Instrument Flight Manual
  - c. En route, approach, area, standard instrument departure (SID), standard airport arrival procedure (STAR), world aeronautical chart (WAC), and sectional charts

#### G. Route and Airport Qualification

1. Weather characteristics
2. Terrain and obstruction hazards
3. Minimum safe flight levels
4. Congested areas, obstructions and physical layout of airports of frequent use

#### H. Adverse Weather Operations and Meteorology

1. General meteorology, appropriate to area of operation
  - a. Instrument flight manual
  - b. Aviation weather manual
    - 1) Frontal systems
    - 2) Icing
    - 3) Fog
    - 4) Thunderstorms
    - 5) Windshear
    - 6) High-altitude weather
2. Weather analysis and dispatch considerations

3. Procedures for avoiding operations in thunderstorms, hail, ice, turbulent air, and wake turbulence
4. Operating in turbulent air or icing conditions
  - a. Weather analysis
  - b. Use of airborne weather radar/thunderstorm detection equipment and its interpretation
  - c. Proper use of stabilizer trim and autopilot
  - d. Flying qualities of each make and model of aircraft (appropriate to each pilot) in turbulence
  - e. Altitude control
  - f. Flying in the vicinity of thunderstorms
  - g. Use of proper airspeed and best altitudes for turbulence penetration
    - 1) Penetration altitude for each make and model
    - 2) Power settings for each make and model
  - h. Wake turbulence
  - i. Clear-air turbulence
  - j. Low-altitude windshear
  - k. Blocked or frozen pilot systems
  - l. Icing

I. Special Conditions

1. Extreme cold weather operations
2. Frost or ice on aircraft
3. Operating in slush or snow
4. Wet runways: hydroplaning and aquaplaning
5. Unreliable airspeed indications

6. Unwanted door opening
  7. Mechanical failures
- J. Hazardous Materials
1. Definitions - HMR Part 175, Appendix
  2. Warning labels
- K. Use of Oxygen
1. Non-pressurized aircraft
  2. Pressurized aircraft
  3. FAR 135.89
- L. Use of Auto Pilot
1. Normal use
  2. In place of second-in-command
  3. Minimum altitudes for use, maximum altitude loss, and FAR 135.93.
- M. Cockpit vigilance, altitude and airspeed awareness, crew coordination, and activity during critical flight phases (FAR 135.100)
- N. Company Aircraft (to be completed for each type of aircraft to be flown)
1. Source of study
    - a. Aircraft owner's manual
    - b. FAA-approved flight manual
    - c. Maintenance inspection air traffic delays (ATD)
  2. General Description
  3. Airframe
    - a. Airframe locations

- 1) Regular and emergency exits
  - 2) First-aid kit
  - 3) Fire extinguisher
- b. Flight controls
- 1) Ailerons
  - 2) Rudder
  - 3) Elevator
  - 4) Trim
- c. Fuel System
- 1) Grade and servicing
  - 2) Tanks and sumps
  - 3) Systems of supply
  - 4) Boost pumps
- d. Oil
- 1) Grade, weight, and servicing
  - 2) Tanks and drains
  - 3) System of supply
  - 4) Feathering
  - 5) Oil cooling system
- e. Electrical System
- 1) Alternators or generators
  - 2) Gear indicator, warning lights, and selector

- 3) Cabin, cockpit, and miscellaneous lights
  - 4) Circuit protection
  - 5) Anti-icing system
  - 6) Fuel pumps
  - 7) Landing and taxi lights
  - 8) Navigation and anti-collision lights
  - 9) Starter motors
  - 10) Landing gear system
  - 11) Flap system
  - 12) Windshield wipers
- f. Hydraulic System
- 1) Reservoir and system
  - 2) Brake system
  - 3) Servicing of system
- g. Avionics
- 1) General radio system
  - 2) Transponder
  - 3) Radar
- h. Heating, Air Conditioning, and Ventilation
- 1) Heating tubes
  - 2) Mixing valves
  - 3) Distribution

- 4) Air conditioner unit
- i. Vacuum System
  - 1) Pump and separator
  - 2) Suction and regulating valve
  - 3) Operation and components
- j. Gyro System
  - 1) Types of gyros
  - 2) Vacuum or electrically driven
- k. Pressurized Cabin
  - 1) Normal operations/cabin pressure altitude
  - 2) Limitations
  - 3) Emergency operations/failure of system
  - 4) Oxygen use
  - 5) Smoke removal
- l. Limitations
  - 1) Airspeeds (gear, flap maneuvers, etc.)
  - 2) Weight limitations
    - Gross weight
    - Maximum takeoff weight
    - Maximum landing weight
    - Maximum zero fuel weight
  - 3) Center of gravity (balance)

- 4) Placards and markings appropriate to the aircraft
  - 5) Miscellaneous limitations imposed by aircraft manufacturer
- m. Performance/Handling
- 1) Preflight/flight planning
  - 2) Runway length limitations for takeoff and landing
  - 3) Airspeeds
  - 4) Starting
  - 5) Taxiing
  - 6) Before takeoff
  - 7) Takeoff
  - 8) After takeoff
  - 9) Cruise
  - 10) In-flight emergencies
  - 11) Before landing
  - 12) Landing
  - 13) After landing and shutdown
  - 14) Emergency procedures
4. Engines/Power Plants
- a) Engines and propellers
    - 1) Make and model
    - 2) Time before overhaul (TBO)
    - 3) Horsepower

- 4) Fuel consumption and cruise control
  - 5) Propeller governor operation
- b) Controls
- 1) Throttles
  - 2) Propeller and systems
  - 3) Mixtures
  - 4) Turbocharger/supercharger operations
  - 5) Oil pressure/temperature
  - 6) Cylinder head temperature
  - 7) Cowl flap system
  - 8) Carburetor heat
  - 9) Alternator air
- c) Ignition
- 1) Magnetos
  - 2) Distributor
  - 3) Impulse systems
  - 4) Spark plugs
  - 5) Ignitions
- d) Engine handling
- 1) Warm up
  - 2) Power settings
  - 3) Power descents to maintain proper operating temperature

- 4) Smoke and fire detection
- 5) Cold weather operation

## 5.2 Flight Training

Safe operations will be emphasized during the entire flight-training phase. Each maneuver and procedure shall be performed with good judgment, with safety in mind and at a safe operations altitude. Flight training will include flight operations and maneuvers necessary to demonstrate the standards in practical skills and techniques set forth in FAR Part 61. In addition, flight training will address the appropriate related advisory circular for the pilot certificate held, and for the category, class, and type of aircraft the pilot will operate. The pilot will be required to demonstrate competent performance by operating the aircraft in a manner that indicates obvious mastery of the aircraft, and with no doubt as to the successful outcome of each procedure.

### A. Aircraft Familiarization

1. Weight and balance and center of gravity
2. V speeds
3. Navigation and communications equipment
4. Research power system

### B. Basic Piloting Techniques/Contact Maneuvers

Training flight will include normal, abnormal, and emergency maneuvers, procedures, and functions to allow the pilot to satisfactorily demonstrate acceptable standards to meet the testing requirements of FAR 135.293 and 135.299.

1. Checklist: Proper use of the checklist, with emphasis on accomplishing both normal and emergency procedures. All items on the checklist will be explained in detail.
2. Preflight Checks: A visual inspection of the interior, cockpit, and exterior of the aircraft, including engines, oil, fuel tanks, propellers, wings, fuselage, landing gear, control surfaces, validity of required certificates, and preparation for starting engines.
3. Starting Engines: Proper starting procedures, with emphasis on possible damage to equipment caused by improper procedures.
4. Taxiing: Acceptable taxi methods, smooth use of power levels, taxiing speed, correct use of controls when taxiing up, down, or crosswind, knowledge of wind effect in taxiing, and smooth and minimum use of brakes.

5. Pre-Takeoff Check: Recommended procedures to be followed in determining proper operations of the engines, propellers, and accessories, with emphasis on a complete check of the pitch trim system and set up of avionics equipment for departure and en route operations.
6. Takeoff and Climb: Instructions in normal, short field, soft field, and crosswind takeoffs, with emphasis on proper power settings, airspeed control, and aircraft configuration. Airspeed controls should include maintaining best rate of climb, or angle of climb speed, as appropriate.
7. Cruise Procedures: Use of power charts and proper power settings.
8. Steep Turns: Turns of 360 degrees with up to a 45-degree bank, emphasizing altitude, bank, and airspeed control.
9. Slow Flight Maneuvering: Slow flight will be practiced at minimum controllable speeds in turns and in straight and level flight with varying aircraft flight configurations.
10. Stalls:
  - a. Power-on stalls. Straight ahead and in turns of 20 degrees bank in both takeoff and cruise configurations.
  - b. Power-off stalls. Straight ahead and in turns of 30 degrees bank in both cruise and landing configurations.
  - c. Emphasis on proper recovery techniques, including use of power.
11. Pitch Control: Emphasis will be given to the proper use of trim systems, the effects of power application at various airspeeds, flap extension and retraction effects at various airspeeds, and emergency procedures, as follows:
  - a. Loss of trim system: An approach to landing using proper power and flap management will be executed. Go-around in this configuration will emphasize the use of airspeed, power, and flaps to reduce control forces.
  - b. Non-programmed pitch trim (run-away trim): Instructor pilot will simulate this situation by applying pressure to the control wheel. Emphasis will be placed on the student's immediately response to the change in control pressure by actuating the emergency release switch.
12. Engine Shutdown and Re-Start in Flight (Multi-Engine Aircraft): An engine will be shut down at an altitude to simulate engine failure in cruise flight. The student will practice dead-engine identification, power application with an engine out, checklist procedures for securing the dead engine, and checklist air start procedures. Emphasis will be placed on maintaining heading, altitude, and a safe airspeed while performing these procedures.

13. Engine-Out Maneuvering (Multi-Engine Aircraft): Maneuvering on one engine with emphasis on maintaining altitude, airspeed, and heading. Minimum control speed with the critical engine inoperative ( $V_{MC}$ ) will be demonstrated and practiced with proper recovery techniques.
14. Approach and Landing:
  - a. Instruction in procedures and techniques recommended for normal, crosswind, short field, and soft field landings.
  - b. Go-around from approach configuration with flaps and gear down; in multi-engine aircraft will be demonstrated normally and with simulated failure of one engine.
  - c. Landings with flaps up.
15. Takeoff and Landing with Simulated Engine Failure (Multi-Engine Aircraft):
  - a. One engine will be throttled to simulate failure after takeoff, when a safe airspeed has been reached and when practicable before reaching 300 ft. Importance of maintaining proper airspeeds and directional control will be emphasized. At least one entire traffic pattern, including climb-out, approach, and landing, will be accomplished with the engine throttled to zero thrust.
  - b. One engine will be throttled to simulate failure before reaching minimum controllable airspeed ( $V_{MC}$ ). Importance of immediately aborting takeoff, maintaining directional control, and proper use of brakes will be emphasized.
16. Pressurized Cabin:
  - a. Normal operations/cabin pressure altitude
  - b. Limitations
  - c. Emergency operations/failure of system
  - d. Oxygen use
  - e. Smoke removal.
17. Emergency Procedures (Operation of Systems): During flight training, the following emergency procedures, in addition to previous emergency procedures, will be reviewed or simulated in flight when possible:
  - a. Engine fire in flight
  - b. Fuselage fire

- c. Failure of electrical system
- d. Emergency gear extension
- e. Gear-up landing
- f. Rejected takeoff in single engine aircraft
- g. Balked landings: Recommended and appropriate go-around procedures will be utilized. Emphasis will be placed on proper use of power, appropriate air speeds, and gear and flap retraction procedures.

### C. Instrument Procedures/Maneuvers

Flights will be conducted in simulated or actual instrument training conditions. Training flights will include normal, abnormal, and emergency maneuvers, procedures, and functions to enable the pilot to satisfactorily demonstrate acceptable standards for the instrument proficiency check required by FAR 135.297 and 135.299. Flights will include take-off, departure, en route, approach, missed approach, and landing procedures. Emphasis will be placed on proper use of equipment installed in the aircraft. Use of pertinent takeoff, climb, cruise, and landing charts and graphs will be emphasized. Approach procedures will be conducted to the published minimums for each procedure.

1. Instrument Takeoff and Climb Procedures: Normal emphasis on  $V_{MC}$ , appropriate rotation speed, and subsequent climb speeds simulated lower than standard IFR takeoff minimums.
2. Area Departure: Compliance with departure instructions and adherence to ATC clearance is expected. Proper use of radio equipment will be stressed. When applicable, proper use of transition procedures described on SID charts will be utilized.
3. En Route and Holding Procedures: Continued compliance with ATC clearances, use of cruise power charts, appropriate holding airspeeds, and proper entry into and maintenance of holding patterns will be emphasized.
4. Area Arrivals: Arrivals will be accomplished in accordance with ATC instructions and proper use of transition procedures described on STAR, profile descent, and approach charts, when applicable.
5. Instrument Approach Procedures and Landings:
  - a. Approach procedures for each instrument approach and compliance with ATC instructions will be stressed. Runway conditions and braking action will be evaluated prior to landing.
  - b. Visual and Contact Approach: Use of correct approach speeds, minimum altitudes, compliance with approach procedures, and landing techniques will be stressed.

- c. Instrument Landing System (ILS) Approach: A landing or missed approach out of a straight-in ILS approach will be accomplished. Remaining on the glide slope, localizer path, and subsequent landing will be emphasized.
  - d. VOR and Non-directional Beacon (NDB) Approaches: These approaches must include straight-in, circling, and missed approach procedures.
  - e. Other Instrument Approaches: Very high frequency omnidirectional radio range/distance-measuring equipment (VOR/DME), localizer (LOC) of instrument landing system, LOC-BC (back course), and airport surveillance radar (ASR) approach procedures will be practiced.
  - f. Circling and Missed Approaches: Minimum altitudes, proper airspeeds, and correct procedures will be emphasized.
  - g. Multi-Engine ILS Approach: During at least one ILS approach, one simulated engine failure will be demonstrated throughout the approach and subsequent climb during the missed approach.
6. In-Flight Simulated Instrument Maneuvers: The following maneuvers shall be practiced, with the addition of simulated instrument conditions:
- a. Slow-flight maneuvering
  - b. Stalls
  - c. Steep turns
  - d. Power plant failure.
7. Instrument Emergency Procedures:
- a. Loss of Radios - communication and navigation: Appropriate radio-out procedures will be used in compliance with FAR Part 91; FAR 91.127 discusses two-way radio communications failure in IFR operations. Use of one navigation receiver will be accomplished in such a way as to comply with ATC instructions. If necessary, the ATC will be requested to amend the clearance as appropriate to available equipment.
  - b. Loss of Gyroscopic Indicator: Operation of the aircraft by partial panel will emphasize the need for proper techniques and interpretation of altimeter, air speed, vertical velocity, turn, bank (or turn coordinator), and magnetic compass instruments.
8. In-Flight Auto Pilot Procedures. Normal use of the auto pilot system will be demonstrated. The auto pilot will be used to maneuver the aircraft about its three axes during normal instrument approach procedures. The auto pilot will be used to the minimum altitudes permitted by FAR 135.93. The pilot will demonstrate the ability (without a First Officer), with and without using the auto pilot, to

- a. Conduct instrument operations competently
  - b. Properly conduct air-ground communications and comply with complex air traffic control instructions, as proficiently as if a second-in-command were present
  - c. Handle simulated auto pilot malfunction during approach conditions.
9. Flight Training for Additional Lower-Than-Standard Takeoffs to 700-ft RVR: The additional lower-than-standard takeoffs require a two-pilot crew, so training emphasis will be placed on the coordination of pilot and copilot responsibilities.
- a. Pilot responsibilities
  - b. Copilot responsibilities
  - c. Restrictions in operations specifications pertaining to additional lower-than-standard takeoffs
  - d. Simulated lower-than-standard takeoffs with pilot and copilot, practicing crew coordination.
10. RNAV Procedures:
- a. Limitations
  - b. Emergency procedures: detection of malfunctioning systems
  - c. Normal procedures
  - d. System description: theory of operations

### **5.3 Crew Member Emergency Training**

- A. Emergency training will be provided for each aircraft type, model, and configuration as appropriate for each crew member and each kind of operation conducted.
- B. Emergency training will include at least the following:
  - 1. Instruction in emergency assignments and procedures, including coordination among crew members.
  - 2. Individual instruction in the location, function, and operation of emergency equipment, including:
    - a. Equipment used in ditching and evacuation
    - b. First aid equipment and its proper use

- c. Portable extinguisher, emphasizing the type of extinguisher to be used on different classes of fires
  - 3. Instruction in the handling of emergency situations, including
    - a. Rapid decompression, if applicable
    - b. Fire in flight or on the surface, and smoke control procedures with emphasis on electrical equipment and location of related circuit breakers
    - c. Ditching and evacuation
    - d. Illness, injury, or other abnormal situations involving passengers or crew members
    - e. Hijacking and other unusual situations.
  - 4. Review of any previous aircraft accidents, incidents, or actual emergency situations experienced by PNNL Research Aircraft.
- C. Each crew member must perform or be able to satisfactorily demonstrate the following emergency drills using the proper emergency equipment and procedures:
  - 1. Ditching - if applicable
  - 2. Emergency evacuation
  - 3. Fire extinguishing and smoke control
  - 4. Operation and use of emergency exits
  - 5. Use of crew and passenger oxygen
  - 6. Removal of life rafts from the aircraft, inflation of the life rafts, use of lifelines, and boarding of passengers and crew, if applicable
  - 7. Donning and inflation of life vests and the use of other individual flotation devices, if applicable.
- D. Crew members who serve in operations above 25,000 ft MSL will receive instruction in the following:
  - 1. Respiration
  - 2. Hypoxia

3. Duration of consciousness without supplemental oxygen at altitude
4. Gas expansion
5. Gas bubble formation
6. Physical phenomena and incidents of decompression.

Each crew member will be knowledgeable of the section of the company manual that discusses emergencies, emergency evacuation duties, and emergency reporting procedures, as well as FAR 135.19, 135.123, 135.167, and other pertinent FAR and demonstrate good judgment at all times.

## **5.4 Check Airmen and Flight Instructor Qualifications**

For each particular aircraft type in the PNNL operation, all flight instructors and check airmen will

1. Hold appropriate certificates and ratings to serve as a PIC on operations under FAR Part 135
2. Have satisfactorily completed the appropriate training phases for the aircraft, including required to serve as a PIC in operations under FAR Part 135
3. Have satisfactorily completed the appropriate proficiency or competency checks required to serve as PIC in operations under FAR Part 135. All flight instructors and check airmen will have satisfactorily completed the training requirements of FAR 135.339; hold a Class I or Class II medical certificate; and, in the case of a check airman, have been approved by the Director of Flight Operations for the airman duties involved. All initial, transition, upgrade, differences, and recurrent ground and flight training will be administered by FAA-certified flight or ground instructors. The Chief Pilot is responsible for designating such instructors (who satisfactorily meet the appropriate requirements) to perform the required training.

## **5.5 Check Airmen and Flight Instructor Training**

- A. The initial and transition ground training for pilot check airmen must include the following:
  1. Pilot check airman duties, functions, and responsibilities
  2. Applicable provisions of FAR Part 135 and PNNL policies and procedures as outlined in the Operations Manual and training programs
  3. Appropriate methods, procedures, and techniques for conducting the required checks

4. Proper evaluation of pilot performance, including the detection of
    - a. Improper and insufficient training
    - b. Personal characteristics that could adversely affect safety.
  5. Appropriate corrective action for unsatisfactory checks
  6. Approved methods, procedures, and limitations for performing the required normal, abnormal, and emergency procedures and maneuvers in the aircraft as outlined in the Operations Manual and training programs.
- B. Pilot flight instructors must be valid certified flight instructors.
- C. Initial and transitional flight training for pilot check airmen and pilot flight instructors will include the following:
1. Enough in-flight training and practice in conducting flight checks from the left and right pilot seats in the required normal, abnormal, and emergency maneuvers to ensure competence to conduct the pilot flight checks and flight training under FAR Part 135, Subpart H, Training.
  2. Appropriate safety measures to be taken from either pilot seat for emergency situations that are likely to develop in training.
  3. Potential results of improper or untimely safety measures during training.

## **5.6 Aviation Safety Point of Contact Training**

This section describes the recommended standards for the establishment and maintenance of a training program for the ASPOC at PNNL. Staff members cannot serve in this capacity unless they have successfully completed the initial or recurrent training phase appropriate to the type of aviation operation they will serve. Refer to Section 5.7 for the definitions of the three types of training for this position (initial assignment, recurrent, and requalification training).

At the conclusion of any of the three categories of training curriculum, the individual involved should be able to successfully demonstrate his knowledge of the regulations, policies, and procedures. The objective of this curriculum is to develop the necessary knowledge and skill to perform the duties and responsibilities of the assigned position to the desired standards. The following table shows the breakdown by number of hours for each segment of initial/requalification training.

### **Initial and Qualification Aviation Safety Point of Contact Training**

<b>Segment</b>	<b>Subject</b>	<b>Hours</b>
1	Overview – DOE Aviation Community	1
2	Applicable Policies/Orders	1
3	Applicable Property Regulations/Reporting Requirements	3
4	Applicable Federal Aviation Regulations	1
5	Accident/Incident Scenarios	2
6	Typical Aviation Organizational Structures/Manuals/Operating Policies	1
7	Charter Operations – Types and Evaluation Techniques	2
8	Implementation Plan – Specific Training	2
9	Mission/Aircraft – Specific Training (as applicable)	2
10	Follow-up Instruction (optional)	4
	<b>Total</b>	<b>19</b>

The next table summarizes the ASPOC recurrent training program.

### **Recurrent Aviation Safety Point of Contact Training**

<b>Segment</b>	<b>Subject</b>	<b>Hours</b>
1	Changes/Updates Applicable to DOE and PNNL Policies/Orders/Regulations Reporting Requirements	1
2	Changes/Updates in Non-PNNL Regulations Applicable to PNNL Aviation Operations	1
3	Accident Prevention Review	1
4	Previous Year Lessons-Learned Forum	1
5	To Be Determined (Alternate Training Subjects Annually)	4
	<b>Total</b>	<b>8</b>

## **5.7 Definitions**

### **A. Initial Training**

Initial training is the training required for crew members who have not qualified and served in the same capacity on an aircraft.

Initial training is for newly hired personnel who have not had previous experience or who have not previously held the position of ASPOC with PNNL. Initial assignment training includes basic indoctrination and specific duty position training.

## B. Recurrent Training

Recurrent training is provided for PNNL aviation staff to remain adequately trained and currently proficient for each aircraft position and type of operation in which the member serves.

Each crew member will receive recurrent training appropriate to the type of operation in which the crew member is to serve, to ensure the crew member can meet the same standards as required by the initial training. No crew member will perform duties as a crew member unless recurrent training has been received within a period since the beginning of the 12th calendar month before that service. Emergency training will be emphasized.

Recurrent ground training for crew members will include, at least

1. A quiz or other review to determine the crew member's knowledge of the aircraft and crew member position involved
2. Instruction as necessary to review appropriate subjects required for initial ground training, as outlined in this training program, including emergency ground training.

Recurrent training for the ASPOC is required annually. If recurrent training is not completed within 18 months of the last training period of the ASPOC, that individual must complete requalification training to maintain qualification status.

Recurrent flight training for pilots will include, at least, flight training review in the maneuvers and procedures outlined in this training program. Satisfactory completion of the check required by FAR 135.293 within the preceding 12 calendar months may be substituted for recurrent flight training.

## C. Requalification Training

This category of training is for personnel who have been trained and qualified by PNNL, but have become unqualified to serve in a particular duty position, due to no recurrent training or competency check within an 18-month period. In the case of the ASPOC training, this type of training curriculum is identical to the initial assignment training.

## D. Transition Training

Transition training is the training required for crew members who have qualified and served in the same capacity on another aircraft. Each flight crew member will complete a ground training course appropriate to each type aircraft before beginning transition flight training.

## E. Upgrade Training

Upgrade training is the training required for crew members who have qualified and served as First Officers on a particular aircraft type, before they serve as PIC on that aircraft.

#### F. Differences Training

Differences training is the training required for crew members who have qualified and served on a particular type aircraft. When the FAA finds differences, training is necessary before a crew member serves in the same capacity on a particular variation of that aircraft.

#### G. Aircraft Manufacturer's Training

Successful completion of the aircraft manufacturer's training program conducted at the manufacturer's training school facilities will be considered satisfactory completion of flight and ground training appropriate to each type of aircraft in which training was given.

#### H. Service Training of Maintenance Personnel

Training of maintenance personnel will be conducted in accordance with the aircraft manufacturer's applicable training program. The Director of Maintenance will determine the quantity and frequency of maintenance personnel participation, based on each individual's qualifications and experience.

#### I. Other Than Crew Member Training

Ground crew personnel shall be familiar with the aircraft they will be servicing and loading. The Director of Maintenance will be responsible for the training of ground crew personnel in the fueling and checking of aircraft. Location of fuel and oil fill caps and the proper grades of oil used will be emphasized. Ground crew should also be familiar with tow limits of the nose gear and the location of proper grounding points.

The Director of Maintenance shall determine if any other subject areas must be covered in this training and shall conduct all such training.