High Altitude Operations Training Course

Enrollment Prerequisites: A pilot may enroll for High Altitude Operations training, provided the pilot:

1. Holds a private pilot certificate, commercial pilot certificate, ATP certificate, ICAO recognized license.

2. Holds an instrument airplane rating or an ATP certificate with an airplane rating.

3. Holds an airplane multiengine land rating.

Description of Course: The High Altitude Operations Course is scheduled for one day and consist of the following minimum programmed hours:

Classroom training ............................................................ 6.0
FTD training................................................................. 2.0
Post/Preflight Brief...................................................... 0.5

Course Objectives:

The pilot will acquire the necessary knowledge and skills to demonstrate that he/she meets the requirements of FAR 61.31(g) (1) (2) for the High Altitude endorsement.

1. Classroom Training 6 hours

1) High Altitude Flight Environment.
   a) Airspace
   b) FAR 91.211, requirements for use of oxygen
   c) FAR 91.215, requirement for mode C transponder
   d) FAR 91.121, requirement for altimeter setting of 29.92
   e) FAR 91.135, requirement for IFR in Class A airspace
   f) FAR 91.159, & 179, specify cruising altitudes
   g) FAR 91.180, operations in airspace designated as RVSM

2) High Altitude Weather
   a) The Atmosphere
      i) Troposphere
      ii) Tropopause
      iii) Stratosphere
   b) Winds
      i) Jet Stream
      ii) Polar Front Jet Stream
      iii) Low Pressure System Circulation
      iv) Clear Air Turbulence
   c) Clouds and Thunderstorms
   d) Icing

3) Flight Planning and Navigation
a) Flight Planing *
   i) Time, Fuel and Distance Climb
   ii) Time, Fuel and Distance to Descend
   iii) Normal Cruise Power
   iv) Economy Cruise Power
   v) Holding Time
b) Gradual Descents
c) Weather Charts
   i) Low level significant weather prog
   ii) High level significant weather prog
   iii) Forecast winds and temperatures aloft
   iv) Observed winds aloft
   v) Tropopause data chart
      (1) Wind shear
d) Navigation
   i) Jet Routes
   ii) RNAV Routes
   iii) Navaids
4) Physiological Training
   a) Respiratory System
   b) Hypoxia, Effects, Causes, Symptoms
      i) Hypoxic (Altitude) Hypoxia
      ii) Histotoxic Hypoxia
      iii) Hypemic (Anemic) Hypoxia
      iv) Stagnent Hypoxia
      v) Times of Useful Consciousness
      vi) Prolonged use of Oxygen
      vii) Rapid Decompression
5) High Altitude Systems and Components *
   a) Turbochargers
      i) Manual Waste Gate
      ii) Fixed Waste Gate
      iii) Absolute Variable Controller
   b) Pressurazation Systems
      i. Sea Level Controller
      ii. Cabin Pressure/Dump Switch
      iii. Rate Control Knob
      iv. Cabin Climb Indicator
      v. Cabin Altimeter
      vi. Pressure Differential
      vii. Bleed Air Pull to Dump
      viii. Cabin Altitude Warning
   c) Oxygen Systems
      ix. Masks
      x. Oxygen duration charts

6) High Altitude Aerodynamics
   a) Effects on controls
b) Engine cooling

c) Engine power

d) Angle of attack

e) IAS vs TAS

7) **Emergencies**

a) Loss of Pressurazation
   i) Explosive decompression
   ii) Rapid decompression
   iii) Gradual decompression
   iv) Emergency descent

**Completion Standard:**
The student will have completed this lesson by achieving a score of 70% or better on each end of lesson test and corrected it to 100%

**Flight Training Device FTD Lesson** *

**Lesson** 2 hours *

**Objective:** Receive training and demonstrate proficiency in normal and emergency flight operations at altitudes above 25,000 feet as required in FAR 61.31 (g) (2).

**Events:**

Preflight Briefing

Before Starting Engines Checks
   a. Airspeeds for Safe operation
   b. Electrical System Checks
   c. Fuel Quantity & Selectors
   d. Annuciator Lights Check
   e. Landing Gear Handle & Lights

Normal Engine Start

Before Taxi Checks
   a. Aux Fuel Pumps
   b. Charging Instruments Checked
   c. Vacuum System Check
   d. Lights
   e. Flight Instruments

Before Take-off
   a. Engine Runup
   b. Ice Protection
   c. Pressurization set
   d. Trim set
   f. Flaps set

**Maneuvers:**
1. Normal Take-off
2. Normal Climb to Flight Levels
3. Cruise
4. Normal descent
5. Instrument approach
6. Landing
7. After Landing shut down and securing

Emergency Procedures (reposition FTD to cruise flight in Flight Levels) *
   1. Smoke in Cockpit
   2. Loss of Pressurization & Emergency Descent
   3. Cabin Over Pressure

**Completion Standard:** The student will demonstrate proficiency in all the procedures and maneuvers required in 61.31(g) (2).

* Note:

These lessons can be combined and completed while taking an initial transition course for a pressurized aircraft