



Interagency Aviation Accident Prevention Bulletin



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Subject: Supplemental Oxygen Requirements

Area of Concern: Flight Safety

Distribution: All Aviation Operations

Supplemental oxygen is essential because it directly prevents hypoxic hypoxia, a dangerous condition caused by insufficient oxygen at high altitudes. As altitude increases, barometric pressure drops, reducing the partial pressure of oxygen—even though the percentage of oxygen remains constant. This makes oxygen in the lungs less efficient. At about 18,000 ft, air pressure is half that at sea level, which reduces available oxygen by the same amount.

Does Hypoxic Hypoxia Kick In at the Same Altitude for Everyone?

No. Onset varies based on:

- Genetics and acclimatization
- Speed of ascent
- Smoking and carbon monoxide exposure
- Health issues (anemia, illness, fatigue, respiratory problems)
- Alcohol or medication
- Individual symptoms can vary such as euphoria, drowsiness, tunnel vision, headache, etc.

The brain is affected first. Judgment, coordination, and memory decline before the person realizes anything is wrong. Aviation oxygen rules exist to keep crews well above their personal impairment threshold.

Supplemental Oxygen Requirements: Determining Which Federal Aviation Regulations (FAR) Part Applies¹

14 CFR Part 91 Oxygen Compliance

Applies when:

- Only pilots (flight crew) are aboard.
- No additional personnel, passengers, or qualified non-crewmembers are carried.

14 CFR Part 135 Oxygen Compliance

¹ While commonly referred to as “the FARs” in aviation circles, the FAA and Department of Transportation now often use “14 CFR part XX” when citing specific regulations, due to overlap of the acronym “FAR” with other regulations like Federal Acquisition Regulations. See [14 CFR Part 91 – General Operating and Flight Rules in official Electronic Code of Federal Regulations \(eCFR\)](#) or [14 CFR Part 135](#).

Applies when:

- Any personnel beyond the pilots are aboard.
- Includes qualified non-crewmembers, mission personnel, Inspectors, or any other authorized occupants.
- Carrying anyone other than required flight crew = Part 135 rules.

Note: Public Aircraft Operations (PAOs) do NOT exempt you from FAR Parts 91 or 135 oxygen carriage or crew/passenger oxygen-use requirements.

14 CFR Supplemental Oxygen Rules

14 CFR Part 91 (Crew-Only Missions)

Unpressurized Aircraft (§91.211)

- 12,500–14,000 ft MSL: Crew uses oxygen after 30 minutes.
- Above 14,000 ft: Crew uses oxygen continuously.
- Above 15,000 ft: Oxygen must be provided to all occupants (if any).

Pressurized Aircraft (§91.211)

- Above FL250: 10 minutes of oxygen per occupant for emergencies.
- Above FL350: One pilot must wear/use oxygen unless using quick-donning masks.

14 CFR Part 135 (Passenger / Additional Personnel Missions)

Pilot Oxygen (§135.89)

- 10,000–12,000 ft MSL > 30 min: Crew uses oxygen.
- Above 12,000 ft: Crew uses oxygen continuously.

Passenger Oxygen (§135.157)

- 10,000–15,000 ft > 30 min: Oxygen must be available for at least 10% of passengers (14 CFR minimum).
- Above 15,000 ft: Oxygen for all occupants.
- Above 25,000 ft (pressurized): Minimum 10 minutes per occupant for emergency descent.
- Additional requirements apply if pressurization is lost (pilot supply or 2-hour rule).

Helicopter Support Services (HSS) Contract Requirements

While the DOI contract does not require further supplemental oxygen requirements beyond 14 CFR Parts 91 and 14 CFR Part 135 [Operations Specifications](#) (OpSpecs), the USFS helicopter source selection (HSS) contract specifications (B.4(d)(33)) incorporates the following additional supplemental oxygen requirements associated with Part 135 for any mission carrying personnel beyond the flight crew.:

- The contractor must supply oxygen to all of personnel on board, regardless of the 14 CFR Part 135 “10% passenger oxygen” allowance.
- Paragraph 33: An oxygen system that is compliant with 14 CFR Part 135.157 shall be provided by the contractor for all occupants when operating in conditions that require supplemental oxygen.

This means:

- The Pilot In Command must be able to provide oxygen for every person aboard at altitudes that require or may require its use. Preflight planning is essential to ensuring these issues are addressed beforehand.
- Contractors must be capable of meeting supplemental oxygen requirements when operations require it. This may require additional proactive coordination to ensure readiness especially in areas where it may not be readily available.
- Recommend adding “HSS– B.4 (d) (33)” to zone aviation briefing guides to be referenced when in-briefing incoming resources and Incident Management Teams.
- Recommend adding remarks to Special Needs regarding Oxygen System Requirements when placing IROC Resource Orders for Standard Category Aircraft.

Operational Bottom Line

- Mission with no additional personnel: Follow 14 CFR Part 91 oxygen rules. Adjust for known fitness and pilot and crew susceptibility.
- Mission with any additional personnel (including qualified non-crewmembers): Follow 14 CFR Part 135 oxygen rules AND the HSS MATOC requirement for oxygen for all people aboard.
- PAO status does not exempt oxygen requirements.
- Flying above 12,500 feet, dropping below for a moment, and then climbing back up may technically reset the regulatory “clock” under 14 CFR 91.211 but it does not meet the intent and nor will it help you prevent the cumulative, negative physiological effects of oxygen deprivation.
- When in doubt, apply the more conservative altitude oxygen requirement. Effects from hypoxia can vary between individuals and may not be immediately apparent, so a conservative approach improves the safety margin.
- If all segments of the mission cannot meet all applicable 14 CFR Parts and contract oxygen requirements, it shall not be flown.

Hypoxia can sneak up on a pilot fast and without much warning. Oxygen rules are there to keep you safe. Because everyone reacts differently, fitness, acclimatization, general health condition, and other factors, will influence the altitude where hypoxia starts. The supplemental oxygen requirements ensure everyone on board can maintain cognitive abilities and safely perform the mission.

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