

# Avoid Unnecessary Risks in Airplane Missions

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Airplanes are generally less expensive to operate than helicopters, but direct operating cost should not be the sole reason for choosing airplanes over helicopters for certain missions.

Let's look at the facts that need to be considered when choosing whether to operate airplanes versus helicopters. Airplanes require less maintenance. They generally require less training for single-engine, VFR operations. They have greater flight-time endurance and can be less fatiguing, particularly if equipped with autopilots and/or stabilization systems. They are appropriate for transportation and traffic management and enforcement when coordinating with ground personnel. They can be effective for managing major events, natural disasters and surveillance operations when operated by two-person crews at safe altitudes incorporating state of the art viewing technology.

But airplanes have limitations, as well. They require higher minimum safe airspeeds than helicopters, and Part 91.119 of the Code of Federal Regulations requires that they operate at higher altitudes. Airplanes are limited to 1,000 feet AGL over densely populated areas and 500 feet AGL over less than densely populated areas, except for during takeoff and landing. As the regulation states, these are minimum altitudes. Airplanes should be operated at higher altitudes under many circumstances, such as over mountainous terrain, water, surfaces not suitable for emergency landings, terrain with dense surface obstacles like forests, and residential communities with narrow streets, utility wires, automobiles or pedestrian traffic.

The main reason for the higher minimums for airplanes is that they have fewer options for safe landing in the event of a power unit failure or other emergency. Because airplanes must touchdown at much higher speeds than helicopters, the risk of injury is much higher to the crew, as well as persons on the ground.

Airplanes are not well suited for low-level tactical or surveillance operations. If you are going to use airplanes for tactical operations, they should be flown at altitudes above 1,500 AGL. This requires the use of various mission support equipment to maintain visibility of suspect(s) and ground personnel, including FLIR sensors, video cameras and stabilized handheld viewing devices.

To fully appreciate the risks associated with airplanes, let's look at the causes of the 33 law enforcement airplane accidents that occurred from 1998-2007. These accidents clearly point out the risks associated with using airplanes for low-level operations. In examining the National Transportation Safety Board (NTSB) accident database pertaining to law enforcement airplane accidents, all of the accidents that resulted in serious or fatal injuries occurred below 1,500 AGL.

The three direct causal factors present in these accidents were stalls, controlled flight into terrain (CFIT) and loss of power. The highest altitude where the primary causal event occurred was 1,400 feet AGL. The lowest was 100 feet AGL. The average altitude was 400 feet AGL, and nine of the 10 serious and fatal injury accidents occurred at or below 500 feet AGL.

The primary cause of all 10 fatal and serious injury airplane accidents was human error, including all loss of power accidents that were due to fuel exhaustion, management and contamination. Therefore, prudent risk management dictates that when operating airplanes, we should be particularly vigilant when operating close to the ground, whether maneuvering or during takeoff and landing.

One of the principles of risk management is, "Never take unnecessary risks." Therefore, operating below 1,500 AGL should be avoided whenever possible in single-engine airplanes, except for takeoff and landing. The current state of the art mission equipment (e.g. FLIR, video cameras and handheld viewing devices) makes low-level operations an unnecessary risk.

We must also address the issue of accidents that occur using a single-pilot only (SPO). SPO operations should be avoided except for low-risk transportation flights in VFR conditions. Most tactical and surveillance operations are conducted with a pilot and tactical flight officer or two pilots. And they should be. Three of the airplane accidents in the NTSB database occurred with single-pilot only, and two of the three resulted in fatal injuries. Two of the accidents were due to stalls, and the other was

due to CFIT. CFIT and stall accidents almost always occur due to a loss of situational awareness that can be prevented. SPO operations generally require that the pilot operate below 1,500 AGL due to the limitations of the naked eye and the fact that the pilot is unable to simultaneously fly the aircraft and use viewing devices.

Remember, the pilot's primary responsibility is the safe operation of the aircraft. Pilots should not simultaneously be flying the aircraft and performing tactical duties because it compromises safety and is an unnecessary risk. And to be clear, not having a second crewmember does not justify flying a mission SPO, no matter how important.

Accident prevention is the most important responsibility of organization management. Management has the responsibility of defining missions and establishing standards for safety, operations, training, maintenance and management. This includes standards for assigning aircrews and their respective aircraft. Abdicating this responsibility creates latent errors that may not immediately result in an accident or incident, but creates pre-conditions for having an accident. Organization policy should always include crew composition, including the use of a tactical flight officer or second pilot as a crewmember for tactical and surveillance operations.