

# Special Operations Aircraft From a Safety Perspective

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**Selecting the wrong aircraft can compromise safety and adversely affect any organization's ability to perform its missions.**

There are three factors that must be considered when selecting aircraft. These include the missions to be performed, the environment and the aircrew. The first step in the selection process is to determine what missions you need to perform. There needs to be a distinction between "need" and "want." You may want to perform missions such as rescue, SWAT and airborne use of force, but these missions generally require aircraft with higher performance capability that cost more to purchase and operate. The organization must decide what it can afford, then define the mission within the performance capabilities of the aircraft. Management should clearly define approved missions in writing.

In order to perform special operations, a unit may need to acquire aircraft beyond what many organizations typically use to perform missions such as patrol, surveillance and transportation. You can do patrol in any number of light, single-engine aircraft. However, many of these aircraft are not suitable for performing other missions requiring additional personnel and equipment that adds to the gross weight and limits the performance of the aircraft.

Larger aircraft generally have more complex systems that require aircrews to have more experience than some crewmembers may have. Therefore, organization policy should dictate the experience requirements for pilots and TFOs to operate these more complex aircraft.

All too often, organizations take what they can get. Many times these are light, single-engine military surplus aircraft that have marginal abilities when attempting to carry out missions that require additional performance. Since 1999, there have been 86 law enforcement helicopter accidents. Twenty occurred in OH-58s, 18 in OH-6s, 10 in MD369s and seven in S269s. This constitutes two-thirds of the accident aircraft since 1999. (Table 2)

The problem with these aircraft is not that they are military surplus or small in size, but with how the organization operates these aircraft, often not staying within its design and performance capability. And, when funding is not available for aircraft, it is often not available for training and/or maintenance. Such organizations must recognize these limitations and adjust their expectations accordingly. When you include a standard law enforcement package on many of the light helicopters, these aircraft may be at, near, or even over their operating limitations. This must be recognized, and missions such as rescue and SWAT operations limited accordingly. Failing to do so is just setting up your organization for an accident. Don't put four people on or in your light single-engine helicopter with a full tank of gas and expect to hover out of ground effect to perform these missions. Most light single-engine helicopters with a maximum gross weight of 3,200 pounds or less are generally not well suited for these high-risk operations.

## ENVIRONMENT

The environment plays an important role in deciding what, when and where missions can be performed. Because most special operations require additional crew

<i>HELICOPTERS</i>	<i>AIRPLANES</i>
OH-58 . . . . .2 0	PA18 . . . . .9
OH-6 . . . . .1 8	C182 . . . . .2
MD369 . . . . .1 0	C206 . . . . .2
269C . . . . .7	PA32 . . . . .1
AS350B2 . . . . .5	C180 . . . . .1
AS350B3 . . . . .3	C185 . . . . .1
206B . . . . .4	MD82 . . . . .1
206L . . . . .4	C210 . . . . .1
MD600N . . . . .3	BA60 . . . . .1
MD500E . . . . .2	C172 . . . . .1
407 . . . . .2	B727 . . . . .1
MD500N . . . . .1	BA200 . . . . .1
B47 . . . . .2	C207 . . . . .1
MD520N . . . . .1	<u>Aero Cmdr. . .1</u>
TH55 . . . . .1	<b>TOTAL . . . . .2 4</b>
EC120 . . . . .1	
A119 . . . . .1	
R44 . . . . .1	
<b>TOTAL . . . . .8 6</b>	

and equipment, the environment becomes an even more important consideration.

If your agency is going to perform rescue operations, it is essential that you obtain weather forecasts for the locations and times of day or night that these operations may be conducted. What will work at sea level in early morning may not work on a hot afternoon.

Management must assess the operational environment when selecting aircraft and then identify the standards for performing missions in the organization's SOPs.

## AIRCREW

It is also important to note that of the 110 total law enforcement accidents since 1999, 41 were due to loss of control, and 25 percent of helicopter loss of control accidents were due to loss of tail rotor effectiveness (LTE). These accidents are clearly preventable, and following the aircraft manufacturer's Operators Manual will prevent most of these accidents. (See Table 1)

**Table 1: 1999-2005 U.S. LAW ENFORCEMENT AVIATION ACCIDENTS SUMMARY**

YEAR - TOTAL	ROTARY	FIXED-WING	PRIMARY CAUSES	INJURIES			
					Minor	Serious	Fatal
1999 - 27	.21	.6	41 - Loss of control				
2000 - 15	.14	.1	23 - Engine failure				
2001 - 16	.12	.4	10 - Other mechanical failure				
2002 - 13	.11	.2	14 - Autorotation training	Rotary	41	26	20
2003 - 14	.0	.4	3 - Other emergency procedure training				
2004 - 13	.9	.4	6 - Disorientation (IIMC)				
2005 - 12	.9	.3	6 - CFIT	Fixed-wing	3	7	6
2006 YTD	.2	.0	2 - Fuel starvation				
			1 - Fuel contamination				
<b>TOTALS</b>	<b>.86</b>	<b>.24</b>	1 - Wire strike	<b>TOTAL</b>	<b>44</b>	<b>33</b>	<b>26</b>
			3 - Other				

LTE accidents occur due to failure of the pilot to operate the aircraft within the aircraft performance limitations and the pilot's failure to anticipate the conditions that contribute to LTE and fly the aircraft in a manner that avoids loss of control. One organization had a loss of control accident when they had four SWAT officers step on the skids of their OH-58 while the aircraft was in a hover. The aircraft immediately began to spin out of control and crashed, seriously injuring two officers. That's not the aircraft's fault – a simple weight and balance calculation would have shown this could not be done.

Safety is a function of management effectiveness. Had there been a simple written training plan requiring a weight and balance be performed and included in the plan, this accident would have been prevented.

The other factor we must recognize is aircrew knowledge, skill, judgment and experience. Do not expect a 500-hour commercial pilot to be able to perform high risk, complex, external load operations. Add to this an aircraft with marginal performance, and you have an accident waiting to happen. And, they happen all too frequently.

New units just getting started should stick to the basics (e.g. patrol, surveillance and transportation missions) and never assign inexperienced pilots and TFOs together. Clear standards for personnel selection and primary and recurrent training should be defined in organization SOPs. Inexperienced pilots should not fly complex aircraft and/or missions as pilot in command until they have the necessary skills and experience. When there are multiple make and model aircraft in the fleet, low-time pilots should have a minimum of 500 hours before being transitioned into other make and model or more complex aircraft.

Most law enforcement operations demand the use of a tactical flight officer or crew chief for most operations, and eliminating the TFO can be dangerous. Most law enforcement aircraft have more complex equipment than ever before. Having persons other than the TFO fly in his/her position is problematic and often unsafe.

When performing special operations (e.g. rappel, fast-rope operations), always have a crew chief. The crew chief assists the pilot with flying the aircraft using voice commands. The crew chief is a second set of eyes that increases the safety of the operation. Even photo flights are best conducted with a TFO onboard. The TFO is there to direct the pilot so the pilot can focus his/her attention on flying the aircraft. In reviewing the 41 loss of control accidents since 1999, it is clear that many of these accidents could have been prevented if the pilot had focused more attention on flying the aircraft.

## **MANAGEMENT**

Management has the responsibility to protect personnel from unnecessary risks. It is important to note that management must define missions, set standards and reduce and/or eliminate risks through effective leadership. This may mean accepting that your aircraft may not be capable of performing certain missions. Identify the missions and acquire the aircraft that can safely perform the missions. If you cannot have the aircraft of choice, then adjust your mission capabilities accordingly.

Managers must ensure that aircrews operate within their means, with safety always being the highest priority and performing the mission having a lower priority. Remember, the second leading cause of death of law enforcement personnel in the U.S. is aviation accidents. The 26 officers killed and many of the other 77 that were injured in law enforcement accidents since 1999 will never fly another mission. Always remember that safety comes first, even when choosing your aircraft.