

Simulators & Scenarios

By Keith Johnson, ALEA Safety Program Manager

Simulators today can accurately portray aircraft systems failures and performance response with complete realism and without ever taking to the air.

Since 1999, nearly 20 percent of all law enforcement accidents have occurred while conducting training. Fifteen of those occurred during autorotation, and the balance occurred while conducting other emergency procedures.

Airborne law enforcement must be ever-vigilant in looking for proactive ways to eliminate accidents. Simulators provide scenario based training for tactical and crew resource management. Most tactical flight officer training utilizes the pilot to conduct this training while also flying the aircraft. This is not necessarily the safest, most effective means of conducting this type of training.

One of the major contributing factors to law enforcement accidents is a loss of situational awareness by the pilot, leading to loss of control of the aircraft. Organizations that conduct tactical operations with only a pilot are highly subject to these losses.

This year, the International Helicopter Safety Team (IHST) received a preliminary report from the Joint Helicopter Safety Analysis Team stating that training was one of the two most important issues that the helicopter community needed to address in order to achieve the objective of reducing accidents by 80 percent over the next 10 years. It further noted that one of the primary training issues that needed to be addressed was the use of simulators. Simulators and flight training devices can be less expensive overall in conducting pilot and aircrew training.

According to the law enforcement accident causal factors since 1999, many training accidents occurred because flight instructors failed to take corrective action to control the aircraft. Flight instructors often lack the necessary knowledge, skill, judgment and experience to provide emergency procedures flight training. Many new law enforcement flight instructors have only a few hundred hours of total helicopter flight time. In most cases, this is not sufficient experience to teach emergency procedures, even when doing power-recovery autorotations. There is a difference when a new instructor must demonstrate proficiency in performing emergency maneuvers during a check ride, where an FAA examiner who knows how to fly is in the aircraft, and actually having the skill necessary to recover in an actual emergency.

Most law enforcement units are made up of less than five pilots. Providing in-house emergency flight training often does not give the instructors the necessary frequency in teaching these maneuvers to remain proficient. Therefore, we must find alternate means of providing emergency flight training. Simulators can be an effective means of closing this gap.

Offices frequently say that training is too expensive. But consider the cost of having an accident. It can destroy or significantly damage a \$2 million aircraft. You can buy a lot of training for \$2 million. There are also the indirect costs that must be considered. The public perception is that helicopters are inherently unsafe. When an accident occurs in the helicopter community, it affects everyone, not just the organization that had the accident.

Annual emergency flight training is generally not sufficient to maintain adequate proficiency while performing emergency maneuvers. That first autorotation during during emergency procedure practice is probably as good as you are able to perform in a real engine failure. Moreover, simulators provide us with the ability to master emergency procedures prior to ever performing the procedure in a real aircraft. Most aircraft manufacturers (e.g. Bell Helicopter, American Eurocopter and MD Helicopters) have recognized that the use of simulators is one of the most cost effective means of remaining proficient during recurrent training, as well as during primary flight training.

Part 121 operators provide virtually all training in simulators and have nearly eliminated accidents by simulating every possible in-flight scenario. Organizations like Flight Safety International have been providing the aviation industry with pilot, crew and maintenance training for more than 50 years, and the use of the latest technology and simulation of aircraft operations has been proven to be one of the most effective tools for training.

Simulators can accurately portray aircraft systems failures and performance response with complete realism. This has become the standard in training for most turbine fixed-wing operations for

many years. It is now possible to perform this training in most single turbine-engine helicopters. Using simulation to depict scenarios unique to the type of operation flown (e.g. patrol, surveillance, rescue and EMS) has developed into an effective training solution. Now the single-engine helicopter sector has the same training options as twin-engine helicopters.

Simulators are now available to operators who wish to utilize their own instructors, as well as the more traditional full-service training. New flight instructors now have the opportunity to develop their personal skills for performing emergency procedures without performing these maneuvers in actual aircraft.

The fact that the number one cause of law enforcement aviation accidents is loss of control is particularly important in crew resource management and deciding how workload is managed. This often occurs when pilots become too focused on the mission and what is occurring on the ground. Aircrews are prone to overestimating the gravity of a situation, which results in taking unnecessary risks, one of the leading factors in poor decision-making. Simulators can create real scenarios that ultimately result in loss of control that could not be done in actual aircraft and are a practical means of performing such training. Simulators can facilitate mission based training for all aircrews including tactical flight.

Every law enforcement aviation unit, no matter how large or small, has the option of training flight crewmembers in the flight scenarios and procedures specific to their type of operation. These not only include typical missions, such as patrol and surveillance, but also search and rescue, EMS, mountain flight and over-water operations that can all be simulated with accurate realism. Scenario based training is the most effective way to address the human factor issues facing flight crews in their daily missions.

The preliminary report of the Joint Helicopter Safety Analysis Team noted that in addition to training, the other primary issue that must be addressed is organization safety culture. This includes not just safety, but how we operate, how decisions are made, accountability and effective management.

Unit managers must recognize their responsibility to provide safe, effective training, much of which can only be done in simulators. Wishing and hoping you won't have an accident will not prevent an accident. Managers who fail to recognize this are setting up their organization for an accident.