

# WORLDWIDE SAFETY EFFORT FOCUSES ON DOMESTIC LAW ENFORCEMENT

By Mark Liptak, IHST Program Director, FAA Office of Safety Data and Analysis Services

*Excerpts from the International Helicopter Safety Team's report on rotorcraft accidents reveal the unique challenges facing the domestic airborne law enforcement industry.*

In September 2005, at the International Helicopter Safety Symposium in Montréal, 300 helicopter industry stakeholders agreed that the worldwide accident trends for civil and military rotorcraft were unacceptable. The International Helicopter Safety Team (IHST) was formed at this meeting, and its voluntary, aggressive goal was to reduce helicopter accidents by 80 percent by 2016. Airborne law enforcement operators were to be one of the many missions that would be examined.

The IHST borrowed heavily in adapting the commercial fixed-wing community's successful accident analysis and safety improvement process, the Civil Aviation Safety Team. Based on those adaptations, three basic tenets of the process emerged: all recommendations must be developed from accident analyses; decisions must be made by a wide spectrum of helicopter community members, including operators, manufacturers and regulators; and the actions taken to improve safety must be measurable.

For the U.S. effort, a team of helicopter community participants have analyzed nearly 400 accidents of N-registered helicopters from the National Transportation Safety Board database.

The accidents occurred across the full spectrum of helicopter types and missions, including airborne law enforcement, and a set of recommendations has been passed to an implementation team, who are developing strategies to drive down accident rates.

The first IHST report on the accident analyses was issued in September 2007 and contained an examination of 197 accidents across 15 mission types. An update will be issued early in 2009, containing results from the balance of the 400 accidents. Below are select excerpts from the report focusing on the airborne law enforcement mission:

- ❑ Airborne law enforcement is a mission flown to provide aerial support to local, state or federal law enforcement agencies. The aerial support that these aircraft provide often involves orbiting at altitudes close to the ground. Law enforcement pilots are forced to deal with high and multitask saturation, as they are often seeking or following a suspect(s) on the ground or monitoring other events occurring on the ground while flying the aircraft and maintaining constant situational awareness of the environment.
- ❑ Although they are exempt from many Federal Aviation Regulations (FARs), numerous law enforcement agencies elect to operate in 14 CFR Part 91. The aircraft and airmen participating in Part 91 law enforcement operations are required to be certificated in accordance with Part 61 regulations, and the aircraft must have an FAA Certificate of Airworthiness.
- ❑ Airborne law enforcement operations are sometimes referred to and can be conducted as 'Public Use' operations. Public Use operations are not held to the regulations set forth by the FAA, other than compliance with general operating rules (e.g., airspace and communications compliance). Many of the aircraft utilized in Public Use operations are 'Public Aircraft.' Public Aircraft refers to certain government

aircraft operations and means, among other things, that an aircraft will not be subject to some of the regulatory requirements applicable to civil (or civilian) aircraft. Many of these aircraft are surplus military aircraft, acquired from the U.S. government.

- ❑ Of the 197 accidents analyzed in the NTSB year 2000 data set, 13 accidents involved law enforcement operations. This represented 6.6 percent of the accidents analyzed for the year. Of the 13 aircraft involved in accidents in this data set, eight (62 percent) were surplus military helicopter models operated as Public Use, and five (38 percent) were civilian models operated to Part 91 standards. Ten of the aircraft were single-engine turbine-powered helicopters; the other three accidents occurred in reciprocating engine powered helicopters.
- ❑ Five of the accidents involved mechanical failures, some of which suggested improper maintenance or inspection by the Public Use operator. One of the IIMC flights involved an aircraft that was dispatched with a non-functional attitude indicator. The standards of the operator allowed night VFR flight without an operating attitude indicator. Two accidents involved practice autorotations that were not conducted correctly.
- ❑ All of the pilots were certificated to fly helicopters. Level of licenses/certificates ranged from Private to Airline Transport Pilot. Pilot total time ranged anywhere from 756 hours to 29,500 hours. Five pilots had fewer than 1,500 hours total flight time, and six pilots had fewer than 1,000 hours in rotorcraft. The average total flight time of the accident pilots was 7,379 hours. The pilots' experience in make and model of the accident aircraft ranged from 144 to 3,326 hours.

Four pilots had 250 or fewer hours in make and model, and two pilots had unknown experience in make and model. The pilots' average time in make and model was 1,004 hours.

Eighty-three problems were identified in 10 Standard Problem Statement categories. The top three are as follows:

- 1 Pilot judgment and actions, cited in 10 (77 percent) of the 13 accidents, was the leading problem category in Law Enforcement accidents. In four accidents, improper landing site selection or reconnaissance was identified as a problem. In three accidents, pilots disregarded cues that should have led to the termination of a course of action or maneuver. Perceptual judgment errors or failure to follow procedures was a problem in three accidents. Inappropriate aircraft handling or inadequate energy/power management was identified in three accidents. Unsafe flight profiles were identified as a problem in two accidents, although it was determined that low altitude and airspeed was unavoidable for one of the flights. Inappropriate response to common aerodynamic phenomena (LTE and dynamic rollover) and inadequate autorotations were also problems identified in this category. Inadequate and belated CFI action to correct student action was cited in one accident.
- 2 Data issues were the next most frequently identified problem in the reviewed set of accidents, cited in nine (69 percent) of the 13 accidents. In nearly all of these accidents, information that was needed to understand or to allow mitigation of the accident was either unavailable to investigators or was missing from the accident report.
- 3 Safety culture was cited as a problem in seven (54 percent) of the 13 law enforcement accidents. Lack of management oversight and sufficient aircraft and pilot monitoring were identified. Inadequate pilot

experience and inadequate training were also problems in this category. In one case, the helicopter was inadequately equipped for a night mission under marginal weather conditions.

The analysis team also identified interventions that would mitigate the problem areas. The top three interventions cited were:

- 1 Training was the most commonly cited intervention category for law enforcement accidents. Training in the areas of mission planning, preflight procedures and planning, autorotations, enhanced CFI, aircraft performance, inadvertent IMC, risk assessment, emergency procedures, LTE, dynamic rollover, critical cues, and simulators were suggested as interventions.
- 2 The need to install cockpit recording devices was recommended in nine of the accidents. Further investigation of a part failure was suggested in one accident.
- 3 Safety management interventions ranked high on the intervention list. The need for development of safety, operational and risk assessment procedures, as well as the implementation of a safety management program, such as SMS, were the most frequent interventions cited. Department Standard Operating Procedures for weather, preflight planning, landing site selection and training were recommended.

These are only excerpts of the full mission analyses. You can find the top recommendations for the U.S. fleet and all the details for this and 14 other missions in the "U.S. Joint Helicopter Safety Analysis Team Year 2000 Report" that is posted at [www.ihst.org](http://www.ihst.org).

Perhaps the most critical first step to reduce accidents is in the adoption of SMS methods. Keith Johnson of ALEA has been an early champion of SMS. Adopting SMS in the airborne law enforcement arena has shown positive results, and the rest of the helicopter operator community is being urged to take this action, as well.

IHST is currently working on reaching the helicopter industry's smaller operators, those with five or fewer aircraft, as this is believed to offer the highest payoff in the U.S. The team is working with helicopter associations, OEMs, insurers, maintainers, FAA Flight Standards District Offices, and others to help develop safety solutions catering to the small operator. Safety improvement will be driven by a wide variety of actions, but the most important steps will be the adoption of SMS, make/model-specific simulator training and better aeronautical decision making.

In addition to working on U.S. fleet safety issues, the IHST is conducting a worldwide outreach effort to partner with any international entity that has comprehensive accident data and can field a local team of analysts and implementers. Currently, there are data analysis teams working in Canada, 23 European nations, Brazil, India and Australia. IHST is also trying to establish safety efforts in the Middle East, Far East, Mexico, Russia and South Africa. If the team's outreach plan is successful, it will ultimately be working with about 90 percent of the worldwide fleet of approximately 30,400 helicopters.

Regardless of the mission you fly, the success of the IHST is important to everyone in the helicopter community. Whether it's landing on hospital helipads, spotting tuna offshore or hauling logs down a mountainside, if you're a pilot, manufacturer, regulator or maintainer, you have a stake in this effort. Visit the IHST website at [www.ihst.org](http://www.ihst.org) and join the initiative.

*Mark Liptak serves as the Program Director of the IHST Executive Committee, in addition to his duties as an aeronautical engineer at the Federal Aviation Administration.*