Efforts of the International Helicopter Safety Team seem to be producing results.

IHST Nears Mid-Point

BY DOUGLAS W. NELMS

In 2005, the global civil helicopter accident rate was at 9.4 per 100,000 flight hours; for the United States, with a little more than 14,000 civil helicopters — 41 percent of the world's total — the rate was 9.1 per 100,000 flight hours. These rates had held fairly level over the preceding five years, and this lack of progress was judged to be unacceptable.

In September of that year, the members of the International Helicopter Safety Symposium (IHSS) met in Montreal and formed the International Helicopter Safety Team (IHST), taking on the goal of reducing civil helicopter accidents by 80 percent within 10 years. The IHST program was based on the U.S. Commercial Aviation Safety Team (CAST) (*ASW*, 1/08, p. 26), a government-industry group focused on airline safety. While the two programs are now fairly similar, the biggest difference between CAST and IHST is that CAST currently bases its research on fatal accidents, while IHST considers all helicopter accidents.

In February 2006, IHST was officially launched. In November 2006, the European Helicopter Safety Team (EHEST) was formed as the European component of the IHST.

As of May 2010, approaching the halfway point toward the IHST goal, helicopter accidents worldwide had dropped to 5.4 per 100,000 flight hours, while U.S. accidents dropped to 3.5 (Figure 1).

The relationship between the IHST's efforts and the drop in accidents is, as yet, unproven, said Matt Zuccaro, president of the Helicopter Association International (HAI) and co-chairman of the IHST.

"We can't say there is a direct correlation, but we can't ignore the trend. The simple fact that we are out there aggressively promoting a safety culture has created an industrywide heightened awareness for safety."

There is, he said, no "silver bullet" to enhance helicopter safety. "It is the culture and actual mentality of the operators in the industry that is changing dramatically," Zuccaro said. There is a commitment to safety, an economic commitment, a philosophical commitment: "Everybody from the owner of the company through the management team down to the pilot and maintenance and the support staffs are all in the same mindset of preventing accidents and being safety-aware."

Zuccaro also noted that as part of the awareness program, it is critically important that the end user, the client, be educated as to what the safety initiatives are, why the industry is promoting this program, why operational procedures are being changed and why something a helicopter operator did yesterday to satisfy the client may not be appropriate today based on new information obtained through the study of aircraft data, sorted by mission type (Figure 2, p. 24).

J.A. Donoghue

Zuccaro

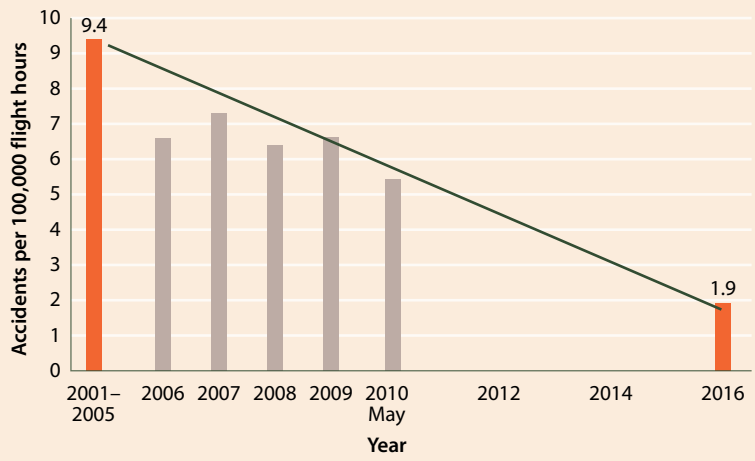
To develop an overall safety strategy, each region's IHST has created sub-teams, the joint helicopter safety analysis teams (JHSATs) to study and analyze hundreds of reports of helicopter accidents and incidents, and the joint helicopter safety implementation teams (JHSITs) to turn the analyses into recommendations to prevent accidents.

JHSAT studies have been completed by the North American and European teams. Additional regional teams are now collecting data worldwide to increase the range of information under study.

Canada, Brazil, India and Australia weren't fully on board the IHST program until 2007, Middle East nations and Japan did not start their regional JHSAT teams until 2009, and Russia kicked off its program this year.

The JHSAT phase, the analysis, is the leading edge of the IHST initiative, the engine that will drive down the accident rate "through introducing intervention strategies," according to Duncan Trapp, EHEST Communications

IHST Review of Worldwide Helicopter Accidents



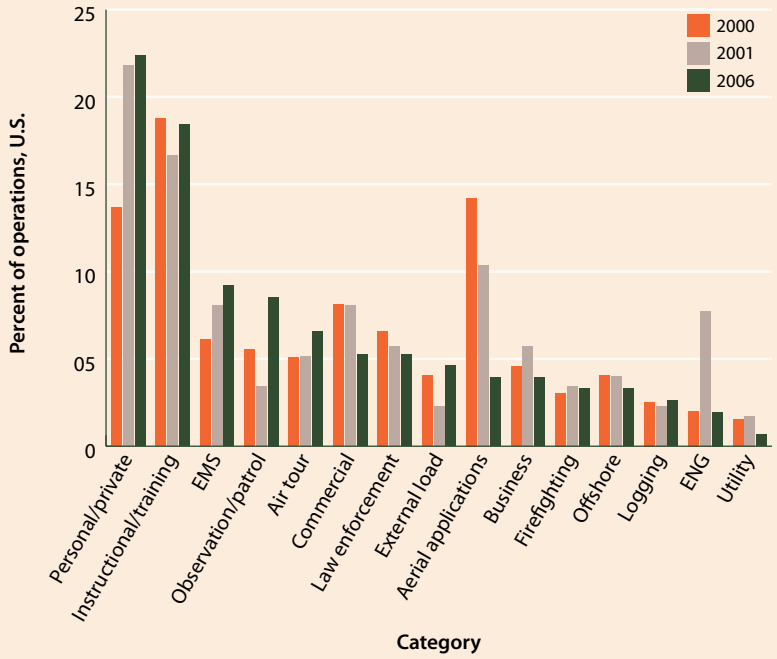
IHST = International Helicopter Safety Team

Note: Data are through May 2010.

Source: Helicopter Association International

Figure 1

Helicopter Mission Comparisons

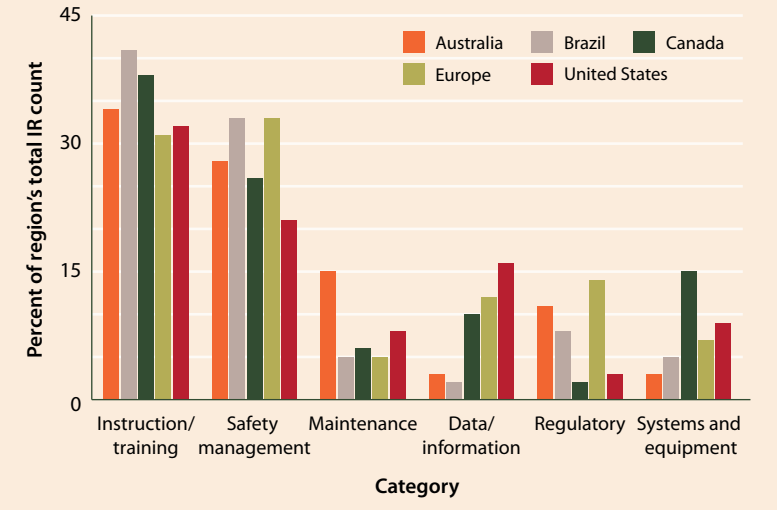


EMS = emergency medical services; ENG = electronic news gathering

Source: Helicopter Association International

Figure 2

IHST Intervention Recommendation by Region



IHST = International Helicopter Safety Team; IR = intervention recommendation

Source: Helicopter Association International

Figure 3

Sub-group leader and the safety and regulatory manager for CHC Helicopter—European Operations (Figure 3).

A major step to improved safety in the helicopter industry is the development of safety management systems (SMS) by individual operators, with IHST and EHEST working through their members to produce tool kits providing the road maps for meeting safety standards. Although not a required program for operators, SMS is expected to become a regulatory requirement for commercial helicopter operators in the United States and Europe.

To that end, the IHST initiative seeks to provide free, easy-to-use guidance material to get operators to adopt the processes and principles that are best practices elsewhere, and has created an SMS tool kit which is available as a download from the HAI website <www.rotor.com>.

JHSIT has created two other tool kits, the Helicopter Training Toolkit and the Helicopter Flight Data Monitoring Toolkit. In June, the EHEST started developing a helicopter maintenance tool kit.

Trapp said the next step is to move the SMS and other tool kit programs to the smaller operator, generally with five or fewer helicopters. "They are perhaps not best placed to help themselves because they are tight on funds, tight on resources, and tight on people and time," he said, so this new effort takes the program to the smaller operators on their own turf.

Zuccaro noted that implementation of the recommendations put out by JHSAT has "a cultural, philosophical approach to it. We have to market the tool kits and establish mentor programs to implement them."

To do that in the United States, the Federal Aviation Administration (FAA) and HAI have developed a joint program, providing mission-specific pilot-safety forums throughout the country. "Right now, almost all pilot safety forums, and even the certificated flight instructor (CFI) renewal programs, are fixed wing–oriented," Zuccaro said. "So we are going to go out and start a whole new set of pilot safety forums."

Continued on p. 26

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New Initiatives

The worldwide helicopter industry is linking its International Helicopter Safety Team (IHST) program to two initiatives that are organizationally separate from the IHST but are key program elements.

The first initiative promotes the use of flight data monitoring devices, providing information useful in predictive and reactive (accident investigation) safety programs. The second is the International Standards–Business Aircraft Operations (Helicopter Edition), or IS-BAO (HE), an accreditation program to assist operators in developing a "best practices" safety program.

Flight Data Monitoring

In the perfect universe in which none of us live, helicopters would have the same types of flight data recorders and cockpit voice recorders that airlines use. However, the cost and size of these units puts them beyond the reach of most helicopter operators.

As a result, the industry is looking for low-cost, low-weight helicopter flight data monitors (HFDMs) that can provide data similar to those from the airlines' "black boxes" and quick access recorders (*ASW*, 8/10, p. 28). The light helicopter community is using the term "flight data monitors" for its hardware to differentiate it from the more complex flight data recorders.

FDM analyses provide the information needed for both predictive and reactive safety efforts, HAI President Matt Zuccaro said. The question is, he said, "How can you fix what you don't know?" These safety data can be used to make long-term safety improvements, to aid investigations into incidents and accidents, and to add accuracy to discrepancy reports. Knowing more about what happens in flight will help improve training programs and fleet operation standards.

The Global HFDM Steering Group was formed last April, with the goal of sharing "information with the intent of making HFDM easy for [all] operators to implement." The steering group is co-chaired by Mike Pilgrim, a captain and FDM adviser for CHC Helicopters' European Operations, and Joseph Syslo Sr., manager–aviation safety for American Eurocopter, and includes 70 individuals from 48 organizations worldwide.

Syslo said that the steering group set up three sub-organizations which deal with technical aspects; operational aspects; and a combination of communication, legal concerns and related matters.

The FAA says it is working to lessen barriers to operators' efforts to install FDMs on their aircraft. "We're seeing a lot of emphasis put on [installing] fairly low-cost recording devices on a voluntary basis," said FAA's Mark Schilling, IHST co-chair. "The FAA has been very active in making it easy for people to put these devices on their aircraft, particularly helicopters. What we did was to come up with some policy out of the Rotorcraft Directorate that allows these devices to be installed with very little rigor as far as what normally would go into an STC [supplemental type certificate]. We said that [FDMs] are non-operationally required safety-enhancing equipment. So if the equipment doesn't affect the operation of the aircraft when it fails, let's go ahead and get it installed."

Somen Chowdhury, a member of the IHST executive committee and manager, international research, Bell Helicopter Textron, Canada, noted that in some countries, these recording devices are required. "But some national regulators such as the FAA don't want to mandate them," he said. "So IHST is taking is an educational approach. We are going to put in a very simplistic system, with hardware nearly developed that will record the voice and instruments without intruding into the current certified system. It will not go into the wiring system at all. Once you touch that, you have to re-certify the whole thing."

Most helicopter manufacturers are working on finding FDMs for their aircraft. Lindsay Cunningham, senior accident investigator for American Eurocopter, said the company is putting the Appareo Systems Vision 1000 on the AS-350. The system, developed jointly by Eurocopter and Appareo Systems, is a cockpit imaging and flight data monitoring device wrapped into a single unit to provide voice and video data, with a global positioning system that captures location. The cockpit imaging device takes photos of the instrument panel, flight controls and partial exterior views at four frames per second. It contains inertial sensors that include nano-gyros and accelerometers to record basic flight parametric data.

In the event of an accident, investigators can zoom in on the gauges "and look at individual frames as necessary to determine what happened," Cunningham said.

Beyond accident investigation, however, "we want it available for training, flight testing, data monitoring, all of these uses that we hadn't even anticipated," American Eurocopter's Syslo said.

"One of the biggest issues coming out of JHSAT was the lack of data … in the investigative reporting [of accidents] and the proactive use of data to stop accidents," Cunningham said. "The industry is running up against this brick wall. We know what is causing most of the accidents, but we've reached the point where we don't have the data to support it 100 percent. So people aren't spending the money to move that forward." The FDM will provide the data to allow both proactive and reactive data collection.

The system costs about $7,500, not including installation, and weighs only 300 g (0.66 lb). It comes with a secure

digital (SD) data card that can be taken out and put into a laptop that can transmit information about any flight to a data management system. Syslo noted that organizations offering a monitoring service for about $500 a year will log the information as it comes in and provide it to the customer to look for trends.

Cunningham added that "the system is light enough and low cost enough that you could put it on a Robinson R-22." She also noted that American Eurocopter President and CEO Marc Paganini said the company will install the Vision 1000 system on all new production Eurocopter aircraft as an STC becomes available for each model.

"That's where the some [manufacturers] are going … making it standard equipment," Cunningham said.

IS-BAO (HE)

International helicopter organizations have signed an agreement to create a new code of best practices for helicopter safety, basing it on the fixed-wing corporate aviation International Standard for Business Aircraft Operations (IS-BAO).

The new IS-BAO Helicopter Edition, or IS-BAO (HE), will provide a road map for helicopter operators to meet the new standards and audits to achieve a certificate of registration.

The agreement was ratified at the ILA Berlin Air Show last June, signed by the European Helicopter Association, Helicopter Association International (HAI), British Helicopter Association and the International Business Aviation Council. The agreement will allow the formation of a steering committee responsible for developing international standards for operations, maintenance, training and related issues. It will also provide linkage to the regulations and recommended practices specified by the International Civil Aviation Organization and to national aviation regulations, the association said.

Duncan Trapp, safety and regulatory manager, CHC Helicopter—European operations and communications sub-group leader for the European Helicopter Safety Team, said that IS-BAO (HE) is being rolled out around the world as a recognized standard with no planned differences between countries. "The aim is to set a baseline standard that said if you've done all [the standardization work] and get IS-BAO (HE) recognition, then you've covered to a good level all the requirements in terms of safe operations."

HAI President Matt Zuccaro said that a working group is being established "to look at the foundation document of IS-BAO, the accreditation document, and come up with a helicopter addition to address helicopter operators who want to be IS-BAO accredited. That will be the basis of the HAI accreditation program."

HAI will actually be part of two accreditation programs, its own and that of IS-BAO (HE). "We will be an agent of IS-BAO," Zuccaro said. "We will be able to get [the helicopter operators] to the program and walk them through the process. If you want to be HAI-accredited, we are going to send out one of our auditors who will be trained to do IS-BAO. So it will be a one-shot deal."

The difference between the HAI accreditation program and IS-BAO (HE) is that "ours is IS-BAO plus mission-specific," Zuccaro said. "If you conduct ENG [electronic news gathering], we're certifying you to IS-BAO standards that we are going to develop for the helicopter world, and we are also going to certify that you meet the mission-specific standards that we have established for your ENG mission. Just to have an accreditation program for a helicopter operator is not really realistic or a true evaluation of the operator. All the different missions that helicopters fly have different criteria requirements, operating environments, different risks."

— DWN

Sue Gardner, IHST program manager and a special assistant in the FAA's Flight Standards General Aviation and Commercial Division, said that the FAA Safety Team (FAAST), along with working with HAI to present regional educational programs, is developing products that are available through <www.faasafety.gov>, webinars or pamphlets, "focused on helicopter safety, targeting very specific initiatives that we need to address… that is the best way to reach that small operator," Gardner said. "They will have a daytime meeting focused on helicopter operators, and then an evening meeting that is specific to the individual helicopter pilot and flight instructor. We are also working with an industry organization on developing a master CFI program specific to helicopters."

Gardner also noted that FAA is working with the IHST to make its programs as bureaucracy-free as possible. "Our goal is to try to encourage voluntary compliance, and we've been pretty successful so far," she said. The FAA has worked closely with IHST on the introduction of the tool kits, particularly in the training area, focusing on voluntary adoption. However, one area that is in the regulatory realm, yet is non-intrusive, is initial qualification training, specifically the knowledge test questions and practical test standards, where FAA is working with JHSAT recommendations.

For specific information on the organizational makeup of IHST, go to <www.ihst.org>.