Looking Back from 2020:
A Vertical Retrospective of Rotorcraft Safety

By Mike Hirschberg, VFS Executive Director

With the dawn of a new decade, we’re taking a look back at how things have changed since the beginning of the 21st Century, focusing on civil helicopter safety in this issue.

VFS Prompts Global Safety Initiative
In September 2005, the Vertical Flight Society (then AHS International) held the first International Helicopter Safety Symposium (IHSS). With international alarm at a spate of high-profile fatal helicopter crashes, VFS seized the initiative to create a call for action.

Then-AHS Executive Director Rhett Flater laid out the facts in his Commentary, “Improving Helicopter Safety: In Pursuit of a Global Vision,” in the Winter 2005 Vertiflite: “Within the United States, the civil helicopter accident rate average as measured during the 1999-2003 period is an unacceptable 8.3 per 100,000 flight hours and shows no trend toward improvement.”

The Commercial Aircraft Safety Team (CAST) was a source of inspiration. CAST had been founded in 1998 with the goal of reducing airline accidents by 80% within a decade and was then well on its way. Today, largely as a result of voluntary actions, airline travel is the safest means of transportation ever known: since 2007, there has only been one fatal airline crash (Colgan Air in 2009) of a US Part 121 scheduled air carrier.

But the helicopter industry is much more diverse than the airlines and the focus of IHSS was on all types of helicopter operations, not just Part 135 commercial operators.

The first IHSS was organized by Somen Chowdhury, international vice president on the Society’s Board of Directors and Bell Helicopter Canada certification expert, and the VFS Montreal-Ottawa Chapter. At IHSS, 265 attendees from industry, commercial operators and government regulators from around the world came together and resolved that “something dramatic must occur to change the unworkable dynamics of the past,” Flater recounted.

The attendees, which included helicopter and engine chief executives, operator representatives such as Helicopter Association International (HAI), the Association of Air Medical Services (AAMS), and the Tour Operators Program of Safety (TOPS); government agencies such as the Federal Aviation Administration (FAA), European Aviation Safety Agency (EASA), Transport Canada (TC), the National Transportation Safety Board (NTSB) and the Transport Canada Transportation Board (TCTB), among others, agreed to adopt a goal of reducing helicopter accidents by 80% within 10 years — by the end of 2016.

Thus, the International Helicopter Safety Team (IHST) was born — with AHS as the Secretariat — and the global civil helicopter community was mobilized. An important decision was made to move away from the conventional approach to safety methods and risk analysis, and instead adopt a completely data-driven approach to analyze the causal factors of past accidents, and develop mitigation and implementation strategies.

At the time, the founders of IHST decided to avoid the more controversial and time-consuming methods to address rotary-wing safety, such as changes to regulation, and looked for voluntary measures. They focused on areas where consensus was more readily achieved between the vast array of stakeholders — operators, manufactures, regulators and consumers. With that, the IHST quickly gained momentum, and many volunteers joined the efforts.

Heading Check
Over the next five years, the industry met regularly and more working groups were established around the world, with more than 500 volunteers (the proceedings of IHSS meetings are available to the public at no charge in the Vertical Flight Library; see www.vtol.org/safety). IHST published “toolkits” for addressing the key recommendations as its implementation strategy, including helicopter training, flight data monitoring (FDM), maintenance and safety management systems. Most important in avoiding accidents, it was found, was a safety mindset.

Operators with an SMS in place were dramatically less likely to have an accident. IHST also recommended implementation of systems and equipment like health and usage monitoring systems (HUMS), night vision goggles, wire-strike protection, terrain avoidance and warning systems (TAWS) and traffic collision avoidance systems (TCAS).

In November 2011, VFS hosted the fifth IHSS in Ft. Worth, Texas. Halfway through the 10-year period, it was a heading check on the progress (see “Mid-Course Correction,” Vertiflite, Winter 2011). Data showed the baseline years of 2001–2005 had a global civil helicopter accident rate of 9.4 accidents per 100,000 hours.

By 2011, analysis showed that rate was down to about 6.5, a decrease of 35%. Improvements were greatest in the US, Canada and Europe, where there were excellent partnerships between industry and the regulators. However, continuing the same slope of improvement, it was predicted that those regions were on track for about a 50% reduction overall by 2016 — an incredible improvement, though short of the 80% goal within 10 years, it was noted.

End of the Decade
Unfortunately, progress over the next five years slowed. Although the evidence is clear that the IHSF’s key recommendations could achieve the 80% goal, far too many helicopter operators are not following those recommendations. While the IHSF’s annual global safety surveys have shown steadily increasing adoption of those recommendations, some industry sectors, especially the personal/private sector, have not adopted those recommendations to any great extent. IHST kicked off a number of initiatives to try to reach these smaller operators, but statistically, voluntary actions that require conservative aeronautical decision-making do not seem to be working for smaller operators without a strong safety culture.
In addition, unexplained increases in accidents would occasionally occur, most notably a spike in 2013.

In 2016, IHST rededicated itself with the goal of zero accidents, and last year legally incorporated as the International Helicopter Safety Foundation (IHSF).

Unfortunately, the past few years have not seen significant further reductions in accidents or fatalities. Over the past five years (fiscal 2015–2019), helicopter accidents in the US have plateaued around 120 per year with an average of 20 fatal accidents per year.

Current Status
As the graph of US accidents indicates, helicopters are safer than they have ever been, but not as safe as anyone would like. IHSF has been very successful over the past 15 years, with the US accident rate in fiscal 2019 down to 3.35 per 100,000 flight hours. However, the recent plateau indicates that the methods employed to date are inadequate to achieve further reductions by themselves. All of the low hanging fruit appear to have been harvested and more pervasive approaches are required.

So far this fiscal year, there have been several high-profile fatal helicopter accidents. Seven people were killed in Hawaii on Dec. 26, but a total of 23 accidents — including three fatal accidents — resulted in a total of 10 fatalities between October and December.

On Jan. 26, Los Angeles sports superstar Kobe Bryant, his daughter, and seven others were killed — the day before Heli-Expo opened just a few miles away. While every fatal accident is a tragedy and one accident is not a statistic, the outpouring of grief and sense of loss from the community spurred action by local politicians Congressman Brad Sherman and Senator Diane Feinstein.

Four days after the Bryant accident, Sherman sponsored the “Kobe Bryant and Gianna Bryant Helicopter Safety Act” to direct the FAA to adopt new helicopter safety standards in coordination with the NTSB, “which must include a requirement that helicopters be equipped with a Terrain Awareness and Warning System.” Sherman noted that in 2004, the NTSB recommended to the FAA that all helicopters be equipped with TAWS. Although experts have debated whether TAWS would have helped flying so close to the ground and whether spatial disorientation was a more likely cause, Sherman postulated that, “had this system been on the helicopter, it is likely the tragic crash could have been avoided.” The legislation would also establish a commission on helicopter safety and require a report to Congress on best practices for helicopters in cases of low visibility.

On Feb. 4, Feinstein sent a letter to the FAA Administrator, Steve Dickson, saying, “In order to ensure such a tragedy never happens again, I ask that the FAA commence a rulemaking process to require all commercial helicopters operating in the U.S. to have terrain awareness and warning systems. While I understand these systems can cost $35,000 per helicopter, I believe reducing the risk to passengers and those on the ground is more than worth this cost.”

Perspective
High-profile accidents can spur politicians to look for easy answers that might or might not have had an impact on that accident or significant reductions in future accidents. Regulation may indeed be needed to achieve the high level of safety desired, but solutions to the still-unacceptably high risk of helicopter accidents must be data-driven. In any event, new approaches must be taken if further safety improvements are to be seriously undertaken.

Current efforts do not appear likely to ever achieve the original goal of reducing accidents by 80%, much less the vision of zero accidents. Now 15 years since the establishment of IHST, it is time for a serious reassessment. The goal, need and enthusiasm to greatly improve safety remain. The methods to achieve the goal must be expanded. Before another decade passes by, it is time to reinvigorate and expand how we approach safety improvements in our industry.

VFS calls on IHSF, industry, regulators and the operational community to have a serious dialogue and reexamine our approach. Though avoided originally, it may indeed be time for a more regulatory-oriented approach to improving rotorcraft safety. Meanwhile, manufacturers could voluntary include safety equipment as standard on all new production helicopters despite some increase in cost.

As the old saying goes, “If you think safety is expensive, try an accident.”

What do you think? Let me know at director@vtol.org.