The Importance of Safety in an Essential Industry

By Mike Herman (IHST team member)

Crop protection is an important industry, and it is an industry where safety needs to be a central cornerstone. Each year, agricultural aerial applicators, both airplanes and helicopters, commercially treat 77 million acres of cropland with crop protection products. Accounting for nearly 25 percent of all commercially applied crop protection products, this is all accomplished by 3,600 aircraft, and more than 500 of these agricultural aircraft are helicopters. The safety of these helicopters and the people who fly them is a significant focus of the International Helicopter Safety Team (IHST).

The IHST was formed in 2005 to lead a government and industry cooperative effort to address factors that were affecting an unacceptable helicopter accident rate. The group's mission is to reduce the international civil helicopter accident rate by 80 percent by 2016.

During the past decade, helicopters accounted for 14.6 percent of all aerial application aircraft, however, they also accounted for 17 percent of all agricultural aircraft operation accidents. In 2010, the number of agricultural helicopter accidents was unusually high. They totaled 24 during the year compared to an average of 12 accidents per year from 2000 to 2009. The agricultural helicopter accident rate during the decade was 9.26 accidents per 100,000 flight hours while the accident rate for all agricultural aircraft was 7.47 accidents per 100,000 flight hours. As a comparison, the accident rate for all types of helicopter operations across all industries was 6.40 accidents per 100,000 flight hours.

Looking deeper into the numbers, what are the most common causes for agricultural helicopter accidents?

- wire strikes,
- loss of engine power,
- controlled flight into terrain,
- rotor/drive system mechanical failures,
- fuel exhaustion or contamination.

These top five causes make up 75 percent of all agricultural helicopter accidents.

Wire strikes - Agricultural aircraft routinely operate at or below the height of wires and other obstacles. Power lines, wind turbines, and unmarked meteorological testing towers are a growing concern for aerial applicators. One study showed that about 40 percent of wire strikes involved wires that were already known to pilots.

Loss of engine power - Many variables contribute to the top accident factors, and some hazards are more prevalent during summer operations. Three out of four agricultural helicopter accidents occur from May through September and nearly twice as many accidents occur during July compared to any other month. Aircraft routinely operate near maximum gross weight, and this condition combined with the summer months' high density altitude may result in a situation when the power required exceeds the power available.

CFIT - Due to the need to fly close to the ground, agricultural pilots have very little time to react if an unusual or abnormal situation arises. Controlled flight into terrain (CFIT) accidents tend to happen in greater numbers because of the reduced reaction time allowed to make a correction or necessary adjustment.

Mechanical failures - In agricultural helicopter operations, there tends to be a greater number of accidents with mechanical causes such as power loss and rotor/drive system failures than in other helicopter operation. This may be due to long flying days which may allow less time to conduct preventative maintenance, and needed maintenance may be put off in some cases. In addition, corrosion due to chemicals and increased wear and fatigue on certain components combined with the type of flying being conducted may play a part in system failures.

Fuel issues - Fuel contamination and exhaustion accidents may result from operators occasionally having to fuel their aircraft out of barrels or portable tanks that may not have proper drains or filters on them. Steep turns, pushing the limit between refueling operations, and pilot fatigue can all contribute to fuel exhaustion accidents.

As a way to mitigate these hazardous issues, the IHST offers safety "toolkits" aimed at helping members of the helicopter industry to enhance their safety practices and reduce the number of accidents.

The IHST's key support pieces include:

- A safety management system toolkit to help promote safety through a continuous improvement program and in assessing risk.
- A training toolkit that provides a standard for pilot training that focuses on operational specific scenarios, human factors, and the use of simulators and flight training devices.
- A maintenance toolkit that provides helicopter operators with a framework of guidance material to ensure that they can safely maintain their aircraft in airworthy readiness for operations in the most cost-effective manner possible.
- And a flight data monitoring toolkit that is designed to provide a summary of existing flight data monitoring direction and to serve as a step-by-step guide to helicopter operators considering or currently implementing a helicopter flight data monitoring program.

Information about the IHST, its reports and its free safety toolkits can be found on its web site at www.IHST.org and on its IHST Facebook page. In addition, these 2010 FAA Safety Alerts may be of special interest to agricultural helicopter operators: SAFO 10015 - Flying in the Wire Environment and SAFO 10020 - Hot Refueling/Loading.
http://www.faa.gov/other_visit/aviation_industry/airline_operators/airline_safety/safo/all_safos/

The job of an agriculture pilot is not an easy one. There are many outside influences that can affect safety, including weather and the pressure to satisfy the time sensitive needs of farmers. In addition to the unique hazards associated with flying, pilots are responsible for complying with Environmental Protection Agency policies and other regulations. Agricultural pilots know that

they have an important job to do. But it is also important for them to keep a central focus on safe practices to mitigate the everyday hazards of a challenging job.

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