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NTSB STUDY SHOWS THAT AIRBAGS CAN PROVIDE OCCUPANT PROTECTION IN GENERAL AVIATION ACCIDENTS

Today the National Transportation Safety Board adopted a study that concluded that general aviation (GA) airplanes equipped with airbags provide additional protection to occupants in accidents involving survivable forward impacts.

Airbags are designed to mitigate head and upper body injuries and are installed in the lap belt or shoulder harness portions of the restraint system. They were first approved for use in the pilot and co-pilot seats in GA aircraft in 2003. Currently, there are nearly 18,000 airbag-equipped seats in over 7,000 of the 224,000 GA aircraft in the United States.

"Although airbags have been mandated in automobiles for over a decade, the aviation industry has no such requirement for small aircraft," said NTSB Chairman Deborah A.P. Hersman. "The good news is that over 30 manufacturers have stepped up to the plate and offer airbags as standard or optional equipment."

The study, which examined 88 accidents involving airbag-equipped airplanes that occurred between 2006 and 2009, found no instances where the airbag caused harm in properly restrained occupants. In addition, the study found 10 survivable accidents in which the crash forces were severe enough to cause injury and/or to deploy the airbag.

Within the group of 10 accidents, 12 occupants experienced airbag deployments, and the study found that the airbag likely mitigated injuries for two of the occupants.

The study also noted that there were no negative consequences as a result of airbag deployments. For instance, there were no cases in which the airbags were expected to deploy but did not. Nor were there any cases that involved airbags deploying under unexpected circumstances, hindering egress, fueling post-crash fires or interfering with rescue attempts. Yet investigators did uncover some safety issues with restraint systems.

One such issue involved the incorrect usage or adjustment of seat belts. In certain aircraft types, the seat belts in the left and right seats can become reversed, which could result in the wrong airbag being activated if only one of the seats is occupied.

There were also concerns with optimal airbag protection for occupants whose body mass indexes (BMI) classified them as either overweight or obese (BMIs of 25 or higher). The NTSB questions whether the airbag-equipped restraints were designed and tested with the high-BMI population in mind.

An additional finding of this study was the strong affirmation that correctly installed shoulder harness/lap belt combinations provide significantly greater protection in GA accidents than that offered by a lap belt alone. Based on an analysis of over 37,000 GA accidents, the Board concluded that the risk of fatal or serious injury was 50 percent higher when an occupant was only restrained by a lap belt as compared to the combination lap belt and shoulder harness.

"The simplest and cheapest improvement to the safety of general aviation aircraft occupants is the mandatory installation of shoulder harnesses," said Hersman.

The five-Member Board voted to adopt six safety recommendations, all directed to the Federal Aviation Administration:

1. Require manufacturers to modify restraint systems vulnerable to being used incorrectly in newly built GA airplanes and to modify restraints in existing airplanes.
2. Revise the guidance and certification standards for restraint systems to reduce the likelihood of misuse.
3. Modify the guidance to GA airbag manufacturers as to how they should demonstrate that an airbag design provides adequate protection for a greater range of body sizes, including very small and very large individuals.
4. Require the retrofitting of shoulder harnesses on all general aviation airplanes that are not currently equipped with such restraints.
5. Evaluate the feasibility of requiring airbag-equipped aircraft to capture and record crash dynamics data to determine whether the system performed as designed.
6. Develop a system to track safety equipment, such as restraint systems, airbags, and aircraft parachutes, designed to improve crash outcomes.

The complete safety study will be available on the NTSB website in several weeks.

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