



NTSB 2017–2018 MOST WANTED LIST OF TRANSPORTATION SAFETY IMPROVEMENTS

Expand Recorder Use to Enhance Safety



AVIATION

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What is the issue?

Recorders—data, audio/voice, and video—capture and store critical information that can help investigators determine the cause of plane and helicopter accidents and companies and operators take proactive steps to prevent accidents. Yet, some aircraft, especially general aviation and rotorcraft, are still not equipped with these critical technologies, even though recorders are readily available, easily installed, and largely affordable.

A flight data recorder (also known as a “black box”) can record technical information about a flight and its operation before, during, and after an accident. Audio/voice recorders, such as cockpit voice recorders, capture crew discussions and transportation-related noises. Image/video event recorders provide video of the crew immediately before, during, and after an event.

Although we have used recorder data to determine the cause of accidents and to develop recommendations to help prevent future accidents, some questions can only be answered through the data provided by an image recorder. These devices help investigators and operators fill in the gaps when data and voice/audio recordings can’t tell the story. For example, although we obtained recorded cockpit audio and extensive parametric data during our investigation of the SpaceShipTwo accident, our investigators were only able to determine the true cause of the accident from video that showed the copilot prematurely moving the feather lock handle.

Recorders not only help with determining the cause of a crash or accident, but, perhaps more importantly, they also help companies and operators establish effective safety management strategies. Data from recorders can be used to adjust procedures and enhance crew training to prevent accidents from happening in the first place. Although some operators have implemented—or are in the process of implementing—recorder programs and systems, many are slow to do so without regulatory requirements.



What can be done?

We urge aircraft owners and operators to install crash-resistant data, audio/voice, and image recorders, if not already required. Recorders are readily available and can be easily installed in such a way as to “survive” a crash and provide investigators with useful information.

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Regulators should require recorder use and ensure a consistent, comprehensive approach to the timely identification of important safety issues. Additionally, regulations should work to remove barriers for industry and encourage voluntary recorder implementation.

We have recommended image recorders for more than 16 years. Although there may be technical solutions other than image recorders that can capture instrument readings displayed to the flight crew, those solutions do not also capture crew actions. The aircraft involved in the Air France (May 2009) and UPS (August 2013) crashes, for example, were equipped with recorders that greatly exceeded the minimum parameter requirements. However, in these accidents, critical information about the cockpit environment conditions (for example, crew actions and visibility), instrument indications available to crewmembers, and aircraft system degradation was not available to investigators.

The International Civil Aviation Organization (ICAO) recently proposed revisions to the carriage requirements of flight recorders that are currently being reviewed by state signatories to ICAO. These actions are not yet complete and, although the Federal Aviation Administration (FAA) is participating in ICAO's activities, it should more proactively encourage these efforts, particularly in the United States. The FAA should also encourage voluntary implementation of an alternative data recovery method for those aircraft capable of such technology.

Although we have addressed many of our concerns to the FAA, companies and operators should not wait for regulators to mandate that they take action. They should proactively procure recorder technology to improve the operational and safety oversight of their aircraft, then routinely review recorded information in structured programs. For example, the Helicopter Air Ambulance, Commercial Helicopter, and Part 91 Helicopter Operations Final Rule, which was published on February 21, 2014, requires operators to equip helicopter air ambulances with flight data monitoring (FDM) systems and encourages operators to gather and analyze this information to improve safety in their day-to-day operations. This rule should also require helicopter air ambulance operators to establish the recommended FDM program.

The benefits of recorders are many, and both regulators and operators should do more to see that these technologies—in all their forms—are installed and used to improve aviation safety. ■

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The NTSB Most Wanted List highlights safety issues identified from the NTSB's accident investigations to increase awareness about the issues and promote recommended safety solutions.

The NTSB is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant accidents in other modes of transportation – railroad, highway, marine and pipeline. The NTSB determines the probable cause of the accidents and issues safety recommendations aimed at preventing future accidents. In addition, the NTSB carries out special studies concerning transportation safety and coordinates the resources of the federal government and other organizations to provide assistance to victims and their family members impacted by major transportation disasters.

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Related Accidents*

Date	Location	Accident ID
October 31, 2014	Koehn Dry Lake, CA	DCA15MA019
December 8, 2014	Gaithersburg, MD	DCA15MA029
November 15, 2015	Akron, OH;	AAR-16/03

*For detailed accident reports visit www.nts.gov

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Critical changes needed to reduce transportation accidents and save lives.

