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NEWS

Release Date: October 21, 2002

02-26

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Foundation Calls for Dramatic Changes In Accident-investigation Tools

Data telemetry, cockpit cameras and improved “black boxes” are among the technologies that could help equip accident investigators to meet the challenges ahead.

The commercial aviation industry must look to the latest, proven technologies to ensure that as air traffic continues to grow, accident investigators will have the tools they need to promptly identify safety problems and recommend corrective measures, said Stuart Matthews, Flight Safety Foundation (FSF) president and CEO, at the International Society of Air Safety Investigators annual conference in Taipei, Taiwan, Oct. 2, 2002.

“The industry must consider implementing flight-data-telemetry systems and equipping flight decks with video cameras while taking action to improve the capabilities of existing tools — the cockpit voice recorder (CVR) and the digital flight data recorder (DFDR),” said Matthews.

He said that substantial time and expense often are expended after an accident in retrieving the “black boxes” — the CVR and DFDR — and sometimes the recorders are found damaged and unreadable.

“Today, telemetry allows immediate readout and analysis of flight data,” Matthews said. “Satellite communication and data links to a ground station would allow continuous monitoring of a flight in real time anywhere in the world. Indeed, some airline maintenance departments already are utilizing data-link technologies for on-condition monitoring of aircraft powerplants and other systems.”

Ensuring data privacy and security would be challenging — but it could be done — and the expense of implementing complete data telemetry would be significant, “but this would surely be offset in large part by improved efficiencies, the savings resulting from fewer accidents and the reduced cost of accident investigations,” he said. “For these reasons alone, telemetry systems deserve serious consideration.”

Flight deck video recordings could add to the information available during an accident investigation.

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“I know that placing cameras on the flight deck is a very contentious subject,” Matthews said. “Nevertheless, it is essential for the continued enhancement of flight safety. Accident investigation could benefit from video data. There is opposition to such proposals, but essential safeguards can be implemented to ensure that the video data will not be abused.”

Matthews said that despite improvements to the black boxes over the years, the CVR and DFDR have some drawbacks.

CVRs, which capture valuable information on crew communication and events that occur on the flight deck, typically record data for the most recent 30 minutes of operation, but they stop recording if electrical power fails aboard the aircraft.

“In some accident investigations, a 30-minute audio-recording loop was not long enough,” Matthews said. “Why not extend the recording loop for a much longer period? A two-hour loop has been suggested, and there seems little reason to prevent it being done.”

DFDRs, which have been invaluable in the identification of safety problems, also have limited data-recording capability and, like CVRs, stop recording if electrical power fails aboard the aircraft.

Most DFDRs record 88 parameters (such as altitude, airspeed, attitude, engine pressures and flight control deflections), but new-generation aircraft are capable of measuring more than 12 times that number.

Matthews said that DFDRs and CVRs should have back-up power supplies, so they can continue recording after a failure in the aircraft’s electrical system.

“Numerous accident investigations have been plagued by DFDRs that stopped recording when something catastrophic happened to the aircraft,” he said. “Presumably, this was due to a loss of electrical power, but why not have a back-up internal power source in DFDRs — and CVRs — to allow continued operation?”

Matthews said that commercial air transportation will continue to grow and that the hard work, skills and experience of professional accident investigators will continue to be vital in improving air safety.

“Technology challenges us to produce new, more capable tools to aid accident investigation,” he said.

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Flight Safety Foundation is an international membership organization dedicated to the continuous improvement of aviation safety. Nonprofit and independent, the Foundation was launched officially in 1947 in response to the aviation industry’s need for a neutral clearinghouse to disseminate objective safety information, and for a credible and knowledgeable body that would identify threats to safety, analyze the problems and recommend practical solutions to them. Since its beginning, the Foundation has acted in the public interest to produce positive influence on aviation safety. Today, the Foundation provides safety leadership to more than 900 member organizations in more than 140 countries.