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Airlines Study Alternatives to Jets' Black Boxes

By [CHRISTINE NEGRONI](#)

Modern communication technology allows even those with little important to say to transmit real-time information about where they are and what they are doing. But last month, when [Airbus](#) jets from Air France and Yemenia Airways crashed into the ocean, taking their black boxes into the deep with them, neither aircraft could send its data and cockpit voice recordings to a secure place on the ground.

On July 2, the day that the missing recorders from [Air France Flight 447](#) were presumed to have exhausted their 30-day battery and stopped emitting the pinging noise of the locator beacon, Airbus announced that it would look for new ways to reduce the chance of losing critical data.

"This is a worldwide industry issue, albeit a rare one," said Mary Anne Greczyn, manager of communications for Airbus Americas. In an e-mail message, Ms. Greczyn said, "Recent accidents certainly made this a front-burner topic of discussion."

What is known so far about the crash of Flight 447, in which 228 people died, comes from automatic messages sent from the airplane to Air France. Those messages are not intended to provide information for accident investigators but are routinely used by airlines for maintenance. When an airplane is crossing an ocean and out of radio range, only the most important information is sent, since communication must be by satellite and transmission is expensive. Airlines can select what kind of flight data is worth the price of satellite time.

According to a statement from Airbus, even using the normal radio signal to send all the information about a flight would require enormous bandwidth.

But Krishna Kavi, a professor of computer science and engineering at the University of North Texas, said that might not be the case. In 2001, Mr. Kavi proposed transmitting in real time just the information from the flight data recorder. "The amount of data is very small compared to video photos that you receive on smartphones," he said. Mr. Kavi said his plan was even more achievable today.

Mike Poole, an air crash investigator with CAE Flightscope, an aviation safety company in Canada, said that transmitting all that data in real time "sounds really attractive" but was not that easy.

Mr. Poole, who is also the chairman of the flight recorder working group of the International Society of Air Safety Investigators, said complicating factors include the number of planes in flight at any one time, the need for planes to have a clear line of sight to connect with the satellite, and the integrity and confidentiality of the data being sent. The last point is of particular concern to pilots who have long opposed video cameras in the cockpit, citing the potential for public release of the recordings.

“What do we do about data protection? That’s one that very much concerns the operating crews,” said Paul McCarthy, who represents the International Federation of Air Line Pilots’ Associations at the International Civil Aviation Organization. “If the data is not adequately protected, transmission could be an invasion of privacy.”

These problems have been discussed for years in the industry. What is different now is the attention being paid to the still-inexplicable loss of Flight 447, the apparent inability to retrieve the boxes from the Yemenia Airways Airbus that crashed into the deep waters of the Indian Ocean off the Comoros Islands and the expectation of air travelers that multimillion-dollar airplanes should have more, not less, technological capability than the average [Twitter](#) user.

“We can’t afford to lose an aircraft without drawing a proper conclusion,” said Dieter Reisinger, a long-haul commercial airline pilot and director of the Institute for Flight Safety in Austria. “We might be at a crossroads. Streaming is the next logical step.”

It is not necessarily the only step.

“It’s accidents like this that get people to think out of the box,” said Brian T. Gallagher, the director of public affairs for DRS Technologies of Parsippany, N.J. For the past 25 years, his company has been installing data recorders on the outside of military airplanes like the F-18 and on helicopters carrying oil field workers in the North Sea. On impact in a crash, the recorder, which is encased in an airfoil, flies away from the aircraft. If the plane sinks in the water, the recorder will float. A transmitter signals its location using GPS.

“Instead of it going down and pinging, it deploys the moment of the crash and hooks up with the satellites,” said the company’s vice president and general manager, Peter Connolly. “It will move it away from the crash scene.”

The deployable data recorder has been recovered in all of the approximately 110 accidents involving military airplanes, Mr. Connolly said. DRS is working with the Federal Aviation Administration and the [Homeland Security Department](#) to certify the device for use on commercial airliners, but the process has been lengthy.

Ten years ago, a DRS engineer, Rob Austin, wrote a report citing six large aviation disasters in which the recovery of the black boxes was difficult because the flights went down in the ocean. In some cases, military ships were called in for the recovery, at great expense. Mr. Austin was prophetic as he described a situation in which the deployable data recorder would be effective.

“One can imagine cases such as a midair breakup over deep ocean where the exact location of the aircraft is difficult to track,” he wrote. “If the search extended beyond the 30-day lifetime of the ultrasonic locator beacon, the recorders might never be found.”

With two ocean crashes in one month and no recorders found, Airbus is under considerable pressure. Thomas O. Enders, the company’s chief executive, said two department heads would be assigned to investigate live data transmission, external black boxes and one low-tech but highly relevant response to the loss of Flight 447 — extending the life of the black box pinger.