

40 years of safer aviation through reporting

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Credit: NASA

The U.S. has an incredibly safe aviation system – it's unparalleled when compared to other modes of transportation. The basis for this historic safety record is that we identify and correct safety concerns before they become real problems. NASA's Aviation Safety Reporting System (ASRS) is one of the tools used to make the system as safe as it is.

Celebrating its 40th anniversary this year, NASA's confidential ASRS is widely used by pilots and other airline employees to identify potential hazards. This information is one of 185 data and information sources across government and industry used by the FAA and the aviation community to detect, mitigate and monitor risk.

People working on the front lines of aviation submit their safety concerns to ASRS in the form of incident reports. The system analyzes these cases and responds by distributing vital information from its conclusions to the aviation community. The reports, always handled confidentially, are also used to identify deficiencies and discrepancies in the National Airspace System that need to be remedied.

"Voluntary reporting programs have significantly contributed to the nation's impressive commercial aviation safety record," said FAA Associate Administrator for Aviation Safety Peggy Gilligan. "In addition to reporting programs that are investigated and verified, ASRS gives aviation workers another way to report potential safety issues."

Making the nation's airways safer

"Since the implementation of the Aviation Safety Reporting System, approximately 1.4 million reports have been submitted by pilots, dispatchers, mechanics, air traffic controllers, flight attendants, ground personnel, and others," said Linda Connell, director of the NASA ASRS, which is located at NASA's Ames Research Center, Moffett Field, Calif. "Many of those reports have had a direct influence on making the nation's airways safer, and we are extremely proud of these contributions to safety."

Over the past 40 years, the ASRS has issued more than 6,200 safety alerts to the FAA and other decision makers in the aviation community who are in a position to correct unsafe conditions. Recent alerts have addressed a wide range of safety issues, including air traffic departure procedures, aircraft equipment problems, airport signage and marking issues, confusion among similar-sounding navigation fixes, or positions, and aeronautical chart deficiencies. Many of these issues involve significant human factors and performance contributions.

One example of a safety alert issued by ASRS emerged from reports of intense sunlight reflecting off a large concentrated solar power plant in the southwestern United States, temporarily blinding pilots in the cockpit. The pilots reported the safety hazard to ASRS, which then issued an ASRS Alert Message. Ultimately, this process led to the formal marking of the solar plant obstruction on charts, so that pilots could avoid flying over the area. ASRS information was also instrumental in the revision of solar plant operations to help reduce the adverse effects of certain mirror array configurations.

Other significant ASRS accomplishments include identification of fire hazards associated with the packaging of lithium ion batteries for shipment in aircraft, health hazards associated with the use of certain de-icing fluids, and the susceptibility of certain pressure-sensitive aircraft systems to icing from super-cooled water droplets.

A research repository for aviation safety

"The ASRS is the largest repository of aviation human factors incidents in the world," Connell noted, "and it has conducted more than 7,200 database searches for government agencies, industry groups, research organizations, aircraft manufacturers, aviation students, and a wide variety of other organizations." Since 2006, all reports are logged and processed with full anonymity and that de-identified data has been accessible to the public. In the last 10 years, the ASRS Database has had more than 189,000 queries.

Like safety alerts and database searches, ASRS research findings have also been influential. ASRS data findings on the content and formatting of aviation checklists and manuals for flight crews were incorporated in a FAA Advisory Circular. An ASRS Alert concerning an aircraft wing oscillation issue contributed to the FAA Aircraft Certification Service taking action to mitigate the problem.

Through its website, the ASRS provides access to a range of safety products, including publications, database reports, program overview materials, and ASRS reporting forms for four categories within the aviation community, divided up broadly as pilots and dispatchers; [air traffic controllers](#); maintenance technicians and ground crew; and cabin crew.

A model for safety reporting systems everywhere

ASRS has become a model for safety reporting systems worldwide. It has become a charter member of the International Confidential Aviation Safety Systems, a group of 13 nations that operate ASRS-like voluntary, confidential, non-punitive [aviation safety](#) reporting systems. The ASRS has also been recognized for its safety contributions by other industries,

including rail operations in which NASA ASRS collaborated with the Federal Railroad Administration to create and operate the Confidential Close Call Reporting System.

Provided by NASA

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