

Safety in numbers

Industry team recognized for improving aviation safety

By Sandy Angers

The Commercial Aviation Safety Team proves there's safety in numbers. As the hypothesis goes, an individual is more likely to be safe when part of a large group. In the case of aviation, safety improves when a large number of people work together.

Here's the proof: The U.S. commercial aviation system is one of the world's safest, due in large part to CAST, an industrywide team. Together, hundreds of representatives from airlines, manufacturers, labor and government have helped reduce the fatal accident rate in the United States by 83 percent from 1998 to 2008, according to industry data.

The team's remarkable achievement was recognized by the National Aeronautic Association in May with the Collier Trophy. The annual award signifies the greatest achievement in aeronautics or astronautics in the United States.

"This couldn't have been possible without the contributions of all our CAST members, observers and technical support staff," said John Hickey, deputy associate administrator of aviation safety for the U.S. Federal Aviation Administration. "The work we've all been doing these past 10 or so years has been rewarding enough, but winning this award is certainly the crowning achievement."

SAFETY STRATEGY TEAM

The foundation for CAST started in 1996 when Charlie Higgins, then vice president of Safety for Boeing, and representatives from the Air Transport Association and Air Line Pilots Association met to set a common safety agenda. From that meeting the Industry Safety Strategy Team was formed.

During that same time, the White House Commission on Aviation Safety and Security challenged government and industry to reduce the fatal accident rate by 80 percent over 10 years, and the National Civil Aviation Review Commission report recommended that the FAA and industry work together to develop an integrated safety plan. The FAA and the Industry Safety Strategy Team joined forces to form CAST in 1997.

"CAST is the single most powerful government and industry collaborative effort I've seen in my 30 years in aviation," said Steve Atkins, vice president of Product Integrity and Functional Excellence for Commercial Airplanes.



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PHOTO: The Collier Trophy is awarded annually “for the greatest achievement in aeronautics or astronautics in America with respect to improving the performance, efficiency, and safety of air or space vehicles, the value of which has been thoroughly demonstrated by actual use during the preceding year.” **BOB FERGUSON/BOEING**

ANALYZING ACCIDENT DATA

CAST analyzed data from approximately 500 accidents and thousands of safety incidents worldwide. The team focused on the six leading accident categories: controlled flight into terrain (CFIT), approach and landing, loss of control, uncontained engine failures, weather-related and runway incursion.

Paul Russell, chief engineer of Aviation System Safety for Commercial Airplanes, said the team started with CFIT, which at that time was the leading cause of death in airline accidents.

“We formed a joint safety analysis team of about 40 to 50 experts, representing all CAST stakeholders, to identify all the contributing factors of CFIT accidents. Without constraint, the team determined what could be done to eliminate or minimize contributing factors for CFIT accidents,” Russell explained.

The result? The team developed 16 safety enhancements—from installing terrain warning systems, enhancing training programs and using standard operating procedures, to increasing the number of instrument landing systems—which were turned over to another team for implementation.

CAST used the same process for the other categories. Of the 70 safety enhancements, 48 have been implemented and 22 are in work, according to Russell.

No one entity or agency funds CAST—it sponsors itself, with member organizations contributing financial and technical support. “The group is self-chartered, self-motivated, self-running and self-financing,” Russell said. “CAST has successfully stayed together for three reasons—it’s consensus-based, it’s achieving results and everyone agrees enhancing aviation safety is a worthy goal.”

THE FUTURE OF SAFETY

Although safety efforts have relied on investigating prior accidents to prevent future ones, CAST is evolving to a more predictive approach, examining operational data to identify hidden or emerging patterns and potential conditions before accidents occur. That approach relies on all aviation stakeholders freely sharing and combining data in ways never done before.

One example is a recent study on unwarranted terrain warnings experienced during approaches to some mountainous terrain airports. Although these were harmless individually, there was the very real potential that flight crews could become desensitized and not respond rapidly to a valid warning. One approach identified for investigation was Oakland International Airport in California.

For a complete, comprehensive analysis of the situation, the study combined FAA radar data, airline Flight Operations Quality Assurance data, Aviation Safety Reporting System data, weather data, air traffic control procedures and minimum-vectoring altitude maps. The study identified the contributing factors and developed three safety enhancements that are expected to reduce the false alerts by more than 90 percent. The study is being expanded to other airports throughout the United States.

“If you had asked me three years ago if that kind of data sharing was possible, I would have said ‘it’ll never happen’—because of the various concerns about data being misused,” Russell said. “We’ve reached a stage where people are willing to participate.”

He attributes this shift in thinking to the fact that CAST started slowly, proving over time that concerns about data misuse were unfounded. Most important, sharing the data produced results.



PHOTO: The Commercial Aviation Safety Team has helped reduce the fatal accident rate in the United States by 83 percent over 10 years. Pictured is the air traffic control tower at John F. Kennedy International Airport in New York. **ED TURNER/BOEING**

“CAST has proved that joint industry and government teams working together to improve safety produces better results than regulatory action alone,” said Corky Townsend, Aviation Safety director, Commercial Airplanes, and the Boeing CAST representative.

Added Townsend: “CAST is an amazing cooperative effort, and we are proud that Boeing has been there from the beginning.” ■

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Meet the CAST

The Commercial Aviation Safety Team (CAST) is a proven concept for industry and government cooperation that has been adopted by the European CAST, the International Helicopter Safety team and the International Civil Aviation Organization Coordinated Development of Operational Safety and Continuing Airworthiness programs in Asia.

Members of CAST include representatives from government, unions and industry.

Government

Federal Aviation Administration, European Aviation Safety Authority, NASA, U.S. Department of Defense

Unions

Air Line Pilots Association, Allied Pilots Association, National Air Traffic Controllers Association

Industry

Aerospace Industries Association of America, Airbus, Air Transport Association of America, The Boeing Company, Flight Safety Foundation, GE Aviation (representing all engine manufacturers), National Air Carrier Association, Regional Airline Association

To learn more, visit the CAST Web site (www.cast-safety.org).