



POSITION STATEMENT

NATIONAL AVIATION SAFETY PROGRAM

*Adopted by the IEEE-USA
Board of Directors, 19 November 2010*

As worldwide air transportation traffic volume continues to grow, safety in aviation remains an ongoing concern. IEEE-USA strongly endorses federal efforts to improve aviation safety and their focus on reducing the accident rate in civil and general aviation. This is especially important as we move toward deployment of the Next Generational Air Transportation System. Towards that end, IEEE-USA recommends the federal government:

- Continue to support research that develops on-board technologies to help planes monitor their own systems, including engines and airframes
- Foster the development of innovative technologies, tools, and methods to protect against the growing concerns of software-related failure or malfunction
- Support R&D to bring current graphic weather and weather forecasts economically to the flight deck of all classes of aircraft
- Support focused research to specifically identify and develop new technologies that reduce the accident rate
- Enhance coordination of federal aviation safety research programs. The National Aeronautics and Space Administration (NASA), Federal Aviation Administration (FAA), and Department of Defense (DoD) programs must coordinate closely with other related efforts in government agencies such as the National Transportation Safety Board (NTSB) and with academia and industry, especially aircraft and avionics manufacturers. We especially encourage interagency use of laboratories and other such resources
- Strengthen the capability for data/information analysis to guide ongoing safety enhancements, including statistically significant samples of flight data and operational safety data such as aircraft reliability, employee safety reports, enforcement information and hazard reports

To support these efforts, Congress must provide adequate funding to the principal executing agencies – NASA, FAA and the DoD, particularly for accident prevention, accident mitigation and aviation system monitoring and modeling.

This statement was developed by IEEE-USA's Committee on Transportation and Aerospace Policy, and represents the considered judgment of a group of U.S. IEEE members with expertise in the subject field. IEEE-USA advances the public good and promotes the careers and public policy interests of the more than 210,000 engineers, scientists and allied professionals who are U.S. members of the IEEE. The positions taken by IEEE-USA do not necessarily reflect the views of the IEEE or its other organizational units.

BACKGROUND

In a coordinated effort to improve aviation safety, industry and government worked together to reduce the number of fatal commercial aircraft accidents, which dropped by 65% from 1996-2007. Commercial airline crashes have become so rare that the metric the FAA uses to track progress towards its safety goal is now "fatalities per 100 million persons on board".

These improvements do not mean risk is now non-existent, as events in 2009 clearly reveal. Worldwide, in 2009, 30 fatal airliner accidents resulted in 757 deaths and one ground fatality, according to the Aviation Safety Network (ASN), a Dutch organization that tracks air-transport mishaps. Of the 30 deadly crashes, 11 involved commercial passenger flights, according to ASN. The rest were freighters or military aircraft.

In response to the TWA 800 flight explosion and crash in July 1996, the White House established the Commission on Aviation Safety and Security, the Gore Commission, to develop recommendations for increased aviation safety and security. The Commission challenged the United States to establish a national goal to lower the fatal aircraft accident rate with a five-fold reduction by the year 2007; other national leaders have called for a 90 percent reduction by the year 2022. The imperative for action to reduce the accident rate still further is evident; the operational benefit is immense and highly compelling. Achievement of these goals requires leadership in safety issues that will guide policy and action. The attainment of a safe system is the highest priority in aviation; the trust attributed to the aviation safety system is undermined every time an accident occurs. Thus, it is widely recognized that steps, such as the U.S. aviation safety program, must be taken to reduce the accident rate.

Data from the Flight Safety Foundation, which cooperates with the Aviation Safety Network, show that while the rate of major accidents dropped sharply over the past decade, most of the improvement was accomplished by 2005. The rate of accidents per million departures has held roughly steady for the past five years, according to the foundation's data. Other disturbing global trends stem from the steady stream of accidents since 2005 in which pilots lost control of mechanically well-functioning aircraft -- usually due to a computer problem or pilot confusion involving automated flight-control systems. The period also produced an average of 30 major runway-overflow accidents per year. The positive news is that many accidents are now survivable thanks to steady improvements in airplane design and safety features, such as stronger seats and more fire-resistant materials.

The Government Role in Aviation Safety Research

The federal government has three roles: 1) to be responsible for aviation safety in U.S.-controlled airspace; 2) to provide funding for conduct and sponsorship of research and development in

many aviation disciplines; and 3) attract and inspire the next generation of scientists and engineers by presenting real world problems, relevant data and applicable tools.

Role 1 is realized through the FAA mandate to regulate and enforce aviation safety, among other items in its charter.

Role 2 is realized through research funded by numerous government agencies, including the FAA, the DoD and NASA, which have traditionally conducted research in aviation safety and capacity issues. These federal agencies coordinate efforts in aeronautics research and facilitate the free exchange of information, reduce duplication, share resources, and assist with long-term planning. Three areas have been defined as research priorities:

1. Accident Prevention - attacking the issue of airplane accidents from human, mechanical and engineering perspectives
2. Accident Mitigation - making accidents more survivable
3. Aviation System Monitoring and Modeling - looking at the aviation system as a whole with modern data-gathering techniques

Role 3 motivates young people considering a technical career, providing the opportunity to work on real world problems and cutting edge technology

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