



Runway Risk Reduction

ICAO introduces a campaign to reduce incursions, excursions and other runway accidents.

BY LINDA WERFELMAN

With about one-third of all aviation accidents associated with runway operations, the International Civil Aviation Organization (ICAO) has introduced safety initiatives aimed at reducing runway-related accidents.

The initiatives were endorsed in late May by ICAO partners within the aviation industry, including Flight Safety Foundation, during the first meeting of the ICAO Global Runway Safety Symposium, held in Montreal.¹

“We have a clear understanding on the roles and responsibilities of each of the partners in reducing and working toward eliminating runway incursions and excursions,” Nancy Graham, director of the ICAO Air Navigation Bureau, said. “The multidisciplinary approach is the only option for coming to grips with a complex set of operational and human factors issues.”

The initiatives include runway safety seminars to be held around the world to help develop regional action plans and encourage the formation of

runway safety teams that will involve airlines, airports and air navigation service providers.

Other efforts call for “the compilation and further development of best practices and the greater sharing of information among ICAO member states and industry.” One of the first requirements will be the development of common definitions, metrics and methods of analysis to enable more complete information sharing, as well as the improved reporting of operational hazards.

In addition, ICAO and its partners in the effort will develop multidisciplinary guidance material and training workshops.

One early product of the collaborative effort to reduce runway accidents is the *Runway Excursion Risk Reduction Toolkit* — in which the Foundation played a key role — which includes training modules, videos, best practices and other information, presented in an interactive format.

Increasing Potential

ICAO data show that, over the past five years, one-third of all aviation accidents have been linked to runway operations. As air traffic increases, Graham noted, the potential for runway accidents also will increase, and “we have to act now to develop and implement proved technological and operational solutions that will make sure we improve upon our remarkable safety record.”

Studies conducted more than a decade ago identified a connection between growth in air traffic and an increase in runway incursions, “with one study in particular demonstrating that a traffic increase of 20 percent could result in as much as a 140 percent jump in the risk of a runway incursion,” Graham wrote in the current issue of the *ICAO Journal*.²

These projections spurred work on the tool kit, which was first issued in 2005, and on related efforts, including a global agreement on a new definition of runway incursions — events involving “the incorrect presence of an aircraft, vehicle or person on the protected area of a surface designated for landing and takeoff of aircraft” — which enabled more meaningful analysis of runway incursion data.

In addition, in 2007, ICAO published the *Manual on the Prevention of Runway Incursions*, Document 9870.

“All of these efforts by ICAO and other organizations have helped to improve runway safety significantly,” Graham wrote. “Thanks to improved outreach and coordination locally and globally, these successes are ongoing as new technologies and procedures come online. Implementation of airport surface detection equipment, Model X

(ASDE-X) and similar systems will continue to provide the more immediate and accurate situational awareness that pilots and controllers require to reduce the risk of incidents and accidents resulting from runway incursions.”

Runway excursions are 30 times more likely than incursions, Graham wrote, citing Flight Safety Foundation’s *Global Plan for the Prevention and Mitigation of Runway Excursions*, completed in 2009 by the Runway Safety Initiative — an international effort.

“Excursions are absolutely public enemy number one,” she said.

The Foundation’s report presented comprehensive countermeasures for runway excursions — events in which aircraft veer off the side of a runway or overrun the departure end. Briefing notes included in the plan emphasize the importance of stabilized approaches and methods of reducing the risk of landing “long and fast, with a tail wind, on a contaminated runway.”

Graham said that ICAO has “continued to review and amend its requirements and guidance material” to incorporate worldwide best practices for dealing with incursions and excursions, as well as events attributed to runway confusion, which occurs when flight crewmembers unintentionally use the wrong runway or a taxiway for takeoff or landing.

All three areas are, “by their nature, multidisciplinary issues requiring high levels of coordination and cooperation between all stakeholders in the air transport community,” she said. “Airport and aircraft operators, associations representing pilots and air traffic controllers, aircraft and avionics manufacturers, air navigation service providers and regulators all have important contributions to make and parts to play in the development of any effective runway safety solution.”

U.S. Initiative

One challenge still facing ICAO is achieving better coordination of programs implemented by individual countries and facilities “so that the sharing of information and best practices ... can benefit aviation stakeholders more quickly and on a globally harmonized basis,” Graham said.

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In the United States, the Federal Aviation Administration (FAA) recorded a reduction of more than 90 percent between fiscal year 2000 and fiscal year 2010 (which ended Sept. 30, 2010) in the most serious categories of runway incursions. However, the agency detected a reversal of the trend earlier in fiscal 2011.

Preliminary agency data showed that the 462 total runway incursions reported in the first half of fiscal 2011 — from October 2010 through March 2011 — exceeded the target of 441. Of the 462 incursions, 289 events (63 percent) were pilot deviations, 87 (19 percent) were operational errors/deviations, and 86 (19 percent) were vehicle/pedestrian deviations.³

As a result, in June, the FAA Flight Standards Service reiterated its recommendations for reducing runway-related occurrences — especially those that involve pilot error — by issuing Safety Alert for Operators (SAFO) 11004.

In the document, the FAA noted that in 2007, it had issued a “call to action” to reduce runway incursions by 10 percent in the five years ending in 2013.

The FAA said that after it issued the call to action, “runway incursions involving pilots steadily decreased. However, as time has passed, the trend has reversed.”

Most of the recent incursions have been attributed to loss of situational awareness and failing to comply with instructions from air traffic control, the FAA said.

The agency cited recent data that show that air carrier and multi-pilot crew operations are involved in 20 percent of the reported runway incursion events.

“These operators, who carry the majority of U.S. passenger traffic, need to be mindful of this persistent problem and be proactive in prevention actions for air carrier operations,” the FAA said, urging operators to implement a coordinated effort to mitigate runway incursion hazards.

“The problem of runway incursions touches many parts of an air carrier’s organization; thus, it deserves attention at all levels of air carrier management and line operations. Through

continued management emphasis and specific training for pilots and maintenance personnel, air carriers can instill permanent and effective understanding of the runway incursion problem and the means to eliminate it.”

The SAFO recommended that pilots, maintenance personnel and ground personnel review airport signage, markings and lighting, as well as airport diagrams, notices to airmen and automatic terminal information service broadcasts to ensure that they are aware of any taxiway or runway closures, construction activities and other related risks.

Other recommendations called for increased attention to situational awareness, better use of crew resource management and proper radio communication, and compliance with appropriate taxi techniques.

The SAFO also urged operators; directors of safety, training and maintenance; and chief pilots to “distribute runway incursion prevention information and resources to pilots [and] maintenance personnel, as well as other personnel involved in taxiing aircraft or operating vehicles within the airport operation area”; to include runway incursion prevention in all training programs; and to “track runway incursion trends to determine need for review of causes and current practices.”

Notes

1. ICAO’s partnering organizations are listed as Airports Council International, Civil Air Navigation Services Organisation, European Aviation Safety Agency, Eurocontrol, U.S. Federal Aviation Administration, Flight Safety Foundation, International Air Transport Association, International Business Aviation Council, International Coordinating Council of Aerospace Industries Associations, International Council of Aircraft Owner and Pilot Associations, International Federation of Air Line Pilots’ Associations, and International Federation of Air Traffic Controllers’ Associations.
2. Graham, Nancy. “Focusing on Risk: A Global Approach to Runway Safety.” *ICAO Journal*. 2011 (Issue 2): 3–4.
3. FAA. *FY 2011 2nd Quarter Performance Report*. March 2011.