

# Human factors researchers help to avoid runway incursions and errors

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Major airports around the country will be safer after they implement a new Federal Aviation Administration standard to help prevent runway incursions, which the FAA defines as "any occurrence on an airport runway . . . that creates a collision hazard . . ."

The new safety standard draws on findings from the Enhanced Surface Markings Project, a successful collaboration among human factors/ergonomics (HF/E) consultants, the FAA, and aviation industry representatives. In a summary of these findings, published in the Spring 2005 *Ergonomics in Design*, the authors note that pilots and ground and tower control personnel will benefit from low-cost but highly effective alterations in the way that lines are painted on runways and taxiways. "The irony," they say in the article, "is that one of the most complex phases of flight has nothing to do with flying; it is taxiing to and from the gate."

Incidents such as the late August 2006 Comair jet crash at Kentucky's Blue Grass Airport are among a few recent tragic examples of the need for greater runway safety at airports of all sizes. The use of HF/E findings such as those from the Enhanced Surface Markings Project address one risk element in runway safety.

Over a two-year testing and evaluation period, the HF/E researchers recommended three changes to the way runways and taxiways are marked: a modified centerline extending 150 feet from the runway holding position with a pattern of dashes on either side to give a

"preview" to the pilots that a runway is approaching; surface-painted holding position signs to be placed at all runway intersections and on both sides of the centerline; and a modified runway hold line with white dashes, instead of yellow, to indicate the runway side and not the taxiway side. The first two recommendations were incorporated into the FAA standard.

The HF/E researchers aimed to make the runway and taxiway markings conspicuous and usable. They had to preserve the essential elements of current markings to keep additional training and extra confusion to a minimum.

A total of 224 pilots who participated in the evaluations, which ended in 2004, said they would feel more confident with the combination of new visual cues in approaching runways. The new designs will also provide assistance to drivers of runway vehicles such as baggage and fuel trucks and maintenance carts, given that 20% of runway incursions between 1999 and 2002 involved vehicles.

As a result of the Enhanced Surface Markings Project, the FAA adopted changes in its safety standards, which will make new surface-painted markings mandatory for 72 major U.S. airports by June 30, 2008.

Source: Human Factors and Ergonomics Society

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