Federal Aviation Administration


# Runway Safety Report

## June 2008

# Message from the Administrator

A successful flight—whether trans-oceanic in a commercial airliner or a short trip in a private airplane—begins and ends with safe ground operations. While within the purview and oversight of the Federal Aviation Administration, runway safety is at the same time the ongoing responsibility of pilots, air traffic controllers, and airport ground vehicle operators. Through training and education, heightened awareness, enhanced airport signage and markings, and dedicated technology, FAA is providing each of these constituencies with the tools required to significantly improve runway safety. The ultimate goal is to reduce the severity, number, and rate of runway incursions; this report details a number of accomplishments and encouraging trends toward that end.

A glance at the Executive Summary provides an overview of runway incursion data as well as numerous initiatives either completed, underway or about to begin. Serious runway incursions, which involve a significant reduction in adequate separation between two aircraft and where the risk of a collision is considerable, are trending favorably. In fiscal year 2007, these types of incursions were down 29 percent from the previous year and at their lowest total during the past four years. Since 2001, serious runway incursions are down 55 percent.

In August 2007, we met with more than 40 aviation leaders from airlines, airports, air traffic controller and pilot unions, and aerospace manufacturers under a "Call to Action" for Runway Safety. Together, we developed an ambitious plan focused on cockpit and air traffic procedures, training, increased awareness, runway/taxiway layout, signage and markings, and the timely development and implementation of new technology. The result—100 short-term initiatives at 20 U.S. airports, identified as high-risk for a serious runway incursion, are nearly complete with mid- and long-term initiatives well underway. A second group of 22 high-risk airports has been identified and is undergoing similar treatment regarding runway safety enhancements.

The FAA's safety standards are nonpareil, and 2007 was the safest year ever for aviation in the U.S. Nevertheless, efforts to optimize aviation safety on the surface and in the air are never-ending and continue as our number one priority. With that said, I would like to take the publication of this *Runway Safety Report* as an opportunity to extend this Agency's deepest gratitude, respect and appreciation for the outstanding work toward the enhancement of aviation safety that has been accomplished and continues to be performed each day by thousands of dedicated professionals within the FAA and throughout the nation's aviation community.

Robert A. Sturgell
Acting Administrator

# FAA Runway Safety Report

## Trends and Initiatives at Towered Airports in the United States, FY 2004 through FY 2007



Federal Aviation Administration


9-27

# Executive Summary

**AT THE FEDERAL AVIATION ADMINISTRATION, SAFETY IS THE FIRST PRIORITY.** FAA employees work around the clock to keep the National Airspace System (NAS) the best in the world. It takes a network of people, procedures and technologies to keep the system safe. Pilots, controllers, technicians, engineers, inspectors, and supervisors oversee this network to make sure millions of passengers move safely through it every day.

Within the safety area, one of the highest priorities is runway safety. As such, the FAA focuses on all areas to improve runway safety, including training and education, airport signage, lighting and markings, operational procedures, equipment, and technology. In recent years, the FAA has formally incorporated this culture of safety into the Agency's strategic plan, the *Flight Plan*, and has devoted millions of dollars in research and technology to aid controllers in moving America safely through the skies. The FAA also continues to reach out to NAS stakeholders—from controllers to pilots to airport managers to airlines—to partner with the FAA to improve runway safety.

The *2008 FAA Runway Safety Report* presents an assessment of runway safety in the United States (U.S.) for fiscal years (FY) 2004 through FY 2007. Analysis of this data shows that during the four-year period, there was an average rate of 5.5 runway incursions per million operations. Pilot deviations continued to be the most common type of runway incursion comprising 55 percent of the total; 29 percent were air traffic control operational errors/deviations, and 16 percent were vehicle/pedestrian deviations.

In FY 2007, FAA reported a 25 percent improvement over FY 2006. There were 24 serious runway incursions (Category A and B) during 61 million aircraft operations, an encouraging reduction from the 31 serious incursions in FY 2006, and the 53 serious incursions in FY 2001.

Of the 24 serious incursions in FY 2007, eight involved commercial flights and none of these incursions resulted in a collision. At this rate (eight in over 25 million operations) a person could fly on one commercial flight every day for as many as 4,280 years without encountering a serious runway incursion.

While the FAA has made measurable improvements with the most serious of the runway incursions, total runway incursions, regardless of severity, increased in FY 2007 to 370, from 330 incursions in FY 2006. Though most of those incursions are Category C and D events that pose little or no risk to the persons or property, the increase and the fact that some serious incursions are still occurring, prompted the FAA's Acting Administrator to issue a "Call to Action." Stakeholders agreed upon a plan which focused on changes in cockpit procedures, airport signage and markings, air traffic procedures and technology.

The FAA aims to reduce the risk of runway incursions by addressing errors committed by pilots, air traffic controllers, airport-authorized vehicles, and pedestrians through outreach and the implementation of improved infrastructure and technology. Externally, airport sponsors, operators, and tenants, communities and local governments, industry groups, and research and development firms, all contribute time and resources to making airfields safer.

The FAA continues to explore new ways of mining and interpreting data with the focus on improving safety. Beginning in FY 2008, the FAA adopted the definition of runway incursion used by the International Civil Aviation Organization (ICAO), a United Nations organization charged with promoting safety and security in international aviation. In fact, the FAA helped ICAO develop that definition a few years ago.

Under this new definition, a runway incursion is any unauthorized intrusion onto a runway, regardless of whether or not an aircraft presents a potential conflict. Previously, the FAA tracked an event without an aircraft in potential conflict as a “surface incident.”

By adopting this broader definition of what constitutes a runway incursion, the FAA has a greater amount of data for analysis and awareness of the errors that occur in the runway environment. It allows the Agency to identify at-risk behaviors and circumstances that might have posed a collision risk if another aircraft or vehicle had been present. The new definition also allows the FAA to compare trends worldwide, which is important in an industry as global as aviation.

Because the possibility of human error exists, the FAA is evolving the end-to-end system that, to the extent possible, accommodates human error without compromising safety. The FAA is creating a Runway Safety Council and Working Group to look at the data and address root causes, and continue to involve all who play a part in runway safety. A number of components have an impact on runway safety including but not limited to:

- Confusing runway and taxiway patterns
- Airport layouts
- Pilot awareness and attention
- Controllers losing situational awareness or forgetting previous instruction
- Ambiguous pilot-controller communication
- Vehicle operators and pedestrians

As a result, many stakeholders have a role in the development of improvements and solutions. That is why the FAA formed the Commercial Aviation Safety Team (CAST), and that is why the Agency reached out to air carriers, pilots, airports, and others in the aviation community through the runway safety "Call to Action." And finally, that is why the FAA adopted the Safety Management System (SMS), which uses a systems approach to manage risk and helps the Agency to better track efforts for safety improvement, and their effectiveness once implemented.

Every reported runway incursion is taken seriously, investigated thoroughly, and analyzed to determine the causal factors. The FAA continues to seek ways to improve awareness, training, and technologies, and continues to collaborate with airlines, airports, unions, and aerospace manufacturers to minimize the severity, number, and rate of runway incursions.

# Introduction

**THE FAA'S EFFORTS HAVE REDUCED THE NUMBER OF SERIOUS RUNWAY INCURSIONS** by 55 percent since FY 2001. In FY 2007, FAA reported a 25 percent improvement over FY 2006. There were 24 serious runway incursions (Category A and B) during 61 million aircraft operations, a notable reduction from the 31 incursions in FY 2006, and the 53 incursions in FY 2001.

Of the 24 serious incursions, eight involved commercial flights and none of these incursions resulted in a collision. At this rate (eight in over 25 million operations) a person could fly on one commercial flight every day for as many as 4,280 years without encountering a serious runway incursion.

While the FAA has made improvements with the most serious of the runway incursions, overall runway incursions increased in FY 2007 to 370, up from 330 incursions in FY 2006. While most of the incursions are Category C and D events that pose little or no risk to the persons or property, the increase and the fact that serious incursions are still occurring, prompted the FAA to issue a "Call to Action."

The National Airspace System Performance section of this report details runway safety trends from the beginning of FY 2004 through the end of FY 2007, which does not include the new ICAO runway incursion definition or classification. However, it does expand on the analyses in previous FAA Runway Safety Reports and examines runway safety from a quantitative perspective in an effort to explore historical runway incursion trends as well as anticipate and mitigate emerging runway safety risks.

In addition to the runway safety trends, this report highlights the FAA's major initiatives to track, analyze, reduce, and prevent runway incursions. On August 15, 2007, the FAA and aviation leaders from airlines, airports, air traffic control and pilot unions, and aerospace manufacturers met under a "Call to Action" for runway safety. Stakeholders agreed upon a plan which focused on changes in cockpit procedures, airport signage and markings, air traffic procedures and technology. Working together, the aviation community completed significant short-term actions while work continues in support of mid- and long-term goals to improve runway safety at U.S. airports.

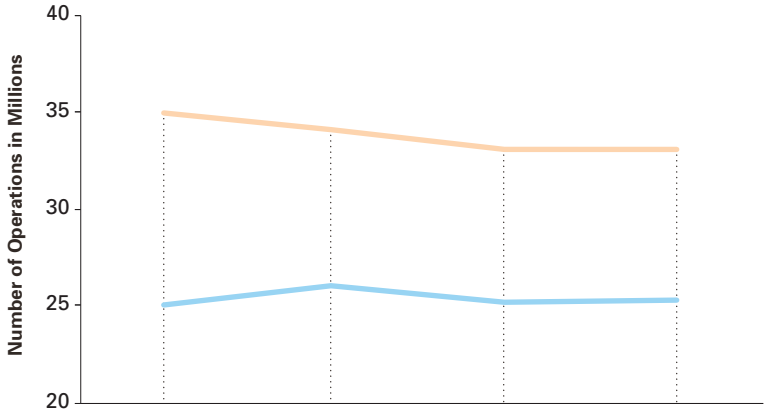
# National Airspace System Performance

**U.S. AIRPORTS WITH AIR TRAFFIC CONTROL SERVICES MUST REPORT SURFACE INCIDENTS** which may take place on the runway environment or on other airport movement areas. The FAA reviews all of these incidents and identifies a subset as runway incursions. The data and analyses in this section are an assessment of the runway incursions in the U.S. from FY 2004 through FY 2007.

Because the FAA adopted the current ICAO definition of runway incursions and severity categorization beginning with FY 2008, the previous FAA definition of runway incursions—any occurrence in the airport runway environment involving an aircraft, vehicle, person, or object on the ground that creates a collision hazard or results in a loss of separation with an aircraft taking off, intending to takeoff, landing, or intending to land—is used for analysis throughout this report.

Overall, traffic volumes have remained relatively stable over the four-year period for both general and commercial aviation operations *(see Figure 1)*. General aviation operations decreased during the first three years of the period from FY 2004 to FY 2006, when it reached its lowest level of activity; these operations increased in FY 2007. Commercial aviation operations increased from FY 2004 to FY 2005; decreased from FY 2005 to FY 2006; and, similar to general aviation, increased again in FY 2007. Figure 2 represents the distribution of aircraft operations in the NAS and each type's involvement in runway incursions. General aviation operations consisted of 54 percent of all NAS activity during this four-year period. Forty-one percent of operations during the period were commercial operations and five percent were public use aircraft operations.

**Figure 1**
**Commercial Aviation and General Aviation Operations at Towered Airports (FY 2004 through FY 2007)**




| | FY 2004 | FY 2005 | FY 2006 | FY 2007 |
|---|---|---|---|---|
| General Aviation | 34,967,730 | 34,156,954 | 33,076,714 | 33,133,952 |
| Commercial Aviation | 25,179,306 | 26,083,842 | 25,223,963 | 25,278,140 |

**Figure 2**
**Distribution of Aircraft Operations in the NAS (FY 2004 through FY 2007)**

| | Percentage of NAS Aircraft Operations |
|---|---|
| **Commercial Aviation** | 41% |
| **General Aviation** | 54% |
| **Public Use Aviation** | 5% |

Of the more than 500 FAA towered airports, 215 airports (43 percent) had zero incursions, 208 airports (41 percent) had one to five incursions, and 55 airports (11 percent) had six to 10 incursions from FY 2004 through FY 2007. Twenty-six airports (five percent) had more than 10 runway incursions during the four-year period *(see Figure 3)*.

**Figure 3**
**Runway Incursions at FAA Towered Airports (FY 2004 through FY 2007)**

| Number of Runway Incursions | Number of FAA Towered Airports | Percentage of FAA Towered Airports |
|---|---|---|
| 0 | 215 | 43% |
| 1-5 | 208 | 41% |
| 6-10 | 55 | 11% |
| 11-20 | 16 | 3% |
| 21-30 | 8 | 2% |
| Over 30 | 2 | < 1% |

Total Number of FAA Towered Airports: 504[3]

## Runway Safety Metrics

The FAA uses three primary metrics to assess runway incursions: frequency, severity and type of runway incursions. The following sections examine NAS performance using these metrics as well as a qualitative assessment of the common characteristics of a runway incursion.

### Frequency

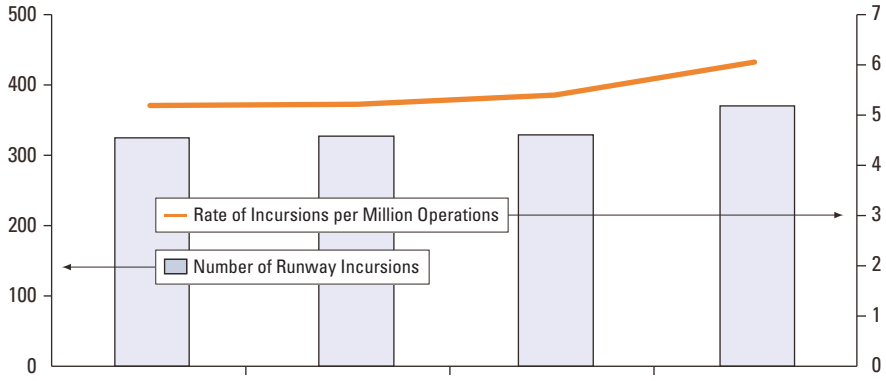
The FAA describes both the number and rate of runway incursions to accurately present runway safety trends. The number of incursions provides a description of magnitude. The rate is how often incursions occur for a given number of operations. Because the rate accounts for the different number of operations at each airport, it serves as a basis for comparing runway safety trends among airports. For example, a rate might reflect a trend in the number of pilot deviations per million aircraft operations.

[1] *Public Use Aircraft Operations include military operations, law enforcement, and state and local government aircraft operations.*
[2] *All facilities operating between FY 2004 and FY 2007 may not be present due to activation/deactivation and/or temporary status of towers. Data as of 02/21/08.*

From FY 2004 through FY 2007, there were approximately 250 million operations—approximately 170,000 per day—at FAA towered airports in the U.S. During these operations, there were 1,353 runway incursions—an average of one runway incursion per 183,621 operations during the four-year period.

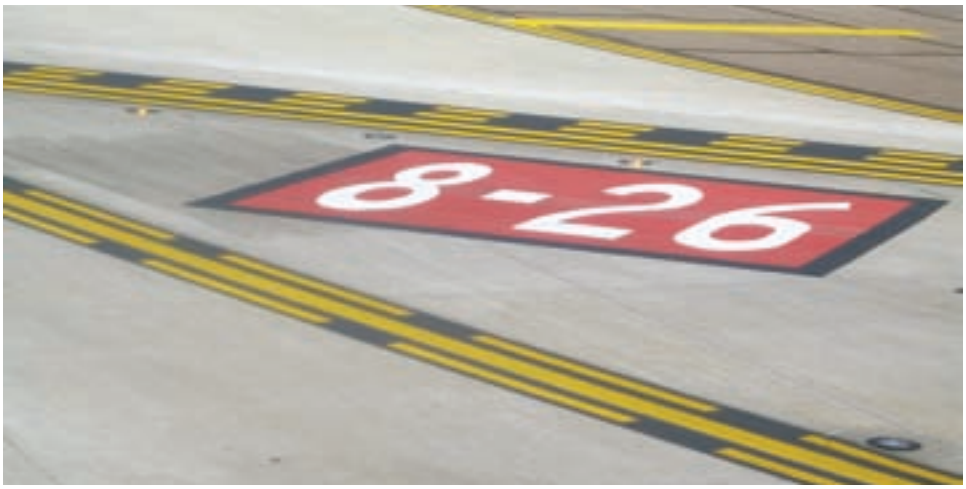
The rate of runway incursions averaged 5.5 million operations from FY 2004 through FY 2007 *(see Figure 4)*. However, the number of runway incursions increased from 330 incursions in FY 2006 to 370 incursions in FY 2007—a 12 percent increase.

**Figure 4**
**Number and Rate of Runway Incursions (FY 2004 through FY 2007)**




| | FY 2004 | FY 2005 | FY 2006 | FY 2007 | Total |
|---|---|---|---|---|---|
| **Number of Runway Incursions** | 326 | 327 | 330 | 370 | **1,353** |
| **Rate of Runway Incursions per Million Operations** | 5.2 | 5.2 | 5.4 | 6.1 | **5.5** |
| **Total Number of Operations** | 63,126,312 | 63,104,415 | 61,076,341 | 61,131,629 | **248,438,697** |

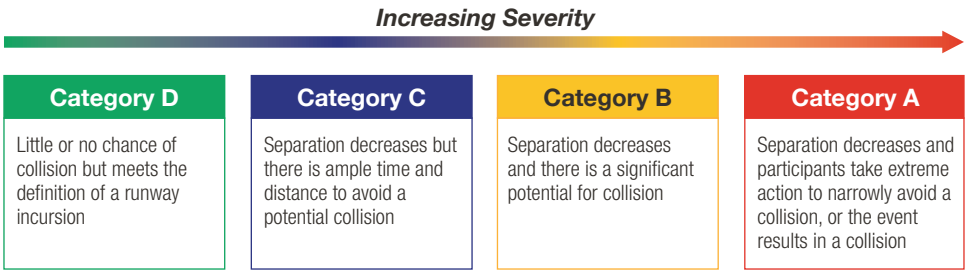
Note: Appendix D lists the number and rate of runway incursions for all U.S. towered airports that reported at least one runway incursion or surface incident for the four-year period.



## Severity

The FAA systematically reviews each runway incursion in terms of the severity of its outcome. Severity is measured using four categories. Again, the definitions used reflect the FAA's definition of severity for FY 2004 to FY 2007. As shown in Figure 5, Category A is the most serious and Category D is the least serious incursion.

**Figure 5**
**Categories of Runway Incursion Severity (FY 2004 through FY 2007)[3]**



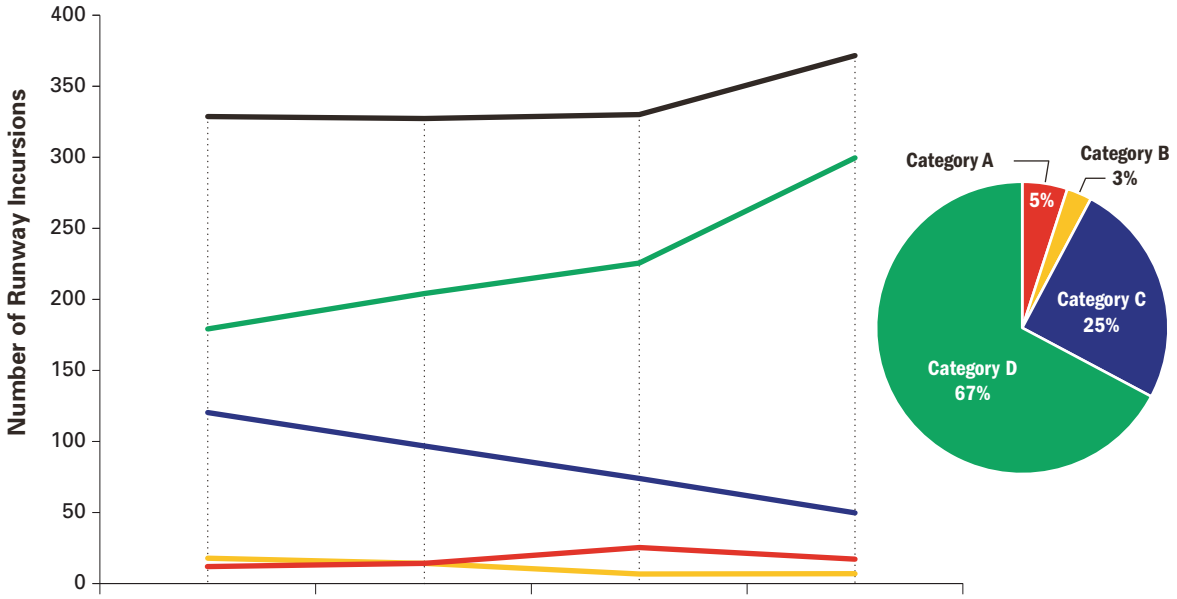

The severity categories consider factors such as the speed and performance characteristics of the aircraft involved, the proximity of one aircraft to another aircraft or a vehicle, and the type and extent of any evasive action by those involved in the event.

Operational data pertaining to runway incursions are evaluated by the Runway Incursion Assessment Team. Although the composition of the team changes over time with respect to specific staff representatives, the team is generally composed of subject matter experts from the following areas: air traffic, aircraft operations, and airports.

During the four-year period, the majority (92 percent) of runway incursions—1,241 of the 1,353 incursions—were Category C and D incursions that involved little or no risk of collision. However, Category A and D runway incursions increased while Category B and C incursions decreased *(see Figure 6)*.

[3] *Appendix B.1 contains a history of the FAA's runway incursion severity classification process. Appendix B.2 lists the factors considered in the severity ratings.*

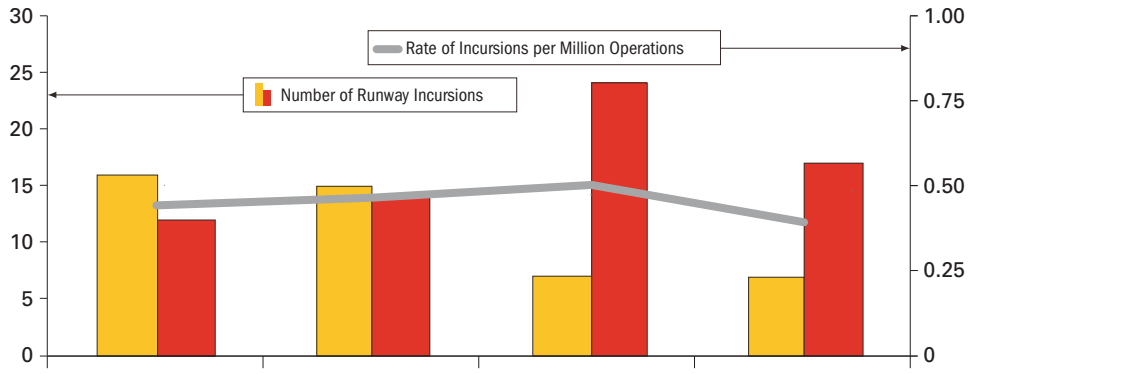
**Figure 6**
**Runway Incursion Severity Distribution (FY 2004 through FY 2007)**




| | FY 2004 | | FY 2005 | | FY 2006 | | FY 2007 | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Number | Rate per Million Ops | Number | Rate per Million Ops | Number | Rate per Million Ops | Number | Rate per Million Ops | Number | Rate per Million Ops |
| **Category D** | 178 | 2.82 | 203 | 3.22 | 224 | 3.67 | 297 | 4.86 | 902 | 3.63 |
| **Category C** | 120 | 1.90 | 95 | 1.51 | 75 | 1.23 | 49 | 0.80 | 339 | 1.36 |
| **Category B** | 16 | 0.25 | 15 | 0.24 | 7 | 0.11 | 7 | 0.11 | 45 | 0.18 |
| **Category A** | 12 | 0.19 | 14 | 0.22 | 24 | 0.39 | 17 | 0.28 | 67 | 0.27 |
| **Total** | **326** | **5.16** | **327** | **5.18** | **330** | **5.40** | **370** | **6.05** | **1,353** | **5.45** |

From FY 2004 through FY 2007, 112 of the 1,353 incursions (eight percent) were Category A and B incursions. Together, these runway incursions increased in number and rate during FY 2004 through FY 2006 before decreasing by 23 percent in FY 2007 (31 incursions in FY 2006 to 24 incursions in FY 2007). Only one of the 67 Category A incursions during this four-year period resulted in a collision; no fatalities resulted from this collision *(see Appendix B.3)*.

**Figure 7**
**Total Number and Rate of Category A and B Runway Incursions (FY 2004 through FY 2007)**




| | FY 2004 | | FY 2005 | | FY 2006 | | FY 2007 | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Number | Rate per Million Ops | Number | Rate per Million Ops | Number | Rate per Million Ops | Number | Rate per Million Ops | Number | Rate per Million Ops |
| **Category B** | 16 | 0.25 | 15 | 0.24 | 7 | 0.11 | 7 | 0.11 | 45 | 0.18 |
| **Category A** | 12 | 0.19 | 14 | 0.22 | 24 | 0.39 | 17 | 0.28 | 67 | 0.27 |
| **Total** | 28 | 0.44 | 29 | 0.46 | 31 | 0.51 | 24 | 0.39 | 112 | 0.45 |

The FAA met its performance targets for FY 2004 through FY 2007[4] and maintained the total rate of (Category A and B) runway incursions at 0.45 incursions per million operations *(see Figure 7)*. The *FAA Flight Plan 2008-2012* performance target is to limit the most serious (Category A and B) runway incursions to a rate of no more than 0.45 per million operations by FY 2010 and maintain or improve that rate through FY 2012. The actual Category A and B incursion rate for FY 2007 was 0.39 incursions per million operations, which is 26 percent less than the FY 2007 performance target of 0.53 incursions per million operations.

A key strategy for mitigating the risks of runway incursions involving conflicts with a takeoff aircraft came in September 2003 with the publication of Advisory Circular (AC) 120-74A. As stated in the AC, "The standard operating procedure of turning on landing lights when takeoff clearance is received is a signal to other pilots, air traffic controllers, and ground personnel that the aircraft is moving down the runway for takeoff." All exterior lights, including the landing lights are also to be turned on when crossing a runway.

Since the implementation of this procedure, the incidence of the most serious (Category A and B) runway incursions resulting from crossing in front of a takeoff decreased more than 20 percent. For FY 2000 through FY 2003, the percentage of Category A and B runway incursions involving crossings and potential crossings in front of a takeoff was 47 percent. This decreased to 26 percent in FY 2004 and has remained stable (between 26 percent and 23 percent) through FY 2007. There have been instances in which pilots cleared to

*[4]For FY 2004 the target was a number (40). The target for FY 2005 was a number (36) but the rate was also reported (0.557). In FY 2006, the target became a rate only. The target was 0.551 for FY 2006 and 0.530 for FY 2007.*

cross the runway stopped upon seeing the onset of the landing light of an aircraft at the end of the runway. There has also been at least one case in which the landing light signal provided useful information to an air traffic controller:

> *Aircraft #1 (B757), after landing Runway 25L exited at Taxiway A6 and was given clearance to cross Runway 25R. Aircraft #1 stopped his taxi between 25L and 25R on Taxiway A6 and Local Control (LC) attempted to contact the pilot but received no reply. Aircraft #1's landing lights were also off. LC assumed that Aircraft 1 was NORDO (No Radio) and had not received the crossing clearance for Runway 25R and issued takeoff clearance to Aircraft #2 , B737, Runway 25R full length. LC then noticed Aircraft #1's lights come on and the aircraft began to move. Realizing the aircraft was encroaching on Runway 25R, LC cancelled Aircraft #2's takeoff clearance. Aircraft #2 reached taxi speed within 3700 feet of departure with closest horizontal proximity reported as 5,350 feet.*

Another trend involving conflicts with takeoff aircraft is the increase in these incidents that result in an aborted takeoff. While aborted takeoffs can be a serious adverse event for aircraft operations, they present less risk of collision than the completed takeoff. In FY 2003 and FY 2004, only 37 percent of the runway incursions involving taxiing in front of a takeoff resulted in the aircraft aborting its takeoff. This includes the air traffic controller canceling the takeoff clearance and pilots aborting takeoffs on their own. The percentage of runway incursions involving crossings, and potential crossings, in front of a takeoff that resulted in an aborted takeoff increased to 47 percent in FY 2005, 51 percent in FY 2006 and decreased to 45 percent in FY 2007.

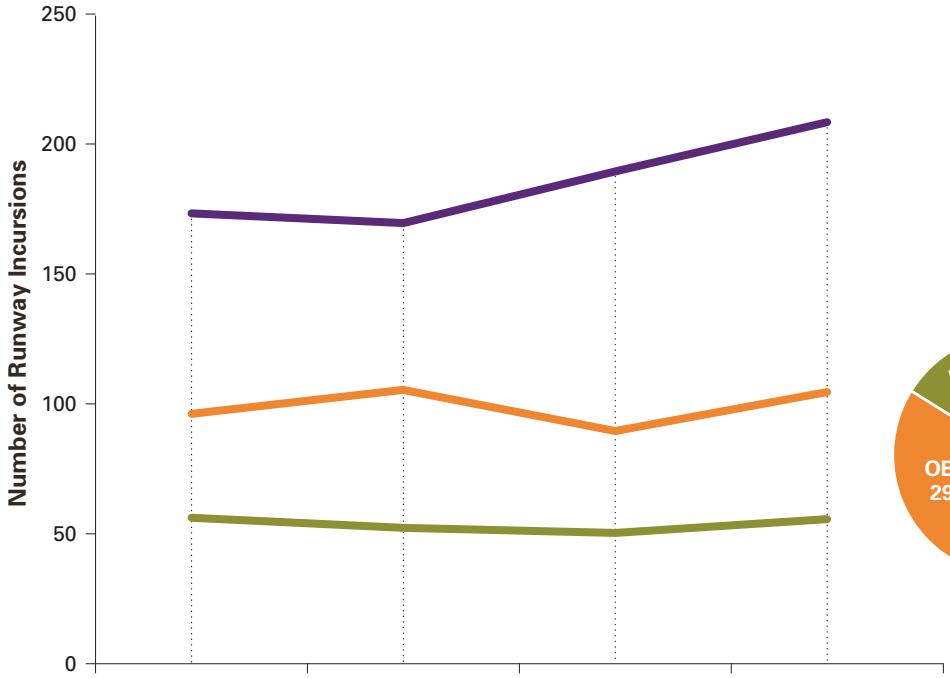
## Types

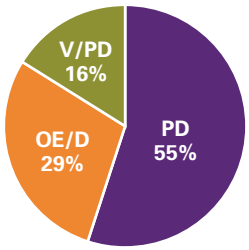
The FAA divides runway incursions into three error types: pilot deviations, operational errors/deviations, and vehicle/pedestrian deviations *(see Figure 8)*. Identification of a runway incursion as a pilot deviation, an operational error/deviation, or a vehicle/pedestrian deviation is not an indication of the cause of the runway incursion; it is a classification of an error type. These error types typically refer to the last event in a chain of pilot, air traffic controller, and/or vehicle operator actions that led to the runway incursion.

**Figure 8**
**Types of Runway Incursions**

| | |
|---|---|
| **Pilot Deviations** | A pilot deviation (PD) is an action of a pilot that violates any Federal Aviation Regulation. For example, a pilot fails to obey air traffic control instructions to not cross an active runway when following the authorized route to an airport gate. |
| **Operational Errors/ Deviations** | An operational error (OE) is an action of an air traffic controller that results in:<br>■ Less than the required minimum separation between two or more aircraft, or between an aircraft and obstacles (e.g., vehicles, equipment, personnel on runways).<br>■ An aircraft landing or departing on a runway closed to aircraft.<br>An operational deviation (OD) is an occurrence attributable to an element of the air traffic system in which applicable separation minima were maintained, but an aircraft, vehicle, equipment, or personnel encroached upon a landing area that was delegated to another position of operation without prior coordination and approval. |
| **Vehicle/Pedestrian Deviations** | A vehicle or pedestrian deviation (V/PD) includes pedestrians, vehicles, or other objects interfering with aircraft operations by entering or moving on the movement area without authorization from air traffic control.<br>NOTE: This runway incursion type includes aircraft being towed and mechanics taxiing aircraft for maintenance or gate re-positioning. |

**Figure 9**
**Number and Rate of Incursions for Each Runway Incursion Type (FY 2004 through FY 2007)**



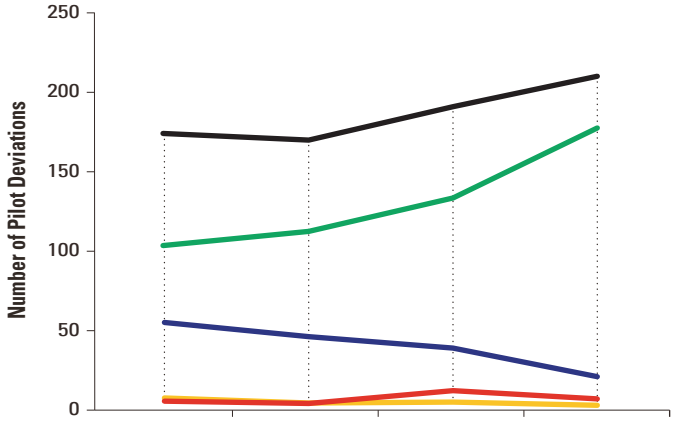




| | FY 2004 | | FY 2005 | | FY 2006 | | FY 2007 | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Number | Rate per Million Ops | Number | Rate per Million Ops | Number | Rate per Million Ops | Number | Rate per Million Ops | Number | Rate per Million Ops |
| **Pilot Deviations** | 173 | 2.74 | 169 | 2.68 | 190 | 3.11 | 209 | 3.42 | 741 | 2.98 |
| **Operational Errors/ Deviations** | 97 | 1.54 | 105 | 1.66 | 89 | 1.46 | 105 | 1.72 | 396 | 1.59 |
| **Vehicle/Pedestrian Deviations** | 56 | 0.89 | 53 | 0.84 | 51 | 0.84 | 56 | 0.92 | 216 | 0.87 |
| | | | | | | | | | **1,353** | **5.45** |

### *Pilot Deviations*

From FY 2004 through FY 2007, 55 percent of runway incursions (741 of 1,353 incursions) were pilot deviations *(see Figure 9)*. From FY 2004 through FY 2007, 56 percent (689 of 1,241 incursions) of Category C and D runway incursions were pilot deviations. *(see Figure 10)*. Forty-six percent of the Category A and B incursions (52 of 112 incursions) were pilot deviations.

**Figure 10**
**Number and Severity of Pilot Deviation Runway Incursions (FY 2004 through FY 2007)**



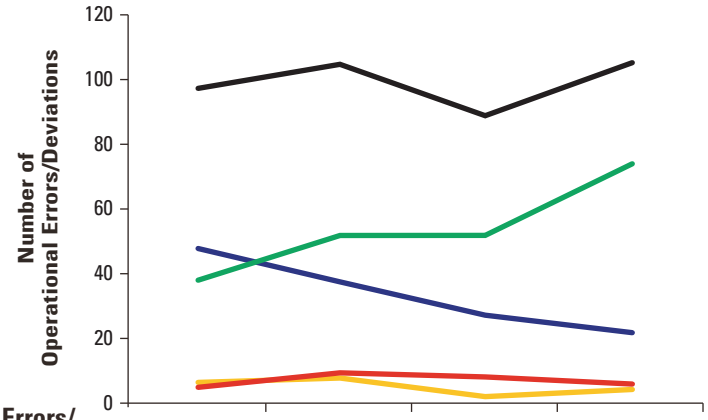

| Pilot Deviations | FY 2004 | FY 2005 | FY 2006 | FY 2007 | Total PD |
|---|---|---|---|---|---|
| Category D | 104 | 113 | 133 | 177 | **527** |
| Category C | 55 | 47 | 39 | 21 | **162** |
| Category B | 8 | 5 | 5 | 3 | **21** |
| Category A | 6 | 4 | 13 | 8 | **31** |
| **Total** | **173** | **169** | **190** | **209** | **741** |

The most common type of error that resulted in a pilot deviation was a correct readback of an air traffic controller instruction followed by an unauthorized maneuver. This type of error occurred in 44 percent of all pilot deviation runway incursions in FY 2007. In 47 of these runway incursions, the pilot correctly read back the "hold short" instruction and then proceeded to cross the hold short line (but not the runway edge). In 19 of these runway incursions, the aircraft completely crossed the runway.

### *Operational Errors/Deviations*

From FY 2004 through FY 2007, operational errors/deviations accounted for 29 percent (396 of 1,353 incursions) of all runway incursions *(see Figure 9)*. From FY 2004 through FY 2007, 28 percent of Category C and D incursions (349 of 1,241 incursions) were operational errors/deviations *(see Figure 11)*. Additionally, 42 percent of all Category A and B runway incursions (47 of 112 incursions) were operational errors/deviations.

**Figure 11**
**Number and Severity of Operational Error/Deviation Runway Incursions (FY 2004 through FY 2007)**




| Operational Errors/ Deviations | FY 2004 | FY 2005 | FY 2006 | FY 2007 | Total OE/D |
|---|---|---|---|---|---|
| Category D | 38 | 52 | 52 | 73 | **215** |
| Category C | 48 | 37 | 27 | 22 | **134** |
| Category B | 6 | 7 | 2 | 4 | **19** |
| Category A | 5 | 9 | 8 | 6 | **28** |
| **Total** | **97** | **105** | **89** | **105** | **396** |

The most common type of operational error/deviation that resulted in a runway incursion involved an air traffic controller temporarily forgetting about an aircraft or vehicle. As in previous years, this is one of the two most common types of operational errors/deviations resulting in a runway incursion, which is associated with 25 percent of the operational errors/deviations that resulted in runway incursions in FY 2007.

In FY 2007, ten percent of the operational errors/deviations that resulted in runway incursions involved the air traffic controller forgetting about an aircraft cleared for takeoff (39 percent of the operational errors/deviations involving a memory lapse). Additionally, in seven percent of the operational errors/deviations the controller forgot about an aircraft cleared to land.

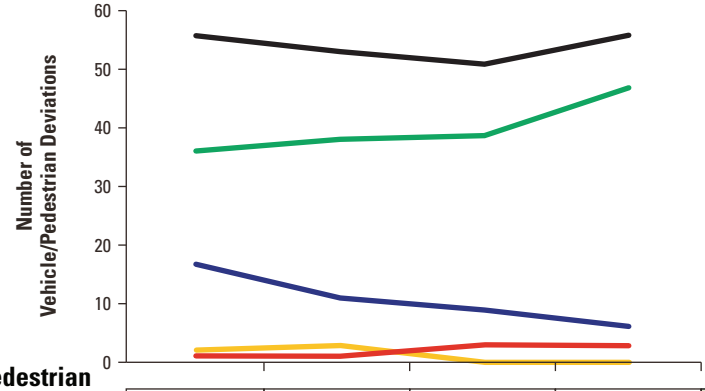
The second most common type of operational error/deviation that resulted in a runway incursion in FY 2007 was inadequate coordination among air traffic controllers, usually concerning runway crossings. In FY 2007, this type of error was associated with 25 percent of the operational errors/deviations. Readback/hearback errors were associated with an additional nine percent of the operational errors/deviations that resulted in runway incursions. Most of these errors were not the traditional type of readback/hearback errors, but a failure on the air traffic controller's part to obtain a readback of a "hold short" instruction.

### *Vehicle/Pedestrian Deviations*

From FY 2004 through FY 2007, 16 percent (216 of 1,353 incursions) of all runway incursions were vehicle/pedestrian deviations *(see Figure 12)*. From FY 2004 through FY 2007, 16 percent (203 of 1,241 incursions) of Category C and D runway incursions were vehicle/pedestrian deviations. Of the 112 Category A and B runway incursions in the NAS during this four-year period, 12 percent were vehicle/pedestrian deviations (13 of 112 incursions).

In FY 2007 there were 56 reports of incursions categorized as vehicle/pedestrian deviations. While a small percentage of these are due to unauthorized pedestrians on the airport surface, the majority (88 percent) involve airport vehicles, construction and emergency response vehicles, maintenance taxis and private vehicles. In 40 percent of these errors, the driver never contacted air traffic control. In an additional 33 percent of these incursions, the driver read back the clearance correctly, but then executed a different maneuver.

**Figure 12**
**Number and Severity of Vehicle/Pedestrian Deviation Runway Incursions (FY 2004 through FY 2007)**




| Vechicle/Pedestrian Deviations | FY 2004 | FY 2005 | FY 2006 | FY 2007 | Total V/PD |
|---|---|---|---|---|---|
| Category D | 36 | 38 | 39 | 47 | **160** |
| Category C | 17 | 11 | 9 | 6 | **43** |
| Category B | 2 | 3 | 0 | 0 | **5** |
| Category A | 1 | 1 | 3 | 3 | **8** |
| **Total** | **56** | **53** | **51** | **56** | **216** |

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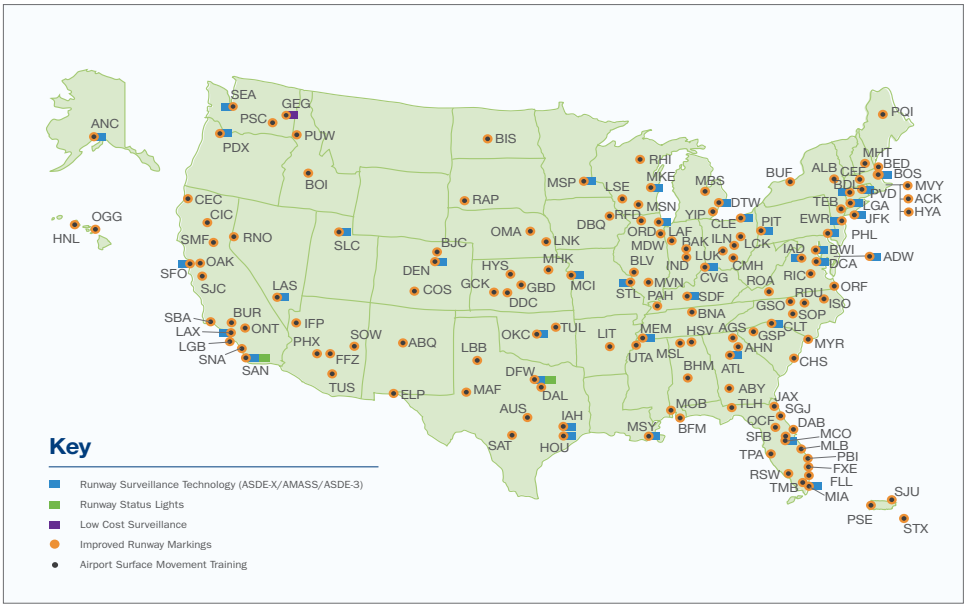
# FAA "Call to Action"

**THE U.S. AVIATION COMMUNITY COMPLETED SIGNIFICANT SHORT-TERM ACTIONS** to improve safety at U.S. airports. Led by the Acting FAA Administrator, more than 40 aviation leaders from airlines, airports, air traffic control and pilot unions, and aerospace manufacturers, agreed on August 15, 2007, to an ambitious plan focused on solutions in: cockpit procedures, airport signage and markings, air traffic procedures, and technology.

Both the FAA and Industry have taken steps to improve runway safety. Figure 13 shows the higher volume airports that have taken steps to improve runway safety by adding runway surveillance technology, RWSL, low cost surveillance, improved runway markings, and providing additional airport surface movement training to everyone who works on the airport taxiways, runways, and other operational areas. Each airport is identified on the map by its unique three-letter code. The key explains what each airport has added to improve runway safety, both before and after the August 2007 "Call to Action."

**Figure 13**
**Runway Safety Initiatives at Busier Airports**



## "Call to Action" – Short-term Accomplishments

The following is a summary of the "Call to Action" short-term actions and accomplishments.

**Upgrade Airport Markings at Medium and Large Airports.** All airports with more than 1.5 million enplanements were asked to voluntarily accelerate the installation of enhanced taxiway centerline markings that the FAA originally required by June 30, 2008. All of the 75 airports required to make the modifications to their surface markings have completed the upgrade *(see Appendix B.4)*.

Enhanced Taxiway Centerline Markings are designed to increase the situational awareness of pilots and airfield drivers when they are approaching the hold-short line. FAA changed the airfield markings (paint) standard *(see Figure 14)* to incorporate dashed yellow lines on either side of the solid line in the proximity of a runway. Previously, taxiway centerlines were marked with a solid yellow line.

**Figure 14**
**Enhanced Taxiway Centerline Markings**

Previous Taxiway Centerline Markings

Enhanced Taxiway Centerline Markings


**Upgrade Airport Markings at Smaller Airports.** All airports certificated under Code of Federal Regulations (CFR) Part 139 were asked to develop plans to voluntarily upgrade existing markings. As a result, 90 airports upgraded their markings, and an additional 335 airports have committed to making the upgrades. This means 428 of the 492 small certificated airports (87 percent) have agreed to voluntarily complete the installation of enhanced markings. The FAA continues to track the progress with airport sponsors and provide assistance.

To further support the airport "Call to Action" initiatives, the FAA issued Change 1 to AC 150/5340-1J, Standards for Airport Markings, on March 31, 2008. This change extends the requirement for the enhanced taxiway centerline marking beyond the 75 largest airports with more than 1.5 million annual passenger enplanements where it is already required, to the remaining certificated airports. At airports with less than 1.5 million annual passenger enplanements but more than 370,000 annual passenger enplanements (small hubs), the

enhanced taxiway centerline marking must be installed by March 31, 2009. At the remaining smaller certificated airports, the enhanced taxiway centerline must be installed by March 31, 2010.

**Airport Recurrent Training.** All certificated airports were asked to voluntarily develop plans to require annual recurrent training for all individuals with access to movement areas such as runways and taxiways. All of the 567 certificated airports in the U.S. require initial and recurrent training for airport employees such as airport police and airport maintenance workers. As a result of the "Call to Action" there are currently 420 airports that require recurrent training for non-airport employees such as Fixed-Base Operators (FBO) or airline mechanics. Additionally, 105 airports plan to adopt this requirement. To date, nearly 91 percent of the certificated airports have agreed to step up to the "Call to Action" challenge. Regional offices continue to track the progress with airport sponsors and provide assistance.

The FAA Office of Airport Safety and Standards issued a draft change to AC 150/5210-20, Ground Vehicle Operations on Airports, in late December 2007. The comment period closed on February 26, 2008. Based on a review of comments, the AC change strongly recommends regular recurrent driver training for all persons with access to the movement area. The FAA signed the AC on March 25, 2008, and it became effective March 31, 2008. In addition, the FAA is undertaking a rulemaking process that will make this training mandatory.

**Airport Surface Analysis.** The FAA Runway Safety Office completed a runway safety review of 20 airports selected based on runway incursion data and wrong runway departure data. Reviews of all 20 airports *(see Figure 15)* have resulted in more than 100 short-term and numerous mid- and long-term initiatives. Almost all of the short-term initiatives identified have already been completed. The Agency has evaluated lessons learned from the initial surface analysis and has modified the format for future Runway Safety Action Team (RSAT) meetings and incorporated evaluation of the "wrong runway" risk factors identified by the CAST into the RSAT's. In March 2008, a second tier of airports was selected and included in the "Call to Action" surface analysis effort.

**Figure 15**
**First Tier "Surface Analysis" Airports**

| Airport Code | City | Airport |
|---|---|---|
| ATL | Atlanta, GA | Hartsfield–Jackson Atlanta International |
| PDK | Atlanta, GA | Dekalb-Peachtree |
| BOS | Boston, MA | General Edward Lawrence Logan International |
| ORD | Chicago, IL | Chicago O'Hare International |
| DFW | Dallas, TX | Dallas/Ft. Worth International |
| DEN | Denver, CO | Denver International |
| FLL | Ft. Lauderdale, FL | Ft. Lauderdale/Hollywood International |
| LAS | Las Vegas, NV | McCarran International |
| VGT | Las Vegas, NV | North Las Vegas |
| LGB | Long Beach, CA | Long Beach-Daugherty Field |
| LAX | Los Angeles, CA | Los Angeles International |
| MIA | Miami, FL | Miami International |
| MKE | Milwaukee, WI | General Mitchell International |
| JFK | New York, NY | John F. Kennedy International |
| MCO | Orlando, FL | Orlando International |
| PHL | Philadelphia, PA | Philadelphia International |
| RNO | Reno, NV | Reno/Tahoe International |
| SFO | San Francisco, CA | San Francisco International |
| SJC | San Jose, CA | Norman Y. Mineta San Jose International |
| SNA | Santa Ana, CA | John Wayne Airport–Orange County |

**Air Carrier Pilot Training.** Air Carriers were asked to provide pilots with simulator or other training that incorporated realistic scenarios from pushback through taxi operations. FAA's Flight Standards Services confirmed that all 112 active air carriers report being in compliance.

**Air Carrier Cockpit Procedures.** Air carriers were asked to review cockpit procedures to identify and develop a plan to address elements that contribute to pilot distraction during taxi operations. FAA's Flight Standards Services confirmed that all 112 active air carriers report being in compliance.

**Air Carrier Employee Training.** Air carriers were asked to establish mandatory recurrent training for non-pilot employees who operate aircraft or vehicles on the airfield. The FAA reviewed existing videos, such as *FAA Tug and Tow 101*, posted FAA Notice No. 0988 containing a visual depiction of a Taxi Operation Procedures chart and is developing a new DVD to be distributed to air carriers for use in training programs.

**Air Traffic Procedures.** ATO Terminal Services was asked to conduct a safety risk analysis of explicit taxi clearance instructions, explicit runway crossings clearances, takeoff clearances, and issuing multiple landing clearances (including landing clearances too far from the airport). They were also asked to evaluate the adoption of international phraseology such as "line-up and wait" instead of the U.S. "position and hold" phraseology. The FAA completed an analysis of ATC procedures pertaining to taxi clearances and found that

more explicit taxi instructions are needed. As a result, procedures for issuing detailed taxi instructions were published and distributed to the field in March 2008 with implementation in May 2008. Where airport configurations permit, prohibiting the issuance of a takeoff clearance during an airplane's taxi to its departure runway until after the airplane has crossed all intersecting runways will be the next procedure to be implemented this summer. Analysis on Multiple Landing Clearances, "line-up and wait" and explicit runway crossings is underway.

**FAA ATO Voluntary Reporting.** Terminal Services was asked to work with labor unions on an Aviation Safety Action Program (ASAP) for air traffic controllers. ASAP is already used successfully by 67 air carriers to encourage voluntary reporting of safety concerns by pilots, dispatchers, flight attendants or mechanics. A partnership agreement between the FAA and the National Air Traffic Controllers Association (NATCA) was signed in October 2007 that covers all ATO air traffic controllers.

In March 2008, the FAA and NATCA signed an agreement to create an Air Traffic Safety Action Program (ATSAP), designed to foster a voluntary, cooperative, non-punitive environment for the open reporting of flight safety concerns by air traffic controllers. Under the ATSAP, all parties will have access to valuable safety information that may not otherwise be obtainable. This information is to be analyzed in order to develop skill enhancement or system corrective action to help solve safety issues. The agreement is for 18 months and will begin at several targeted facilities. If the program is determined to be successful after a comprehensive review and evaluation, both sides intend for it to be a continuing program. The FAA is planning to extend voluntary safety reporting to airway transportation system specialists in the future.

## "Call to Action" Next Steps

As a follow-on to the "Call to Action," on January 15, 2008, FAA's Acting Administrator met by phone with air carrier Chief Executive Officers to underscore the importance of direct contact with all pilots and flight engineers about the continuing runway safety risk. As a result of the FAA's outreach, air carriers provided pilots and flight engineers with the current data on runway incursions and required crew members to review online informational safety programs.

In January 2008, focus groups for reducing pilot deviations were held with every major and regional carrier's chief pilot and directors of operations and safety. These Flight Standards "Road Shows" were held over a seven day period ending on January 25. Four executives of the Flight Standards Service were dispatched to meet face to face with the Chief Pilot, Director of Safety and Director of Operations for every U.S. air carrier. Key officers of every air carrier attended those meetings. As a result of the FAA's outreach, air carriers provided pilots and flight engineers with the current data on runway incursions and required crew members to review online informational safety programs.

While work continues on mid- and long- term goals, the FAA is addressing a second tier of airports *(see Figure 16)* over the next several months and will complete runway safety reviews. The top-to-bottom review of the initial surface analysis airports provided a valuable amount of data which has led to many improvements. The 22 second tier surface analysis airports were determined in March 2008 based on runway incursion data and wrong runway departure data.

**Figure 16**
**Second Tier "Surface Analysis" Airports**

| Airport Code | City | Airport |
|---|---|---|
| ABQ | Albuquerque, NM | Albuquerque International |
| ANC | Anchorage, AK | Ted Stevens Anchorage International |
| BJC | Denver, CO | Rocky Mountain Metropolitan/Jefferson County |
| BNA | Nashville, TN | Nashville International |
| CLE | Cleveland, OH | Cleveland-Hopkins International |
| CLT | Charlotte, NC | Charlotte/Douglas International |
| DAB | Daytona Beach, FL | Daytona Beach International |
| FFZ | Mesa, AZ | Falcon Field |
| FXE | Ft. Lauderdale, FL | Ft. Lauderdale Executive |
| HOU | Houston, TX | William P. Hobby |
| IAD | Chantilly, VA | Washington Dulles International |
| LBB | Lubbock, TX | Lubbock International |
| LGA | New York, NY | LaGuardia |
| LIT | Little Rock, AR | Adams Field |
| MAF | Midland, TX | Midland International |
| MDW | Chicago, IL | Chicago Midway International |
| SAT | San Antonio, TX | San Antonio International |
| SBA | Santa Barbara, CA | Santa Barbara Municipal |
| SEA | Seattle, WA | Seattle-Tacoma International |
| STL | St. Louis, MO | Lambert-St. Louis International |
| TEB | Teterboro, NJ | Teterboro |
| TMB | Miami, FL | Kendall-Tamiami Executive |

# FAA Runway Safety Program

**MANY ORGANIZATIONS WITHIN THE FAA HAVE INITIATIVES UNDERWAY** to help improve runway safety. The runway safety program involves many organizations both inside and outside the FAA and it takes people from all these groups working together on runway safety issues to make a difference. Externally, airport sponsors and operators, airport tenants, communities and local governments, industry groups, and research and development (R&D) firms, all contribute time and resources to making airfields safer.

With the support and participation of all these groups and the analysis of runway safety data, the FAA focused on improving runway safety through changes to the airport infrastructure, human factors and training, safety culture, new procedures and technology. The highlights include:

## Runway Safety Reviews

- Conducting runway safety reviews at 20 airports resulted in more than 100 short-term and numerous mid- and long-term initiatives and led to many surface safety improvements at these 20 airports.
- Regional Runway Safety Program Managers (RRSPM) conducted or participated in 70 Runway Safety Action Team Meetings, 340 Safety Meetings, 113 Incident Investigations, 37 Fly-ins, and 297 other meetings in FY 2007 which allowed them to present or provide runway safety information to airmen.

## Airport Infrastructure and Information

- Upgrading airport taxiway markings gives pilots another indicator that they are approaching a runway hold short line. All 75 medium and large airports with more than 1.5 million annual enplanements have added the enhanced taxiway centerline markings. Extending the requirement for enhanced markings to smaller airports will increase awareness of pilots at those airports. Ninety-three smaller airports have already installed the markings.
- Continuing the Runway Safety Area (RSA) improvement program with 41 additional improvements completed in 2007 will enhance safety in the event of an aircraft undershoot, overrun, or excursion from the side of the runway.
- Installing perimeter taxiways at two major airports—Hartsfield-Jackson Atlanta International and Dallas-Fort Worth International—provides an alternate path for aircraft to travel without having to cross another runway, thus reducing the number of opportunities for incursions. The taxiway at Hartsfield-Jackson Atlanta International is operational and Dallas-Fort Worth International is scheduled for completion in December 2008.

## Human Factors and Training Initiatives

- Requiring all airlines to provide their pilots with simulator or other training that incorporates realistic scenarios from pushback through taxi operations, stresses the importance of this phase of flight. All 112 active air carriers have completed this action.
- Conducting Crew Resource Management (CRM) training at 26 airports and terminal facilities helps controllers detect and correct controller and pilot mistakes before they result in operational errors or accidents. Training will be conducted at 13 facilities in 2008.
- Using the four Runway Incursion Safety Clips (re-creations) as mandatory briefing items provides an opportunity for controllers to review incidents and discuss ways of preventing similar incidents.

## Improving the Safety Culture

- Conducting a Safety Management System (SMS) pilot program at 20 airports allowed for data collection and analysis in preparation for the development of an SMS regulation for U.S. certificated airports.

- Certificate holders and repair stations participating in Aviation Safety Action Programs led to the identification and correction of safety events that are voluntarily reported by pilots, dispatchers, mechanics, and flight attendants. Over 70 operators currently participate in ASAPs.

- Similarly, establishing an Air Traffic Safety Action Program (ATSAP) for air traffic controllers will provide a mechanism for reporting flight safety concerns in a non-punitive environment.

- Offering the Runway Incursion Information Evaluation Program (RIIEP) enables the collection and analysis of information about runway incursions to implement safety education programs, produce guidance and augment technologies. Over 736 pilots and 20 technicians have participated in the program.

- Establishing the FAA Safety Team (FAASTeam) network for distributing safety information to airmen provides a way to reach thousands of airmen in a timely, economical manner. To date, almost 475,000 people have registered for the service.

## Changes in Procedures

- Reviewing cockpit procedures to identify distractions in the cockpit during taxi operations led to developing plans to minimize these distractions. All 112 active air carriers have completed this review.

- Conducting Operational Error Reduction Workshops with representatives of similar facilities provides the opportunity to discuss procedures and standardization of techniques, for risk mitigation.

- Convening Safety Risk Management Panels on six air traffic control operations (Detailed Taxi Instructions, Takeoff Clearances, Taxi To, Restricting Multiple Runway Crossings During Taxi, Landing Clearances, and Line Up and Wait) identified hazards and assessed risks associated with recommended procedure changes that are thought to decrease the risk of runway incursions. To date, one change in procedure, issuing detailed taxi instructions, has been implemented.

## New Technology

- Installing Engineered Materials Arresting Systems (EMAS) at 30 runway ends at 21 airports since 1996 provides a means to bring aircraft entering the EMAS to a safe stop with no serious injuries to the passengers, and minimal damage to the aircraft.

- Testing continues on Runway Status Lights which provide illuminated red in-pavement lights to indicate to pilots that a runway is unsafe for entry or is unsafe for takeoff due to traffic on the runway. The FAA recently issued a request for proposal from companies interested in building a system that would be deployed nationwide.
- Testing continues on the Final Approach Runway Occupancy Signal (FAROS) system which alerts pilots on approach, via flashing Precision Approach Path Indicator (PAPI) lights, if the runway is occupied.
- Operating AMASS at 34 airports gives visual and aural prompts to tower controllers to respond to situations on the airfield that potentially compromise safety.
- Operating ASDE-X at 12 airports enables air traffic controllers to detect potential runway conflicts by providing detailed coverage of movement on runways and taxiways. ASDE-X is scheduled to be operational at 35 airports by the end of 2010.
- Moving Map Displays are under development, and will show the pilot their own position on the airport surface, and have the potential to greatly improve runway safety at night and in poor visibility. At least one such system is already certificated for use in aircraft.
- Low cost surveillance systems are currently being tested, and could reduce the risk of incursions at small and medium-sized airports.

While the Runway Safety Office is ultimately accountable for the runway safety initiatives throughout the Agency, there are many groups that work closely together to improve runway safety. Appendix C.5 highlights the Runway Safety Office, Office of Airports, Flight Standards Service, the Air Traffic Organization Terminal Services and the Regional Administrator Offices and their recent runway safety initiatives.

# Future Directions

This report highlighted many of the initiatives that have already been implemented and are providing a positive impact on runway safety. This is an ongoing effort and the FAA is committed to finding ways of making the air transportation system even safer. In addition to all the good things that are already being done, the following efforts are planned to further the progress of runway safety over the next year.

## ICAO Runway Incursion Definition and Severity Classification

As part of its *Flight Plan* goal for International Leadership, the FAA supported the efforts of ICAO to establish standard definitions for runway incursion and runway incursion severity. The FAA adopted the ICAO definition beginning in FY 2008 (October 1, 2007):

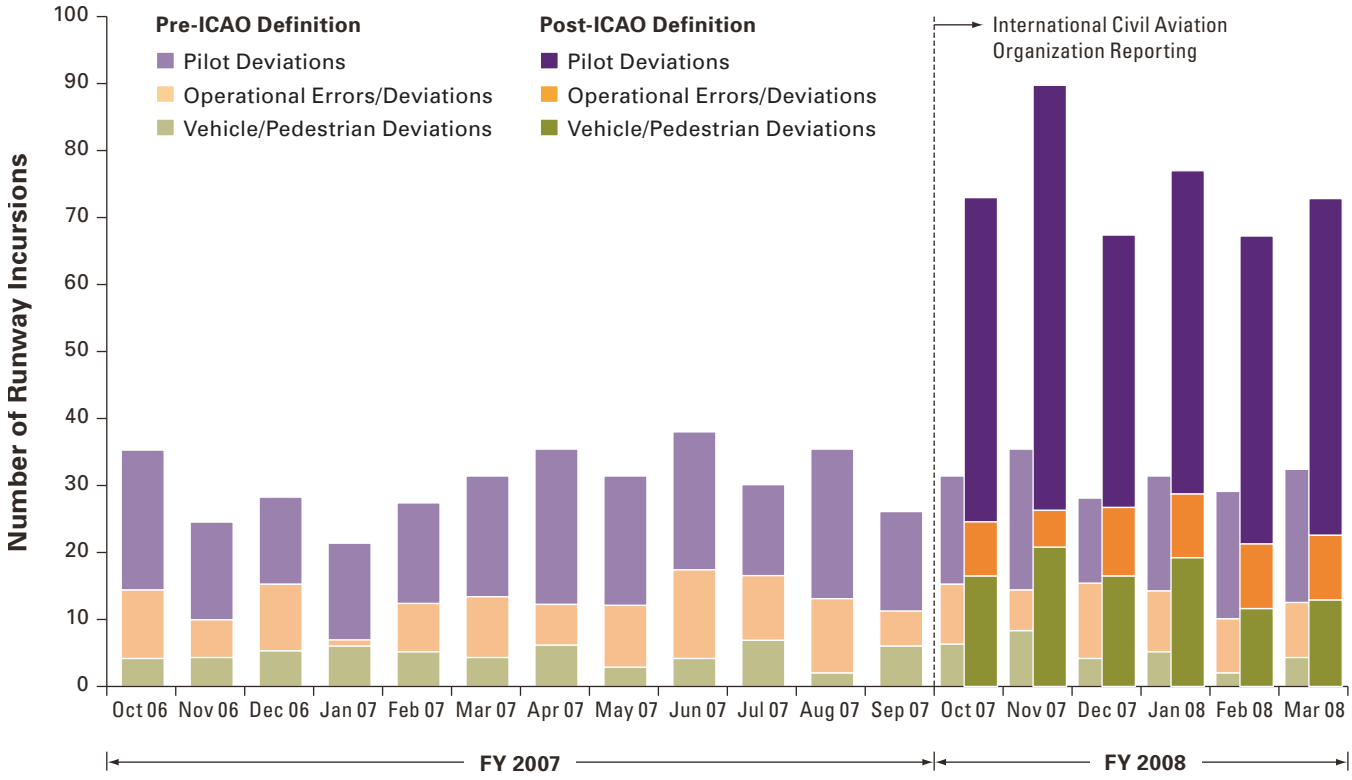
> ***Any occurrence at an aerodrome involving the incorrect presence of an aircraft, vehicle or person on the protected area of a surface designated for the landing and takeoff of aircraft.***

Prior to the adoption of the ICAO definition, the FAA reviewed all surface incidents, identified a subset as runway incursions, and assigned a severity category. Effective FY 2008, the FAA began categorizing runway incursions using the ICAO definition of incursions and severity of incursions. Figure 17 shows a comparison between the FAA definition used prior to October 1, 2007, and the current definition for runway incursion severity classifications. Figure 18 shows an "apples to apples" comparison of the number of runway incursions after the new reporting standard was adopted. The initial increase of runway incursions in FY 2008 will be reported as a greater number of less serious runway incursions (Category C and D) due to this change in definition.

**Figure 17**
**Comparison of Previous and Current FAA Definition for Runway Incursion Severity Classifications**

| FAA Definition Prior to FY 2008 | | Current FAA Definition | |
|---|---|---|---|
| **Class** | **Description** | **Class** | **Description** |
| **A** | Separation decreases and participants take extreme action to narrowly avoid a collision, or the event results in a collision. | **Accident** | Refer to ICAO Annex 13 definition of an accident. |
| | | **A** | A serious incident in which a collision was narrowly avoided |
| **B** | Separation decreases and there is a significant potential for a collision. | **B** | An incident in which separation decreases and there is a significant potential for collision, which may result in a time critical corrective/ evasive response to avoid a collision. |
| **C** | Separation decreases, but there is ample time and distance to avoid a potential collision. | **C** | An incident characterized by ample time and/or distance to avoid a collision. |
| **D** | Little or no chance of a collision but meets the definition of a runway incursion. | | |
| **Other Surface Incidents** | An event during which unauthorized or unapproved movement occurs within the movement area or an occurrence in the movement area associated with the operation of an aircraft that affects or could affect the safety of flight. (This subset includes only non-conflict events). | **D** | Incident that meets the definition of runway incursion such as incorrect presence of a single vehicle/ person/aircraft on the protected area of a surface designated for the landing and takeoff of aircraft but with no immediate safety consequences. |
| | | **Not Defined** | FAA non-conflict surface incidents include more than just ICAO class "D" events. |
| **ID** | Insufficient Data-inconclusive or conflicting evidence precludes severity assessment. | **E** | Insufficient information inconclusive or conflicting evidence precludes severity assessment. |

**Figure 18**
**Comparison of the Number of Runway Incursions With the new Reporting Standard Adopted in October 2007**




**Electronic Flight Bag (EFB).** The EFB is an electronic display system that gives pilots information about a variety of aviation topics. These display systems range from laptop-like devices totally independent of the aircraft that can be used on planes across the existing fleet, to high-end displays permanently installed and fully integrated into cockpits of newer aircraft. Most EFBs incorporate an Airport Moving Map which uses Global Positioning System (GPS) technology to show pilots their actual positions ("own ship") on the airport surface. The FAA is focusing the effort on a third type of device, referred to as a "Class 2 system" that is still portable but takes its power and data directly from aircraft systems.

In April 2007, FAA reduced the cost and complexity of certifying EFBs that include moving map technology. AC 91-78 was released in July 2007 which provided aircraft owners, operators, and pilots operating aircraft under Title 14 of CFR Part 91, with information for removal of paper aeronautical charts and other documentation from the cockpit through the use of Class 1 or Class 2 EFBs. The FAA expects several vendors to use the EFB technology by the end of 2008.

**Low Cost Surveillance Systems.** The FAA is considering the use of low-cost, commercially available radar surveillance systems that would reduce the risk of runway incursions at certain small and medium-sized airports. These systems would be installed at airports that do not have Airport Surface Detection Equipment (either ASDE-3 or ASDE-X). Two such systems (different technologies) are currently being tested at Spokane, Washington. Lower traffic levels and less complex operations at these airports allow ground operations to be safely conducted through visual and voice communication between controllers and pilots. A low-cost system would further reduce the risk of ground incidents or accidents, especially during periods of low visibility. The FAA recently sent out a survey to determine what systems are currently on the market.

**The Runway Safety Council.** This is a joint effort between the FAA and the aviation industry to look into the root causes of runway incursions. The Runway Safety Council, scheduled to begin meeting by the end of June 2008, will be comprised of 12 to 15 representatives from various parts of the aviation industry. A working group will integrate investigations of severe runway incursions and conduct a root cause analysis. The working group will present its root cause analysis to the council and make recommendations on ways to improve runway safety. The council will review the recommendations. If accepted, they will be assigned to the part of the FAA and/or the industry that is best able to control the root cause and prevent further runway incursions. The council will track recommendations to make sure appropriate action is taken.

**Tower Refresher Training.** To ensure air traffic controllers maintain a high level of runway incursion prevention awareness, the FAA has mandated that runway incursion prevention be included in the quarterly refresher training at every control tower. These training courses revisit the fundamentals of tower procedures. It is a supplement to the work at each individual airport and scenarios of incidents are reviewed. This training is anticipated to begin in the summer of 2008.

The 2008 *FAA Runway Safety Report* presented an assessment of runway safety in the U.S. from FY 2004 through FY 2007 and highlighted the current and future runway safety initiatives intended to reduce the severity, number, and rate of runway incursions. This report can be downloaded from the FAA website at www.faa.gov/runwaysafety where you can find additional runway safety data, publications, links, and initiatives.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# Appendices

## Trends at Towered Airports in the United States, FY 2004 through FY 2007

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# Appendix A

## A.1 Glossary

**Advisory Circular (AC)** — A document that provides guidance such as methods, procedures, and practices acceptable to the Administrator for complying with regulations and grant requirements. ACs may also contain explanations of regulations, other guidance material, best practices, or information useful to the aviation community. They do not create or change a regulatory requirement.

**Airport Movement Area Safety System (AMASS)** — Radar-based surface detection system that provides automated alerts and warnings of potential runway incursions and other hazards. The system prompts Air Traffic Controllers both visually and aurally to respond to events on the airfield which potentially compromise safety.

**Airport Surface Detection Equipment, Model X (ASDE-X)** — Surface detection technology that integrates data from various sources including radars and aircraft transponders to provide controllers a more robust view of airport operations and enable them to detect potential runway conflicts by providing detailed coverage of movement on runways and taxiways. By collecting data from a variety of sources, ASDE-X is able to track vehicles and aircraft on the airport movement area and obtain identification information from aircraft transponders.

**Air Traffic Safety Action Program (ATSAP)** — A voluntary, non-punitive reporting program for employees of the FAA to openly report safety of flight concerns.

**Aviation Safety Action Program (ASAP)** — A voluntary reporting system designed to encourage voluntary reporting of safety issues and events that come to the attention of employees of certain certificate holders. To encourage an employee to voluntarily report safety issues even though they may involve an alleged violation of Title 14 of the Code of Federal Regulations (14 CFR), enforcement-related incentives have been designed into the program. An ASAP is based on a safety partnership that will include the Federal Aviation Administration (FAA) and the certificate holder, and may include any third party such as the employee's labor organization.

**Commercial Aviation Operations** — Scheduled or charter for-hire aircraft used to carry passengers or cargo. These aircraft are typically operated by airlines, air cargo, and charter services. This group of aircraft operations includes jet transports and commuter aircraft.

**Commercial Aviation Safety Team (CAST)** — A cooperative government-industry initiative founded in 1998 with a goal to reduce the commercial aviation fatality rate in the United States. CAST applies an integrated, data-driven strategy to reduce commercial aviation fatality risk in the United States and promote new government and industry safety initiatives throughout the world.

**Crew Resource Management (CRM) —** The optimal use of all available resources, information, equipment, and people to achieve safe and efficient flight operations.

**Flight Operational Quality Assurance (FOQA)** — A program for obtaining and analyzing data recorded in flight to improve flight crew performance, air carrier training programs and operating procedures, air traffic control procedures, airport maintenance and design, and aircraft operations and design.

**General Aviation (GA)** — General Aviation operations encompass the full range of activity from student pilots to multi-hour, multi-rated pilots flying sophisticated aircraft

for business or pleasure. This group of aircraft operations includes small general aviation aircraft (less than 12,500 lbs maximum takeoff weight) and large general aviation aircraft (maximum takeoff weight greater than or equal to 12,500 lbs). The small general aviation aircraft tend to be single-piloted aircraft, such as a Cessna 152 or Piper Cherokee. The large general aviation aircraft tend to be represented by corporate or executive aircraft with a two-person flight crew — for example a Cessna Citation C550 or Gulfstream V.

**Hold Short** — An air traffic control instruction to the pilot or an aircraft or a vehicle driver not to proceed beyond a specified point.

**Hot Spot** — A location on an aerodrome movement area with a history or potential risk of collision or runway incursion, where pilot/vehicle operator heightened attention is necessary.

**National Transportation Safety Board (NTSB)** — An independent U.S. Federal agency that investigates every civil aviation accident in the United States and significant accidents in the other modes of transportation, conducts special investigations and safety studies, and issues safety recommendations to prevent future accidents.

**Notice to Airmen (NOTAM)** — Information on unanticipated or temporary changes to components of or hazards in the NAS that is disseminated to aircraft operators until the associated charts and related publications have been amended.

**Operational Deviation (OD)** — An occurrence attributable to an element of the air traffic system in which applicable separation minima were maintained, but an aircraft, vehicle, equipment, or personnel encroached upon a landing area that was delegated to another position of operation without prior coordination and approval.

**Operational Error (OE)** — An action by an air traffic controller that results in less than the required minimum separation between two or more aircraft, or between an aircraft and obstacle (e.g., vehicles, equipment, personnel on runways).

**Operational Evolution Partnership (OEP)** — This partnership is lead by the FAA and requires collaboration, commitment, monitoring, and accountability among internal and external stakeholders to transition the National Airspace System to NextGen. In particular, the OEP serves as the integration and implementation mechanism for NextGen.

**Office of the Inspector General (OIG)** — The OIG has a responsibility to report, both to the Secretary and to the Congress, program and management problems and recommendations to correct them. The OIG's duties are carried out through a nationwide network of audits, investigations, inspections and other mission-related functions performed by OIG components.

**Pilot Deviation (PD)** — An action of a pilot that violates any Federal Aviation Regulation.

**Precision Approach Path Indicator (PAPI)** — Lighting system that primarily assists pilots by providing visual glide slope guidance in precision approach environments. The glide path is comprised of a maximum of four lights (red and white) that will illuminate in combinations (e.g. two white and two red when the pilot is on the correct glide slope or one red and three white when the pilot is slight above the glide slope) to assist the pilot in adjusting the approach accordingly.

**Public Use Aircraft Operations** — Any aircraft operated by the military, law enforcement, or state or local government.

**Runway Entrance Lights (REL)** — Lighting system located at runway-taxiway intersections that illuminates a string of red lights and serves as an indicator for pilots and vehicle operators when it is unsafe to enter or cross the runway.

**Runway Incursion (RI)** (Fiscal year 2007 and prior) — Any occurrence on the airport runway environment involving an aircraft, vehicle, person, or object on the ground that creates a collision hazard or results in a loss of required separation with an aircraft taking off, intending to take off, landing, or intending to land.

**Runway Incursion (RI)** (Beginning fiscal year 2008) — Any occurrence at an aerodrome involving the incorrect presence of an aircraft, vehicle or person on the protected area of a surface designated for the landing and take-off of aircraft.

**Runway Incursion Error Type** — Operational error/deviation, pilot deviation, or vehicle/pedestrian deviation. These error types are not an indication of the cause of the runway incursion - they typically refer to the last event in a chain of pilot, air traffic controller, and/or vehicle operator actions that led to the runway incursion.

**Runway Safety Action Team (RSAT)** — A Runway Safety Action Team (RSAT) is established at either the regional or local level to develop a Runway Safety Action Plan for a specific airport. The RSAT's primary purpose is to address existing runway safety problems and issues. A secondary purpose is to identify and address potential runway safety issues. RSATs operate in accordance with standard operating procedures issued by the Office of Runway Safety.

**Runway Status Lights (RWSL)** — Warning system located on the runway that provides a visual indication to pilots and ground vehicle operators not to enter or cross a runway on which there is approaching traffic. System consists of red in-pavement runway entrance lights that are illuminated if a runway is unsafe for entry or crossing.

**Safety Management System (SMS)** — An SMS is a quality management approach to controlling risk. It also provides the organizational framework to support a sound safety culture. For general aviation operators, an SMS can form the core of the company's safety efforts. For certificated operators such as airlines, air taxi operators, and aviation training organizations, the SMS can also serve as an efficient means of interfacing with FAA certificate oversight offices. The SMS provides the company's management with a detailed roadmap for monitoring safety-related processes.

**Surface Incident (SI)** — Any event where unauthorized or unapproved movement occurs within the movement area, or an occurrence in the movement area associated with the operation of an aircraft that affects or could affect the safety of flight. A surface incident can occur anywhere on the airport's surface, including the runway. The FAA further classifies a surface incident as either a runway incursion or a non-runway incursion. In this report, non-runway incursions are generically referred to as surface incidents.

**Taxi Into Position and Hold (TIPH)** — An air traffic control instruction to a pilot of an aircraft to taxi onto the active departure runway, to hold in that position, and not take off until specifically cleared to do so.

**Vehicle/Pedestrian Deviation (V/PD)** — Vehicles or pedestrians entering or moving on the runway movement area without authorization from air traffic control that interferes with aircraft operations.

## A.2 Acronyms

| | |
|---|---|
| **AC** | Advisory Circular |
| **ACRP** | Airport Cooperative Research Program |
| **ADS-B** | Automated Dependent Surveillance - Broadcast |
| **AIM** | Aeronautical Information Model |
| **AIP** | Airport Improvement Program |
| **AIXM** | Aeronautical Information Exchange Model |
| **AMASS** | Airport Movement Area Safety System |
| **ARC** | Region and Center Operations |
| **ASAP** | Aviation Safety Action Program |
| **ASDE-3** | Airport Surface Detection Equipment, Model 3 |
| **ASDE-X** | Airport Surface Detection Equipment, Model X |
| **ASRS** | Aviation Safety Reporting System |
| **ATC** | Air Traffic Control |
| **ATO** | Air Traffic Organization |
| **ATSAP** | Air Traffic Safety Action Program |
| **BASIC** | (B)e sure the runway is open, (A)ircraft position verified, (S)can the runway, (I)ssue clearances using correct phraseology, and (C)lose the loop by getting an accurate readback |
| **CAST** | Commercial Aviation Safety Team |
| **CFR** | Code of Federal Regulations |
| **COO** | Chief Operating Officer |
| **CRM** | Crew Resource Management |
| **DOT** | Department of Transportation |
| **EFB** | Electronic Flight Bag |
| **EMAS** | Engineered Materials Arresting System |
| **FAA** | Federal Aviation Administration |
| **FAASTeam** | Federal Aviation Administration Safety Team |
| **FAROS** | Final Approach Runway Occupancy Signal |
| **FBO** | Fixed Base Operator |
| **FCT** | Federal Aviation Administration Contract Tower |
| **FIRC** | Flight Instructor Review Clinic |
| **FITS** | Federal Aviation Administration Industry Training Standards |
| **FOQA** | Flight Operational Quality Assurance |
| **FSDO** | Flight Standards District Office |
| **FSS** | Flight Service Station |
| **FY** | Fiscal Year |
| **GAO** | Government Accounting Office |
| **GPS** | Global Positioning System |
| **IATA** | International Air Transport Association |
| **ICAO** | International Civil Aviation Organization |
| **InFO** | Information for Operators |
| **JIMDAT** | Joint Implementation Measurement Data Analysis Team |
| **JRC** | Joint Resources Council |
| **LC** | Local Control |
| **MOU** | Memorandum of Understanding |
| **NACO** | National Aeronautics Charting Office |
| **NAS** | National Airspace System |
| **NASA** | National Aeronautics and Space Administration |
| **NATCA** | National Air Traffic Controllers Association |
| **NATPRO** | National Air Traffic Professional Program |

| | |
|---|---|
| **NORDO** | No Radio |
| **NOTAM** | Notice to Airmen |
| **NRC** | National Resource Center |
| **NTSB** | National Transportation Safety Board |
| **OE/D** | Operational Error/Deviation |
| **OEP** | Operational Evolution Partnership |
| **OIG** | Office of the Inspector General |
| **OSHA** | Occupational Safety and Health Administration |
| **PAPI** | Precision Approach Path Indicator |
| **PD** | Pilot Deviation |
| **POI** | Principal Operations Inspector |
| **PTRS** | Program Tracking Reporting Systems |
| **R&D** | Research and Development |
| **RA** | Regional Administrator |
| **REL** | Runway Entrance Lights |
| **RIIEP** | Runway Incursion Information Evaluation Program |
| **ROC** | Regional Operations Center |
| **RRSPM** | Regional Runway Safety Program Manager |
| **RSA** | Runway Safety Area |
| **RSAT** | Runway Safety Action Team |
| **RWSL** | Runway Status Lights |
| **SMGCS** | Surface Movement Guidance and Control System |
| **SMS** | Safety Management System |
| **SPANS** | Safety Program Airmen Notification System |
| **SRM** | Safety Risk Management |
| **THL** | Takeoff Hold Lights |
| **TIPH** | Taxi-into-Position-and-Hold |
| **TRACON** | Terminal Radar Approach Control |
| **TRB** | Transportation Research Board |
| **U.S.** | United States |
| **V/PD** | Vehicle/Pedestrian Deviation |

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# Appendix B

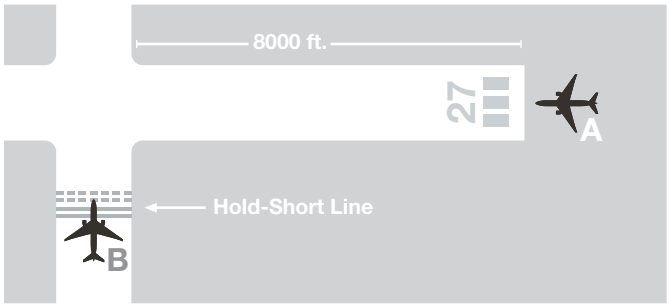
## B.1 History of Runway Incursion Severity

In 2000, the FAA convened a government-industry team of aviation analysts with expertise in air traffic control, airway facilities, airports, flight standards, human factors, and system safety to conduct a systematic review and analysis of the 1,369 reported runway incursions that occurred from CY 1997 through CY 2000 and categorized these incidents in terms of severity. This analysis, presented in the June 2001 Runway Safety Report, provided the foundation for the continued analysis and classification of runway incursion severity. Since that time, the FAA Office of Runway Safety has continued to systematically review the reported runway incursions on a regular basis.

The following runway incursion profiles illustrate the importance of classifying runway incursion severity.

### CASE 1

This incident meets the definition of a runway incursion, but there is little or no chance of collision.



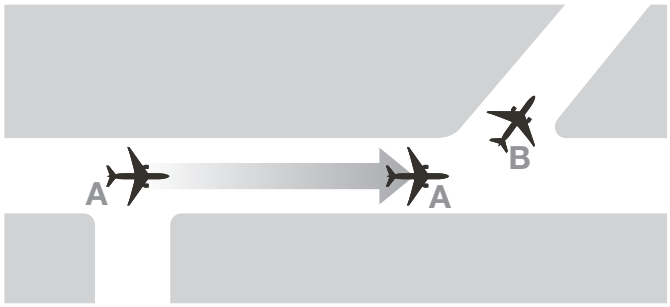

Aircraft A is on approach to Runway 27, an 8,000-foot runway. Aircraft B is taxiing to a parking area on the north side of the airport and has been instructed by air traffic control to "hold short of Runway 27" in anticipation of the arrival of Aircraft A. When Aircraft A is on a quarter mile final approach, Aircraft B's pilot informs the controller that he has accidentally crossed the hold-short line for Runway 27. Although he is not on the runway, the aircraft's nose is across the hold-short line, usually 175 feet from the runway.

A runway incursion has occurred since separation rules require that a runway be clear of any obstacle before an aircraft can land or take off on that runway. The controller instructs Aircraft A to "go around."

- The potential for a collision is low, but by definition, a runway incursion has taken place.
- This case exemplifies the most frequently reported runway incursions.

### CASE 2

This is a severe situation where the margin of safety is so low that a collision is barely avoided.




Aircraft A has been cleared to taxi into position and hold on Runway 9 following Aircraft B that has just landed on the same runway and is rolling out. Aircraft B is instructed to turn left at a taxiway. Aircraft B acknowledges. The controller observes Aircraft B exiting the runway and clears Aircraft A for takeoff. A moment later the controller notices too late that Aircraft B has not fully cleared the runway and in fact appears to have come to a complete stop with much of the aircraft still on the runway.

Aircraft A has accelerated to the point it cannot stop and has only the option to fly over the top of Aircraft B.

- The potential for a collision is high and typifies the common perception of a runway incursion.
- This case is more severe but occurs infrequently.

These examples demonstrate why more descriptive runway incursion categorizations were necessary to capture the different margins of safety— or, conversely, varying degrees of severity—associated with each runway incursion. An accurate portrayal of runway incursion severity trends is essential to finding solutions that target opportunities for error and mitigate the consequences of those errors that do happen.

### B.2 Factors Considered in Severity Categorization

- Speed and performance of the aircraft
- Distance between parties (horizontal and/or vertical)
- Location of aircraft, vehicle, or object on the actual runway or on a taxiway inside the runway holding position markings
- Type and extent of evasive action
- Was the party on the ground stopped or moving?
- Knowledge of the other party's location
- Visibility conditions
- Night vs. day
- Runway conditions (e.g., wet, snow covered)
- Status of radio communications

### B.3 Runway Collisions

There was only one Runway Collision from FY 2004 through FY 2007

| Date | Airport | Airport Location | Brief Summary |
|---|---|---|---|
| 11/30/2004 | PHL | Philadelphia, PA | Ground Control approved a maintenance tug towing a jet transport to cross Runway 35. Simultaneously, Local Control cleared a general aviation aircraft for take-off, also on Runway 35. While on departure roll, the aircraft observed the tug and veered left to avoid a collision, clipping his right wing tip on the tug. This collision resulted in damage but no injuries. |

## B.4 Enhanced Taxiway Centerline Markings at Airports With More Than 1.5 Million Enplanements

| State | Airport Code | Name |
|---|---|---|
| AL | BHM | Birmingham International |
| AK | ANC | Ted Stevens Anchorage International |
| AZ | PHX | Phoenix Sky Harbor International |
| | TUS | Tucson International |
| CA | BUR | Bob Hope |
| | LAX | Los Angeles International |
| | OAK | Metropolitan Oakland International |
| | ONT | Ontario International |
| | SAN | San Diego International |
| | SFO | San Francisco International |
| | SJC | Norman Y. Mineta San Jose International |
| | SMF | Sacramento International |
| | SNA | John Wayne Airport-Orange County |
| CO | DEN | Denver International |
| CT | BDL | Bradley International |
| FL | FLL | Ft. Lauderdale/Hollywood International |
| | JAX | Jacksonville International |
| | MCO | Orlando International |
| | MIA | Miami International |
| | PBI | Palm Beach International |
| | RSW | Southwest Florida International |
| | TPA | Tampa International |
| GA | ATL | Hartsfield-Jackson Atlanta International |
| HI | HNL | Honolulu International |
| | OGG | Kahului |
| ID | BOI | Boise Air Terminal-Gowen Field |
| IL | MDW | Chicago Midway International |
| | ORD | Chicago O'Hare International |
| IN | IND | Indianapolis International |
| KY | CVG | Cincinnati/Northern Kentucky International |
| | SDF | Louisville International-Standiford Field |
| LA | MSY | Louis Armstrong New Orleans International |
| MA | BOS | General Edward Lawrence Logan International |
| MD | BWI | Baltimore-Washington International |
| MI | DTW | Detroit Metropolitan Wayne County |
| MN | MSP | Minneapolis-St Paul International |
| MO | MCI | Kansas City International |
| | STL | Lambert-St Louis International |

| State | Airport Code | Name |
|---|---|---|
| NC | CLT | Charlotte/Douglas International |
| | RDU | Raleigh-Durham International |
| NE | OMA | Eppley Airfield |
| NH | MHT | Manchester |
| NJ | EWR | Newark Liberty International |
| NM | ABQ | Albuquerque International Airport |
| NV | LAS | McCarran International |
| | RNO | Reno/Tahoe International |
| NY | ALB | Albany International |
| | BUF | Buffalo Niagara International |
| | JFK | John F. Kennedy International |
| | LGA | LaGuardia |
| OH | CLE | Cleveland-Hopkins International |
| | CMH | Port Columbus International |
| OK | OKC | Will Rogers World |
| | TUL | Tulsa International |
| OR | PDX | Portland International |
| PA | PHL | Philadelphia International |
| | PIT | Pittsburgh International |
| PR | SJU | Luis Munoz Marin International |
| RI | PVD | Theodore Francis Green State |
| TN | BNA | Nashville International |
| | MEM | Memphis International |
| TX | AUS | Austin-Bergstrom International |
| | DAL | Dallas Love Field |
| | DFW | Dallas/Fort Worth International |
| | ELP | El Paso International |
| | HOU | William P. Hobby |
| | IAH | George Bush Intercontinental/Houston |
| UT | SLC | Salt Lake City International |
| VA | DCA | Ronald Reagan Washington National |
| | IAD | Washington Dulles International |
| | ORF | Norfolk International |
| | RIC | Richmond International |
| WA | GEG | Spokane International |
| | SEA | Seattle-Tacoma International |
| WI | MKE | General Mitchell International |

### B.5 Airports with EMAS Installations

Currently, EMAS is installed at 30 runway ends at 21 airports in the United States, with plans to install 14 EMAS systems at 8 additional U.S. airports.

| Airport | Location | No. of Systems | Installation Date |
|---|---|---|---|
| John F. Kennedy International | New York, NY | 2 | 1996/2007 |
| Minneapolis St.-Paul | Minneapolis, MN | 1 | 1999 |
| Adams Field | Little Rock, AR | 2 | 2000/2003 |
| Greater Rochester International | Rochester, NY | 1 | 2001 |
| Bob Hope | Burbank, CA | 1 | 2002 |
| Baton Rouge Metropolitan | Baton Rouge, LA | 1 | 2002 |
| Greater Binghamton | Binghamton, NY | 2 | 2002 |
| Greenville Downtown | Greensville, SC | 1 | 2003* |
| Barnstable Municipal | Hyannis, MA | 1 | 2003 |
| Roanoke Regional | Roanoke, VA | 1 | 2004 |
| Ft. Lauderdale/Hollywood International | Fort Lauderdale, FL | 2 | 2004 |
| Dutchess County | Poughkeepsie, NY | 1 | 2004 |
| LaGuardia | New York, NY | 2 | 2005 |
| General Edward Lawrence Logan International | Boston, MA | 2 | 2005/2006 |
| Laredo International | Laredo, TX | 1 | 2006 |
| San Diego International | San Diego, CA | 1 | 2006 |
| Teterboro | Teterboro , NJ | 1 | 2006 |
| Chicago Midway International | Chicago, IL | 4 | 2006/2007 |
| Merle K (Mudhole) Smith | Cordova, AK | 1 | 2007 |
| Charleston Yeager | Charleston , WV | 1 | 2007 |
| Manchester | Manchester, NH | 1 | 2007 |
| * General aviation airport | | | |

Additional EMAS Projects Currently Under Contract

| Airport | Location | No. of Systems | Expected Installation Date |
|---|---|---|---|
| Wilkes-Barre/Scranton International | Wilkes-Barre Scranton, PA | 1 | Spring 2008 |
| Chicago O'Hare International | Chicago O'Hare, IL | 2 | Spring 2008 |
| Newark Liberty International | Newark Liberty, NJ | 1 | Spring 2008 |
| San Luis County Regional | San Luis Obispo , CA | 2 | Spring 2008 |
| Minneapolis-St. Paul International | Minneapolis St. Paul, MN | 2 | Spring 2008 |
| Lafayette Regional | Lafayette , LA | 2 | TBD |
| Telluride Regional Airport | Telluride, CO | 2 | TBD |
| Groton-New London Airport | Groton-New London, CT | 2 | TBD |

### B.6 Airports that have Received or are Slated to Receive AMASS or ASDE-X Systems

* Indicates ASDE-X is operational at these sites

| Airport Code | Airport Name, City | AMASS | ASDE-X |
|---|---|---|---|
| **ADW** | Andrews AFB, Camp Springs | X | |
| **ATL** | Hartsfield-Jackson Atlanta International Airport, Atlanta* | X | X |
| **ANC** | Ted Stevens Anchorage International Airport, Anchorage | X | |
| **BDL** | Bradley International Airport, Windsor Locks* | X | X |
| **BOS** | General Edward Lawrence Logan International Airport, Boston | X | |
| **BWI** | Baltimore-Washington International Thurgood Marshall Airport, Baltimore | X | |
| **CLE** | Cleveland-Hopkins International Airport, Cleveland | X | |
| **CLT** | Charlotte/Douglas International Airport, Charlotte* | X | X |
| **CVG** | Cincinnati/Northern Kentucky International Airport, Covington/Cincinnati | X | |
| **DCA** | Ronald Reagan Washington National Airport, Washington | | X |
| **DEN** | Denver International Airport, Denver | X | X |
| **DFW** | Dallas/Fort Worth International Airport, Dallas | X | X |
| **DTW** | Detroit Metropolitan Wayne County Airport, Detroit | X | X |
| **EWR** | Newark Liberty International Airport, Newark | X | X |
| **FLL** | Ft. Lauderdale/Hollywood International Airport, Ft. Lauderdale | | X |
| **HNL** | Honolulu International Airport, Honolulu | | X |
| **HOU** | William P. Hobby Airport, Houston* | | X |
| **IAD** | Washington Dulles International Airport, Chantilly* | X | X |
| **IAH** | George Bush Intercontinental/Houston Airport, Houston | X | X |
| **JFK** | John F. Kennedy International Airport, New York | X | X |
| **LAS** | McCarran International Airport, Las Vegas | X | X |
| **LAX** | Los Angeles International Airport, Los Angeles | X | X |
| **LGA** | LaGuardia Airport, New York | X | X |
| **MCI** | Kansas City International Airport, Kansas City | X | |
| **MCO** | Orlando International Airport, Orlando* | | X |
| **MDW** | Chicago Midway International Airport, Chicago | | X |
| **MEM** | Memphis International Airport, Memphis | X | X |
| **MIA** | Miami International Airport, Miami | X | |
| **MKE** | General Mitchell International Airport, Milwaukee* | | X |
| **MSP** | Minneapolis-St. Paul International/Wold Chamberlain Airport, Minneapolis | X | X |
| **MSY** | Louis Armstrong New Orleans International Airport, New Orleans | X | |
| **ORD** | Chicago O'Hare International Airport, Chicago* | X | X |
| **PDX** | Portland International Airport, Portland | X | |
| **PHL** | Philadelphia International Airport, Philadelphia | X | X |
| **PHX** | Phoenix Sky Harbor International Airport, Phoenix | | X |
| **PIT** | Pittsburgh International Airport, Pittsburgh | X | |
| **PVD** | Theodore Francis Green State Airport, Providence* | | X |
| **SAN** | San Diego International Airport, San Diego | X | X |
| **SDF** | Louisville International Airport-Standiford Field, Louisville* | X | X |
| **SEA** | Seattle-Tacoma International Airport, Seattle* | X | X |
| **SFO** | San Francisco International Airport, San Francisco | X | |
| **SLC** | Salt Lake City International Airport, Salt Lake City | X | X |
| **SNA** | John Wayne-Orange County Airport, Santa Ana | | X |
| **STL** | Lambert-St. Louis International Airport, St. Louis* | X | X |

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# Appendix C

## C.1 Common Runway Incursions in FY 2007

The FAA conducted an analysis of runway incursions to determine the most common runway incursion conflicts. In FY 2007, as in previous years, the most common conflict was a taxiing aircraft or vehicle conflicting with a landing aircraft. Similar to previous years, for FY 2007, these scenarios accounted for 42 percent (155 of 370 incursions) of the total number of runway incursions. Seventy-five percent (116 of 155 incursions) of these incidents were attributed to pilot deviations, 13 percent were categorized as operational errors/deviations, and 12 percent were categorized as vehicle/pedestrian deviations.

The second most common runway incursion conflict in FY 2007 was a taxiing aircraft or vehicle conflicting with an aircraft taking off. These scenarios accounted for 29 percent of the total number of runway incursions. Half of these were categorized as pilot deviations and 29 percent as operational errors/deviations. The remainder were attributed to vehicle/pedestrian deviations. These data are also consistent with previous years.

When combined, taxiing aircraft and vehicles crossing (or potentially crossing) in front of landings and takeoffs accounted for the majority (71 percent) of the incursions. The remainder involved different configurations, such as operations on intersecting runways, and operations on the same runway with the same or opposite direction traffic (such as a takeoff and a landing on the same runway or two landings on the same runway).

There are several differences between the two most common runway incursion scenarios. First, incursions involving crossings in front of a landing are much more likely to be classified as a pilot deviation than an operational error/deviation. Crossings and potential crossings in front of a landing was the most common type of pilot deviation conflict – accounting for 60 percent of the pilot deviations but only 12 percent of the operational errors/deviations. Crossings and potential crossings in front of a takeoff was the most common conflict for operational errors/deviations, accounting for 39 percent of the operational errors/deviations and 26 percent of pilot deviations.

Additionally, while taxiing in front of a landing aircraft accounted for 42 percent of the total number of runway incursions in FY 2007, it accounted for only 12 percent of the most serious (Category A and B) runway incursions. This is due, in part, to the fact that most (62 percent) of the crossings in front of a landing resulted in a go-around. Incidents that result in the landing aircraft going around present lower probability of collision than those that involve the aircraft completing the landing. Taxiing in front of a takeoff aircraft accounted for 29 percent of the total number of runway incursions and 23 percent of the most serious (Category A and B) incursions.

## C.2 Aviation Safety Reporting System (ASRS) and Pilot Deviations

ASRS is a voluntary reporting system administered and maintained by the National Aeronautics and Space Administration (NASA). ASRS collects, analyzes and responds to aviation safety incident reports which are voluntarily submitted by pilots, air traffic controllers and others. The data from these reports is useful for the FAA to understand, in general, issues occurring in the airport environment; what practices industry recognizes as contributing factors to runway safety; and how the FAA can better raise awareness of airport safety.

The FAA reports of pilot deviations that result in runway incursions rarely include information as to why these errors occurred. In order to gain insight into the situations that result in the most common type of pilot error – reading back an instruction correctly, but then initiating another action – an analysis of reports submitted to the NASA ASRS was conducted. This study examined 300 ASRS reports of airport surface movement events at the 34 busiest towered airports submitted between May 2001 and August 2002. Most (78 percent) of the reports were filed by a captain or first officer who was operating the aircraft under FAA Code of Federal Regulations (CFR) Parts 121 or 135 and was directly involved in the incident.

Thirty-five percent of the ASRS reports involved incidents in which pilots crossed the hold short line without authorization. This statistic mirrors the 38 percent frequency in FAA runway incursion data. Among the ASRS reports where a pilot crossed the hold short line without authorization, more than 40 percent of the pilots reported a loss of "position awareness;" that is, they intended to hold short, and crossed the hold short line without realizing it. In such cases, crossing the hold short line without authorization was most often related to the pilot performing heads-down tasks. In 26 percent of these ASRS incidents, the pilot reported being heads down in the cockpit either performing checklists or programming flight deck systems as they crossed the hold short line.

In one-third of the ASRS reports involving a pilot erroneously crossing the hold short line, expectations or reverting to habit contributed to the incident. For example, pilots frequently mentioned that either the hold lines were not where they expected them to be or that they were accustomed to taking a certain route to the assigned runway (and thus holding at a different location than instructed). In these cases, when the instructions were different from what was expected, pilots unintentionally reverted to habit in their actions. In addition, some pilots reported simply following the aircraft in front of them across the hold line, even though they intended to hold short.

### C.3 Improving Training – Vehicle/Pedestrian Deviations

An analysis of runway incursions attributed to vehicle/pedestrian deviations shows that most of them are caused by human performance issues associated with poor or inadequate communications, or inadequate training. For example, in the first five months of FY 2008, 30 percent of the Category A, B, and C vehicle/pedestrian deviations were caused by vehicles that were not in radio contact with the tower. Twenty-six percent of the Category A, B, and C vehicle/pedestrian deviations were caused by vehicles that were instructed to hold short of a runway but did not, and 13 percent were caused by airport emergency vehicles or snowplowing operations. This indicates the high priority that airports need to put on driver training and supports the "Call to Action" training initiative to expand annual recurrent training to all personnel with driving access for the movement area.

One of the error mitigation strategies that the Runway Safety Office initiated is to improve training provided to airport vehicle drivers. As part of this effort, a series of studies on the use of simulators to train airport vehicle drivers was conducted. The first study demonstrated clear benefits for such training, using a high-fidelity simulator. (Evaluation of a Driving Simulator for Ground-Vehicle Operator Training, January 2006, DOT/FAA/AR-06/1) The second study sought to determine whether the same benefits could be attained with a lower-cost simulator. (Ground-Vehicle Operator Training Using a Low-Cost Simulator. May 2006, DOT/FAA/AR-06/22). Most recently, a study was undertaken to explore the hardware, software, and resources that would be required for an airport to build their own customized low-cost simulator (DOT/FAA/AR-07/59). This information has been compiled and is available to any airport interested in building their own simulator to train airport vehicle drivers (Constructing a Low-Cost Ground-Vehicle Driving Simulator at an Airport, September, 2007). This information is available on the FAA website at www.faa.gov/runwaysafety.

## C.4 Recent Recommendations

**IN ADDITION TO AGENCY PLANNING AND INITIATIVES,** the FAA also receives recommendations from external groups. Recent recommendations have come from external groups (highlighted below), and the FAA is reviewing and responding to the recommendations.

**The NTSB** is an independent U.S. federal agency that is charged by Congress to investigate and determine the probable cause of every civil aviation accident in the U.S. and certain public-use aircraft accidents.

Runway Incursion prevention continues to be on the NTSB's "Most Wanted List" of safety improvements in 2008. The current safety recommendations are described below:

- Require, at all airports with scheduled passenger service, a ground movement safety system that will prevent runway incursions; the system should provide a direct warning capability to flight crews. In addition, demonstrate through computer simulations or other means that the system will, in fact, prevent incursions.
- Amend 14 CFR section 91.129(l) to require that all runway crossings be authorized only by specific air traffic control clearance, and ensure that U.S. pilots, U.S. personnel assigned to move aircraft, and pilots operating under 14 CFR Part 129 receive adequate notification of the change.
- Amend FAA Order 7110.65, "Air Traffic Control," to require that, when aircraft need to cross multiple runways, air traffic controllers issue an explicit crossing instruction for each runway after the previous runway has been crossed.
- Immediately require all 14 CFR Part 121, Part 135, and Part 91, subpart K operators to conduct arrival landing distance assessments before every landing based on existing performance data, actual conditions, and incorporating a minimum safety margin of 15 percent.

**The GAO** is an independent, nonpartisan agency that provides audit, evaluation and investigation support for the U.S. Congress. They investigate how the government spends taxpayer dollars.

In December 2007, the GAO released the report *Aviation Runway and Ramp Safety: Sustained Efforts to Address Leadership, Technology, and Other Challenges Needed to Reduce Accidents and Incidents.*Their objective was to review how well the FAA and others were addressing runway and ramp safety. They recommended the five actions described below:

- Implement the FAA Order establishing the Office of Runway Safety to lead the agency's runway safety efforts, including preparing a new national runway safety plan. The plan should include goals to improve runway safety; near- and longer-term actions designed to reduce the severity, number and rate of runway incursions; timeframes and resources needed for those actions; and a continuous evaluative process to track performance towards those goals. The plan should also address the increased runway safety risk associated with the expected increased volume of air traffic.
- Develop an implementation schedule for establishing a non-punitive voluntary safety reporting program for air traffic controllers.
- Develop and implement a plan to collect data on runway overruns that do not result in damage or injury for analyses of trends and causes such as the locations, circumstances, and types of aircraft involved in such incidents.
- Develop a mitigation plan for addressing controller overtime that considers options such as shift changes and incentives to attract controllers to facilities with high volumes of air traffic and high rates of controller overtime.

- Work with the aviation industry and OSHA to develop a mechanism to collect and analyze data on ramp accidents and, if the analysis shows it is warranted, develop a strategic plan aimed at reducing accidents involving workers, passengers, and aircraft in the ramp area. The plan should include a discussion of roles and responsibilities, performance measures, data collection and analysis, and milestones, and consider ramp safety practices being followed in other countries.

**The OIG** is a component of the Department of Transportation. It is an independent auditing group responsible for reporting problems and recommendations – based on audits, investigations and inspections – to the Secretary and Congress.

In May 2007, the OIG released a report: "Progress Has Been Made in Reducing Runway Incursions, But Recent Incidents Underscore the Need for Further Proactive Methods". The report provides the results of their review of the FAA actions taken to address runway incursions at BOS, ORD, PHL and LAX airports. Their objectives were to assess the actions taken by FAA to identify and correct the causes of recent runway incursions at those airports as well as address those issues that could affect safety system-wide. They recommended the six actions described below:

- Establish initiatives to promote increased voluntary pilot participation in RIIEP and ensure that the data collected are analyzed to identify and mitigate runway incursion causal factors.
- Work with the pilot and airline communities to establish a process whereby RRSPMs can request site-specific redacted ASAP information on runway incursions and surface incidents to aid in identifying trends, root causes, and possible local solutions.
- Develop an automated means to share local best practices that were successful in reducing runway incursions. One such mechanism would be establishing an intranet site through the Regional Runway Safety Offices.
- Establish milestones for implementing JANUS, NATPRO, and CRM training and tower simulator training technologies at air traffic control towers that have a history of a high number of runway incursions caused by controller operational errors.
- Require the use of safety risk analyses to evaluate existing operational procedures at airports where potential runway safety risks have been identified and train appropriate personnel in conducting such analyses.
- Require each LOB to include quantitative goals in its annual business plans for reducing runway incursion risks that are specific to its oversight responsibilities and designate the Runway Safety Office as the authority to review and approve all runway safety initiatives submitted by all LOBs.

In January 2008, the OIG released another report: "FAA's Implementation of Runway Status Lights". The OIG objectives of the audit were to determine RWSL viability for reducing runway incursions and assess FAA's progress in implementing the system. They recommended the 4 actions described below:

- Modify the RWSL software design to address the differences between the ASDE-X prototype system used at DFW for RWSL and the national ASDE-X system being deployed at other airports.
- Ensure that the RWSL program office (a) coordinates with FAA's Airports line of business to identify locations that are scheduled to receive RWSL and have ongoing or planned runway improvements and (b) secures agreements with those airports to deploy RWSL in-ground infrastructure concurrently with airfield construction to avoid duplicative construction efforts and costs.

- Ensure that existing RWSL program expertise is retained during the system's transition from R&D to the acquisition phase to capitalize on lessons learned at DFW in addressing system and site-specific anomalies.
- Expedite preparation of the acquisition package to make the final investment decision earlier than the current July 2008 milestone to accelerate RWSL deployment as directed by Congress and the Joint Resources Council (JRC).

**Congress.** The FAA Reauthorization Act of 2007, H.R. 2881, which passed the House on September 20, 2007, contains several provisions that focus on runway incursion issues. This includes significant funding efforts. Section 102 (f) of H.R. 2881 provides $42M over four years for runway incursion reduction programs, as well as $74 million for the acquisition and installation of RWSLs.

In addition, section 305 requires that the FAA develop a Strategic Runway Plan that addresses goals to improve runway safety that are focused on near- and long-term needs to reduce the runway incursion rate. It also requires that the FAA identify the resources necessary to do this, and develop runway safety metrics and a tracking system.

The FAA predicts that one billion people will be flying by 2015, and 2 to 3 billion by 2025. With the growth, maintaining safe ground operations – to include taxing operations, movement on the ground by both aircraft and vehicles, and takeoffs and landings – is a priority. The Aviation Subcommittee held a hearing on February 13, 2008 to receive testimony on runway safety. As a result of the hearing, it was requested that the FAA provide a progress report every three months detailing each Category A and B runway incursion; how the FAA responded; and what progress is being made to address these incidents and reduce the overall number of runway incursions.

**Commercial Aviation Safety Team.** In addition to the external groups discussed in this section, CAST has provided recommendations as well. CAST was created in 1998 and is a U.S. government-aviation industry partnership that has developed an integrated, data-driven strategy to reduce the commercial aviation fatality rate in the U.S. The initial goal was to reduce the commercial aviation fatality rate in the U.S. by 80 percent by 2007; CAST reduced the fatality rate of commercial air travel in the U.S. by 83 percent by 2007. Their goals include maintaining a continuous reduction in fatality risk in U.S. and international commercial aviation beyond 2007.

In August 2007, CAST released a report "Wrong Runway Departures". The report focuses on the analysis of wrong runway departures for Part 121 operators in the U.S. and proposes mitigations to reduce the risk of airplanes departing from the wrong runway. The CAST conclusions and recommended actions are described below:

- Wrong runway departure events continue to occur even after the Lexington accident. Only 60 days after the Lexington accident, an air carrier flight crew departed from the wrong runway at Seattle Tacoma International Airport. To effectively prevent more of these events, the recommended strategy is implementation of a combination of the most effective, [Joint Implementation Data Analysis Team] JIMDAT mitigations with regard to cost and risk reduction. These mitigations are own-ship moving map display – own-ship and/or aural advisory system, flightcrew and ATC CRM, flightcrew and ATC special emphasis scenario-based training, taxiway and runway configuration and enhanced surface markings, ATC clearance and policy, RSAT evaluations, ASDE-X, information dissemination and external lighting.
- Own-ship moving map display – own-ship and/or an aural advisory system combine to form a very powerful mitigation strategy. A combination of own-ship moving map display – own-ship and an aural advisory system would produce a combined risk elimination of nearly 60 percent while offering a path for flight decks to migrate toward own-ship moving map – direct path, which has a risk reduction greater than 80 percent. This solution also would offer risk reductions for runway incursions and other safety initiatives.

- Flightcrew member and ATC CRM combined offer a 57 percent risk reduction. The CAST already has established initiatives for these mitigations; therefore, the existing work should be updated to incorporate the wrong runway departure information for future flight crew and ATC CRM training.
- RSAT evaluations are already scheduled at 60 percent of the airports that have experienced wrong runway departure issues. At a cost of $1,500 and offering a 32 percent risk reduction, the focus of these evaluations should be expanded from runway incursions to include wrong runway departures.
- A review of the ATC clearances and policies offer a 32 percent risk reduction for only $7,200. Implementation costs and a capacity impact assessment would need to be conducted for each airport to determine overall cost. The mitigation used by Cleveland-Hopkins International Airport offers a powerful example of the benefit of reviewing these procedures to reduce the risk of wrong runway departure.
- The wrong runway special emphasis scenario-based training for flightcrew offers a 21 percent risk reduction. In addition, ATC wrong runway special emphasis scenario- based training would produce a 13 percent risk reduction. The combined effort would use the lessons learned from this report to ensure both flightcrew members and ATC personnel are aware of the risks and trained appropriately.
- The installation of ASDE-X equipment has already been established as a CAST safety enhancement for certain airports. This study has found that it will provide a 15 percent risk reduction for wrong runway airports. Twelve of the 38 wrong runway airports have ASDE-X, or are on the implementation schedule. This existing and future work will continue to reduce the risk of wrong runway departures.
- The taxiway and runway configuration changes coupled with enhanced surface markings offers significant risk elimination. The high cost of these projects will require integration of the mitigation strategies into existing airport improvement projects.
- The FAA ATO has taken action to encourage the better dissemination of airport construction information with the Aeronautical Information Model (AIM) process that follows the international Aeronautical Information Exchange Model (AIXM) of adoption and implementation. This work is expected to reduce the risk of wrong runway departures by five percent.
- The feasibility of enhancing airplane external lighting to provide additional conspicuity from behind should be explored and is expected to offer a three percent wrong runway departure risk reduction.
- Finally, the review of the Notice to Airmen (NOTAM) process highlighted that the FAA guidance and documentation that describes the NOTAM process is inconsistent and unclear. In addition, NOTAMs L are only disseminated as determined by the local Flight Service Station (FSS) issuing them and have to be specifically requested to be received. While the FAA has taken action to encourage the better dissemination of airport construction information, the AIM process that follows the international AIXM of adoption and implementation will have an additional positive impact in reducing these events.

## C.5 Ongoing Runway Safety Efforts

The Runway Safety Office is ultimately responsible for the runway safety initiatives throughout the agency. It is made up of a headquarters staff, and regional runway safety offices, staffed with a RRSPM. This office works closely with many groups – including FAA offices with responsibility for runway safety, industry, airport authorities, and the academic community – on their many runway safety initiatives which are described later in this section of the report.

### Regional Runway Safety Programs in FY 2007

RRSPMs interface directly with aviation customers, both internal and external to the Agency. RSAT meetings are conducted at airports that experience frequent or severe runway incursion incidents. The purpose of these meetings is to identify and address existing and potential runway safety problems and to identify corrective actions to further improve surface safety. Additionally, best practices and lessons learned are shared. After developing a plan, the RRSPMs assist in implementing solutions. Annually, the RRSPMs plan meetings at airports for the coming year, as well as other education and training activities as seen in Exhibit 1.

**Exhibit 1**
**Runway Safety Field Activities FY 2007**

| Activity (FY 2007) | Total |
|---|---|
| RRSPM RSAT's | 70 |
| Local Follow Up | 92 |
| Safety Meetings | 248 |
| Incident Investigations | 113 |
| Fly-ins | 37 |
| Other Meetings | 297 |
| **Total Major Activities** | **857** |

### Runway Safety Office Significant Accomplishments for FY 2007

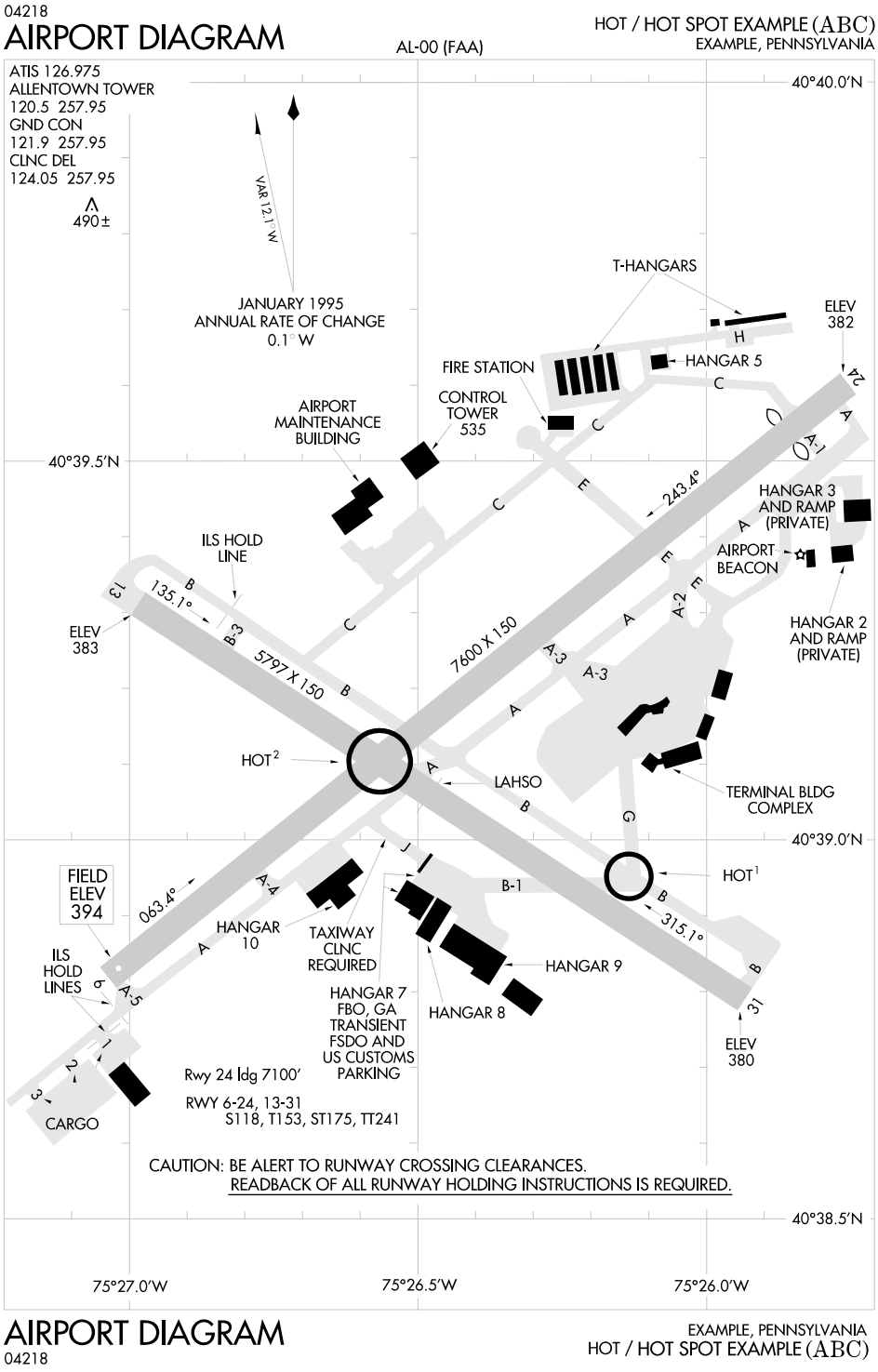
- Developed "Pilot & Flight Crew Procedures During Taxi Operations" posters, adopted for national distribution.
- Developed "Airfield Procedure for Vehicles and Pedestrians" posters, adopted for national distribution.
- Developed a DVD presentation entitled *Runway Safety and the Air Traffic Controller*, on human factors of an ATC error. It is to be used as a recurrent briefing item that covers results of analysis of operational errors and pilot deviations and the human factors that permeate such events. The DVD was distributed to all Air Traffic Control Towers (ATCT) and FAA Contract Towers (FCT) in the Southern Region.

- Participated at the International Air Transport Association (IATA) annual conference. Provided a briefing on runway safety and some of the procedures put in place as a result of the runway incursion that took place at General Edward Lawrence Logan International Airport in June 2005.
- Invited by the New Hampshire Fire Academy to help develop a training module on surface safety that they give to their fire departments state wide. Many of these fire departments support local airports in providing emergency services to them on an ad hoc basis. Training has been provided to several groups.
- Hosted four presentations on runway safety topics at the Great Lakes Region Annual Airports Conference. There were just over 500 registrants at this year's 23rd Great Lakes annual conference, held in Schaumburg, Illinois.
- Produced an update to the original *Airport Sign & Marking Quick Reference Guide* that was produced several years ago. The revision includes a reference to enhanced taxiway centerlines, and is a very popular item with airport organizations and their engineering consultants. These documents have been widely disseminated nationally.
- Provided influence resulting in significant changes to airport geometry at Los Angeles International Airport for the purpose of addressing high runway safety risks on the airport. Also, aggressively supported center taxiway construction for the north complex (as was done previously for the south complex) in order to introduce longer taxi times between runways, eliminating direct runway crossing routes (i.e., eliminating straight-line crossings of runways).
- Initiated a new DVD entitled *ATC: Face to Face, Eye to Eye* which explores the human factors issues in re-creations of actual incursions.

Other Initiatives

- **Runway Safety Educational Materials.** The Runway Safety Office produces other educational material for pilots, controllers and airport vehicle drivers. Some of this material is developed at the headquarters level in response to trends and prominent issues, but the majority is developed at the regional level in response to needs seen by the regional teams, then shared nationally.
- **Hot Spots.** Hot Spots are runway safety-related problem areas on an airport that present increased risk of collision during surface incidents. ICAO has defined a Hot Spot as "a location on an aerodrome movement area with a history or potential risk of collision or runway incursion, and where heightened attention by pilots and drivers is necessary." Typically they are complex or confusing intersections and an area of increased risk has either had a history of or a potential for runway incursions or surface incidents. Exhibit 2 provides an example of a National Aeronautical Charting Office (NACO) diagram with the addition of Hot Spots. Hot Spots will be added to NACO diagrams as soon as the Airports Diagrams Order JO7910.4D is finalized. This is expected in early summer 2008. There are currently approximately 50 airports with Hot Spot brochures developed prior to the adoption of the ICAO definition.

**Exhibit 2**
**Hot Spots Included as Part of the NACO Diagrams**



## Terminal Services

Terminal Services has placed special emphasis on runway safety initiatives and any procedure or policy that affects runway safety. Examples of the initiatives they are pursuing which include runway safety are:

**Management Action Plans.** Operational Error Reduction Workshops are convened to address mitigation strategies such as management action plans, performance management, and operational oversight by all levels of management. Management action plans include the process of challenging and validating procedures (always searching for risk mitigation) and the standardization of techniques, setting a high standard for performance management, making sure management is focused on running the operation and not allowing outside variables to distract the work requirements, and ensuring accountability at every level of the organization. The groups discuss initiatives such as position relief overlap, time on position, on-the-job training, and standardization. These groups are comprised of representatives from similar facilities such as large Terminal Radar Approach Control (TRACON) facilities or combined Tower/TRACONs.

**Surface 9 Airports.** Nine airports (General Edward Lawrence Logan International Airport, Newark Liberty International Airport, Philadelphia International Airport, Detroit Metropolitan Wayne County Airport, Hartsfield-Jackson Atlanta International Airport, Chicago O'Hare International Airport, Dallas/Fort Worth International Airport, McCarran International Airport, Los Angeles International Airport) were examined in March 2008 during Special Awareness for Surface Incident Month. The goal was to look at the entire organization and facilities, focusing on how each one operates and standardizing processes. This initiative included:

- Providing readback/hearback survey report results to customers, facilities, and ATO Terminal Services; including providing letters to customers—anyone who operates on the airport environment such as air carriers, cargo, corporate, private, airport employees, and FBO employees
- Briefings from Air Traffic Managers to Operations Managers and Front Line Managers on making the prevention of runway incursions a top priority
- Providing notifications from Local Control to Front Line Managers of all temporary runway closures
- Adding the requirement to be vigilant to prevent runway incursions to the position relief checklist
- Reiterating runway incursion prevention measures when making operational position assignments
- Maintaining controller awareness with placards throughout the facility

**BASICs.** This is a DVD Series providing Best Practices in ATC *Back to the Basics* for Tower Air Traffic Controllers. BASICs (which stands for **B**e sure the runway is open, **A**ircraft position verified, **S**can the runway, **I**ssue clearances using correct phraseology, and **C**lose the loop by getting an accurate readback) is a joint effort by Terminal Services and Safety Services to reduce operational errors in the terminal environment. Four DVDs were created which are intended to reduce operational errors by focusing on basic control principles and procedures outlined as BASICs. The fourth and final DVD was released in September 2007 and highlighted the "I" and "C" aspects of the BASICs philosophy. Similar videos are planned for En Route Centers and TRACONs in FY 2008. The first video will be distributed in August 2008—*Don't Keep Secrets: Airborne Icing and ATC*. An additional video is also in progress—*Don't Keep Secrets: Thunderstorms and ATC*.

**Crew Resource Management.** Safety Services developed a comprehensive CRM program to address human factors in air traffic control towers. CRM is introduced with a one-day workshop, "Crew Resource Management Human Factors for Air Traffic Controllers." The intent of this course is to help controller teams detect and correct controller and pilot mistakes before they result in operational errors or accidents. Between FY 2006 and the present, FAA has conducted workshops at 26 Operational Evolution Parntership airports and high-operational-error-rate terminal facilities.

Training continues in FY 2008; the following towers will receive CRM training: Charleston, Newark, Kennedy, LaGuardia, Raleigh-Durham, Memphis, Cleveland, Dallas/Fort Worth, Indianapolis, Phoenix, San Diego, Washington National, and Portland. Additionally, CRM training has been held at 11 En Route Centers: Seattle, Los Angeles, Atlanta, Minneapolis, Boston, Salt Lake, Jacksonville, New York, Indianapolis, Chicago, and Washington, D.C. Planning for CRM at the remaining En Route Centers and TRACONs is in progress.

**National Air Traffic Professional Program.** NATPRO is a training series being deployed to Terminal facilities. It consists of 210 exercises designed to improve cognitive skills, as well as improve reaction time, abilities, and awareness. NATPRO training objectives are to increase controller awareness of mental skills affecting performance. NATPRO utilizes an interactive computer program to improve these skills. The program is directly related to mental skills that are important to the performance of air traffic control duties. Examples of the targeted cognitive skills are scanning, tracking, comparing, concentrating, and reaction time. The initial phase of NATPRO training is scheduled for 168 radar facilities in FY 2008. In FY 2009, 214 tower facilities will complete the training.

**AMASS/ASDE.** The AMASS visually and aurally prompts tower controllers to respond to situations on the airfield that potentially compromise safety. AMASS is an add-on enhancement to the host ASDE-3 radar that provides automated alerts and warnings of potential runway incursions and other hazards. AMASS extends the capability of the ASDE-3, enhances surface movement safety, and is currently operational at 34 airports.

ASDE-X is an even more sophisticated surface detection technology. While AMASS is radar-based, ASDE-X integrates data from a variety of sources to give controllers a more reliable view of airport operations. ASDE-X enables air traffic controllers to detect potential runway conflicts by providing detailed coverage of movement on runways and taxiways. ASDE-X is slated for operations at 35 airports. It is currently fully operational at 11 Operational Evolution Partnership airports and is scheduled to be operational at 35 airports by the end of 2010, with the remaining two systems operational by early in 2011. Appendix B.6 displays a list of the airports that have received or are slated to receive AMASS or ASDE-X systems.

**Safety Risk Management (SRM).** In Response to the "Call to Action" Committee recommendations, ATO Terminal Services convened an SRM panel of subject matter experts to identify hazards and assess risks associated with the Committees recommendations for the following air traffic control operations:

- Detailed Taxi Instructions
- Takeoff Clearances
- Taxi To
- Restrict Multiple Runway Crossings During Taxi
- Landing Clearances
- Line Up and Wait

## Airports

Under the Associate Administrator for Airports, the Office of Airport Safety and Standards is responsible for addressing runway safety from an engineering point of view (e.g. lighting, signage and markings standards) and from an operations point of view (e.g. standards for the operation of vehicles). The Office supports airport safety and development by providing grants to airports, developing airport standards, conducting airport research and managing the airport certification and inspection program. FAA Airports is funded under the AIP appropriation. AIP was funded at $3,514,500,000 in FY 2008. Much of this money supported airport grants for runway safety projects such as improvements to RSAs, installation of EMAS, construction of perimeter taxiways and improvements to airport lighting and marking systems.

### Airports Runway Safety Initiatives

In addition to the initiatives discussed in the "Call to Action" section, FAA Airports has facilitated several key initiatives designed to enhance the level of safety enjoyed by system users throughout the NAS. The following highlights a portion of those efforts, and clearly illustrates the multidisciplinary approach taken to raise the level of safety.

**Runway Safety Areas.** RSAs are established to enhance safety in the event of an aircraft undershoot, overrun, or excursion from the side of the runway. The standard RSA extends from 240 feet to 1,000 feet beyond each runway end and is between 120 feet and 500 feet wide depending on the type of instrument approach procedures and size and type of aircraft served by the runway.

In FY 2002, FAA started an ambitious program to accelerate RSA improvements for commercial service runways that did not meet standards. The FAA developed a long-term completion plan that will ensure that all practicable improvements are completed by 2015. Each year, FAA Airports' Business Plan establishes specific completion targets for each FAA region. When the RSA improvement initiative started in FY 2002, there were a total of 453 RSAs requiring improvement. Since then, significant progress has been made and by the end of FY 2008, 63 percent of the RSA improvements will be completed. By the end of 2010, 88 percent of RSA improvements will be completed leaving 54 improvements to be made to meet the 2015 goal.

Forty-one RSA improvements were completed in FY 2007 *(see Exhibit 3)*. In FY 2008, airport sponsors, with FAA AIP grant support, will complete 39 additional RSA improvements. Exhibit 3 highlights those airports to be upgraded:

**Exhibit 3**
**RSA Improvement Plan: FY 2007**

| Inventory | |
|---|---|
| Part 139 Airports | 571 |
| Runways | 1016 |
| Priority Runways | 453 |

| FY 2007 Improvements | |
|---|---|
| Priority Planned | 39 |
| Priority Complete | 41 |
| Other Complete | 24 |
| **Total Complete** | **65** |

| Funding Plan | |
|---|---|
| **Year** | **Cost** |
| 2007* | $262,000,000 |
| 2008 | $227,691,310 |
| 2009 | $209,236,793 |
| 2010 | $196,330,239 |
| 2011 | $191.914,806 |
| 2012 | $151,311,250 |
| 2013 | $111,895,000 |
| 2014 | $17,695,782 |
| 2015 | – |
| **TOTAL** | **$1,106,075,180** |

| Completions | |
|---|---|
| 2000 | 23 |
| 2001 | 31 |
| 2002 | 34 |
| 2003 | 48 |
| 2004 | 22 |
| 2005 | 49 |
| 2006 | 37 |
| 2007 | 41 |
| **Planned** | |
| 2008 | 39 |
| 2009 | 42 |
| 2010 | 31 |
| 2011 | 16 |
| 2012 | 15 |
| 2013 | 11 |
| 2014 | 7 |
| 2015 | 7 |
| **Total** | **453** |

*Estimate AIP grant awards not included in total.*

**Exhibit 3**
**Planned FY 2008 RSA Improvements**

| Region | Location | State | Airport Code | Runway Number |
|---|---|---|---|---|
| AAL | KING SALMON | AK | AKN | 11/29 |
| ACE | KANSAS CITY | MO | MKC | 03/21 |
| ACE | ST LOUIS | MO | STL | 06/24 |
| ACE | ST LOUIS | MO | SUS | 08R/26L |
| AEA | GLENS FALLS | NY | GFL | 01/19 |
| AEA | BLUEFIELD | WV | BLF | 05/23 |
| AEA | CHARLESTON | WV | CRW | 15/33 |
| AEA | GLENS FALLS | NY | GFL | 12/30 |
| AEA | HAGERSTOWN | MD | HGR | 09/27 |
| AEA | NEW YORK | NY | JFK | 04R/22L |
| AEA | JAMESTOWN | NY | JHW | 07/25 |
| AEA | LYNCHBURG | VA | LYH | 04/22 |
| AEA | MORGANTOWN | WV | MGW | 18/36 |
| AEA | PITTSBURGH | PA | PIT | 10L/28R |
| AEA | PARKERSBURG | WV | PKB | 03/21 |
| AGL | ALTON/ST LOUIS | IL | ALN | 17/35 |
| AGL | EVANSVILLE | IN | EVV | 04/22 |
| AGL | MOLINE | IL | MLI | 13/31 |
| AGL | DETROIT | MI | YIP | 05L/23R |
| AGL | DETROIT | MI | YIP | 05R/23L |
| ANE | MANCHESTER | NH | MHT | 06/24 |
| ANM | PUEBLO | CO | PUB | 17/35 |
| ANM | SEATTLE | WA | SEA | 16C/34C |
| ASO | CHARLOTTE | NC | CLT | 18L/36R |
| ASO | WILMINGTON | NC | ILM | 17/35 |
| ASO | ROCKY MOUNT | NC | RWI | 04/22 |
| ASO | PINEHURST/ SOUTHERN PINES | NC | SOP | 05/23 |
| ASW | OKLAHOMA CITY | OK | OKC | 13/31 |
| ASW | LONGVIEW | TX | GGG | 13/31 |
| ASW | HOUSTON | TX | HOU | 17/35 |
| ASW | HOUSTON | TX | IAH | 09/27 |
| AWP | ARCATA/EUREKA | CA | ACV | 01/19 |
| AWP | CONCORD | CA | CCR | 01L/19R |
| AWP | CRESCENT CITY | CA | CEC | 11/29 |
| AWP | CRESCENT CITY | CA | CEC | 17/35 |
| AWP | BULLHEAD CITY | AZ | IFP | 16/34 |
| AWP | LOS ANGELES | CA | LAX | 07L/25R |
| AWP | SANTA BARBARA | CA | SBA | 07/25 |
| AWP | SANTA ROSA | CA | STS | 01/19 |

**Engineered Materials Arresting System Installations.** EMAS was developed in the 1990s in concert with the University of Dayton, the Port Authority of New York and New Jersey, and Engineered Arresting Systems Corporation. This system provides safety benefits in cases where land is not available, where it would be very expensive for the

airport sponsor to buy the land off the end of the runway, or where it is otherwise not possible to have the standard 1000-foot RSA.

EMAS uses a light-weight, crushable concrete material, placed beyond the departure end of a runway, to stop or greatly slow an aircraft that overruns the runway. EMAS does this by exerting predictable deceleration forces on its landing gear as the EMAS material crushes.

While EMAS systems using crushable concrete are the only systems that currently meet FAA standards, the FAA is conducting research through the ACRP that will examine alternatives to the existing approved EMAS system. Results of this effort are expected in 2009.

Four incidents highlight how the technology has worked successfully to bring aircraft entering the EMAS to a safe stop with no serious injuries to the passengers, and minimal damage to the aircraft. These incidents were:

- May 1999: A Saab 340 commuter aircraft overran the runway at John F. Kennedy International Airport
- May 2003: MD-11 safely decelerated at John F. Kennedy International Airport
- January 2005: A Boeing 747 overran the runway at John F. Kennedy International Airport
- July 2006: Falcon 900 airplane ran off the runway at the Greenville Downtown Airport, S.C.

**Airports Safety Responses.** FAA Airports is also responsive to the safety recommendations posed by stakeholders and other governmental agencies. For example, in November 2007, the GAO issued its report titled *Aviation Runway and Ramp Safety: Sustained Efforts to Address Leadership, Technology, and Other Challenges Needed to Reduce Accidents and Incidents*. That report contained two recommendations aimed directly at FAA Airports. The first recommendation calls for the FAA to develop and implement a plan to collect data on runway overruns that do not result in damage or injury for analyses of trends and causes such as the locations, circumstances, and types of aircraft involved in such incidents. The FAA will establish a working group including FAA Airports, ATO, Aviation Safety, and appropriate aviation associations to identify what safety data is currently available regarding these events. The workgroup would also make recommendations to identify mechanisms through which data can be collected and analyzed, with an objective view toward implementing corrective measures. The workgroup report, including recommendations for collecting data on runway overruns, will be completed by the end of the first quarter of FY 2009.

The second recommendation calls for the FAA to work with the aviation industry and Occupational Safety and Health Administration (OSHA) to develop a mechanism to collect and analyze data on ramp accidents and, if the analysis shows it is warranted, develop a strategic plan aimed at reducing accidents involving workers, passengers, and aircraft in the ramp area. The plan includes a discussion of roles and responsibilities, performance measures, data collection and analysis, and milestones, and considers ramp safety practices being followed in other countries. While ramp safety has traditionally been an issue involving the creation of safe working conditions, the FAA agrees that a review of this issue is appropriate. FAA Airports has asked the Airport Cooperative Research Program (ACRP) Board of Governors to consider a study of how other countries regulate ramp safety. The study would list best practices and identify procedures that are effective in improving ramp safety. The study was approved by the ACRP Board of Governors. The Transportation Research Board (TRB) formed a technical panel to develop a statement of work and request for proposals (RFP). The RFP was issued and proposals are due in June. A contractor will be selected, and the study is scheduled to be completed in FY 2009. The FAA will also form a workgroup, co-chaired by Associate

Administrators for Airports and Aviation Safety with representatives from FAA Airports, ATO, AVS, and appropriate aviation associations to recommend an improved methodology for collecting and analyzing data on ramp accidents. That workgroup report should be completed by the second quarter of FY 2009. FAA is also examining whether ramp safety management should be a required feature of airline and airport SMS plans.

**Safety Management System.** FAA Airports is moving forward with the integration of SMS into its business practices and airport certification rules. To help familiarize the airport community with these concepts, FAA Airports issued AC 5200-37, Introduction to Safety Management Systems for Airport Operators, in February 2007. An SMS pilot program was also initiated at 20 airports in the summer of 2007 and is scheduled for completion in June 2008. AIP grants were provided to allow airports to hire consultants to develop airport-specific SMS plans. The results of these studies will be used to help the Office of Airports in the development of rules requiring SMS at certificated airports. The goal is the development of a regulation that is flexible enough to be used at both large and small certificated airports throughout the U.S.

**Airports Research.** FAA Airports sponsors two airport research programs. The Airport Technology Research Program is conducted by the Airport R&D Branch at the FAA Technical Center. It is funded in AIP at approximately $19 million per year. About half the research is for improving airport safety including research on airport design, airport lighting and marking, airport rescue and fire fighting, and wildlife hazard mitigation. The very successful EMAS technology was developed under this research program

AIP also funds the ACRP at $10 million per year. ACRP is administered by the TRB. The TRB solicits research topics which are then reviewed by a board of governors that selects the topics to be funded. TRB forms a technical panel for each topic, develops a RFP, and selects a contractor to do the work. Over 90 research studies including those on airport safety are underway. In 2007, TRB issued an ACRP report on airport SMSs. A follow up document is being developed by TRB—*The Guidebook for Airport Safety Management Systems*—and is scheduled for completion in late 2008.

**Regional Initiatives.** Regional Airport Divisions analyze the cause of vehicle/pedestrian deviations to target their outreach efforts. For example, regions that reported an increase in snowplow runway incursions in the winter, developed special programs to emphasize training for snowplow operators prior to the next winter season.

**Lead-on Lights.** Effective February 1, 2007, AC 150/5340-30B changed runway lead-on light standards to include a modified color pattern of taxiway centerline lead-on lights. As displayed in Exhibit 5 and Exhibit 6, the modification adds alternating yellow and green lights after the hold-short line. This enhancement improves a flight crew's awareness of the runway environment by providing an additional visual indication that the aircraft is approaching the holding position marking and is about to enter the runway environment. Previously, taxiway centerline lights extended from the apron to the runway with no distinction from lead-on lights.

**Exhibit 5**
**Runway Lead-On Lights**

Previous Configuration | New Configuration

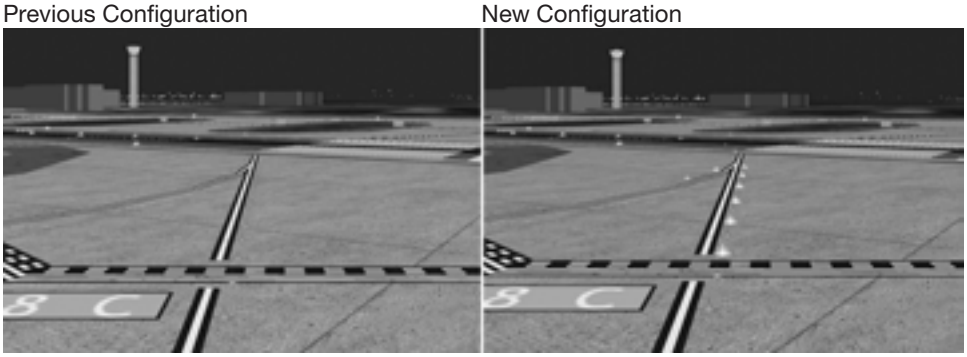
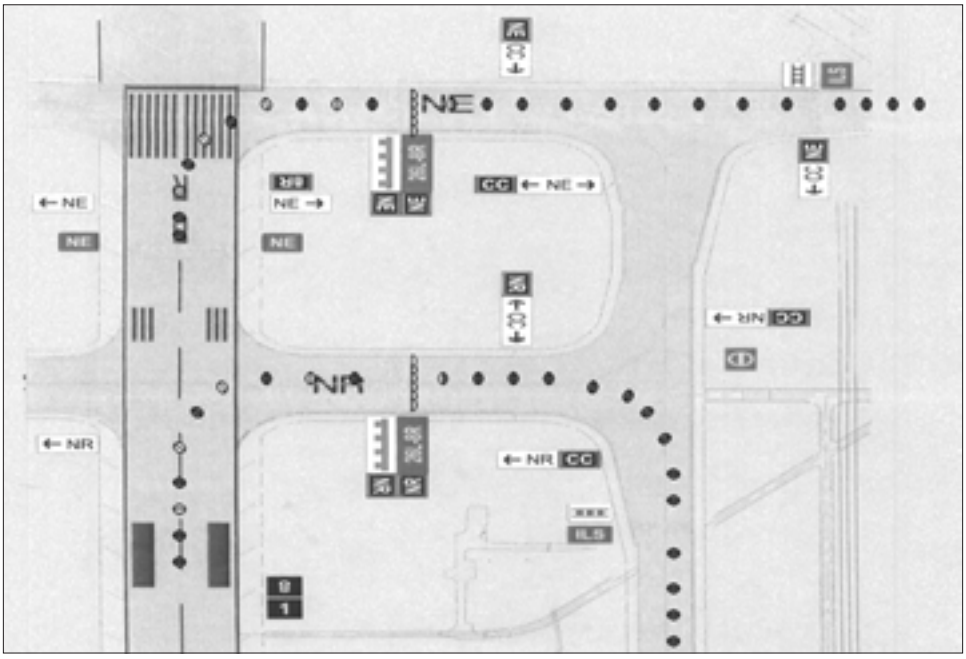


**Exhibit 6**
**Enhanced Runway Lead-On Lights**




**Perimeter Taxiways.** Perimeter taxiways provide an alternate pathway for aircraft to travel between the runway and the gate without having to cross another runway. This infrastructure change offers improvements to surface safety due to the reduced number of runway crossings. Airports that operate parallel runway arrival and departure configurations may get the dual benefits of increased capacity and safety.

Hartsfield-Jackson Atlanta International Airport was the first airport in the country to install a perimeter taxiway (Taxiway Victor), which opened in April 2007. It eliminates hundreds of runway crossings per day, reduces delays, and boosts departure capacity.

Dallas/Fort Worth International Airport is nearing completion on a perimeter taxiway in its South East quadrant. Simulations have shown that the airport could have significant reductions in departure delays and in the number of runway crossings, which currently number 1,600-1,800 per day. Other benefits include relieving frequency congestion due to a decreased need for pilot-controller communications for ground control. Dallas/Fort Worth International Airport plans to install similar perimeter taxiways in the other three quadrants over the next decade.

**Runway Status Lights.** RWSL are another technology the FAA is testing that will alert pilots to potential runway incursions. They are a supplement to existing pilot procedures training and visual monitoring. While Airport Surface Detection Equipment, Model X (ASDE-X) and Airport Movement Area Safety System (AMASS) detect the presence and motion of aircraft and vehicles on or near the runways, RWSL identifies any possible conflicts with other surface traffic. The two functional elements that comprise the current RWSL system are Runway Entrance Lights (RELs) *(see Exhibit 7)* and Takeoff Hold Lights (THLs) *(see Exhibit 8)*. RELs indicate when a runway is unsafe for entry and THLs advise pilots when the runway is unsafe for takeoff due to traffic on the runway.

The operational evaluation of RELs using ASDE-X was completed in 2005 at Dallas/Fort Worth International Airport and showed promising results and the test system remains in use. THLs were installed and have been under evaluation at Dallas/Fort Worth International Airport since 2006. An enhanced lighting configuration is being installed at two additional runways at Dallas/Fort Worth International Airport in 2008. The evaluation of RWSL with AMASS began in 2007 at San Diego International Airport and are currently being tested with promising results. The FAA recently issued a RFP from companies interested in building a system that would be deployed nationwide.

**Exhibit 7**
**Runway Entrance Lights**

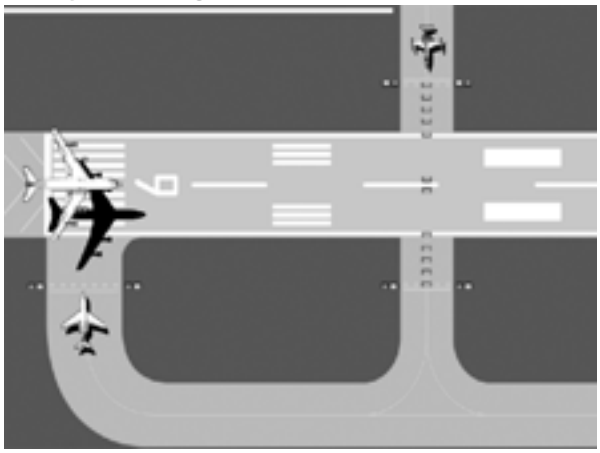
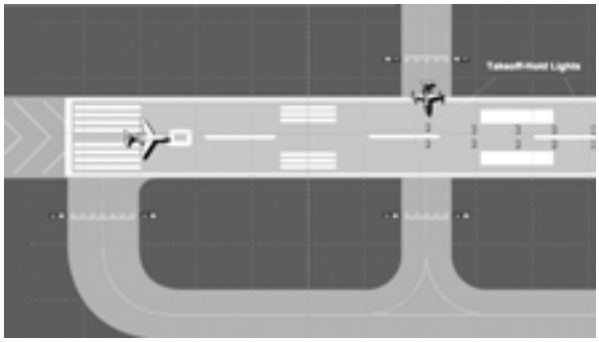


**Exhibit 8**
**Takeoff Hold Lights**



The FAA entered a preliminary agreement in February 2008 to install an additional RWSL system for evaluation on the north and south airfields at Los Angeles International Airport. Los Angeles International Airport will fund the cost of the RWSL installation. It will be the first system to be installed on high speed taxiways. In April 2008, the FAA entered a preliminary agreement to install an additional RWSL system for evaluation at General Edward Lawrence Logan International Airport. The FAA and Massport will share in the system installation costs of this RWSL installation.

**Final Approach Runway Occupancy Signal.** The FAA is testing this technology which will alert pilots to potential runway incursion. The Final Approach Runway Occupancy Signal (FAROS) test system at Long Beach-Daugherty Field is a fully automated system using inductive loop sensors embedded in the runway and taxiway surfaces to detect aircraft and vehicles entering and exiting the monitored zones. When the runway is occupied by a potentially hazardous target, the system flashes the Precision Approach Path Indicator (PAPI) lights as a visual indicator to pilots on approach without controller input. FAA is developing a plan for implementation of FAROS at the larger airports, and expects to begin operational trials at Dallas/Fort Worth International Airport by the end of FY 2008.

As illustrated in Exhibit 9 and Exhibit 10 , Runway 30 at Long Beach-Daugherty Field is monitored at three areas commonly used for departures and runway crossings. These three areas are called activation zones.

**Exhibit 9**
**FAROS System**

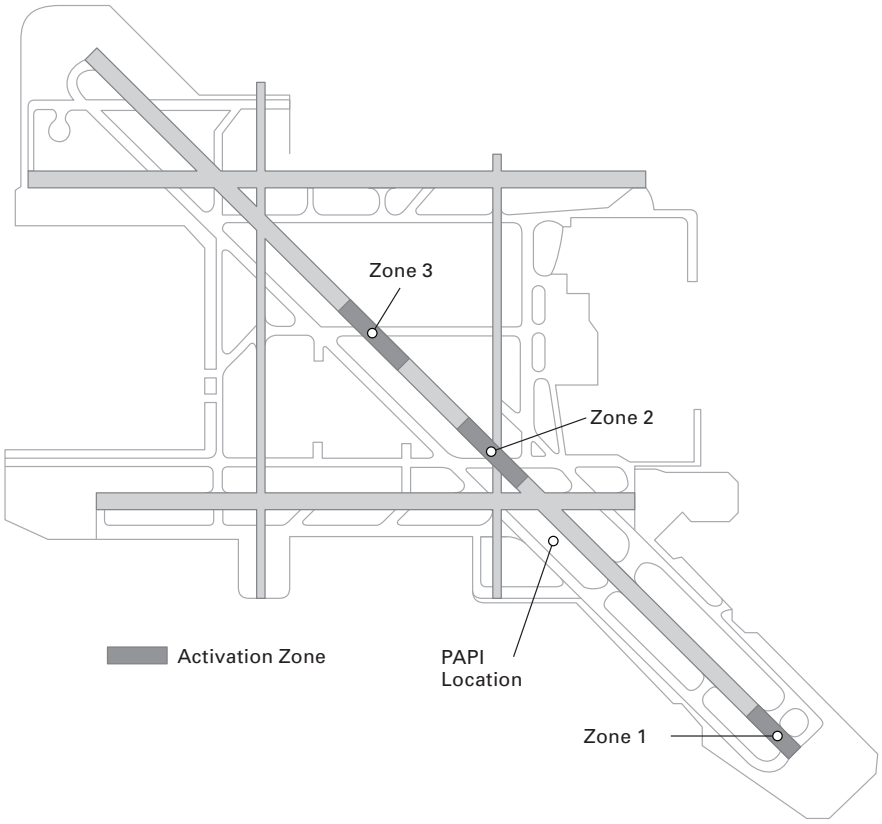
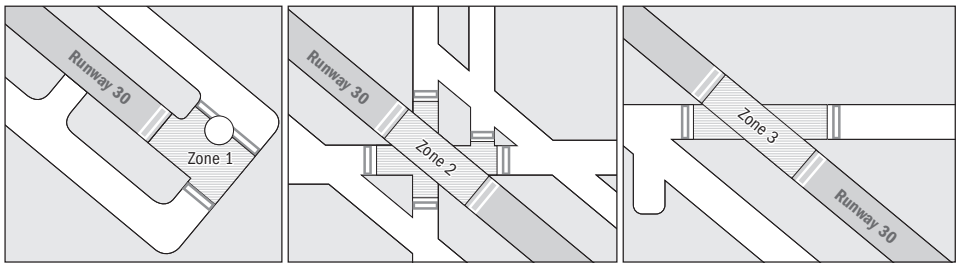



**Exhibit 10**
**FAROS System Intersection Runway Logic Zones**



## Flight Standards Service

Flight Standards promotes safe air transportation by setting the standards for certification and oversight of airmen, air operators, air agencies, and designees. They also promote safety of flight of civil aircraft and air commerce by accomplishing certification, inspection, surveillance, investigation, and enforcement, setting regulations and standards, and managing the system for registration of civil aircraft and all airmen records.

Within Flight Standards, there are many organizations that help with runway safety by interfacing with both commercial and general aviation pilots, by managing the RIIEP program, through the educational efforts of the FAASTeam, and other special safety initiatives such as more in-depth investigations of runway incursions. Flight Standards investigates all pilot deviations, whether they happen on the surface or in the air. This report focuses on the surface pilot deviations only.

**Ongoing Runway Safety Initiatives**

- **In-depth Reviews.** Flight Standards is working to make greater use of available information and to find out more about runway safety events and develop solutions. One step is conducting more in-depth reviews of the more serious (Category A and B) runway incursions with general aviation involvement. This will include:
  - Listening to recordings of communications to identify non-verbal cues that indicate pilot problems.
  - Investigators will use event data to locate where most alarms are occurring and identify those airports that warrant further investigation. This will help determine why incursions are occurring and help provide solutions to curb these alarms.
  - Reviewing RSAT recommendations for applicability to other airports and to identify high priority items that may not be in the process of being accomplished.
  - Reviewing ASRS and RIIEP narratives. This is valuable information because pilots described the "why" in some reports—which is a subjective statement of contributing factors related to the incident and can aid with finding a root cause. The airports which experience the most runway incursions need the most attention, and the narrative data should be reviewed for clues to the reasons for the high frequency.
- **Surface Movement Guidance and Control System (SMGCS).** Flight Standards is responsible for SMGCS operations, which involve air carriers conducting operations when visibility is less than 1,200 feet runway visual range. Flight Standards is updating AC 120-57A, SMGCS, which describes the standards and provides guidance for the development of an airport's SMGCS plan; a draft FAA SMGCS Order is in coordination.
- **Pilot Guidance for Runway Status Lights**. Flight Standards is also involved in the RWSL program highlighted in the Airports portion of this report. Flight Standards is responsible for ensuring that pilot guidance for operating on airports with RWSLs is incorporated into the *Aeronautical Information Manual* and the *Airport Improvement Plan*.
- **Quality Assurance.** The Flight Standards Quality Assurance staff is responsible for analysis of pilot deviation data. They produce periodic reports which analyze these incidents, of which runway incursions are a subset. This office also works with the regions to make sure that the pilot deviation reports are completely investigated. They provide quarterly pilot deviation analysis identifying trends and "hot spots" to Flight Standards management.

- **Aviation Safety Action Program.** The primary purpose of ASAP is to identify and correct adverse safety events that would otherwise not likely come to the attention of the FAA or company management. The goal of the air transportation ASAP is to enhance aviation safety through the prevention of accidents and incidents by encouraging voluntary reporting of safety issues and events that come to the attention of employees of certificate holders and repair stations that are participating in the ASAP. The ASAP provides for the collection, analysis and retention of the safety data that is used to develop corrective actions for identified safety concerns, and to educate the appropriate parties to prevent a reoccurrence of the same type of safety event. Some statistics are presented below:
  - As of February 2008, over 70 operators were participating in ASAP, and over 160 ASAP Memorandums of Understanding (MOU's) had been established for different employee groups (pilots, dispatchers, mechanics, and flight attendants).
  - Feedback since the program was formally initiated with AC 120-66 on January 8, 1997 has been highly positive. ASAP is providing an unprecedented opportunity to identify and correct adverse safety events which, prior to the establishment of the program, were largely unknown and which otherwise would have continued uncorrected. Each operator is required to maintain a database of all ASAP reports and their disposition. The FAA also maintains a separate database of ASAP safety enhancements at its headquarters.
- **Runway Incursion Information Evaluation Program.** RIIEP is an FAA safety program that was developed to help gather and analyze facts about runway incursions. When an individual is involved in a runway incursion and is determined to be eligible for RIIEP, a Flight Standards' inspector contacts the person and conducts an interview using the 48-question RIIEP questionnaire. The information that pilots, maintenance technicians and others provide will be used to develop and implement runway safety education programs, future regulatory guidance and new technologies. The number of questionnaires completed reflects participation by 736 pilots and 20 mechanics as of March 31, 2008.

An analysis of this data showed that, of the pilots that have submitted RIIEP reports, 39 percent were air transport pilots, 31 percent were private pilots, 24 percent were commercial pilots, and six percent were student pilots. Thirty-five percent were certified flight instructors. The analysis showed that the Captain or Pilot-in-Command was at the controls when the incursion happened 91 percent of the time.

Eighty-three percent of those pilots involved in incursions had never been involved in an accident or incident, and 95 percent had not been involved in an accident or incident in the two years preceding the incursion. Sixty-one percent of the pilots always operate at towered airports. Sixty-eight percent of the incursions occurred at an airport that was not the pilot's home base or airport.

Sixty-nine percent of the incursions occurred during taxiing before takeoff; 17 percent occurred during taxiing after landing; eight percent happened during landing; and six percent happened during takeoff.

The table below summarizes some of the findings regarding specific aspects of the incursions:

**Exhibit 11**
**RIIEP Runway Incursion Findings**

| Factor | Mechanic | Pilot |
|---|---|---|
| Incident occurred during the day | 71% | 80% |
| Mechanic or pilot could see clearly | 95% | 91% |
| Reviewed airport diagram prior to taxi | 50% | 71% |
| Looked at airport diagram during taxi | 40% | 53% |
| Could see signs, markings, and lighting from cockpit | 90% | 89% |
| Signs, markings, and lighting were clear | 90% | 91% |
| Received the taxi instructions they expected | 58% | 64% |
| Wrote down taxi instructions | 68% | 28% |
| Read back taxi instructions | 84% | 87% |
| Wrote down hold short instructions | 26% | 17% |
| Read back hold short instructions | 79% | 62% |
| Confirmed hold short instructions with other crew member | 37% | 26% |
| Had normal amount of sleep prior to event | 75% | 83% |
| Experiencing normal degree of fatigue at time of incident | 75% | 71% |

**National FAASTeam.** The FAASTeam is led by FAA employees and augmented with volunteer pilots. Their mission is to publicize safety issues, including runway safety. They are doing this in many ways.

- The FAASTeam is familiar with Runway Safety educational and awareness materials, so they can provide or make airmen aware of them.
- The National Resource Center (NRC) provides a central location for resources (including runway safety products) for FAASTeam members. These materials are then disseminated by the team members at meetings, air shows, and other events. The NRC also has produced videos on safety that are broadcast, and also archived for later viewing. Recent topics have included Runway Safety for Air Traffic Controllers, Safer Skies, and RIIEP.
- The FAASTeam uses electronic media to increase safety awareness. In addition to their website, which hosts a variety of safety material, the FAASTeam also established the Safety Program Airman Notification System (SPANS) network. Anyone can enroll, indicate topics of interest, and subsequently receive emails when relevant publication or event information is available. As of March 31, 2008, 473,555 people had signed up.
- The FAASTeam members support various meetings, including RSAT meetings, pilot/controller meetings, airmen meetings, aviation association meetings, Runway Safety Summits, and agricultural group meetings.
- FAASTeam members work with airlines regarding runway safety, by attending meetings with the airlines and providing runway safety materials to those carriers. Additionally, they are working with the Principal Inspectors for those airlines to make them aware of runway safety materials and issues, and encourage a review of airline procedures that affect Runway Safety. They also work to make the airlines aware of risky areas at the airports they fly into.
- FAASTeam members work on specific issues at individual airports, identifying risky areas on airport diagrams and publicizing the need for caution in these areas by pilots and airport personnel. They also conduct specific presentations at these airports.
- The FAASTeam members raise awareness of RIIEP with both FAA personnel and pilots, explained RIIEP's use, and encourage use of the program to increase the causal factor data available for analysis.

- The FAASTeam members work with the RRSPMs; many are regular representatives to RSAT's. In some regions, the FAASTeam and RRSPM have established data sharing mechanisms.
- Led by the FAASTeam, WINGS is an accreditation/certificate Pilot Proficiency Program designed to help pilots construct an educational curriculum suitable for their unique flight requirements. It encourages pilots to continue their aviation educational pursuits and requires education, review, and flight proficiency in the Areas of Operation found in current Practical Test Standards, that correspond with the leading accident causal factors. Flight Standards is recommending the addition of a module that focuses on runway safety.

**Flight Standards Training and Instruction.** Proficiency training is essential to the safety of all pilots and their passengers. Each pilot must take a personal interest in his or her safety and that of their passengers. Changes to the following initiatives are being explored by Flight Standards Service:

- **Flight Reviews.** Flight Reviews, which are provided by flight instructors, incorporate information to refresh pilots on runway safety. They consist of one hour of ground instruction and one hour of flight instruction and participants receive a certificate as verification of course completion. Flight Standards Service is considering the mandatory review of a Runway Safety DVD as a way of increasing the awareness with respect to runway safety.
- **Flight Instructor Review Clinics (FIRC).** Flight instructors are required to renew their flight instructor certificates every two years. A FIRC is a 16-hour course that allows the flight instructor to satisfy this requirement. In November 2007, AC 61-83 version F went into effect providing more flexibility to the FIRC provider, allowing them to decide what the most important topics are and how much time should be spent on each. There are still 15 core topics, but they can be incorporated into the FIRC training course outline as the provider sees fit. Flight Standards is recommending that a two-hour block of time should be allocated for runway safety. This session would provide guidance to flight instructors on runway safety techniques, which flight instructors are then expected to pass on to their students.
- **Flight Tests.** Flight Standards believes tailoring questions in pilot exams toward runway safety increase runway safety awareness for pilots. They are recommending that questions target the airports that pilots are likely to fly into depending on their region and flying schedules. By allowing Designated Pilot Examiners to determine which questions to use during test administration, the pilots will receive a more realistic and practical experience. This will allow the pilots to be more familiar with the runways at the airports they fly into.
- **FAA Industry Training Standards (FITS).** FITS is a joint government-stakeholder initiative developed for GA flight operations with technically advanced aircraft. FITS introduces proven concepts that are central to system safety into the training curriculum and allows training to evolve with the introduction of new and advanced in-cockpit technologies. It allows for structured, scenario-based training that is key to achieving a high level of safety. Flight Standards is recommending that a runway safety component be added to these standards as well as adding a focus on situational awareness and improved decision-making.

- **CFR Part 141–Flight Schools.** Flight Standards Service will implement measures to ensure runway safety is emphasized in flight school curricula and operations by inspectors. Flight Standards Service will provide tools such as checklists and instructions for assessing runway safety at flight schools, and will be developing Program Tracking Reporting Systems (PTRS) codes to track and measure inspectors' activities and ensure runway safety issues are part of the inspection process.

**Flight Standards Communications**

- **Listen Up to Protect Yourself.** This program provides replays of the communications from actual events and emphasizes the need for pilots to stop, listen, and seek clarity in communications.
- **Compact Disc from Accident Investigations.** The discs review the TWA accident at Lambert-St. Louis International Airport from the early 1990s. Inspectors at the Flight Standards District Offices (FSDOs) will be required to review it prior to working on runway incursion enforcement actions.
- **Welcome Packages.** Flight Standards expects to start sending a welcome package to every new student pilot welcoming them to the aviation community and will include information on the seriousness of the taxi stage of operations and its role in runway incursions.

## Office of Assistant Administrator for Region and Center Operations

Under the leadership of the Assistant Administrator for Region and Center Operations, the Regional Administrators (RAs), located in each of the FAA's nine regional offices, work collaboratively with all types of internal and external customers to promote runway safety. The RAs monitor runway safety activities in the various FAA organizations within each region to ensure that efforts are well integrated and issues requiring cooperation across the FAA's diverse lines of business are resolved quickly. The RAs promote the sharing of information at the senior management level throughout the various regional and ATO Service Area organizations.

**Horizontal Integration.** As the official representative for the FAA Administrator, the RA serves as a key focal point in advocating runway safety initiatives both inside and outside the FAA organization. This is accomplished through maintenance of a wide network of contacts, including regional military services, aviation industry and organizations, and state and local governments. The RAs assist the RRSPMs in collaborating with state and local aviation officials on efforts to improve runway safety through training, education and feedback sessions with local aviation users. The RAs provide support at key runway safety meetings. In 2007 and 2008, these included the Airport Surface Analysis meetings conducted as part of the Runway Safety "Call to Action", AFS "Reducing Pilot Deviation" meetings with the Part 121 commercial carriers and the Regional Runway Safety Summits sponsored by the Office of Runway Safety.

As part of both the "Call to Action" and the Flight Standards "Reducing Pilot Deviation" briefings, through the RA's, ARC was instrumental in assuring all lines of business within the FAA were engaged and contributors in the Agency's effort to reduce runway incursions and enhance aviation safety.

The RAs and their Aviation Space and Education coordinators integrate the Runway Safety Program Office into various educational and customer forums. These include aviation conferences, Aviation Career Education camps, pilot town hall meetings, national and regional aviation symposiums, local air shows and aviation career day events. The

RAs work with the RRSPMs to make sure they take advantage of every opportunity to educate aviation system users on the importance of runway safety.

**Timely Notifications.** The Regional Operations Centers (ROCs), which are part of each RAs Executive Operations staff, provide support and leadership to FAA organizations who respond to aviation incidents and accidents. Typically, the ROC is the first point-of-contact for FAA's field facilities, airports, and law-enforcement organizations reporting these types of events. It is the responsibility of the ROC to immediately notify key decision-makers in their respective regions (or adjoining regions, if necessary) of an event. This allows all parties with a "need-to-know" to receive time-sensitive notifications so critical data needed for root-cause analysis can be preserved. The ROC also assists in the coordination of the investigations of those incidents or accidents.

**Advancing Aviation Safety Through Technology.** As demands on the nation's aviation system increase, it is necessary for the FAA and the aviation industry as a whole to identify ways to enhance safety. While we are in the safest period in history for commercial aviation, we must continue to strive for improvements. Much of this improvement will rely on new and advanced technologies. In the case of runway safety, items such as enhanced vision systems providing near visual acuity in instrument meteorological conditions, moving map displays in aircraft and ground service vehicles to promote improved situational awareness, Automated Dependent Surveillance-Broadcast (ADS-B) on-board aircraft for more timely surveillance updates to pilots, multi-lateration systems to identify the location of vehicles and aircraft operating within the airport movement areas, and advanced airport signage/marking are a few examples of technologies being tested to improve the safety of our runways and airfields.

But as with any new system, adequate funding is imperative for research, development, deployment and maintenance. During the past year, the RAs have been actively educating federal, state and local officials, media outlets, pilot organizations and the general public on the need to maintain and financially support the U.S. aviation infrastructure. Each RA has conducted multiple briefings to a wide variety of audiences on how these technologies, many relating to the preservation and enhancement of runway safety, must be fielded to maintain and improve the Agency's record for aviation safety.

**Areas for Improvement.** Based on the FAA's organizational structure, most offices within the FAA are under direct-line supervision from FAA Headquarters in Washington, D.C. While the RAs report directly to the Assistant Administrator for Regions and Center Operations, they have no direct authority over any other staff or operational offices except their own executive operations and logistics staffs. For the most part, any coordination or "horizontal integration" the RAs carry out must be done through mutual respect and collaboration with other lines of business managers/directors within each regional office. This is especially true when it comes to runway safety activities.

Typically, this system works well; however, in cases where all parties do not agree, the RA has no direct-line authority that would require action on the part of any lines of business. As the Office of Runway Safety within ATO Safety Services becomes more established and mature, clear lines-of-authority and protocols for handling matters with cross-cutting implications should be jointly established. This will assist in standardizing how runway safety matters are handled and better define the roles and responsibilities for any lines of business playing a part in promoting and addressing runway safety issues.

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## Appendix D

**ALABAMA**

| Airport, City (Airport Code) | Region | Fiscal year | Severity | | | | | Total RIs | Annual RI Rate | Total SIs |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Collision | A | B | C | D | | | |
| Birmingham International Airport, Birmingham (BHM) | ASO | 2004 | | | | | | | | 6 |
| | | 2005 | | | | | 1 | 1 | 0.67 | 1 |
| | | 2006 | | | | 1 | 1 | 2 | 1.40 | 3 |
| | | 2007 | | 1 | | | | 1 | 0.72 | 4 |
| Huntsville International - Carl T. Jones Field, Huntsville (HSV) | ASO | 2004 | | | | | | | | 2 |
| | | 2005 | | | | | | | | 1 |
| | | 2006 | | | | | | | | 2 |
| | | 2007 | | | | | | | | 4 |
| Mobile Downtown Airport, Mobile (BFM) | ASO | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | 2 |
| | | 2007 | | | | | | | | |
| Mobile Regional Airport, Mobile (MOB) | ASO | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | 1 | 1 | 0.94 | 4 |
| | | 2007 | | | | | 1 | 1 | 1.06 | 2 |
| Montgomery Regional Airport, Montgomery (MGM) | ASO | 2004 | | | | | | | | 1 |
| | | 2005 | | | | | 1 | 1 | 1.50 | |
| | | 2006 | | | | | | | | 1 |
| | | 2007 | | | | | | | | |

**ALASKA**

| Airport, City (Airport Code) | Region | Fiscal year | Severity | | | | | Total RIs | Annual RI Rate | Total SIs |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Collision | A | B | C | D | | | |
| Bethel Airport, Bethel (BET) | AAL | 2004 | | | | | 3 | 3 | 2.80 | 1 |
| | | 2005 | | | | 1 | | 1 | 0.97 | 2 |
| | | 2006 | | | | | 1 | 1 | 1.00 | 1 |
| | | 2007 | | | | | | | | |
| Fairbanks International Airport, Fairbanks (FAI) | AAL | 2004 | | | | 1 | 2 | 3 | 2.40 | 4 |
| | | 2005 | | | | 2 | 2 | 4 | 3.52 | 9 |
| | | 2006 | | | | | 2 | 2 | 1.78 | 7 |
| | | 2007 | | | | | 2 | 2 | 1.85 | 7 |
| Fort Yukon Airport, Fort Yukon (FYU) | AAL | 2004 | | | | | | | | 1 |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | |
| Juneau International Airport, Juneau (JNU) | AAL | 2004 | | | | | | | | 1 |
| | | 2005 | | | | | 1 | 1 | 0.97 | |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | 1 | 1 | 2 | 2.11 | 4 |
| King Salmon Airport, King Salmon (AKN) | AAL | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | 1 | 1 | 2.91 | |
| Kodiak Airport, Kodiak (ADQ) | AAL | 2004 | | | | | 2 | 2 | 6.07 | 2 |
| | | 2005 | | | | | | | | 2 |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | |

**ALASKA – Continued**

| Airport, City (Airport Code) | Region | Fiscal year | Severity | | | | | Total RIs | Annual RI Rate | Total SIs |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Collision | A | B | C | D | | | |
| Merrill Field, Anchorage (MRI) | AAL | 2004 | | | | 1 | 4 | 5 | 2.58 | 22 |
| | | 2005 | | | | 1 | 1 | 2 | 1.06 | 9 |
| | | 2006 | | | | | | | | 10 |
| | | 2007 | | | | | | | | 9 |
| Ted Stevens Anchorage International Airport, Anchorage (ANC) | AAL | 2004 | | | | 3 | 3 | 6 | 1.96 | 7 |
| | | 2005 | | | | 2 | 5 | 7 | 2.23 | 9 |
| | | 2006 | | | | | 3 | 3 | 0.98 | 14 |
| | | 2007 | | 1 | | | 3 | 4 | 1.33 | 7 |

**ARIZONA**

| Airport, City (Airport Code) | Region | Fiscal year | Severity | | | | | Total RIs | Annual RI Rate | Total SIs |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Collision | A | B | C | D | | | |
| Chandler Municipal Airport, Chandler (CHD) | AWP | 2004 | | | | | | | | 1 |
| | | 2005 | | | | | 1 | 1 | 0.44 | 1 |
| | | 2006 | | | | 1 | | 1 | 0.37 | |
| | | 2007 | | | | | | | | 1 |
| Ernest A. Love Field, Prescott (PRC) | AWP | 2004 | | | | | | | | 1 |
| | | 2005 | | | | | 4 | 4 | 1.69 | 4 |
| | | 2006 | | | | | 1 | 1 | 0.44 | 3 |
| | | 2007 | | | | | 4 | 4 | 1.73 | 1 |
| Falcon Field, Mesa (FFZ) | AWP | 2004 | | | | | | | | 2 |
| | | 2005 | | | | | 2 | 2 | 0.78 | 4 |
| | | 2006 | | | | | | | | 2 |
| | | 2007 | | | | | 6 | 6 | 2.10 | 2 |
| Flagstaff Pulliam Airport, Flagstaff (FLG) | AWP | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | 1 |
| | | 2007 | | | | | | | | |
| Glendale Municipal Airport, Glendale (GEU) | AWP | 2004 | | | | | | | | 1 |
| | | 2005 | | | 1 | | | 1 | 0.78 | |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | 1 |
| Laughlin/Bullhead International Airport, Bullhead City (IFP) | AWP | 2004 | | | | | | | | 7 |
| | | 2005 | | | | | 1 | 1 | 3.52 | 7 |
| | | 2006 | | | | | | | | 2 |
| | | 2007 | | | | | | | | |
| Phoenix Deer Valley Airport, Phoenix (DVT) | AWP | 2004 | | | | 1 | 1 | 2 | 0.56 | 1 |
| | | 2005 | | 1 | | 3 | 1 | 5 | 1.40 | 8 |
| | | 2006 | | 1 | | | 1 | 2 | 0.50 | 2 |
| | | 2007 | | | | | 1 | 1 | 0.25 | 3 |
| Phoenix Goodyear Airport, Goodyear (GYR) | AWP | 2004 | | | | | | | | |
| | | 2005 | | | | | 1 | 1 | 1.04 | |
| | | 2006 | | | | | 1 | 1 | 0.72 | 1 |
| | | 2007 | | | | | | | | |
| Phoenix-Mesa Gateway Airport, Mesa (IWA) | AWP | 2004 | | | | 1 | | 1 | 0.43 | 2 |
| | | 2005 | | | | 1 | 1 | 2 | 0.77 | 1 |
| | | 2006 | | | | 1 | 4 | 5 | 1.82 | 2 |
| | | 2007 | | | | | 1 | 1 | 0.33 | |

**ARIZONA – Continued**

| Airport, City (Airport Code) | Region | Fiscal year | Severity | | | | | Total RIs | Annual RI Rate | Total SIs |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Collision | A | B | C | D | | | |
| Phoenix Sky Harbor International Airport, Phoenix (PHX) | AWP | 2004 | | | | 4 | 1 | 5 | 0.84 | 7 |
| | | 2005 | | | | 2 | 2 | 4 | 0.71 | 2 |
| | | 2006 | | 2 | | 1 | | 3 | 0.54 | 1 |
| | | 2007 | | | | | 1 | 1 | 0.18 | |
| Ryan Field, Tucson (RYN) | AWP | 2004 | | | | | 1 | 1 | 0.65 | |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | |
| Scottsdale Airport, Scottsdale (SDL) | AWP | 2004 | | | | | 1 | 1 | 0.50 | 1 |
| | | 2005 | | 1 | | 2 | 2 | 5 | 2.36 | 1 |
| | | 2006 | | | | | 1 | 1 | 0.50 | 2 |
| | | 2007 | | | | | 1 | 1 | 0.53 | |
| Tucson International Airport, Tucson (TUS) | AWP | 2004 | | | | 1 | | 1 | 0.41 | 2 |
| | | 2005 | | | | | | | | 4 |
| | | 2006 | | 1 | | 1 | 2 | 4 | 1.42 | 1 |
| | | 2007 | | | | | 2 | 2 | 0.78 | 1 |

**ARKANSAS**

| Airport, City (Airport Code) | Region | Fiscal year | Severity | | | | | Total RIs | Annual RI Rate | Total SIs |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Collision | A | B | C | D | | | |
| Adams Field, Little Rock (LIT) | ASW | 2004 | | | | 1 | 1 | 2 | 1.08 | 2 |
| | | 2005 | | | | | | | | 1 |
| | | 2006 | | | | | 1 | 1 | 0.69 | 4 |
| | | 2007 | | | | 2 | 1 | 3 | 2.11 | 1 |
| Drake Field, Fayetteville (FYV) | ASW | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | 1 |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | |
| Ft. Smith Regional Airport, Ft. Smith (FSM) | ASW | 2004 | | | | | | | | 1 |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | 1 |
| Springdale Municipal Airport, Springdale (ASG) | ASW | 2004 | | | | | 1 | 1 | 1.67 | |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | |

**CALIFORNIA**

| Airport, City (Airport Code) | Region | Fiscal year | Severity | | | | | Total RIs | Annual RI Rate | Total SIs |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Collision | A | B | C | D | | | |
| Brackett Field, La Verne (POC) | AWP | 2004 | | | | | | | | 2 |
| | | 2005 | | | | 1 | 1 | 2 | 1.17 | 1 |
| | | 2006 | | | | | 1 | 1 | 0.79 | 5 |
| | | 2007 | | | | | | | | 7 |
| Brown Field Municipal Airport, San Diego (SDM) | AWP | 2004 | | | | | | | | 1 |
| | | 2005 | | | | | | | | 1 |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | |
| Buchanan Field, Concord (CCR) | AWP | 2004 | | 1 | | | 4 | 5 | 4.03 | 1 |
| | | 2005 | | | | 1 | 1 | 2 | 1.62 | 2 |
| | | 2006 | | | | | | | | 1 |
| | | 2007 | | | | | 1 | 1 | 1.09 | 1 |
| Bob Hope Airport, Burbank (BUR) | AWP | 2004 | | | | | | | | 1 |
| | | 2005 | | | | | | | | 3 |
| | | 2006 | | | | | 2 | 2 | 1.04 | 5 |
| | | 2007 | | | | | 1 | 1 | 0.53 | 4 |
| Camarillo Airport, Camarillo (CMA) | AWP | 2004 | | | 1 | | 3 | 4 | 2.37 | 4 |
| | | 2005 | | | | | 1 | 1 | 0.65 | 7 |
| | | 2006 | | | | | 2 | 2 | 1.33 | 11 |
| | | 2007 | | | | | | | | 4 |
| Charles M. Schulz-Sonoma County Airport, Santa Rosa (STS) | AWP | 2004 | | | | | | | | 1 |
| | | 2005 | | | | | | | | 2 |
| | | 2006 | | | | | | | | 1 |
| | | 2007 | | | | | | | | 1 |
| Chico Municipal Airport, Chico (CIC) | AWP | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | 1 |
| | | 2006 | | | | | 1 | 1 | 2.20 | |
| | | 2007 | | | | | | | | |
| Chino Airport, Chino (CNO) | AWP | 2004 | | | | | 3 | 3 | 1.90 | 4 |
| | | 2005 | | | | | | | | 2 |
| | | 2006 | | | | | | | | 10 |
| | | 2007 | | | | | | | | 6 |
| El Monte Airport, El Monte (EMT) | AWP | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | 2 |
| | | 2006 | | | | | | | | 1 |
| | | 2007 | | | | | | | | 1 |
| Fresno Yosemite International Airport, Fresno (FAT) | AWP | 2004 | | | | | 1 | 1 | 0.61 | 2 |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | 1 | 1 | 0.65 | |
| | | 2007 | | | 1 | | | 1 | 0.64 | |
| Gillespie Field, San Diego/El Cajon (SEE) | AWP | 2004 | | | 1 | | 1 | 2 | 1.01 | 6 |
| | | 2005 | | | 1 | 1 | 2 | 4 | 1.75 | 1 |
| | | 2006 | | 1 | | | | 1 | 0.36 | 3 |
| | | 2007 | | | | | | | | 1 |
| Hayward Executive Airport, Hayward (HWD) | AWP | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | 1 |
| | | 2007 | | | | | | | | 1 |

**CALIFORNIA – Continued**

| Airport, City (Airport Code) | Region | Fiscal year | Severity | | | | | Total RIs | Annual RI Rate | Total SIs |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Collision | A | B | C | D | | | |
| Jack Northrop Field/Hawthorne Municipal Airport, Hawthorne (HHR) | AWP | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | 1 | 1 | 1.61 | 3 |
| | | 2007 | | | | | 1 | 1 | 1.45 | |
| John Wayne Airport-Orange County, Santa Ana (SNA) | AWP | 2004 | | | | 2 | 2 | 4 | 1.10 | 4 |
| | | 2005 | | | | 3 | 5 | 8 | 2.13 | 3 |
| | | 2006 | | | | | 3 | 3 | 0.83 | 1 |
| | | 2007 | | | | | 9 | 9 | 2.58 | 12 |
| Lake Tahoe Airport, South Lake Tahoe (TVL) | AWP | 2004 | | | | | | | | 1 |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | |
| Livermore Municipal Airport, Livermore (LVK) | AWP | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | 1 |
| | | 2007 | | | | | | | | |
| Long Beach - Daugherty Field, Long Beach (LGB) | AWP | 2004 | | | | 1 | 4 | 5 | 1.45 | 8 |
| | | 2005 | | | | | 6 | 6 | 1.71 | 10 |
| | | 2006 | | | | 1 | 1 | 2 | 0.56 | 6 |
| | | 2007 | | | 1 | | 5 | 6 | 1.51 | 9 |
| Los Angeles International Airport, Los Angeles (LAX) | AWP | 2004 | | | 1 | 2 | 4 | 7 | 1.08 | 4 |
| | | 2005 | | | | 2 | 6 | 8 | 1.22 | 12 |
| | | 2006 | | 1 | 1 | | 6 | 8 | 1.22 | 3 |
| | | 2007 | | | 2 | 2 | 4 | 8 | 1.19 | 13 |
| McClellan-Palomar Airport, Carlsbad (CRQ) | AWP | 2004 | | | | 1 | | 1 | 0.48 | 1 |
| | | 2005 | | | | | 1 | 1 | 0.49 | |
| | | 2006 | | | | | 3 | 3 | 1.52 | |
| | | 2007 | | | | | 2 | 2 | 0.93 | |
| Meadows Field, Bakersfield (BFL) | AWP | 2004 | | | | 1 | | 1 | 0.71 | 4 |
| | | 2005 | | | | | | | | 1 |
| | | 2006 | | | | | | | | 2 |
| | | 2007 | | | | | | | | 2 |
| Metropolitan Oakland International Airport, Oakland (OAK) | AWP | 2004 | | | | | | | | 2 |
| | | 2005 | | | | | | | | 3 |
| | | 2006 | | | | 1 | 1 | 2 | 0.60 | 5 |
| | | 2007 | | | | | 1 | 1 | 0.29 | 1 |
| Modesto City-County Airport-Harry Sham Field, Modesto (MOD) | AWP | 2004 | | | | | 1 | 1 | 1.24 | 1 |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | |
| Monterey Peninsula Airport, Monterey (MRY) | AWP | 2004 | | | | | | | | |
| | | 2005 | | | | | 1 | 1 | 1.12 | 1 |
| | | 2006 | | | | | 2 | 2 | 2.17 | 2 |
| | | 2007 | | | | | | | | 1 |
| Montgomery Field, San Diego (MYF) | AWP | 2004 | | | | | 2 | 2 | 0.89 | 1 |
| | | 2005 | | | | | 1 | 1 | 0.41 | 1 |
| | | 2006 | | | | | | | | 2 |
| | | 2007 | | 1 | | 1 | 1 | 3 | 1.34 | 2 |

**CALIFORNIA – Continued**

| Airport, City (Airport Code) | Region | Fiscal year | Severity | | | | | Total RIs | Annual RI Rate | Total SIs |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Collision | A | B | C | D | | | |
| Napa County Airport, Napa (APC) | AWP | 2004 | | | | 1 | 1 | 2 | 1.72 | |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | 1 | 2 | 3 | 2.58 | 3 |
| | | 2007 | | 1 | | | 1 | 2 | 1.63 | 5 |
| Norman Y. Mineta San Jose International Airport, San Jose (SJC) | AWP | 2004 | | | 1 | 1 | | 2 | 0.92 | 3 |
| | | 2005 | | | | | | | | 8 |
| | | 2006 | | | | | 2 | 2 | 0.93 | 8 |
| | | 2007 | | | | | 4 | 4 | 1.93 | 7 |
| Ontario International Airport, Ontario (ONT) | AWP | 2004 | | | | 1 | | 1 | 0.65 | 6 |
| | | 2005 | | | | | 1 | 1 | 0.68 | 3 |
| | | 2006 | | | | | 1 | 1 | 0.73 | 2 |
| | | 2007 | | | | | 1 | 1 | 0.69 | 3 |
| Oxnard Airport, Oxnard (OXR) | AWP | 2004 | | | | 2 | | 2 | 2.08 | 3 |
| | | 2005 | | | | | | | | 2 |
| | | 2006 | | | | | | | | 1 |
| | | 2007 | | | | | | | | 2 |
| Palm Springs International Airport, Palm Springs (PSP) | AWP | 2004 | | | | | 3 | 3 | 3.16 | 1 |
| | | 2005 | | | | | 2 | 2 | 2.11 | 2 |
| | | 2006 | | | 1 | | 2 | 3 | 3.28 | 5 |
| | | 2007 | | | | | 2 | 2 | 2.21 | 9 |
| Palmdale Regional Airport, Palmdale (PMD) | AWP | 2004 | | | | | | | | 1 |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | 1 |
| Palo Alto Airport of Santa Clara County, Palo Alto (PAO) | AWP | 2004 | | | | | | | | |
| | | 2005 | | | | | 1 | 1 | 0.54 | 1 |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | |
| Ramona Airport, Ramona (RNM) | AWP | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | 1 |
| Redding Municipal Airport, Redding (RDD) | AWP | 2004 | | | 1 | | | 1 | 1.28 | |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | 1 |
| Reid-Hillview Airport of Santa Clara County, San Jose (RHV) | AWP | 2004 | | | | 1 | | 1 | 0.49 | |
| | | 2005 | | | | | 1 | 1 | 0.50 | 1 |
| | | 2006 | | | | | 1 | 1 | 0.59 | |
| | | 2007 | | | | | | | | 1 |
| Riverside Municipal Airport, Riverside (RAL) | AWP | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | 1 |
| | | 2006 | | | 1 | | | 1 | 1.20 | |
| | | 2007 | | | | | | | | 2 |
| Sacramento Executive Airport, Sacramento (SAC) | AWP | 2004 | | | | 1 | | 1 | 0.74 | |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | 1 | 1 | 0.88 | 2 |
| | | 2007 | | | | | | | | |

**CALIFORNIA – Continued**

| Airport, City (Airport Code) | Region | Fiscal year | Severity | | | | | Total RIs | Annual RI Rate | Total SIs |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Collision | A | B | C | D | | | |
| Sacramento International Airport, Sacramento (SMF) | AWP | 2004 | | | | | 1 | 1 | 0.61 | 1 |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | 1 |
| | | 2007 | | | | | | | | 1 |
| Sacramento Mather Airport, Sacramento (MHR) | AWP | 2004 | | | | 1 | | 1 | 1.24 | 1 |
| | | 2005 | | | | | | | | 1 |
| | | 2006 | | | | | | | | 1 |
| | | 2007 | | | | | | | | |
| Salinas Municipal Airport, Salinas (SNS) | AWP | 2004 | | | | 1 | | 1 | 1.28 | |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | 1 | | 1 | 1.36 | |
| | | 2007 | | | | | | | | |
| San Carlos Airport, San Carlos (SQL) | AWP | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | 2 |
| San Diego International Airport, San Diego (SAN) | AWP | 2004 | | | | | 1 | 1 | 0.47 | 2 |
| | | 2005 | | | | | | | | 4 |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | 3 |
| San Francisco International Airport, San Francisco (SFO) | AWP | 2004 | | | | 2 | 1 | 3 | 0.85 | 3 |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | 2 | 1 | 3 | 0.84 | 5 |
| | | 2007 | | 1 | | 1 | 2 | 4 | 1.08 | 4 |
| San Luis County Regional Airport, San Luis Obispo (SBP) | AWP | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | 1 |
| | | 2007 | | | | | | | | |
| Santa Barbara Municipal Airport, Santa Barbara (SBA) | AWP | 2004 | | | | 2 | 1 | 3 | 2.00 | 4 |
| | | 2005 | | | | | 1 | 1 | 0.64 | 2 |
| | | 2006 | | | | | 2 | 2 | 1.46 | 2 |
| | | 2007 | | | | 1 | 1 | 2 | 1.62 | |
| Santa Maria Public Airport - Capt G. Allen Hancock Field, Santa Maria (SMX) | AWP | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | 2 | 2 | 3.12 | |
| | | 2007 | | | | | | | | |
| Santa Monica Municipal Airport, Santa Monica (SMO) | AWP | 2004 | | | | | 1 | 1 | 0.74 | 2 |
| | | 2005 | | | | | | | | 3 |
| | | 2006 | | | | | | | | 6 |
| | | 2007 | | | | | | | | |
| Southern California Logistics Airport, Victorville, (VCV) | AWP | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | 3 |
| | | 2007 | | | | | | | | 1 |
| Vandenberg Air Force Base, Lompoc (VBG) | AWP | 2004 | | | | | | | | 1 |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | |

**CALIFORNIA – Continued**

| Airport, City (Airport Code) | Region | Fiscal year | Severity | | | | | Total RIs | Annual RI Rate | Total SIs |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Collision | A | B | C | D | | | |
| Van Nuys Airport, Van Nuys (VNY) | AWP | 2004 | | | | | 1 | 1 | 0.22 | 5 |
| | | 2005 | | | 1 | | 2 | 3 | 0.71 | 6 |
| | | 2006 | | | | 1 | 1 | 2 | 0.51 | 1 |
| | | 2007 | | | | | | | | 4 |
| Whiteman Airport, Los Angeles, (WHP) | AWP | 2004 | | | | | | | | 1 |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | 1 |
| | | 2007 | | | | | | | | |
| Yuba County Airport, Marysville, (MYV) | AWP | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | 1 |
| | | 2007 | | | | | | | | |
| Zamperini Field, Torrance (TOA) | AWP | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | 1 |
| | | 2006 | | | | | 1 | 1 | 0.67 | |
| | | 2007 | | 1 | | | 2 | 3 | 1.78 | 5 |

**COLORADO**

| Airport, City (Airport Code) | Region | Fiscal year | Severity | | | | | Total RIs | Annual RI Rate | Total SIs |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Collision | A | B | C | D | | | |
| Aspen-Pitken Count/Sardy Field, Aspen (ASE) | ANM | 2004 | | | | | | | | |
| | | 2005 | | | | 1 | 1 | 2 | 4.47 | 2 |
| | | 2006 | | | | | 1 | 1 | 2.25 | 1 |
| | | 2007 | | | | | | | | 1 |
| Centennial Airport, Denver (APA) | ANM | 2004 | | | | 2 | 2 | 4 | 1.13 | 5 |
| | | 2005 | | | | 2 | | 2 | 0.56 | 6 |
| | | 2006 | | | | 1 | | 1 | 0.31 | 4 |
| | | 2007 | | | | | 3 | 3 | 0.91 | 5 |
| City of Colorado Springs Municipal Airport, Colorado Springs (COS) | ANM | 2004 | | 1 | | | | 1 | 0.55 | |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | 1 | 1 | 0.67 | |
| | | 2007 | | | | | 1 | 1 | 0.66 | 1 |
| Denver International Airport, Denver (DEN) | ANM | 2004 | | | | 1 | | 1 | 0.18 | 1 |
| | | 2005 | | | | | | | | 1 |
| | | 2006 | | | | | | | | 1 |
| | | 2007 | | 2 | | | 2 | 4 | 0.65 | 4 |
| Eagle County Regional Airport, Eagle (EGE) | ANM | 2004 | | | | | | | | |
| | | 2005 | | 1 | | | | 1 | 2.44 | 1 |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | |
| Front Range Airport, Aurora (FTG) | ANM | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | |
| | | 2006 | | 1 | | | | 1 | 1.13 | |
| | | 2007 | | | | | | | | |
| Pueblo Memorial Airport, Pueblo (PUB) | ANM | 2004 | | | | 1 | | 1 | 1.09 | |
| | | 2005 | | | | | | | | 2 |
| | | 2006 | | | | | | | | 1 |
| | | 2007 | | | | | 1 | 1 | 0.69 | 3 |

**COLORADO – Continued**

| Airport, City (Airport Code) | Region | Fiscal year | Severity | | | | | Total RIs | Annual RI Rate | Total SIs |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Collision | A | B | C | D | | | |
| Rocky Mountain Metropolitan/Jefferson County Airport, Broomfield (BJC) | ANM | 2004 | | | 1 | 2 | 1 | 4 | 2.14 | 8 |
| | | 2005 | | | | | | | | 3 |
| | | 2006 | | | | | | | | 1 |
| | | 2007 | | | | | 4 | 4 | 2.38 | 2 |
| Walker Field, Grand Junction (GJT) | ANM | 2004 | | | | | 1 | 1 | 1.14 | |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | 1 | 1 | 1.35 | |
| | | 2007 | | | | | | | | 1 |

**CONNECTICUT**

| Airport, City (Airport Code) | Region | Fiscal year | Severity | | | | | Total RIs | Annual RI Rate | Total SIs |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Collision | A | B | C | D | | | |
| Bradley International Airport, Windsor Locks (BDL) | ANE | 2004 | | | | | | | | 2 |
| | | 2005 | | | | 1 | 2 | 3 | 1.91 | 3 |
| | | 2006 | | | | | 2 | 2 | 1.33 | 1 |
| | | 2007 | | | | | 1 | 1 | 0.69 | 1 |
| Danbury Municipal Airport, Danbury (DXR) | ANE | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | 1 |
| Hartford-Brainard Airport, Hartford (HFD) | ANE | 2004 | | | | | 1 | 1 | 1.02 | |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | 1 |
| | | 2007 | | | | | | | | |
| Igor I. Sikorsky Memorial Airport, Bridgeport (BDR) | ANE | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | 1 | 2 | 3 | 3.50 | 2 |
| Tweed-New Haven Airport, New Haven (HVN) | ANE | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | 1 |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | 1 |
| Waterbury-Oxford Airport, Oxford (OXC) | ANE | 2004 | | | | | | | | 1 |
| | | 2005 | | | | | | | | 1 |
| | | 2006 | | | | | | | | 1 |
| | | 2007 | | | | | | | | 3 |

**DELAWARE**

| Airport, City (Airport Code) | Region | Fiscal year | Severity | | | | | Total RIs | Annual RI Rate | Total SIs |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Collision | A | B | C | D | | | |
| New Castle County Airport, Wilmington (ILG) | AEA | 2004 | | | | 1 | | 1 | 0.85 | |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | 1 |

**DISTRICT OF COLUMBIA**

| Airport, City (Airport Code) | Region | Fiscal year | Severity | | | | | Total RIs | Annual RI Rate | Total SIs |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Collision | A | B | C | D | | | |
| Ronald Reagan Washington National Airport, Washington, DC (DCA) | AEA | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | 1 | 1 | 2 | 0.72 | 3 |
| | | 2007 | | | | | 1 | 1 | 0.36 | 2 |

**FLORIDA**

| Airport, City (Airport Code) | Region | Fiscal year | Severity | | | | | Total RIs | Annual RI Rate | Total SIs |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Collision | A | B | C | D | | | |
| Cecil Field, Jacksonville (VQQ) | ASO | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | 1 |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | |
| Craig Municipal Airport, Jacksonville (CRG) | ASO | 2004 | | | | | | | | 1 |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | |
| Daytona Beach International Airport, Daytona Beach (DAB) | ASO | 2004 | | | 1 | | | 1 | 0.32 | 3 |
| | | 2005 | | | | | | | | 1 |
| | | 2006 | | 1 | | | 1 | 2 | 0.78 | 1 |
| | | 2007 | | 1 | | 1 | 3 | 5 | 1.65 | 2 |
| Ft. Lauderdale Executive Airport, Ft. Lauderdale (FXE) | ASO | 2004 | | | | 1 | 2 | 3 | 1.41 | 6 |
| | | 2005 | | | | 1 | 1 | 2 | 0.96 | 2 |
| | | 2006 | | | | | 3 | 3 | 1.54 | 18 |
| | | 2007 | | | | | 4 | 4 | 2.00 | 5 |
| Ft. Lauderdale/Hollywood International Airport, Ft. Lauderdale (FLL) | ASO | 2004 | | | | | 3 | 3 | 0.97 | 1 |
| | | 2005 | | | | | 2 | 2 | 0.60 | 7 |
| | | 2006 | | | | | 2 | 2 | 0.67 | 7 |
| | | 2007 | | 1 | | | 3 | 4 | 1.31 | 6 |
| Jacksonville International Airport, Jacksonville (JAX) | ASO | 2004 | | | | | 1 | 1 | 0.82 | 1 |
| | | 2005 | | | | | | | | 2 |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | 1 |
| Kendall-Tamiami Executive Airport, Miami (TMB) | ASO | 2004 | | | | | 1 | 1 | 0.56 | 3 |
| | | 2005 | | | | | | | | 2 |
| | | 2006 | | | | 1 | 1 | 2 | 1.02 | 4 |
| | | 2007 | | | 1 | 1 | 2 | 4 | 1.61 | 4 |
| Kissimmee Gateway Airport, Orlando (ISM) | ASO | 2004 | | | | | | | | |
| | | 2005 | | | | 1 | | 1 | 0.66 | 4 |
| | | 2006 | | | | | 1 | 1 | 0.67 | 3 |
| | | 2007 | | | | 1 | 1 | 2 | 1.19 | 2 |
| Lakeland Linder Regional Airport, Lakeland (LAL) | ASO | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | 2 |
| Miami International Airport, Miami (MIA) | ASO | 2004 | | | | 3 | 3 | 6 | 1.51 | 3 |
| | | 2005 | | | | 1 | | 1 | 0.26 | 1 |
| | | 2006 | | 1 | | 1 | 2 | 4 | 1.04 | 1 |
| | | 2007 | | | | | 5 | 5 | 1.29 | 3 |

**FLORIDA - Continued**

| Airport, City (Airport Code) | Region | Fiscal year | Severity | | | | | Total RIs | Annual RI Rate | Total SIs |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Collision | A | B | C | D | | | |
| Naples Municipal Airport, Naples (APF) | ASO | 2004 | | | | | | | | 3 |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | |
| North Perry Airport, Hollywood (HWO) | ASO | 2004 | | | | | 1 | 1 | 0.71 | 1 |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | |
| Opa Locka Airport, Miami (OPF) | ASO | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | 1 |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | 2 | 2 | 1.73 | 3 |
| Orlando Executive Airport, Orlando (ORL) | ASO | 2004 | | | | 1 | | 1 | 0.63 | |
| | | 2005 | | | | 1 | | 1 | 0.64 | 2 |
| | | 2006 | | 1 | | | 1 | 2 | 1.22 | 3 |
| | | 2007 | | | | | 2 | 2 | 1.32 | |
| Orlando International Airport, Orlando (MCO) | ASO | 2004 | | | | | | | | 1 |
| | | 2005 | | | | 1 | | 1 | 0.28 | 2 |
| | | 2006 | | | | | 1 | 1 | 0.28 | |
| | | 2007 | | | | 1 | 2 | 3 | 0.83 | 5 |
| Orlando Sanford International Airport, Orlando (SFB) | ASO | 2004 | | | | 2 | 3 | 5 | 1.38 | 3 |
| | | 2005 | | | | 1 | 1 | 2 | 0.58 | 3 |
| | | 2006 | | | | | 2 | 2 | 0.64 | 3 |
| | | 2007 | | | | 1 | 2 | 3 | 0.96 | 10 |
| Ormond Beach Municipal Airport, Ormond Beach (OMN) | ASO | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | 1 |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | |
| Page Field, Ft. Myers (FMY) | ASO | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | 1 |
| | | 2006 | | | | | | | | 1 |
| | | 2007 | | | | | | | | |
| Palm Beach International, West Palm Beach, (PBI) | ASO | 2004 | | | 1 | 2 | 1 | 4 | 2.02 | 4 |
| | | 2005 | | | | | 1 | 1 | 0.50 | 11 |
| | | 2006 | | | | 2 | 1 | 3 | 1.55 | 12 |
| | | 2007 | | | | 1 | 1 | 2 | 1.05 | 16 |

**FLORIDA - Continued**

| Airport, City (Airport Code) | Region | Fiscal year | Severity | | | | | Total RIs | Annual RI Rate | Total SIs |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Collision | A | B | C | D | | | |
| Panama City-Bay County International Airport, Panama City (PFN) | ASO | 2004 | | | | | | | | 1 |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | |
| Pensacola Regional Airport, Pensacola (PNS) | ASO | 2004 | | | | | | | | 2 |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | 1 | 1 | 0.87 | 1 |
| | | 2007 | | | | | 1 | 1 | 0.92 | |
| Sarasota-Bradenton International Airport, Sarasota (SRQ) | ASO | 2004 | | | | | | | | 1 |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | 1 | 1 | 0.61 | |
| | | 2007 | | | | | | | | 1 |
| Southwest Florida International Airport, Ft. Myers, (RSW) | ASO | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | 1 |
| | | 2006 | | 1 | | | | 1 | 1.08 | 1 |
| | | 2007 | | | | | 2 | 2 | 2.14 | 6 |
| Space Coast Regional Airport, Titusville (TIX) | ASO | 2004 | | | | | | | | 1 |
| | | 2005 | | | | | | | | 1 |
| | | 2006 | | | | | | | | 1 |
| | | 2007 | | | | | | | | 1 |
| St. Augustine Airport, St. Augustine (SGJ) | ASO | 2004 | | | | | | | | 3 |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | 1 | | 1 | 0.87 | 1 |
| | | 2007 | | | | | 2 | 2 | 1.91 | 1 |
| St. Lucie County International, Ft. Pierce (FPR) | ASO | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | 2 |
| | | 2006 | | | | | | | | 1 |
| | | 2007 | | | | | | | | |
| St. Petersburg-Clearwater International Airport, St. Petersburg (PIE) | ASO | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | 1 |
| | | 2006 | | | | | | | | 1 |
| | | 2007 | | | | | | | | 5 |
| Tallahassee Regional Airport, Tallahassee (TLH) | ASO | 2004 | | | | | | | | 3 |
| | | 2005 | | | | | | | | 3 |
| | | 2006 | | 1 | | | | 1 | 0.99 | |
| | | 2007 | | | | | | | | 1 |
| Tampa International Airport, Tampa (TPA) | ASO | 2004 | | | | | | | | 2 |
| | | 2005 | | | | | 1 | 1 | 0.37 | 5 |
| | | 2006 | | | 1 | | | 1 | 0.39 | 5 |
| | | 2007 | | | | | | | | 1 |
| Vero Beach Municipal Airport, Vero Beach (VRB) | ASO | 2004 | | | | | | | | 2 |
| | | 2005 | | | 1 | 1 | | 2 | 1.36 | 2 |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | 2 |

**GEORGIA**

| Airport, City (Airport Code) | Region | Fiscal year | Severity | | | | | Total RIs | Annual RI Rate | Total SIs |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Collision | A | B | C | D | | | |
| Augusta Regional Airport at Bush Field, Augusta (AGS) | ASO | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | 3 |
| Cobb County-McCollum Field, Marietta (RYY) | ASO | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | 1 |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | |
| Columbus Metropolitan Airport, Columbus (CSG) | ASO | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | 1 |
| | | 2007 | | | | | | | | |
| Dekalb-Peachtree Airport, Atlanta (PDK) | ASO | 2004 | | | | 3 | 1 | 4 | 1.82 | 2 |
| | | 2005 | | | 2 | 2 | 4 | 8 | 4.04 | 9 |
| | | 2006 | | | | 1 | 3 | 4 | 1.94 | 3 |
| | | 2007 | | | | 1 | 6 | 7 | 3.13 | 3 |
| Fulton County Airport-Brown Field, Atlanta (FTY) | ASO | 2004 | | | | | | | | |
| | | 2005 | | | | | 1 | 1 | 0.85 | 1 |
| | | 2006 | | | | | | | | 1 |
| | | 2007 | | | | | | | | 2 |
| Gwinnett County-Briscoe Field, Lawrenceville (LZU) | ASO | 2004 | | | | | | | | 1 |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | |
| Hartsfield-Jackson Atlanta International Airport, Atlanta (ATL) | ASO | 2004 | | 1 | | 2 | 4 | 7 | 0.73 | 4 |
| | | 2005 | | | | 1 | 2 | 3 | 0.30 | 1 |
| | | 2006 | | | | 2 | 7 | 9 | 0.93 | 3 |
| | | 2007 | | | | 2 | 9 | 11 | 1.11 | 5 |
| Middle Georgia Regional Airport, Macon (MCN) | ASO | 2004 | | | | | | | | 1 |
| | | 2005 | | | | | | | | 2 |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | 1 |
| Savannah/Hilton Head International Airport, Savannah (SAV) | ASO | 2004 | | | | | | | | 2 |
| | | 2005 | | | | 1 | 1 | 2 | 1.88 | 6 |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | 1 | 1 | 0.99 | 4 |

**HAWAII**

| Airport, City (Airport Code) | Region | Fiscal year | Severity | | | | | Total RIs | Annual RI Rate | Total SIs |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Collision | A | B | C | D | | | |
| Hilo International Airport, Hilo (ITO) | AWP | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | 1 |
| | | 2006 | | | | 1 | | 1 | 1.04 | 2 |
| | | 2007 | | | | | | | | |
| Honolulu International Airport, Honolulu (HNL) | AWP | 2004 | | | | 1 | | 1 | 0.32 | 3 |
| | | 2005 | | | 1 | | 2 | 3 | 0.90 | 3 |
| | | 2006 | | | | | 2 | 2 | 0.63 | 4 |
| | | 2007 | | | | | 2 | 2 | 0.64 | 6 |

**HAWAII - Continued**

| Airport, City (Airport Code) | Region | Fiscal year | Severity | | | | | Total RIs | Annual RI Rate | Total SIs |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Collision | A | B | C | D | | | |
| Kahului Airport, Kahului (OGG) | AWP | 2004 | | | | | | | | 1 |
| | | 2005 | | | | 1 | 1 | 2 | 1.19 | 1 |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | |
| Kalaeloa Airport, Kapolei (JRF) | AWP | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | 1 |
| | | 2006 | | | | | | | | 2 |
| | | 2007 | | | | | | | | 1 |

**IDAHO**

| Airport, City (Airport Code) | Region | Fiscal year | Severity | | | | | Total RIs | Annual RI Rate | Total SIs |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Collision | A | B | C | D | | | |
| Boise Air Terminal - Gowen Field, Boise (BOI) | ANM | 2004 | | | | | 1 | 1 | 0.60 | 1 |
| | | 2005 | | | | 2 | | 2 | 1.16 | |
| | | 2006 | | | | | 1 | 1 | 0.58 | 1 |
| | | 2007 | | | | | 2 | 2 | 1.08 | 1 |
| Friedman Memorial Airport, Hailey (SUN) | ANM | 2004 | | | | | | | | 1 |
| | | 2005 | | | | | | | | |
| | | 2006 | | 2 | | | | 2 | 4.83 | |
| | | 2007 | | | | | | | | |
| Idaho Falls Regional Airport, Idaho Falls (IDA) | ANM | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | 3 |
| | | 2007 | | | | | | | | 3 |
| Joslin Field-Magic Valley Regional Airport, Twin Falls (TWF) | ANM | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | 1 |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | |
| Pocatello Regional Airport, Pocatello (PIH) | ANM | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | 1 |
| | | 2007 | | | | | | | | |

**ILLINOIS**

| Airport, City (Airport Code) | Region | Fiscal year | Severity | | | | | Total RIs | Annual RI Rate | Total SIs |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Collision | A | B | C | D | | | |
| Aurora Municipal Airport, Aurora (ARR) | AGL | 2004 | | | | | | | | 1 |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | 1 | 1 | 1.47 | |
| Capital Airport, Springfield (SPI) | AGL | 2004 | | | | | | | | 3 |
| | | 2005 | | | | | | | | 2 |
| | | 2006 | | | | | 1 | 1 | 1.95 | 1 |
| | | 2007 | | | | | 2 | 2 | 4.37 | 3 |

**ILLINOIS – Continued**

| Airport, City (Airport Code) | Region | Fiscal year | Severity | | | | | Total RIs | Annual RI Rate | Total SIs |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Collision | A | B | C | D | | | |
| Chicago Executive Airport, Prospect Heights/Wheeling (PWK) | AGL | 2004 | | | | 2 | 3 | 5 | 3.12 | |
| | | 2005 | | | | | 1 | 1 | 0.76 | |
| | | 2006 | | 1 | | 1 | | 2 | 1.87 | |
| | | 2007 | | | | 1 | | 1 | 0.84 | 1 |
| Chicago Midway International Airport, Chicago (MDW) | AGL | 2004 | | | | 3 | 1 | 4 | 1.17 | |
| | | 2005 | | | 1 | 2 | 1 | 4 | 1.33 | |
| | | 2006 | | | | | 1 | 1 | 0.34 | 1 |
| | | 2007 | | 1 | | | | 1 | 0.33 | 3 |
| Chicago O'Hare International Airport, Chicago (ORD) | AGL | 2004 | | | | 4 | 3 | 7 | 0.71 | 5 |
| | | 2005 | | 1 | 1 | | 4 | 6 | 0.61 | 7 |
| | | 2006 | | 2 | 1 | 4 | 2 | 9 | 0.94 | 10 |
| | | 2007 | | 1 | | 1 | 10 | 12 | 1.28 | 4 |
| Dupage Airport, West Chicago, (DPA) | AGL | 2004 | | | | | | | | 1 |
| | | 2005 | | | | 1 | 1 | 2 | 1.34 | 1 |
| | | 2006 | | | | 1 | | 1 | 0.97 | |
| | | 2007 | | | | | | | | 1 |
| Greater Peoria Regional Airport, Peoria (PIA) | AGL | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | 1 |
| | | 2006 | | | | | | | | 3 |
| | | 2007 | | | | | | | | 3 |
| Greater Rockford Airport, Rockford (RFD) | AGL | 2004 | | | | | 1 | 1 | 1.34 | 3 |
| | | 2005 | | | | | 2 | 2 | 2.85 | 3 |
| | | 2006 | | | | 1 | 1 | 2 | 2.67 | 2 |
| | | 2007 | | | | | 1 | 1 | 1.30 | 3 |
| Quad City International Airport, Moline (MLI) | AGL | 2004 | | | | 2 | 1 | 3 | 4.54 | 3 |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | 1 | 1 | 1.89 | 1 |
| | | 2007 | | | | | | | | |
| St. Louis Regional Airport, Alton/St. Louis (ALN) | AGL | 2004 | | | | | 1 | 1 | 1.42 | 1 |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | |
| St. Louis Downtown Airport, Cahokia/St. Louis (CPS) | AGL | 2004 | | | | 1 | 1 | 2 | 1.16 | 1 |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | 1 | 1 | 0.65 | 2 |
| | | 2007 | | | | | | | | 1 |

**ILLINOIS – Continued**

| Airport, City (Airport Code) | Region | Fiscal year | Severity | | | | | Total RIs | Annual RI Rate | Total SIs |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Collision | A | B | C | D | | | |
| Waukegan Regional Airport, Waukegan (UGN) | AGL | 2004 | | 1 | | | | 1 | 1.21 | |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | 1 | 1 | 1.45 | 1 |
| Willard Airport - University of Illinois, Champaign/Urbana (CMI) | AGL | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | 1 |
| | | 2006 | | | | 1 | | 1 | 0.84 | 1 |
| | | 2007 | | | | | 2 | 2 | 1.84 | |

**INDIANA**

| Airport, City (Airport Code) | Region | Fiscal year | Severity | | | | | Total RIs | Annual RI Rate | Total SIs |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Collision | A | B | C | D | | | |
| Columbus Municipal Airport, Columbus (BAK) | AGL | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | 2 |
| | | 2007 | | | | | | | | 2 |
| Delaware County Airport - Johnson Field, Muncie (MIE) | AGL | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | 1 | | 1 | 3.84 | |
| | | 2007 | | | | | | | | |
| Evansville Regional Airport, Evansville (EVV) | AGL | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | 1 |
| | | 2006 | | | | | 1 | 1 | 1.53 | |
| | | 2007 | | | | | | | | 2 |
| Ft. Wayne International Airport, Ft. Wayne (FWA) | AGL | 2004 | | | | 1 | | 1 | 1.20 | 1 |
| | | 2005 | | | | 1 | | 1 | 1.24 | |
| | | 2006 | | | | | 4 | 4 | 5.42 | 1 |
| | | 2007 | | | | | 1 | 1 | 1.39 | 2 |
| Indianapolis International Airport, Indianapolis (IND) | AGL | 2004 | | | | | | | | 1 |
| | | 2005 | | | | | | | | 3 |
| | | 2006 | | | | | | | | 4 |
| | | 2007 | | | | | | | | 1 |
| Monroe County Airport, Bloomington (BMG) | AGL | 2004 | | | | | | | | 1 |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | |
| Purdue University Airport, Lafayette (LAF) | AGL | 2004 | | | | | 1 | 1 | 0.82 | |
| | | 2005 | | | | 1 | | 1 | 0.89 | |
| | | 2006 | | | | | 1 | 1 | 0.87 | |
| | | 2007 | | | | | | | | 1 |
| Terre Haute International Airport - Hulman Field, Terre Haute (HUF) | AGL | 2004 | | | | 1 | | 1 | 1.11 | |
| | | 2005 | | | | | 1 | 1 | 1.24 | |
| | | 2006 | | | | | | | | 3 |
| | | 2007 | | | | | | | | |
| South Bend Regional Airport, South Bend (SBN) | AGL | 2004 | | | | | | | | |
| | | 2005 | | | | 1 | | 1 | 1.52 | 1 |
| | | 2006 | | | | | 1 | 1 | 1.67 | |
| | | 2007 | | 1 | | | | 1 | 1.89 | 1 |

**IOWA**

| Airport, City (Airport Code) | Region | Fiscal Year | Severity | | | | | Total RIs | Annual RI Rate | Total SIs |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Collision | A | B | C | D | | | |
| Des Moines International Airport, Des Moines (DSM) | ACE | 2004 | | | | 1 | 1 | 2 | 1.76 | 1 |
| | | 2005 | | | | | | | | 3 |
| | | 2006 | | | | 1 | 1 | 2 | 1.85 | 1 |
| | | 2007 | | | | | | | | |
| Dubuque Regional Airport, Dubuque (DBQ) | ACE | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | 1 |
| | | 2006 | | | | | | | | 1 |
| | | 2007 | | | | | | | | |
| Eastern Iowa Airport, Cedar Rapids (CID) | ACE | 2004 | | | | | | | | 1 |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | |
| Sioux Gateway Airport - Col. Bud Day Field, Sioux City (SUX) | ACE | 2004 | | | | | | | | 2 |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | 2 | 2 | 7.05 | 1 |
| | | 2007 | | | | | 1 | 1 | 4.14 | |
| Waterloo Municipal Airport, Waterloo (ALO) | ACE | 2004 | | | | | | | | |
| | | 2005 | | | | | 1 | 1 | 2.94 | 1 |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | 1 |

**KANSAS**

| Airport, City (Airport Code) | Region | Fiscal Year | Severity | | | | | Total RIs | Annual RI Rate | Total SIs |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Collision | A | B | C | D | | | |
| Forbes Field, Topeka (FOE) | ACE | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | 2 |
| | | 2007 | | | | | | | | 2 |
| Garden City Regional Airport, Garden City (GCK) | ACE | 2004 | | | | 1 | 1 | 2 | 8.75 | 1 |
| | | 2005 | | | | 1 | | 1 | 4.95 | 1 |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | 1 |
| Hutchinson Municipal Airport, Hutchinson (HUT) | ACE | 2004 | | | | | | | | 1 |
| | | 2005 | | | | | 1 | 1 | 2.02 | |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | |
| New Century AirCenter Airport, Olathe (IXD) | ACE | 2004 | | | | | | | | 1 |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | 1 | 1 | 1.83 | 1 |
| | | 2007 | | | | | | | | 3 |
| Salina Municipal Airport, Salina (SLN) | ACE | 2004 | | | | | | | | 1 |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | 1 | | 1 | 1.25 | |
| Wichita Mid-Continent Airport, Wichita (ICT) | ACE | 2004 | | | | 1 | 1 | 2 | 1.12 | 2 |
| | | 2005 | | | | 1 | 1 | 2 | 1.10 | 3 |
| | | 2006 | | | | | 1 | 1 | 0.57 | 4 |
| | | 2007 | | | | | 1 | 1 | 0.60 | 5 |

**KENTUCKY**

| Airport, City (Airport Code) | Region | Fiscal Year | Severity | | | | | Total RIs | Annual RI Rate | Total SIs |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Collision | A | B | C | D | | | |
| Blue Grass Airport, Lexington (LEX) | ASO | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | 3 |
| | | 2007 | | | | | | | | 2 |
| Bowman Field, Louisville (LOU) | ASO | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | 1 | 1 | 1.00 | |
| Louisville International Airport -Standiford Field, Louisville (SDF) | ASO | 2004 | | | | | | | | 1 |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | 1 | 1 | 0.56 | 2 |
| | | 2007 | | | | | 2 | 2 | 1.13 | 2 |
| Owensboro-Davies County Airport, Owensboro (OWB) | ASO | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | 1 |

**LOUISIANA**

| Airport, City (Airport Code) | Region | Fiscal Year | Severity | | | | | Total RIs | Annual RI Rate | Total SIs |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Collision | A | B | C | D | | | |
| Acadiana Regional Airport, New Iberia (ARA) | ASW | 2004 | | | 1 | | | 1 | 1.40 | 1 |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | 1 |
| Baton Rouge Metropolitan Airport, Baton Rouge (BTR) | ASW | 2004 | | | | | | | | 1 |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | 1 |
| | | 2007 | | | | 1 | 1 | 2 | 2.22 | |
| Chennault International Airport, Lake Charles (CWF) | ASW | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | 1 |
| | | 2007 | | | | | | | | |
| Lafayette Regional Airport, Lafayette (LFT) | ASW | 2004 | | | | | | | | |
| | | 2005 | | | | 1 | | 1 | 1.34 | 1 |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | 2 |
| Lake Charles Regional Airport, Lake Charles (LCH) | ASW | 2004 | | | | | | | | 1 |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | |
| Lakefront Airport, New Orleans (NEW) | ASW | 2004 | | | | | | | | |
| | | 2005 | | | | 1 | | 1 | 1.14 | 1 |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | 2 |
| Louis Armstrong New Orleans International Airport, New Orleans (MSY) | ASW | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | 2 |
| | | 2006 | | | | | 3 | 3 | 2.78 | |
| | | 2007 | | | | | 1 | 1 | 0.80 | 1 |

**LOUISIANA – Continued**

| Airport, City (Airport Code) | Region | Fiscal Year | Severity | | | | | Total RIs | Annual RI Rate | Total SIs |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Collision | A | B | C | D | | | |
| Monroe Regional Airport, Monroe (MLU) | ASW | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | 1 | 1 | 2.25 | 1 |
| Shreveport Downtown Airport, Shreveport (DTN) | ASW | 2004 | | | | | | | | 3 |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | 1 |
| | | 2007 | | | | | | | | 3 |
| Shreveport Regional Airport, Shreveport (SHV) | ASW | 2004 | | | | | | | | 1 |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | |

**MAINE**

| Airport, City (Airport Code) | Region | Fiscal Year | Severity | | | | | Total RIs | Annual RI Rate | Total SIs |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Collision | A | B | C | D | | | |
| Bangor International Airport, Bangor (BGR) | ANE | 2004 | | | | | | | | 1 |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | 2 |
| | | 2007 | | | | | | | | |
| Portland International Jetport, Portland (PWM) | ANE | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | 1 |
| | | 2006 | | | | | | | | 5 |
| | | 2007 | | | | | 1 | 1 | 1.34 | |

**MARYLAND**

| Airport, City (Airport Code) | Region | Fiscal Year | Severity | | | | | Total RIs | Annual RI Rate | Total SIs |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Collision | A | B | C | D | | | |
| Andrews Air Force Base, Camp Springs (ADW) | AEA | 2004 | | | | | 1 | 1 | 1.30 | 3 |
| | | 2005 | | | | 2 | | 2 | 2.23 | |
| | | 2006 | | | | | | | | |
| | | 2007 | | 1 | | | | 1 | 1.01 | |
| Balitmore-Washington Thurgood Marshall International Airport, Baltimore (BWI) | AEA | 2004 | | | | 1 | 1 | 2 | 0.65 | 6 |
| | | 2005 | | | 1 | 2 | 1 | 4 | 1.28 | 1 |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | 1 | | 1 | 0.33 | 2 |
| Salisbury-Ocean City Wicomico Regional Airport, Salisbury (SBY) | AEA | 2004 | | | | 1 | | 1 | 1.76 | |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | 1 | | 1 | 2.07 | |

**MASSACHUSETTS**

| Airport, City (Airport Code) | Region | Fiscal Year | Severity | | | | | Total RIs | Annual RI Rate | Total SIs |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Collision | A | B | C | D | | | |
| Barnstable Municipal Airport, Hyannis (HYA) | ANE | 2004 | | | 1 | 1 | | 2 | 1.72 | |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | |
| Beverly Municipal Airport, Beverly (BVY) | ANE | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | 1 |
| General Edward Lawrence Logan International Airport, Boston (BOS) | ANE | 2004 | | | | | 1 | 1 | 0.24 | |
| | | 2005 | | 1 | | 3 | 11 | 15 | 3.50 | 4 |
| | | 2006 | | | | 2 | 5 | 7 | 1.70 | 12 |
| | | 2007 | | | | | 4 | 4 | 0.97 | 6 |
| Laurence G Hanscom Field, Bedford (BED) | ANE | 2004 | | | | | | | | 1 |
| | | 2005 | | | 1 | | | 1 | 0.58 | |
| | | 2006 | | | | 1 | 1 | 2 | 1.18 | |
| | | 2007 | | | | | 3 | 3 | 1.77 | 3 |
| Lawrence Municipal Airport, Lawrence (LWM) | ANE | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | 1 | | 1 | 1.24 | |
| | | 2007 | | | | | | | | |
| Martha's Vineyard Airport, Vineyard Haven (MVY) | ANE | 2004 | | | | | | | | |
| | | 2005 | | | | | 1 | 1 | 1.89 | |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | |
| Nantucket Memorial Airport, Nantucket (ACK) | ANE | 2004 | | | 1 | | | 1 | 0.70 | |
| | | 2005 | | | | | | | | 1 |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | 1 |
| Norwood Memorial Airport, Norwood (OWD) | ANE | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | 1 |
| | | 2007 | | | | | | | | |
| Worcester Regional Airport, Worcester (ORH) | ANE | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | 1 |

**MICHIGAN**

| Airport, City (Airport Code) | Region | Fiscal Year | Severity | | | | | Total RIs | Annual RI Rate | Total SIs |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Collision | A | B | C | D | | | |
| Bishop International Airport, Flint (FNT) | AGL | 2004 | | | | | | | | |
| | | 2005 | | | | 1 | | 1 | 0.75 | |
| | | 2006 | | | | | | | | 2 |
| | | 2007 | | | | 1 | 1 | 2 | 2.35 | |
| Capital City Airport, Lansing (LAN) | AGL | 2004 | | | | | | | | |
| | | 2005 | | | | 1 | | 1 | 1.19 | 1 |
| | | 2006 | | | | | | | | 3 |
| | | 2007 | | | | | | | | 1 |
| Coleman A. Young/Detroit City Airport, Detroit (DET) | AGL | 2004 | | | | | | | | |
| | | 2005 | | | | | 2 | 2 | 2.60 | 1 |
| | | 2006 | | | | | | | | 2 |
| | | 2007 | | | | | | | | |
| Detroit Metropolitan Wayne County Airport, Romulus (DTW) | AGL | 2004 | | | | | 5 | 5 | 0.97 | 2 |
| | | 2005 | | | | | 1 | 1 | 0.19 | |
| | | 2006 | | | | | 2 | 2 | 0.41 | 4 |
| | | 2007 | | | | | 2 | 2 | 0.42 | 4 |
| Gerald R. Ford International Airport, Grand Rapids (GRR) | AGL | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | 1 |
| | | 2007 | | | | | | | | 1 |
| Jackson County Airport -Reynolds Field, Jackson (JXN) | AGL | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | 1 |
| | | 2006 | | | | | 2 | 2 | 4.14 | 1 |
| | | 2007 | | | | | | | | 3 |
| Kalamazoo/Battle Creek International Airport, Kalamazoo (AZO) | AGL | 2004 | | | | | 1 | 1 | 1.05 | |
| | | 2005 | | | 1 | | 1 | 2 | 2.16 | 4 |
| | | 2006 | | | | 2 | | 2 | 2.70 | 2 |
| | | 2007 | | | | | 1 | 1 | 1.58 | 2 |
| MBS International Airport, Saginaw (MBS) | AGL | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | 1 |
| | | 2006 | | | | | | | | 2 |
| | | 2007 | | | | | 1 | 1 | 2.63 | 2 |
| Muskegon County Airport, Muskegon (MKG) | AGL | 2004 | | | | | | | | 1 |
| | | 2005 | | | | 1 | | 1 | 1.92 | 2 |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | |
| Oakland County International Airport, Pontiac (PTK) | AGL | 2004 | | | | | | | | 1 |
| | | 2005 | | | | | 1 | 1 | 0.46 | 1 |
| | | 2006 | | 1 | | | | 1 | 0.51 | 4 |
| | | 2007 | | | | | 1 | 1 | 0.48 | 2 |
| Sawyer International Airport, Marquette (SAW) | AGL | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | 1 |
| | | 2007 | | | | | | | | 1 |

**MICHIGAN – Continued**

| Airport, City (Airport Code) | Region | Fiscal Year | Severity | | | | | Total RIs | Annual RI Rate | Total SIs |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Collision | A | B | C | D | | | |
| W. K. Kellogg Airport, Battle Creek (BTL) | AGL | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | 1 |
| | | 2006 | | | | | | | | 1 |
| | | 2007 | | | | | | | | |
| Willow Run Airport, Ypsilanti (YIP) | AGL | 2004 | | | 1 | | 1 | 2 | 1.74 | 1 |
| | | 2005 | | | | 2 | | 2 | 1.87 | 1 |
| | | 2006 | | | | | 1 | 1 | 1.12 | |
| | | 2007 | | | | | | | | |

**MINNESOTA**

| Airport, City (Airport Code) | Region | Fiscal Year | Severity | | | | | Total RIs | Annual RI Rate | Total SIs |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Collision | A | B | C | D | | | |
| Anoka County - Blaine Airport, Blaine (ANE) | AGL | 2004 | | | | | | | | 1 |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | |
| Crystal Airport, Minneapolis (MIC) | AGL | 2004 | | | | | | | | 1 |
| | | 2005 | | | | 1 | | 1 | 1.40 | 2 |
| | | 2006 | | | | | | | | 1 |
| | | 2007 | | | | | 1 | 1 | 1.88 | 3 |
| Duluth International Airport, Duluth (DLH) | AGL | 2004 | | | | | | | | |
| | | 2005 | | | | | 1 | 1 | 1.45 | 3 |
| | | 2006 | | 1 | | | | 1 | 1.53 | |
| | | 2007 | | | | | | | | 2 |
| Flying Cloud Airport, Minneapolis, (FCM) | AGL | 2004 | | | | 1 | | 1 | 0.63 | 4 |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | 2 | 2 | 1.41 | 2 |
| | | 2007 | | | | | | | | 1 |
| Minneapolis-St. Paul International/ Wold-Chamberlain Airport, Minneapolis (MSP) | AGL | 2004 | | | | 1 | 1 | 2 | 0.37 | 3 |
| | | 2005 | | | | | 5 | 5 | 0.92 | 3 |
| | | 2006 | | | | 3 | 2 | 5 | 1.04 | 1 |
| | | 2007 | | | | | 2 | 2 | 0.44 | 2 |
| Rochester International Airport, Rochester (RST) | AGL | 2004 | | | | | 1 | 1 | 1.45 | |
| | | 2005 | | | | | 1 | 1 | 1.51 | 2 |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | 1 | | 1 | 1.74 | |
| St. Cloud Regional Airport, St. Cloud (STC) | AGL | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | 5 |
| | | 2006 | | | | | | | | 5 |
| | | 2007 | | | | | | | | 6 |
| St. Paul Downtown Airport - Holman Field, St. Paul (STP) | AGL | 2004 | | | | | 1 | 1 | 0.76 | 5 |
| | | 2005 | | | | | 1 | 1 | 0.80 | 5 |
| | | 2006 | | | | | | | | 3 |
| | | 2007 | | | | | | | | 4 |

**MISSISSIPPI**

| Airport, City (Airport Code) | Region | Fiscal Year | Severity | | | | | Total RIs | Annual RI Rate | Total SIs |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Collision | A | B | C | D | | | |
| Golden Triangle Regional Airport, Columbus (GTR) | ASO | 2004 | | | | | | | | 1 |
| | | 2005 | | | | | | | | 3 |
| | | 2006 | | | | | | | | 1 |
| | | 2007 | | | | | | | | |
| Gulfport-Biloxi International Airport, Gulfport (GPT) | ASO | 2004 | | | | | | | | 1 |
| | | 2005 | | | | | | | | 1 |
| | | 2006 | | 1 | | | | 1 | 1.57 | 2 |
| | | 2007 | | | | | | | | 2 |
| Hawkins Field, Jackson(HKS) | ASO | 2004 | | | | | | | | 1 |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | |
| Jackson International Airport, Jackson (JAN) | ASO | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | 1 |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | |
| Mid Delta Regional Airport, Greenville (GLH) | ASO | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | 1 |
| | | 2007 | | | | | | | | |
| Tupelo Regional Airport, Tupelo (TUP) | ASO | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | 1 |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | |

**MISSOURI**

| Airport, City (Airport Code) | Region | Fiscal Year | Severity | | | | | Total RIs | Annual RI Rate | Total SIs |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Collision | A | B | C | D | | | |
| Cape Girardeau Regional Airport, Cape Girardeau (CGI) | ACE | 2004 | | | | | | | | 1 |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | |
| Charles B. Wheeler Downtown Airport, Kansas City (MKC) | ACE | 2004 | | | | | | | | |
| | | 2005 | | | | | 2 | 2 | 1.97 | 7 |
| | | 2006 | | | | 1 | 5 | 6 | 7.42 | 4 |
| | | 2007 | | | | | | | | 1 |
| Joplin Regional Airport, Joplin (JLN) | ACE | 2004 | | | | | | | | 4 |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | 1 |
| | | 2007 | | | | | | | | |
| Kansas City International Airport, Kansas City (MCI) | ACE | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | 2 |
| | | 2006 | | | | | | | | 2 |
| | | 2007 | | | | | | | | |
| Lambert-St. Louis International Airport, St. Louis (STL) | ACE | 2004 | | | | 1 | | 1 | 0.33 | 5 |
| | | 2005 | | | | 1 | 1 | 2 | 0.67 | 1 |
| | | 2006 | | | | | 1 | 1 | 0.35 | 1 |
| | | 2007 | | | | 1 | 2 | 3 | 1.15 | 1 |

**MISSOURI – Continued**

| Airport, City (Airport Code) | Region | Fiscal Year | Severity: Collision | A | B | C | D | Total RIs | Annual RI Rate | Total SIs |
|---|---|---|---|---|---|---|---|---|---|---|
| Spirit of St. Louis Airport, St. Louis (SUS) | ACE | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | 3 |
| | | 2007 | | | | | | | | |
| Springfield-Branson National Airport, Springfield (SGF) | ACE | 2004 | | | | | | | | |
| | | 2005 | | 1 | | | | 1 | 1.16 | |
| | | 2006 | | | | | | | | 1 |
| | | 2007 | | | | 1 | | 1 | 1.34 | 4 |

**MONTANA**

| Airport, City (Airport Code) | Region | Fiscal Year | Severity: Collision | A | B | C | D | Total RIs | Annual RI Rate | Total SIs |
|---|---|---|---|---|---|---|---|---|---|---|
| Billings Logan International Airport, Billings (BIL) | ANM | 2004 | | | | | 1 | 1 | 1.01 | 1 |
| | | 2005 | | | | | | | | 4 |
| | | 2006 | | | | | | | | 3 |
| | | 2007 | | | | | | | | |
| Gallatin Field, Bozeman (BZN) | ANM | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | 1 |
| | | 2006 | | | | | | | | 3 |
| | | 2007 | | | | | 1 | 1 | 1.25 | 1 |
| Glacier Park International Airport, Kalispell (GPI) | ANM | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | 1 |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | 1 | 1 | 1.82 | |
| Great Falls International Airport, Great Falls (GTF) | ANM | 2004 | | | | | | | | |
| | | 2005 | | | | | 1 | 1 | 2.07 | 1 |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | |
| Helena Regional Airport, Helena (HLN) | ANM | 2004 | | | | 1 | | 1 | 1.70 | |
| | | 2005 | | | | | | | | 2 |
| | | 2006 | | | | | | | | 2 |
| | | 2007 | | | 1 | | | 1 | 1.70 | 2 |
| Missoula International Airport, Missoula (MSO) | ANM | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | 2 |

**NEBRASKA**

| Airport, City (Airport Code) | Region | Fiscal Year | Severity: Collision | A | B | C | D | Total RIs | Annual RI Rate | Total SIs |
|---|---|---|---|---|---|---|---|---|---|---|
| Central Nebraska Regional Airport, Grand Island (GRI) | ACE | 2004 | | | | | | | | 1 |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | |
| Eppley Airfield, Omaha (OMA) | ACE | 2004 | | | | | 1 | 1 | 0.71 | 3 |
| | | 2005 | | | | | 1 | 1 | 0.68 | 4 |
| | | 2006 | | | | | 1 | 1 | 0.71 | 5 |
| | | 2007 | | | | 1 | | 1 | 0.74 | 3 |

**NEBRASKA – Continued**

| Airport, City (Airport Code) | Region | Fiscal Year | Severity | | | | | Total RIs | Annual RI Rate | Total SIs |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Collision | A | B | C | D | | | |
| Lincoln Municipal Airport, Lincoln (LNK) | ACE | 2004 | | | | | | | | 5 |
| | | 2005 | | | | | 2 | 2 | 2.55 | 4 |
| | | 2006 | | | | | 1 | 1 | 1.17 | 1 |
| | | 2007 | | | | | | | | 2 |

**NEVADA**

| Airport, City (Airport Code) | Region | Fiscal Year | Severity | | | | | Total RIs | Annual RI Rate | Total SIs |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Collision | A | B | C | D | | | |
| Elko Regional Airport, Elko (EKO) | AWP | 2004 | | | | | 1 | 1 | 3.79 | 2 |
| | | 2005 | | | | | | | | 1 |
| | | 2006 | | | | | | | | 4 |
| | | 2007 | | | | | | | | |
| McCarran International Airport, Las Vegas (LAS) | AWP | 2004 | | | | 2 | 2 | 4 | 0.71 | 4 |
| | | 2005 | | | | 2 | 4 | 6 | 0.99 | 2 |
| | | 2006 | | | | 1 | 4 | 5 | 0.81 | 3 |
| | | 2007 | | | | | 6 | 6 | 0.97 | 2 |
| Reno/Tahoe International Airport, Reno (RNO) | AWP | 2004 | | | | 2 | 1 | 3 | 2.08 | 6 |
| | | 2005 | | | | | 3 | 3 | 1.95 | 3 |
| | | 2006 | | 1 | | | 1 | 2 | 1.30 | 7 |
| | | 2007 | | | | 1 | 5 | 6 | 3.70 | 9 |
| North Las Vegas Airport, Las Vegas (VGT) | AWP | 2004 | | 1 | | 1 | 1 | 3 | 1.30 | 3 |
| | | 2005 | | 1 | | 1 | 5 | 7 | 3.11 | 4 |
| | | 2006 | | | | 3 | 5 | 8 | 3.44 | 9 |
| | | 2007 | | | | 1 | 10 | 11 | 5.02 | 13 |

**NEW HAMPSHIRE**

| Airport, City (Airport Code) | Region | Fiscal Year | Severity | | | | | Total RIs | Annual RI Rate | Total SIs |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Collision | A | B | C | D | | | |
| Boire Field, Nashua (ASH) | ANE | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | 1 |
| | | 2006 | | | | | 1 | 1 | 0.85 | 1 |
| | | 2007 | | | | | | | | |
| Lebanon Municipal Airport, Lebanon (LEB) | ANE | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | 2 |
| Manchester Airport, Manchester (MHT) | ANE | 2004 | | | | | | | | 1 |
| | | 2005 | | | | | 1 | 1 | 0.94 | 2 |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | 2 | 2 | 2.13 | 1 |

**NEW JERSEY**

| Airport, City (Airport Code) | Region | Fiscal Year | Severity | | | | | Total RIs | Annual RI Rate | Total SIs |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Collision | A | B | C | D | | | |
| Atlantic City International Airport, Atlantic City (ACY) | AEA | 2004 | | | | | | | | 4 |
| | | 2005 | | | | | | | | 1 |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | 1 |

**NEW JERSEY – Continued**

| Airport, City (Airport Code) | Region | Fiscal Year | Severity | | | | | Total RIs | Annual RI Rate | Total SIs |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Collision | A | B | C | D | | | |
| Essex County Airport, Caldwell (CDW) | AEA | 2004 | | | | | 1 | 1 | 0.93 | 2 |
| | | 2005 | | | 1 | 1 | | 2 | 1.79 | 3 |
| | | 2006 | | | | | | | | 3 |
| | | 2007 | | | | | 2 | 2 | 1.99 | 4 |
| Morristown Municipal Airport, Morristown (MMU) | AEA | 2004 | | | | | | | | 1 |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | 2 |
| Newark Liberty International Airport, Newark (EWR) | AEA | 2004 | | 1 | | 1 | 3 | 5 | 1.15 | 4 |
| | | 2005 | | 1 | | | 4 | 5 | 1.13 | 5 |
| | | 2006 | | | | 2 | 5 | 7 | 1.56 | 2 |
| | | 2007 | | | | | | | | 4 |
| Teterboro Airport, Teterboro (TEB) | AEA | 2004 | | | | 1 | 3 | 4 | 1.81 | |
| | | 2005 | | | 1 | 2 | 1 | 4 | 1.83 | 6 |
| | | 2006 | | | | | 3 | 3 | 1.50 | 5 |
| | | 2007 | | 1 | | 1 | 4 | 6 | 2.97 | 4 |
| Trenton Mercer Airport, Trenton (TTN) | AEA | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | 1 |
| | | 2006 | | | | | | | | 2 |
| | | 2007 | | | | | | | | 2 |

**NEW MEXICO**

| Airport, City (Airport Code) | Region | Fiscal Year | Severity | | | | | Total RIs | Annual RI Rate | Total SIs |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Collision | A | B | C | D | | | |
| Albuquerque International Airport, Albuquerque (ABQ) | ASW | 2004 | | | | 1 | 1 | 2 | 1.00 | |
| | | 2005 | | | | | 1 | 1 | 0.51 | 2 |
| | | 2006 | | | | 1 | 1 | 2 | 1.02 | 2 |
| | | 2007 | | | | | 1 | 1 | 0.53 | 3 |
| Four Corners Regional Airport, Farmington (FMN) | ASW | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | 1 | 1 | 0.96 | |
| Roswell Industrial Air Center Airport, Roswell (ROW) | ASW | 2004 | | | | | | | | |
| | | 2005 | | | | | 1 | 1 | 1.62 | 1 |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | |

**NEW YORK**

| Airport, City (Airport Code) | Region | Fiscal Year | Severity | | | | | Total RIs | Annual RI Rate | Total SIs |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Collision | A | B | C | D | | | |
| Albany International Airport, Albany (ALB) | AEA | 2004 | | | | | 1 | 1 | 0.74 | 1 |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | 1 |
| Buffalo Niagra International Airport, Buffalo (BUF) | AEA | 2004 | | 1 | | | | 1 | 0.71 | |
| | | 2005 | | | | | | | | 1 |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | 1 | 1 | 0.73 | 1 |

**NEW YORK – Continued**

| Airport, City (Airport Code) | Region | Fiscal Year | Severity | | | | | Total RIs | Annual RI Rate | Total SIs |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Collision | A | B | C | D | | | |
| Dutchess County Airport, Poughkeepsie (POU) | AEA | 2004 | | | | | | | | 1 |
| | | 2005 | | | | | | | | 1 |
| | | 2006 | | | | | 1 | 1 | 0.88 | |
| | | 2007 | | | | | | | | 1 |
| Elmira/Corning Regional Airport, Elmira (ELM) | AEA | 2004 | | | | | 1 | 1 | 2.00 | 1 |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | 1 | 1 | 2.58 | 1 |
| | | 2007 | | | | | | | | |
| Greater Binghamton/Edwin A Link Field, Binghamton (BGM) | AEA | 2004 | | | | | 1 | 1 | 2.77 | 1 |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | 2 |
| | | 2007 | | | | | | | | |
| Greater Rochester International Airport, Rochester (ROC) | AEA | 2004 | | | | | | | | 1 |
| | | 2005 | | | | | | | | 1 |
| | | 2006 | | | | | 1 | 1 | 0.73 | 1 |
| | | 2007 | | | 1 | | | 1 | 0.84 | 7 |
| Ithaca Tompkins Regional Airport, Ithaca (ITH) | AEA | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | 1 |
| | | 2006 | | | | | | | | 1 |
| | | 2007 | | | | | | | | 1 |
| John F. Kennedy International Airport, New York City (JFK) | AEA | 2004 | | | | | 1 | 1 | 0.31 | |
| | | 2005 | | 1 | | 1 | 2 | 4 | 1.11 | 1 |
| | | 2006 | | | | 1 | 3 | 4 | 1.06 | 3 |
| | | 2007 | | | | | 2 | 2 | 0.44 | 1 |
| LaGuardia Airport, New York (LGA) | AEA | 2004 | | | | | 1 | 1 | 0.25 | 1 |
| | | 2005 | | | | | | | | 1 |
| | | 2006 | | | | | 2 | 2 | 0.49 | |
| | | 2007 | | | | 2 | 3 | 5 | 1.25 | |
| Long Island MacArthur Airport, Islip (ISP) | AEA | 2004 | | | | | 1 | 1 | 0.56 | |
| | | 2005 | | | | | 1 | 1 | 0.57 | 1 |
| | | 2006 | | 1 | | | | 1 | 0.54 | 3 |
| | | 2007 | | | | | 1 | 1 | 0.54 | 1 |
| Niagra Falls International Airport, Niagra Falls (IAG) | AEA | 2004 | | | | | | | | |
| | | 2005 | | | | | 1 | 1 | 2.12 | |
| | | 2006 | | | | | | | | 5 |
| | | 2007 | | | | | | | | 6 |
| Oneida County Airport, Utica (UCA) | AEA | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | 1 |
| | | 2006 | | | | | | | | 2 |
| | | 2007 | | | | | | | | |

**NEW YORK – Continued**

| Airport, City (Airport Code) | Region | Fiscal Year | Severity | | | | | Total RIs | Annual RI Rate | Total SIs |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Collision | A | B | C | D | | | |
| Republic Airport, Farmingdale (FRG) | AEA | 2004 | | | | | 1 | 1 | 0.50 | |
| | | 2005 | | | | | 1 | 1 | 0.49 | 2 |
| | | 2006 | | | | 1 | | 1 | 0.52 | |
| | | 2007 | | | | | 1 | 1 | 0.52 | 1 |
| Stewart International Airport, Newburgh (SWF) | AEA | 2004 | | 1 | | | | 1 | 0.97 | |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | |
| Syracuse Hancock International Airport, Syracuse (SYR) | AEA | 2004 | | | | | | | | 3 |
| | | 2005 | | | | | 2 | 2 | 1.61 | 1 |
| | | 2006 | | | | | 1 | 1 | 0.86 | |
| | | 2007 | | | | | | | | |
| Westchester County Airport, White Plaines (HPN) | AEA | 2004 | | | 1 | | | 1 | 0.52 | 1 |
| | | 2005 | | | | 2 | | 2 | 1.02 | 1 |
| | | 2006 | | | | 1 | | 1 | 0.52 | |
| | | 2007 | | | | | 1 | 1 | 0.49 | |

**NORTH CAROLINA**

| Airport, City (Airport Code) | Region | Fiscal Year | Severity | | | | | Total RIs | Annual RI Rate | Total SIs |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Collision | A | B | C | D | | | |
| Asheville Regional Airport, Asheville (AVL) | ASO | 2004 | | | | | | | | 1 |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | 1 |
| | | 2007 | | | | | | | | |
| Charlotte/Douglas International Airport, Charlotte (CLT) | ASO | 2004 | | | | | 1 | 1 | 0.22 | 3 |
| | | 2005 | | | | | 4 | 4 | 0.77 | 2 |
| | | 2006 | | | | 1 | 1 | 2 | 0.39 | 7 |
| | | 2007 | | | | | 3 | 3 | 0.57 | 5 |
| Concord Regional Airport, Concord (JQF) | ASO | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | 1 |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | |
| Hickory Regional Airport, Hickory (HKY) | ASO | 2004 | | | | | | | | 2 |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | |
| Piedmont Triad International Airport, Greensboro (GSO) | ASO | 2004 | | | | | | | | 1 |
| | | 2005 | | | | | 1 | 1 | 0.74 | |
| | | 2006 | | | | | | | | 3 |
| | | 2007 | | | | | 1 | 1 | 0.91 | 2 |

**NORTH CAROLINA – Continued**

| Airport, City (Airport Code) | Region | Fiscal Year | Severity | | | | | Total RIs | Annual RI Rate | Total SIs |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Collision | A | B | C | D | | | |
| Raleigh-Durham International Airport, Raleigh (RDU) | ASO | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | 2 |
| | | 2006 | | | | | 1 | 1 | 0.41 | 4 |
| | | 2007 | | | | | 1 | 1 | 0.40 | 20 |
| Smith Reynolds Airport, Winston Salem (INT) | ASO | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | 1 |
| Wilmington International Airport, Wilmington (ILM) | ASO | 2004 | | | | 1 | 1 | 2 | 2.42 | |
| | | 2005 | | | | | | | | 2 |
| | | 2006 | | | | | | | | 2 |
| | | 2007 | | | | | 1 | 1 | 1.17 | |

**NORTH DAKOTA**

| Airport, City (Airport Code) | Region | Fiscal Year | Severity | | | | | Total RIs | Annual RI Rate | Total SIs |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Collision | A | B | C | D | | | |
| Bismarck Municipal Airport, Bismarck (BIS) | AGL | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | 1 |
| | | 2007 | | | | | | | | |
| Grand Forks International Airport, Grand Forks (GFK) | AGL | 2004 | | 1 | 1 | | | 2 | 0.75 | 2 |
| | | 2005 | | 1 | | | | 1 | 0.39 | 1 |
| | | 2006 | | | | 1 | | 1 | 0.44 | 3 |
| | | 2007 | | | | | | | | 3 |
| Hector International Airport, Fargo (FAR) | AGL | 2004 | | | | | | | | 6 |
| | | 2005 | | | | | 1 | 1 | 1.26 | 3 |
| | | 2006 | | | | | | | | 2 |
| | | 2007 | | | | | | | | 2 |

**OHIO**

| Airport, City (Airport Code) | Region | Fiscal Year | Severity | | | | | Total RIs | Annual RI Rate | Total SIs |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Collision | A | B | C | D | | | |
| Akron-Canton Regional Airport, Akron (CAK) | AGL | 2004 | | | | | | | | 1 |
| | | 2005 | | | | 1 | 1 | 2 | 1.86 | 2 |
| | | 2006 | | | | | 1 | 1 | 0.93 | 1 |
| | | 2007 | | | | | | | | 2 |
| Bolton Field, Columbus (TZR) | AGL | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | 1 |
| | | 2006 | | | | | | | | 1 |
| | | 2007 | | | | | | | | 1 |
| Burke Lakefront Airport, Cleveland (BKL) | AGL | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | 1 |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | 2 |
| Cincinnati/Northern Kentucky International Airport, Covington/Cincinnati (CVG) | ASO | 2004 | | | | 4 | 2 | 6 | 1.16 | |
| | | 2005 | | 1 | | 2 | 1 | 4 | 0.77 | |
| | | 2006 | | | | 1 | | 1 | 0.27 | 1 |
| | | 2007 | | | | | 1 | 1 | 0.30 | |

**OHIO – Continued**

| Airport, City (Airport Code) | Region | Fiscal Year | Severity | | | | | Total RIs | Annual RI Rate | Total SIs |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Collision | A | B | C | D | | | |
| Cincinnati Municipal Airport-Lunken Field, Cincinnati (LUK) | AGL | 2004 | | | | | | | | |
| | | 2005 | | | | | 1 | 1 | 1.15 | 1 |
| | | 2006 | | | | | | | | 1 |
| | | 2007 | | | | | 1 | 1 | 1.38 | |
| Cleveland-Hopkins International Airport, Cleveland (CLE) | AGL | 2004 | | | | 3 | 2 | 5 | 1.89 | 2 |
| | | 2005 | | | | | 2 | 2 | 0.76 | 2 |
| | | 2006 | | 1 | | | 3 | 4 | 1.59 | 2 |
| | | 2007 | | | | 1 | 6 | 7 | 2.84 | 6 |
| James M. Cox Dayton International Airport, Dayton (DAY) | AGL | 2004 | | | | | | | | 1 |
| | | 2005 | | | | | | | | 2 |
| | | 2006 | | | | | | | | 2 |
| | | 2007 | | | | | | | | 1 |
| Mansfield Lahm Regional Airport, Mansfield (MFD) | AGL | 2004 | | | | | 1 | 1 | 2.73 | |
| | | 2005 | | | | | 2 | 2 | 6.00 | 1 |
| | | 2006 | | | | 1 | 1 | 2 | 5.60 | 1 |
| | | 2007 | | | | | | | | |
| Ohio State University Airport, Columbus (OSU) | AGL | 2004 | | | | | 2 | 2 | 2.00 | 1 |
| | | 2005 | | | | | | | | 1 |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | 5 |
| Port Columbus International Airport, Columbus (CMH) | AGL | 2004 | | | | | 1 | 1 | 0.44 | |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | 3 |
| | | 2007 | | | | | | | | 3 |
| Toledo Express Airport, Toledo (TOL) | AGL | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | 1 |
| | | 2007 | | | | | | | | 3 |
| Youngstown-Warren Regional Airport, Youngstown (YNG) | AGL | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | 1 |
| | | 2006 | | | | | 1 | 1 | 1.34 | 1 |
| | | 2007 | | | | | | | | |

**OKLAHOMA**

| Airport, City (Airport Code) | Region | Fiscal Year | Severity | | | | | Total RIs | Annual RI Rate | Total SIs |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Collision | A | B | C | D | | | |
| Ardmore Municipal Airport, Ardmore (ADM) | ASW | 2004 | | | | | | | | 1 |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | 1 |
| | | 2007 | | | | | | | | |
| Enid Woodring Regional Airport, Enid (WDG) | ASW | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | 1 |
| | | 2006 | | | 1 | | | 1 | 3.29 | |
| | | 2007 | | | | | | | | 1 |
| Richard Lloyd Jones Jr. Airport, Tulsa (RVS) | ASW | 2004 | | | | | 1 | 1 | 0.35 | |
| | | 2005 | | | | 1 | 2 | 3 | 0.89 | 1 |
| | | 2006 | | | | | 1 | 1 | 0.39 | 4 |
| | | 2007 | | | | | 1 | 1 | 0.37 | 3 |

**OKLAHOMA – Continued**

| Airport, City (Airport Code) | Region | Fiscal Year | Severity | | | | | Total RIs | Annual RI Rate | Total SIs |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Collision | A | B | C | D | | | |
| Stillwater Regional Airport, Stillwater (SWO) | ASW | 2004 | | | | 1 | | 1 | 1.67 | 2 |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | |
| Tulsa International Airport, Tulsa (TUL) | ASW | 2004 | | | | | | | | 4 |
| | | 2005 | | | | | 1 | 1 | 0.63 | 2 |
| | | 2006 | | | | | | | | 1 |
| | | 2007 | | | | | 2 | 2 | 1.47 | 4 |
| University of Oklahoma Westheimer Airport, Norman (OUN) | ASW | 2004 | | | | | | | | |
| | | 2005 | | | | | 1 | 1 | 0.98 | |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | 2 |
| Wiley Post Airport, Oklahoma City (PWA) | ASW | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | 1 |
| | | 2007 | | | | | | | | |
| Will Rogers World Airport, Oklahoma City (OKC) | ASW | 2004 | | | | | | | | 5 |
| | | 2005 | | | | 1 | | 1 | 0.88 | 1 |
| | | 2006 | | | | | | | | 4 |
| | | 2007 | | | | | | | | |

**OREGON**

| Airport, City (Airport Code) | Region | Fiscal Year | Severity | | | | | Total RIs | Annual RI Rate | Total SIs |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Collision | A | B | C | D | | | |
| Mahlon Sweet Field Airport, Eugene (EUG) | ANM | 2004 | | | | | 2 | 2 | 2.16 | 8 |
| | | 2005 | | | | | | | | 3 |
| | | 2006 | | | | | 1 | 1 | 1.09 | 1 |
| | | 2007 | | | | | | | | 3 |
| McNary Field, Salem (SLE) | ANM | 2004 | | | | | | | | 2 |
| | | 2005 | | | | | 2 | 2 | 4.11 | |
| | | 2006 | | | | | | | | 1 |
| | | 2007 | | | | | | | | |
| Portland International Airport, Portland (PDX) | ANM | 2004 | | | | | | | | |
| | | 2005 | | | | | 1 | 1 | 0.38 | |
| | | 2006 | | | | | 1 | 1 | 0.38 | |
| | | 2007 | | | | | | | | 2 |
| Portland-Hillsboro Airport, Portland (HIO) | ANM | 2004 | | | 1 | | | 1 | 0.55 | |
| | | 2005 | | | | | 1 | 1 | 0.46 | |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | 1 |
| Portland-Troutdale Airport, Portland (TTD) | ANM | 2004 | | | | | | | | 1 |
| | | 2005 | | | | | | | | 3 |
| | | 2006 | | | | | | | | 3 |
| | | 2007 | | | | | | | | |
| Roberts Field, Redmond (RDM) | ANM | 2004 | | | | | 1 | 1 | 1.78 | |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | 1 | 1 | 2 | 2.11 | |

**PENNSYLVANIA**

| Airport, City (Airport Code) | Region | Fiscal Year | Severity | | | | | Total RIs | Annual RI Rate | Total SIs |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Collision | A | B | C | D | | | |
| Allegheny County Airport, West Mifflin (AGC) | AEA | 2004 | | | | | 1 | 1 | 1.09 | 2 |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | 1 |
| Capital City Airport, New Cumberland (CXY) | AEA | 2004 | | | | | | | | 3 |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | |
| Erie International Airport - Tom Ridge Field, Erie (ERI) | AEA | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | 1 |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | |
| Harrisburg International Airport, Harrisburg (MDT) | AEA | 2004 | | | | | | | | 8 |
| | | 2005 | | | | | | | | 4 |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | 1 | 1 | 1.39 | |
| Lancaster Airport, Lititz (LNS) | AEA | 2004 | | | | | | | | 1 |
| | | 2005 | | | | | | | | 1 |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | |
| Lehigh Valley International Airport, Allentown (ABE) | AEA | 2004 | | | | | | | | 1 |
| | | 2005 | | | | | | | | 1 |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | 1 |
| Northeast Philadelphia Airport, Philadelphia (PNE) | AEA | 2004 | | | | 1 | | 1 | 0.90 | 1 |
| | | 2005 | | | | | 1 | 1 | 0.92 | 2 |
| | | 2006 | | | | 1 | 2 | 3 | 2.91 | 1 |
| | | 2007 | | | | | | | | 2 |
| Philadelphia International Airport, Philadelphia (PHL) | AEA | 2004 | | | | 2 | 5 | 7 | 1.53 | 6 |
| | | 2005 | 1 | | | 2 | 6 | 9 | 1.68 | 5 |
| | | 2006 | | | | 3 | 4 | 7 | 1.35 | |
| | | 2007 | | | | 1 | 3 | 4 | 0.79 | 3 |
| Pittsburgh International Airport, Pittsburgh (PIT) | AEA | 2004 | | | | 1 | | 1 | 0.28 | 2 |
| | | 2005 | | | | | 1 | 1 | 0.36 | 2 |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | 1 |
| Reading Regional Airport - Carl A. Spaatz Field, Reading (RDG) | AEA | 2004 | | | | | | | | 1 |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | 1 |
| Wilkes-Barre/Scranton International Airport, Avoca (AVP) | AEA | 2004 | | | | | | | | 1 |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | 1 |

**PUERTO RICO**

| Airport, City (Airport Code) | Region | Fiscal Year | Severity | | | | | Total RIs | Annual RI Rate | Total SIs |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Collision | A | B | C | D | | | |
| Fernando Luis Ribas Dominicci Airport, San Juan (SIG) | ASO | 2004 | | | | 2 | 1 | 3 | 2.40 | 6 |
| | | 2005 | | | | | | | | 3 |
| | | 2006 | | | | | | | | 1 |
| | | 2007 | | | | | | | | 1 |
| Luis Munoz Marin International Airport, San Juan (SJU) | ASO | 2004 | | | | | | | | 8 |
| | | 2005 | | | | | | | | 8 |
| | | 2006 | | | | | 1 | 1 | 0.51 | 9 |
| | | 2007 | | | | | | | | 6 |

**RHODE ISLAND**

| Airport, City (Airport Code) | Region | Fiscal Year | Severity | | | | | Total RIs | Annual RI Rate | Total SIs |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Collision | A | B | C | D | | | |
| Theodore Francis Green State Airport, Providence (PVD) | ANE | 2004 | | | | 1 | | 1 | 0.85 | |
| | | 2005 | | | | 1 | | 1 | 0.81 | |
| | | 2006 | | | | 2 | 1 | 3 | 2.80 | 1 |
| | | 2007 | | | | | | | | |

**SOUTH CAROLINA**

| Airport, City (Airport Code) | Region | Fiscal Year | Severity | | | | | Total RIs | Annual RI Rate | Total SIs |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Collision | A | B | C | D | | | |
| Charleston International Airport, Charleston (CHS) | ASO | 2004 | | | | | | | | 3 |
| | | 2005 | | 1 | | 1 | 1 | 3 | 2.39 | 3 |
| | | 2006 | | | | 1 | 1 | 2 | 1.81 | 5 |
| | | 2007 | | | | | 2 | 2 | 1.79 | |
| Columbia Metropolitan Airport, Columbia (CAE) | ASO | 2004 | | | | 2 | | 2 | 1.73 | |
| | | 2005 | | | | | | | | 1 |
| | | 2006 | | | | | | | | 5 |
| | | 2007 | | | | | 2 | 2 | 2.07 | 3 |
| Donaldson Center Airport, Greenville (GYH) | ASO | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | 1 | | 1 | 2.19 | 2 |
| Florence Regional Airport, Florence (FLO) | ASO | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | 2 |
| | | 2007 | | | | | | | | |
| Myrtle Beach International Airport, Myrtle Beach (MYR) | ASO | 2004 | | | | | | | | 1 |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | 1 |

**SOUTH DAKOTA**

| Airport, City (Airport Code) | Region | Fiscal Year | Severity | | | | | Total RIs | Annual RI Rate | Total SIs |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Collision | A | B | C | D | | | |
| Joe Foss Field Airport, Sioux Falls (FSD) | AGL | 2004 | | | | | | | | |
| | | 2005 | | | | | 1 | 1 | 1.10 | 4 |
| | | 2006 | | | | | 1 | 1 | 1.14 | 3 |
| | | 2007 | | | | | | | | 2 |
| Rapid City Regional Airport, Rapid City (RAP) | AGL | 2004 | | | | | | | | 2 |
| | | 2005 | | | | | | | | 1 |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | |

**TENNESSEE**

| Airport, City (Airport Code) | Region | Fiscal Year | Severity | | | | | Total RIs | Annual RI Rate | Total SIs |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Collision | A | B | C | D | | | |
| Lovell Field, Chattanooga (CHA) | ASO | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | 1 |
| | | 2007 | | | | 1 | | 1 | 1.27 | |
| McGhee Tyson Airport, Knoxville (TYS) | ASO | 2004 | | | | | | | | 3 |
| | | 2005 | | | | 1 | 1 | 2 | 1.46 | 2 |
| | | 2006 | | | | | 1 | 1 | 0.76 | 1 |
| | | 2007 | | | | | 2 | 2 | 1.54 | 3 |
| Memphis International Airport, Memphis (MEM) | ASO | 2004 | | | | 1 | 3 | 4 | 1.05 | 1 |
| | | 2005 | | | | | 1 | 1 | 0.25 | 3 |
| | | 2006 | | | | | 2 | 2 | 0.51 | 3 |
| | | 2007 | | | | | | | | |
| Nashville International Airport, Nashville (BNA) | ASO | 2004 | | 1 | | 1 | 1 | 3 | 1.28 | 5 |
| | | 2005 | | | | | | | | 3 |
| | | 2006 | | | | 1 | 1 | 2 | 0.94 | 2 |
| | | 2007 | | | | 1 | 2 | 3 | 1.40 | 5 |
| Smyrna Airport, Smyrna (MQY) | ASO | 2004 | | | | 1 | 1 | 2 | 2.44 | |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | 2 |
| | | 2007 | | | | | | | | |
| Tri-Cities Regional Airport, Blountville (TRI) | ASO | 2004 | | | | | | | | 1 |
| | | 2005 | | | | | | | | 2 |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | |

**TEXAS**

| Airport, City (Airport Code) | Region | Fiscal Year | Severity | | | | | Total RIs | Annual RI Rate | Total SIs |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Collision | A | B | C | D | | | |
| Addison Airport, Dallas (ADS) | ASW | 2004 | | | | | | | | 1 |
| | | 2005 | | | | 1 | 1 | 2 | 1.50 | 4 |
| | | 2006 | | | | 1 | 2 | 3 | 2.24 | |
| | | 2007 | | | | | 3 | 3 | 2.28 | 1 |
| Austin-Bergstrom International Airport, Austin (AUS) | ASW | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | 1 | 1 | 0.48 | |

**TEXAS – Continued**

| Airport, City (Airport Code) | Region | Fiscal Year | Severity | | | | | Total RIs | Annual RI Rate | Total SIs |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Collision | A | B | C | D | | | |
| Brownsville/South Padre Island International Airport, Brownsville (BRO) | ASW | 2004 | | | | | | | | 1 |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | |
| Collin County Regional Airport at McKinney, McKinney (TKI) | ASW | 2004 | | | | | | | | 1 |
| | | 2005 | | | | | | | | 6 |
| | | 2006 | | | | | | | | 1 |
| | | 2007 | | | | | | | | |
| Corpus Christi International Airport, Corpus Christi (CRP) | ASW | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | 1 |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | 1 |
| Dallas Executive Airport, Dallas (RBD) | ASW | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | |
| | | 2007 | | 1 | | | | 1 | 0.69 | |
| Dallas Love Field, Dallas (DAL) | ASW | 2004 | | | | 1 | 1 | 2 | 0.79 | |
| | | 2005 | | | | | 1 | 1 | 0.42 | 4 |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | 1 | | 1 | 0.40 | 1 |
| Dallas/Ft. Worth International Airport, Dallas (DFW) | ASW | 2004 | | | | 2 | 5 | 7 | 0.86 | 2 |
| | | 2005 | | | | 2 | 2 | 4 | 0.54 | 4 |
| | | 2006 | | | | 2 | 2 | 4 | 0.57 | 1 |
| | | 2007 | | | | | 8 | 8 | 1.16 | 5 |
| David Wayne Hooks Memorial Airport, Houston (DWH) | ASW | 2004 | | | | 1 | | 1 | 0.46 | |
| | | 2005 | | | 1 | | 1 | 2 | 0.96 | 2 |
| | | 2006 | | | | | 1 | 1 | 0.38 | 3 |
| | | 2007 | | | | 1 | | 1 | 0.43 | 1 |
| Denton Municipal Airport, Denton (DTO) | ASW | 2004 | | | | | | | | 2 |
| | | 2005 | | | | | | | | 8 |
| | | 2006 | | | | | | | | 1 |
| | | 2007 | | | | | | | | |
| East Texas Regional Airport, Longview (GGG) | ASW | 2004 | | | | | 1 | 1 | 1.15 | 2 |
| | | 2005 | | | | | 1 | 1 | 1.08 | |
| | | 2006 | | | | | | | | 7 |
| | | 2007 | | | | | | | | 3 |
| El Paso International Airport, El Paso (ELP) | ASW | 2004 | | | | 1 | | 1 | 0.86 | 2 |
| | | 2005 | | | | | 1 | 1 | 0.90 | 1 |
| | | 2006 | | | | | 1 | 1 | 0.99 | |
| | | 2007 | | | | | 1 | 1 | 0.98 | |
| Ft. Worth Alliance Airport, Ft. Worth (AFW) | ASW | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | 1 |
| | | 2007 | | | | | | | | |
| Ft. Worth Meacham International Airport, Ft. Worth (FTW) | ASW | 2004 | | | | 1 | 1 | 2 | 1.39 | 1 |
| | | 2005 | | | | | | | | 7 |
| | | 2006 | | | | 1 | 1 | 2 | 2.40 | 3 |
| | | 2007 | | | | 1 | | 1 | 0.99 | 2 |

**TEXAS – Continued**

| Airport, City (Airport Code) | Region | Fiscal Year | Severity | | | | | Total RIs | Annual RI Rate | Total SIs |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Collision | A | B | C | D | | | |
| George Bush Intercontinental/Houston Airport, Houston (IAH) | ASW | 2004 | | | | | | | | 1 |
| | | 2005 | | | | 2 | 2 | 4 | 0.72 | 1 |
| | | 2006 | | | | | 2 | 2 | 0.33 | |
| | | 2007 | | | | | | | | 1 |
| Laredo International Airport, Laredo (LRD) | ASW | 2004 | | | | | | | | |
| | | 2005 | | | | 1 | | 1 | 1.64 | 3 |
| | | 2006 | | | | | | | | 2 |
| | | 2007 | | | | | | | | |
| Lubbock International Airport, Lubbock (LBB) | ASW | 2004 | | | | 1 | | 1 | 1.24 | 4 |
| | | 2005 | | | | | 1 | 1 | 1.01 | 1 |
| | | 2006 | | | | | | | | 1 |
| | | 2007 | | | | 2 | | 2 | 2.26 | 3 |
| McAllen Miller International Airport, McAllen (MFE) | ASW | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | 1 |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | |
| Midland International Airport, Midland (MAF) | ASW | 2004 | | | | | | | | |
| | | 2005 | | | | | 1 | 1 | 1.15 | |
| | | 2006 | | | | | | | | 1 |
| | | 2007 | | | | | 2 | 2 | 2.35 | |
| Rick Husband Amarillo International Airport, Amarillo (AMA) | ASW | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | 5 |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | 1 |
| San Antonio International Airport, San Antonio (SAT) | ASW | 2004 | | | | | 1 | 1 | 0.42 | 1 |
| | | 2005 | | | | | 1 | 1 | 0.46 | 2 |
| | | 2006 | | | | | 1 | 1 | 0.47 | 2 |
| | | 2007 | | | | 1 | 2 | 3 | 1.40 | 3 |
| Scholes International Airport, Galveston (GLS) | ASW | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | 1 | | 1 | 1.46 | 4 |
| | | 2007 | | | | | | | | |
| Southeast Texas Regional Airport, Beaumont (BPT) | ASW | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | 1 |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | 2 |
| Stinson Municipal Airport, San Antonio (SSF) | ASW | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | 1 |

**TEXAS – Continued**

| Airport, City (Airport Code) | Region | Fiscal Year | Severity | | | | | Total RIs | Annual RI Rate | Total SIs |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Collision | A | B | C | D | | | |
| Sugar Land Regional Airport, Houston (SGR) | ASW | 2004 | | | | | | | | 1 |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | 1 | 1 | 1.16 | |
| TSTC Waco Airport, Waco (CNW) | ASW | 2004 | | | | | | | | 1 |
| | | 2005 | | | | | | | | 2 |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | 2 |
| Tyler Pounds Regional Airport, Tyler (TYR) | ASW | 2004 | | 1 | | | | 1 | 1.24 | 1 |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | |
| Valley International Airport, Harlingen (HRL) | ASW | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | 1 | 1 | 1.89 | 1 |
| | | 2007 | | | | | | | | |
| Waco Regional Airport, Waco (ACT) | ASW | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | 1 | | 1 | 2.71 | 1 |
| | | 2007 | | | | | 1 | 1 | 2.73 | |
| William P. Hobby Airport, Houston (HOU) | ASW | 2004 | | | | 2 | | 2 | 0.81 | 2 |
| | | 2005 | | | | | | | | 2 |
| | | 2006 | | | | | | | | 7 |
| | | 2007 | | | | | 4 | 4 | 1.67 | 2 |

**UTAH**

| Airport, City (Airport Code) | Region | Fiscal Year | Severity | | | | | Total RIs | Annual RI Rate | Total SIs |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Collision | A | B | C | D | | | |
| Ogden-Hinckley Airport, Ogden (OGD) | ANM | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | 2 | 2 | 1.67 | |
| | | 2007 | | | | | | | | 2 |
| Provo Municipal Airport, Provo (PVU) | ANM | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | |
| | | 2006 | | 1 | | 1 | 2 | 4 | 2.41 | 4 |
| | | 2007 | | | | | 2 | 2 | 1.50 | 2 |
| Salt Lake City International Airport, Salt Lake City (SLC) | ANM | 2004 | | | | | | | | 5 |
| | | 2005 | | | | 1 | 1 | 2 | 0.45 | 4 |
| | | 2006 | | | | 3 | 1 | 4 | 0.94 | 1 |
| | | 2007 | | | | | 1 | 1 | 0.24 | 2 |

**VERMONT**

| Airport, City (Airport Code) | Region | Fiscal Year | Severity | | | | | Total RIs | Annual RI Rate | Total SIs |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Collision | A | B | C | D | | | |
| Burlington International Airport, Burlington (BTV) | ANE | 2004 | | | | | | | | 1 |
| | | 2005 | | | | | 1 | 1 | 0.91 | 1 |
| | | 2006 | | | | | | | | 3 |
| | | 2007 | | | | | 1 | 1 | 1.03 | 1 |

**VIRGIN ISLANDS**

| Airport, City (Airport Code) | Region | Fiscal Year | Severity | | | | | Total RIs | Annual RI Rate | Total SIs |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Collision | A | B | C | D | | | |
| Cyril E. King Airport, Charlotte Amalie (STT) | ASO | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | |
| | | 2007 | | 1 | | | | 1 | 1.18 | |

**VIRGINIA**

| Airport, City (Airport Code) | Region | Fiscal Year | Severity | | | | | Total RIs | Annual RI Rate | Total SIs |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Collision | A | B | C | D | | | |
| Manassas Regional Airport/Harry P. Davis Field, Manassas (HEF) | AEA | 2004 | | | | | | | | 1 |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | 1 |
| | | 2007 | | | | | | | | 2 |
| Newport News/Williamsburg International Airport, Newport News (PHF) | AEA | 2004 | | | | | 1 | 1 | 0.43 | |
| | | 2005 | | | | | | | | 1 |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | |
| Norfolk International Airport, Norfolk (ORF) | AEA | 2004 | | | | | | | | 1 |
| | | 2005 | | | | 1 | | 1 | 0.81 | 1 |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | 1 | 1 | 0.74 | 2 |
| Richmond International Airport, Richmond (RIC) | AEA | 2004 | | | | | | | | 1 |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | |
| Washington Dulles International Airport, Chantilly, VA (IAD) | AEA | 2004 | | | | 1 | 2 | 3 | 0.68 | 1 |
| | | 2005 | | | | | 2 | 2 | 0.34 | 1 |
| | | 2006 | | | | | | | | 2 |
| | | 2007 | | | | | 4 | 4 | 0.93 | |

**WASHINGTON**

| Airport, City (Airport Code) | Region | Fiscal Year | Severity | | | | | Total RIs | Annual RI Rate | Total SIs |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Collision | A | B | C | D | | | |
| Bellingham International Airport, Bellingham (BLI) | ANM | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | 1 | 1 | 1.33 | |
| | | 2007 | | | | | | | | |
| Boeing Field - King County International Airport, Seattle (BFI) | ANM | 2004 | | | | 1 | | 1 | 0.33 | |
| | | 2005 | | 1 | | | 2 | 3 | 1.01 | 4 |
| | | 2006 | | | | | | | | 1 |
| | | 2007 | | | | | | | | |

**WASHINGTON – Continued**

| Airport, City (Airport Code) | Region | Fiscal Year | Severity | | | | | Total RIs | Annual RI Rate | Total SIs |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Collision | A | B | C | D | | | |
| Felts Field, Spokane (SFF) | ANM | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | 1 |
| | | 2006 | | | 1 | | | 1 | 1.53 | 1 |
| | | 2007 | | | | | 2 | 2 | 2.76 | |
| Grant County International Airport, Moses Lake (MWH) | ANM | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | 2 |
| | | 2007 | | | | | | | | 3 |
| Renton Municipal Airport, Renton (RNT) | ANM | 2004 | | | | | | | | 2 |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | 1 | 1 | 1.06 | |
| Seattle-Tacoma International Airport, Seattle (SEA) | ANM | 2004 | | | | | 2 | 2 | 0.56 | 3 |
| | | 2005 | | | | 1 | | 1 | 0.29 | 1 |
| | | 2006 | | | | | 2 | 2 | 0.59 | 3 |
| | | 2007 | | | | | 3 | 3 | 0.87 | 10 |
| Snohomish County Paine Field, Everett (PAE) | ANM | 2004 | | | | | | | | 2 |
| | | 2005 | | | | | | | | 3 |
| | | 2006 | | | | | 1 | 1 | 0.70 | 1 |
| | | 2007 | | | | | 1 | 1 | 0.76 | 2 |
| Spokane International Airport, Spokane (GEG) | ANM | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | 1 | 1 | 1.00 | |
| Tri-Cities Airport, Pasco (PSC) | ANM | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | 1 | 1 | 1.66 | 1 |
| | | 2007 | | | | | | | | |
| Yakima Air Terminal/McAllister Field, Yakima (YKM) | ANM | 2004 | | | | | | | | 2 |
| | | 2005 | | | | | | | | 2 |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | 3 |

**WEST VIRGINIA**

| Airport, City (Airport Code) | Region | Fiscal Year | Severity | | | | | Total RIs | Annual RI Rate | Total SIs |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Collision | A | B | C | D | | | |
| Mid-Ohio Valley Regional Airport, Parkersburg (PKB) | AEA | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | 1 |
| North Central West Virginia Airport, Clarksburg (CKB) | AEA | 2004 | | | | | | | | 1 |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | |

**WEST VIRGINIA – Continued**

| Airport, City (Airport Code) | Region | Fiscal Year | Severity | | | | | Total RIs | Annual RI Rate | Total SIs |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Collision | A | B | C | D | | | |
| Tri-State Airport - Milton J. Ferguson Field, Huntington (HTS) | AEA | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | 2 |
| Yeager Airport, Charleston (CRW) | AEA | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | 2 |

**WISCONSIN**

| Airport, City (Airport Code) | Region | Fiscal Year | Severity | | | | | Total RIs | Annual RI Rate | Total SIs |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Collision | A | B | C | D | | | |
| Austin Straubel International Airport, Green Bay (GRB) | AGL | 2004 | | | | | | | | 1 |
| | | 2005 | | | | | | | | 1 |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | 1 |
| Central Wisconsin Airport, Mosinee (CWA) | AGL | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | 1 | | 1 | 4.07 | |
| Chippewa Valley Regional Airport, Eau Claire (EAU) | AGL | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | 3 |
| Dane County Regional Airport -Truax Field, Madison (MSN) | AGL | 2004 | | | 1 | | | 1 | 0.74 | 3 |
| | | 2005 | | | | 1 | | 1 | 0.84 | 1 |
| | | 2006 | | | | | 1 | 1 | 0.88 | 1 |
| | | 2007 | | | | | 1 | 1 | 0.80 | 5 |
| General Mitchell International Airport, Milwaukee (MKE) | AGL | 2004 | | | | | 3 | 3 | 1.41 | |
| | | 2005 | | | | 1 | 1 | 2 | 0.91 | 3 |
| | | 2006 | | | | | 3 | 3 | 1.46 | 15 |
| | | 2007 | | | | 2 | 8 | 10 | 4.99 | 17 |
| Kenosha Regional Airport, Kenosha (ENW) | AGL | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | 1 |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | |
| La Crosse Municipal Airport, La Crosse (LSE) | AGL | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | 1 |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | |
| Outagamie County Regional Airport, Appleton (ATW) | AGL | 2004 | | | | | 1 | 1 | 1.93 | |
| | | 2005 | | | | | | | | 1 |
| | | 2006 | | | | | | | | 4 |
| | | 2007 | | | | | | | | 4 |
| Southern Wisconsin Regional Airport, Janesville (JVL) | AGL | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | 3 | 3 | 5.46 | |
| | | 2007 | | | | | | | | |

**WISCONSIN – Continued**

| Airport, City (Airport Code) | Region | Fiscal Year | Severity | | | | | Total RIs | Annual RI Rate | Total SIs |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Collision | A | B | C | D | | | |
| Waukesha County Airport, Waukesha (UES) | AGL | 2004 | | | | | 2 | 2 | 2.22 | |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | 1 | 1 | 1.68 | 4 |
| Wittman Regional Airport, Oshkosh (OSH) | AGL | 2004 | | | | 1 | 1 | 2 | 1.88 | 1 |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | 1 | 1 | 1.09 | 1 |
| | | 2007 | | | | | | | | 2 |

**WYOMING**

| Airport, City (Airport Code) | Region | Fiscal Year | Severity | | | | | Total RIs | Annual RI Rate | Total SIs |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Collision | A | B | C | D | | | |
| Cheyenne Airport, Cheyenne (CYS) | ANM | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | 1 |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | |
| Jackson Hole Airport, Jackson Hole (JAC) | ANM | 2004 | | 1 | | | | 1 | 3.19 | 3 |
| | | 2005 | | | | | | | | 3 |
| | | 2006 | | | | | | | | |
| | | 2007 | | | | | | | | 3 |
| Natrona County International Airport, Casper (CPR) | ANM | 2004 | | | | | | | | |
| | | 2005 | | | | | | | | |
| | | 2006 | | | | | | | | 1 |
| | | 2007 | | | | | | | | 1 |

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