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# *Office of Inspector General*

# *Audit Report*

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## **MANAGEMENT LIMITATIONS MAY HINDER FAA'S ABILITY TO FULLY IMPLEMENT AND ASSESS THE EFFECTIVENESS OF ITS RUNWAY SAFETY INITIATIVES**

*Federal Aviation Administration*

*Report Number: AV-2014-130*  
*Date Issued: September 25, 2014*






# Memorandum

U.S. Department of  
Transportation

Office of the Secretary  
of Transportation  
Office of Inspector General

Subject: **ACTION:** Management Limitations May Hinder  
FAA's Ability To Fully Implement and Assess the  
Effectiveness of Its Runway Safety Initiatives  
Federal Aviation Administration  
Report No. AV-2014-130

Date: September 25, 2014

From: Matthew E. Hampton   
Assistant Inspector General  
for Aviation Audits

Reply to  
Attn. of: JA-10

To: Federal Aviation Administrator

Given the millions of flights in the United States each year, runway safety is a critical safety area for the Federal Aviation Administration (FAA) due to the risks associated with operating aircraft, vehicles, and pedestrians in a confined space at considerably different speeds. Although the U.S. commercial aviation industry is experiencing one of the safest periods in its history, several high-profile runway safety incidents—known as runway incursions—have occurred. FAA data show that from fiscal year 2011 to fiscal year 2013, the most serious runway incursions increased by more than 57 percent—from 7 in fiscal year 2011 to 11 in fiscal year 2013, with a spike up to 18 serious runway incursions in fiscal year 2012. In addition, the total number of runway incursions increased by 30 percent—from a total of 954 in fiscal year 2011 to 1,241 in fiscal year 2013.

In April 2013, the Ranking Member of the Committee on Transportation and Infrastructure, Subcommittee on Aviation, asked that we examine FAA's Runway Safety Program and actions underway to improve safety. Accordingly, our audit objectives were to evaluate FAA's (1) progress in implementing initiatives to prevent runway incursions, and (2) effectiveness in reporting and evaluating runway incursions.

We conducted this review in accordance with generally accepted Government auditing standards. Exhibit A provides more details on our scope and methodology.

## RESULTS IN BRIEF

FAA has made progress implementing initiatives to reduce runway incursions; however, limitations in FAA's management and organizational structure for the Runway Safety Program could hinder further progress. FAA has implemented 8 of the 11 initiatives in its 2007 Call to Action Plan for Runway Safety, as well as several other national-level initiatives such as enhanced pilot training. In addition, FAA began requiring that airports hold Runway Safety Action Team<sup>1</sup> (RSAT) meetings at least once each fiscal year, which has resulted in many local runway safety initiatives and improvements. Moreover, we determined that airports that hold regularly scheduled RSAT meetings have a lower risk for runway incursions. However, management limitations related to the Runway Safety Group's organizational structure and its lack of authority may hinder FAA's ability to effectively implement additional runway safety initiatives across the Agency. FAA began reorganizing the Runway Safety Group in 2011, but nearly 3 years later, it remains in flux. The office has experienced numerous leadership changes since 2011, in part because FAA has not yet successfully recruited a permanent manager. Further, in 2001<sup>2</sup> and 2010,<sup>3</sup> we recommended that FAA consider realigning the Runway Safety Office under the Deputy Administrator, yet the office remains within FAA's Air Traffic Organization (ATO). As we noted in our prior reports, this structure limits the office's ability to coordinate and provide oversight for the runway safety efforts of other FAA organizations.

It is too soon to determine the effectiveness of FAA's new reporting process for runway incursions because the Agency lacks a baseline for measuring its progress in improving runway safety. FAA has taken steps in recent years to improve its reporting and analysis of aviation safety events, such as implementing an Agency-wide Safety Management System (SMS) that uses data analysis to evaluate ongoing performance and proactively predict future risk.<sup>4</sup> Additionally, in early 2012, FAA revised the reporting process for runway incursions as well as other safety related events and now requires air traffic control tower officials to submit initial reports of potential safety events to quality assurance staff at one of FAA's three regional Service Areas for review and classification. Previously, tower officials were responsible for the initial review and classification. FAA officials state that these new processes have increased the reporting of runway incursions, although it is uncertain if this represents an increase in the number of actual events. Because of the changes to its reporting process and the increased reporting, it will take several years for FAA to establish a new baseline that will allow it to fully evaluate whether the runway safety initiatives are having their intended effect on reducing runway incursions.

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<sup>1</sup> RSAT meetings are held to discuss surface movement issues and concerns at a particular airport and to develop a Runway Safety Action Plan (RSAP) to address those concerns. They include stakeholders from the airport traffic control tower, airport authority, local users, etc.

<sup>2</sup> *Despite Significant Management Focus, Further Actions Are Needed To Reduce Runway Incursions* (OIG Report Number AV-2001-066), June 26, 2001. OIG reports are available through our Web site at <http://www.oig.dot.gov/>.

<sup>3</sup> *Review of FAA's Call to Action Plan for Runway Safety* (OIG Report Number AV-2010-071), July 21, 2010.

<sup>4</sup> *Process for Tracking Runway Safety Performance*, November 2012.

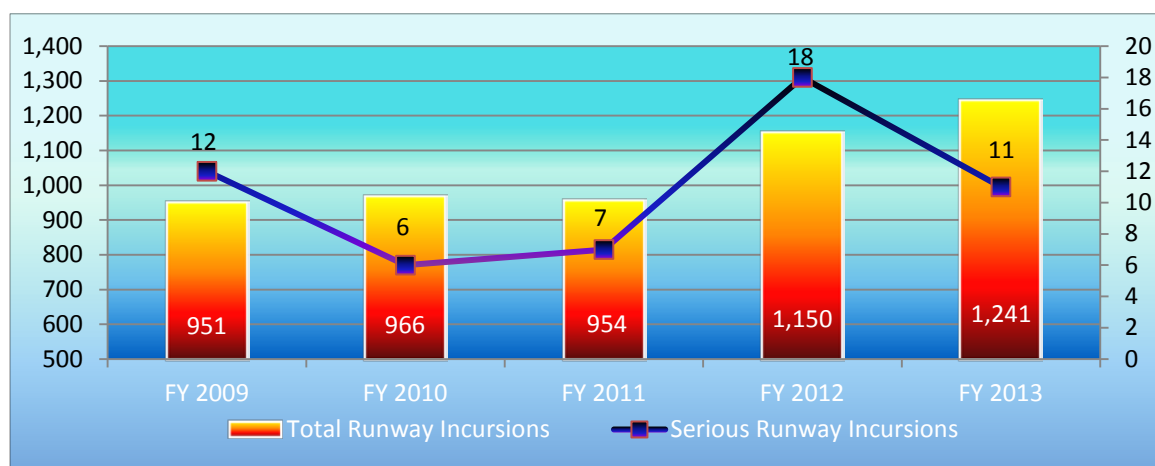
We are making several recommendations to improve FAA's implementation of runway safety initiatives and reporting of runway safety events.

## BACKGROUND

In recent years, FAA has introduced a number of initiatives to reduce serious runway incursions.<sup>5</sup> These include initiatives from its 2007 Call to Action Plan for Runway Safety, as well as other more recent efforts across the Agency, such as those included in its 2011 National Runway Safety Plan.

FAA's Runway Safety Group tracks all reported runway incursions. In recent years, the total number of reported runway incursions has increased, even though overall air traffic levels have declined. Figure 1 illustrates that total runway incursions have generally trended upward since fiscal year 2009, with a more dramatic increase of 30 percent between fiscal years 2011 and 2013, from 954 to 1,241. During the same 5-year period, the number of serious runway incursions, which have a higher risk of collision, does not indicate a consistent trend, having oscillated from 12 in fiscal year 2009, to 6 in fiscal year 2010, to a peak of 18 in fiscal year 2012.

**Figure 1. Runway Incursions, Fiscal Years 2009 to 2013**



Runway incursions are divided into three types:

- **Pilot Deviation (PD):** An action by a pilot that violates Federal Aviation Regulations, such as taxiing an airplane on a runway or taxiway without authorization from the air traffic controller. Potential PDs are investigated by aviation safety inspectors from FAA's Office of Flight Standards.
- **Operational Incident (OI):** An action by an air traffic controller that results in either less than the required minimum separation between two or more aircraft,

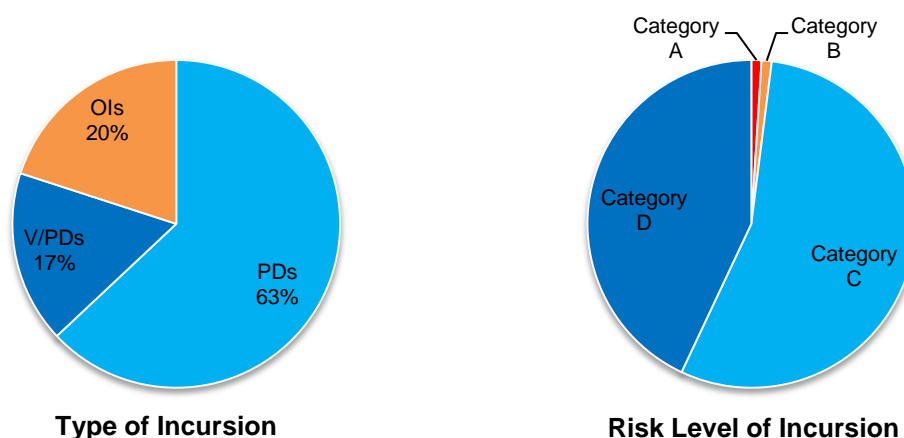
<sup>5</sup> According to the International Civil Aviation Organization's (ICAO) definition, adopted by FAA in fiscal year 2008, a runway incursion is any incident involving an unauthorized aircraft, vehicle, or person on a runway.

or between an aircraft and obstacles (vehicles, people); or an aircraft landing or departing on a closed runway. OIs are reviewed by air traffic officials.

- **Vehicle or Pedestrian Deviation (V/PD):** Pedestrians or vehicles entering any portion of the airport movement areas (runways or taxiways) without authorization from air traffic control. Most V/PDs are investigated by the local airport authority and FAA’s Office of Airports.<sup>6</sup>

As noted in figure 2, PDs accounted for 63 percent of runway incursions in fiscal year 2012. General Aviation (GA) pilots were responsible for more than 80 percent of the PDs. In addition, OIs accounted for 20 percent of runway incursions and V/PDs accounted for 17 percent that year.

**Figure 2. Runway Incursions by Type and Risk Level, FY 2012**



Source: FAA

Also as shown in figure 2, in fiscal year 2012, more than 98 percent of reported runway incursions were classified as Category C and D, which FAA considers low risk events with a minimal risk of collision between aircraft. To determine the seriousness of runway safety incidents, runway incursions are evaluated by a FAA committee consisting of representatives from Flight Standards Service, Air Traffic, and the Office of Airports. This committee determines the level of risk associated with each event, with category “A” events being the most severe and “D” events being the least severe (see table 1).

<sup>6</sup> Those V/PDs that involve a mechanic taxiing an airplane to or from a maintenance facility are investigated by officials from FAA’s Office of Flight Standards.

**Table 1. Runway Incursions Categories Defined**

Category	Definition
A	A serious incident in which a collision is narrowly avoided.
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	An incident characterized by ample time and/or distance to avoid a collision.
D	An incident that meets the definition of Runway Incursion, such as incorrect presence of a single aircraft/vehicle/person on the protected area of a surface designated for the landing and takeoff of aircraft, but with no immediate safety consequences.

Source: FAA

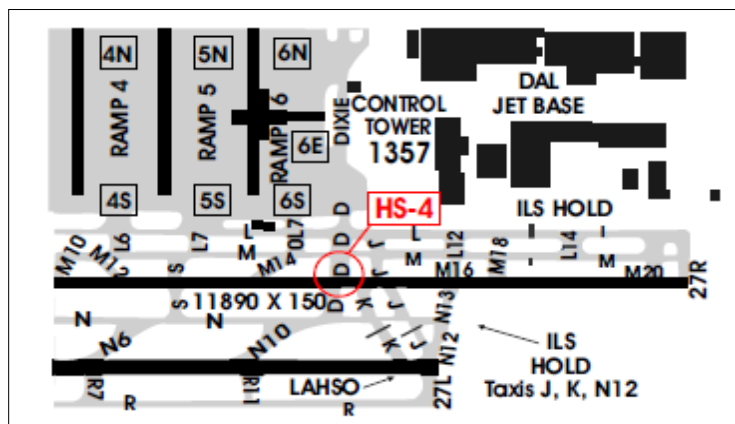
## **LIMITATIONS IN FAA'S MANAGEMENT AND ORGANIZATIONAL STRUCTURE MAY HINDER THE PROGRESS OF RUNWAY SAFETY INITIATIVES**

FAA has implemented 8 of the 11 national initiatives defined in the 2007 Call to Action Plan for Runway Safety, as well as other Agency plans. Likewise, airport-specific improvements have been implemented as a result of action taken by local RSATs. However, FAA has made significant management and organizational changes to its Runway Safety Group during the past 3 years, diminishing its oversight of runway safety initiatives. In addition, the Runway Safety Group has significantly reduced local outreach programs. Finally, FAA has not updated its National Plan for Runway Safety since 2011.

### **FAA Has Implemented Initiatives To Mitigate Runway Incursions, but Some Planned Initiatives Have Been Delayed or Cancelled**

FAA has developed numerous national-level initiatives to mitigate runway incursions through its Runway Safety Group and through other FAA lines of business. For example, FAA is working to identify “hot spots” at the nation’s airports—problem areas or intersections at an airport where there is an increased risk of runway incursions, requiring heightened attention by pilots and vehicle drivers. As of July 2014, FAA has identified hotspots at 270 of 583 airports with staffed air traffic control towers. FAA will designate an intersection as a hotspot for reasons such as airport layout; ground traffic flow; markings, signage, or lighting. For example, the red circle in figure 3 depicts a hotspot at Atlanta/Hartsfield-Jackson International Airport featuring a difficult intersection where pilots must execute tight turns and possibly hold short of taxiways while ensuring that their airplane is sufficiently clear of the active runway.

**Figure 3. Map of Hot Spot-4 (HS-4) at Atlanta/Hartsfield – Jackson International Airport**



Source: Atlanta Airport Authority

FAA also has initiatives to improve pilot training on runway safety. The Office of Aviation Safety (AVS) is responsible for pilot training, certification, and renewal of pilot credentials through its Flight Standards Service (AFS). According to FAA, AFS is initiating significant changes to core pilot education, training, testing, and flight-checking requirements. For example, AFS has updated its Pilots Handbook of Aeronautical Knowledge (the educational foundation for a pilot's knowledge) as well as revised the Practical Test Standards (the guides that examiners use to test applicants for aviation certificates) to reflect a greater emphasis on runway safety. During fiscal years 2012 through 2014, AVS will continue to redefine outreach activities, guidance, training, and the process for checking pilots' understanding and practical application of runway safety practices and issues through individual pilot contact and aviation industry collaboration.

In addition, FAA has made progress implementing the initiatives that originated as a result of the 2007 Call to Action Plan for Runway Safety. Of the 11 initiatives in the plan, FAA has implemented 8. (See table 2 for a list of the initiatives and their status.)

**Table 2. Status of 2007 Call to Action Plan for Runway Safety Initiatives**

	Action	Implemented (Yes / No)
Short-Term Actions	1. Within 60 days, conduct safety reviews at the airports where wrong runway departures and runway incursions are the greatest concern.	Y
	2. Within 60 days, disseminate information and training across the entire aviation industry.	Y
	3. Within 60 days, accelerate required airport signage and markings improvements at the top 75 airports, ahead of FAA's June 2008 deadline.	Y

	Action	Implemented (Yes / No)
	4. Within 60 days, review cockpit procedures and air traffic control (ATC) clearance procedures.	Y
	5. Implement a voluntary self-reporting system for all air traffic controllers and technicians.	Y
<i>Mid-Term Actions</i>	1. Accelerate the modernization of the Notices to Airmen (NOTAM) system to digitally communicate key information to pilots.	Y
	2. Accelerate the installation of runway status lights used to alert pilots of unsafe conditions.	N <sup>7</sup>
	3. Implement National Transportation Safety Board and Commercial Aviation Safety Team recommendations relating to air traffic clearances/phraseology and cross checking runway alignment.	Y
<i>Long-Term Actions</i>	1. Deploy moving map cockpit displays that provide the capability to see other traffic and include conflict alerting.	N
	2. Expedite the development of off-the-shelf, low-cost ground surveillance for smaller airports.	N
	3. Modernize the aeronautical information dissemination program to permit distribution of graphic information, such as airfield construction diagrams.	Y

Source: FAA

However, three of the mid-term and long-term actions have been delayed, 7 years after being proposed, or cancelled all together. For example:

- The Runway Status Lights (RWSL) System**—The RWSL system controls airfield lights that illuminate when it is unsafe for an aircraft or vehicle to enter, cross, or take off on a runway (see figure 4).<sup>8</sup> RWSL has shown the capability to prevent runway incursions caused by air traffic controllers. For example, during an incident at Dallas/Fort Worth International Airport, FAA’s analysis showed that the pilot of a taxiing aircraft questioned a runway crossing clearance that was issued when the runway status lights were illuminated red, indicating that the runway should not be used. In response, the controller cancelled the runway crossing clearance and another aircraft’s landing clearance, thus avoiding a potentially serious ground incident.

<sup>7</sup> Although FAA did not accelerate the implementation of the RWSL System, the Agency plans to deploy 17 sites for operational use by 2017.

<sup>8</sup> The RWSL System activates lights based on the motion and speed of the detected traffic. In-pavement light fixtures allow the lights to be directly visible to pilots and surface vehicle operators.



### **Figure 4. Examples of Runway Status Lights**



Source: FAA's *Runway Safety Report 2011 – 2012*.

Although this initiative has significant potential to improve runway safety, FAA has delayed program completion by 2 years and the program has experienced cost growth. As a result, FAA has reduced the number of airports where the system will be installed from 23 to 17.

- **Moving Map Cockpit Displays**—Moving maps are aircraft cockpit displays that allow pilots to see and avoid other aircraft moving on the airport surface through conflict alerts. FAA officials in ATO Safety and Technical Training completed an analysis in May 2013 and determined that the use of electronic moving maps significantly mitigated the types of errors that typically occur during surface operations. However, moving map cockpit displays rely on Automatic Dependent Surveillance Broadcast (ADS-B), a new satellite-based system<sup>9</sup> that cannot be implemented at this time, as it will require aircraft to be properly equipped. It is unclear when this system will be implemented.
- **“Low-Cost” Ground Surveillance Systems (LCGS)**—In January 2008, FAA initiated a project to explore and evaluate commercially available, low-cost ground radar surveillance systems that could be implemented at small- and medium-sized airports. This technology would have enhanced air traffic controllers’ situational awareness of ground activity during periods of low visibility. However, in 2013, FAA’s Joint Resources Council did not approve a proposal to implement the LCGS project because the project’s costs outweighed its potential benefits.

<sup>9</sup> ADS-B In enables pilots to receive real-time, satellite-based traffic information in the cockpit via a cockpit display.

## **Efforts by Runway Safety Action Teams Have Resulted in Local Airport Improvements**

FAA has also achieved safety improvements through its RSATs, which convene to discuss concerns at a particular airport and to formulate a Runway Safety Action Plan to address those concerns. The team includes personnel from the air traffic control tower, the local airport authority, and local aviation stakeholders, and may include personnel from other FAA lines of business such as Flight Standards or the Office of Airports. FAA requires RSAT meetings to be conducted at least once each fiscal year.

Efforts to identify and address surface safety issues through local and regional RSAT activities have reduced the risk of runway incursions and resulted in local airport improvements. In point of fact, FAA's Runway Safety Office conducted a study of RSAT effectiveness during the period from 2008 through 2011<sup>10</sup> and found that airports that hold RSAT meetings have a lower risk of runway incursions, compared to facilities that do not.

For example, an RSAT meeting led to Lakefront Airport in New Orleans, LA, using green paint and elevated reflectors to close off sections of parking ramps to more effectively "funnel" pilots taxiing to the runways and prevent pilots unfamiliar with the airport from becoming lost. Additionally, Houston Hobby Airport closed one of its taxiways, because runway incursions had occurred when pilots missed the taxiway and inadvertently crossed a nearby active runway without clearance.

## **Limitations With FAA's Current Organizational Structure Inhibits Effective Oversight of Runway Safety**

FAA's Runway Safety Group has a unique mission and challenge within FAA because it must work with other FAA organizations to implement runway safety projects. However, it lacks the organizational standing and authority to effectively align and coordinate runway safety activities across all FAA lines of business. Currently, FAA's Runway Safety Group is part of the ATO's Office of Safety and Technical Training and is responsible for coordinating and overseeing the Agency-wide runway safety program.<sup>11</sup>

However, implementation of runway safety initiatives often requires actions by organizations spread across diverse FAA lines of business such as ATO, Aviation Safety (Flight Standards), and several divisions of the Office of Airports. As such, the Runway Safety Group's position within the Air Traffic Safety and Technical Training office (within the ATO) limits its abilities to oversee efforts in these other, larger FAA offices, particularly its ability to hold them accountable for

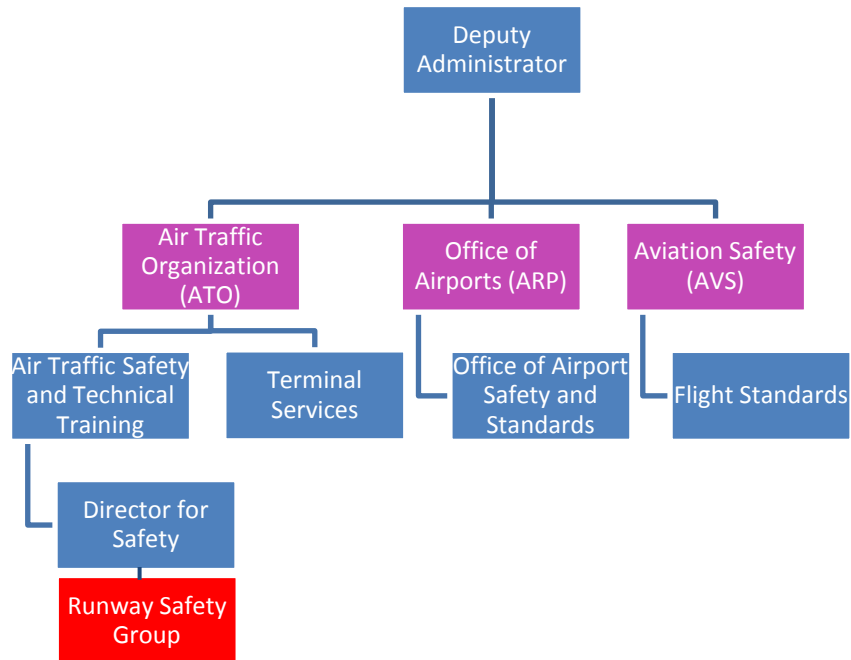
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<sup>10</sup> *Analysis of RSAT Effectiveness* (FAA Runway Safety Office), November 26, 2011.

<sup>11</sup> Guidance for FAA's Runway Safety Program is in FAA Order 7050.1A.

implementing initiatives in a timely and effective manner. Figure 5 shows the current organizational structure and offices responsible for runway safety.

**Figure 5. Organizational Structure of Key FAA Lines of Business Responsible for Runway Safety**



Source: FAA

Since 1997, we have reported on the need to improve accountability within FAA's Runway Safety Program. In July 2010, we recommended that FAA realign the Runway Safety Group outside of FAA's operational lines of business in order to attain independence from the line of business (ATO) to whom runway safety officials must report and to facilitate appropriate program oversight. Although FAA partially concurred with our recommendation, and stated that it would periodically review its organizational structure, FAA continues to align the Runway Safety Group within the ATO.

In addition, there has been a lack of sustained leadership for the program, as reflected by high managerial turnover within the Runway Safety Group since 2011, when FAA downgraded the leading management position from a senior executive to a group manager as part of a larger reorganization within ATO Safety and Technical Training. The Group Manager currently reports to the Director of Safety, rather than directly to the Vice President of Safety and Technical Training. Since the Runway Safety Group's senior executive retired in 2011, five managers have held the position. In fact, in January 2014, the most recent acting Group Manager accepted another position in the ATO, resulting in the assignment of yet another acting Group Manager. According to FAA officials, FAA has difficulty

attracting qualified personnel to move to FAA Headquarters to fill the position at the current organizational level.

Finally, according to senior ATO officials, the role of the Runway Safety Group has evolved from leading the effort to improve runway safety, to serving as the Agency's representative to industry, national, and international stakeholders for FAA runway safety efforts. ATO's Office of Safety and Technical Training has assumed the leadership role that was previously under the purview of the Runway Safety Office. However, according to FAA staff we interviewed, this vision has not been effectively communicated to the Runway Safety Group staff, contributing to confusion and fragmented responsibility among runway safety personnel located in regional facilities across the country.

### **The Runway Safety Group Has Reduced Local Outreach Efforts**

Among other organizational changes, FAA's Runway Safety Group recently reduced its local outreach efforts focused on runway safety. According to local runway safety officials, outreach at the local and regional level is critical because general aviation pilot deviations comprise the highest total percentage of overall runway incursions. While it is difficult to establish a direct relationship, the decrease in outreach efforts may contribute to the increase in reported runway incursions.

According to FAA, the Agency reduced outreach in response to a tightened fiscal environment. Specifically, FAA has reduced the Runway Safety Group's budget for non-salary items, such as travel and printed materials, by 27 percent since 2011, and the number of full-time equivalents (FTE)<sup>12</sup> assigned to the office has decreased from a high of 24 in 2010, to 19 in 2014, a 21 percent decrease. As a result, the Group has cut back on local outreach efforts. For example, the Runway Safety Group now seldom assigns representatives to participate in most RSAT meetings. While local runway safety officials participated in 119 RSAT meetings in 2009, they only participated in 6 in 2013, a reduction of about 95 percent. FAA has also decreased the number of regional RSAT meetings that take place at high-risk airports in each region. Instead, FAA Headquarters officials state they intend to reach larger audiences in the aviation community by using alternative methods such as Web-based training. However, the effectiveness of these new outreach methods is uncertain at this time, and Runway Safety staff we interviewed expressed concerns about whether they were adequately trained to perform this new kind of outreach.

To its credit, FAA has slightly increased other outreach efforts through its Flight Standards Service FAASTeam program, which is separate from the Runway Safety Group. Launched on October 1, 2006, the FAASTeam program provides outreach programs to inform general aviation pilots about runway safety. For

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<sup>12</sup> The definition of FTE (full time equivalent) is the number of working hours that represents one full-time employee during a fixed time period, such as one month or one year.

example, FAASTeams publicize local runway safety issues by posting hot spot charts, runway safety bulletins, runway safety event notices, and other materials on its Web site. However, while these teams provide valuable training and outreach on runway safety issues, it is important to note that the overall level of outreach remains lower than in previous years. As a result, some pilots and local aviation stakeholders may not be getting the full benefits of runway safety information.

## **FAA LACKS A BASELINE FOR MEASURING ITS EFFECTIVENESS IN REPORTING AND EVALUATING RUNWAY INCURSIONS**

According to FAA, the 30 percent increase in reported runway incursions from fiscal year 2011 to fiscal year 2013 was due to increased reporting and improved reporting processes, and not an increase in actual events. However, FAA has not yet established a new baseline to measure whether actual runway incursions have increased. Nor has FAA established metrics by which to analyze the effectiveness of implemented runway safety initiatives.

In recent years, FAA has taken many steps aimed at increasing the reporting of safety events such as runway incursions. In 2008, FAA began to implement an Agency-wide Safety Management System (SMS).<sup>13</sup> The goal of the SMS is to move FAA from an events-based, reactive approach to aviation safety, to a risk-based, proactive approach that uses data analysis to evaluate ongoing performance and predict future risk. A key element of SMS is FAA's Air Traffic Safety Action Program (ATSAP), which FAA established in 2010, to encourage controllers to voluntarily report safety and operational concerns and events with the intent of capturing all instances that might lead to a breakdown in safety.

In addition, in 2012, FAA initiated a new process for reporting safety events (including runway incursions) that may improve FAA's ability to identify and analyze runway incursions. Under the new process, supervisory officials at local air traffic control towers began to report suspected runway incursions electronically.<sup>14</sup> One of the fundamental changes under the new process was FAA's decision to move the responsibility for investigating events away from the air traffic control facilities where events occurred, to one of three ATO Service Centers.<sup>15</sup> Quality Assurance officials in the Service Centers validate the data and send the reports to FAA Headquarters for severity categorization. The reports are

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<sup>13</sup> Process for Tracking Runway Safety Performance, November 2012.

<sup>14</sup> FAA replaced its previous Air Traffic Quality Assurance (ATQA) reporting database with the Comprehensive Electronic Data Analysis and Reporting (CEDAR) database for completing safety incident reports.

<sup>15</sup> ATO Service Centers provide support services to the Directors of Operation and their service units in the three service center locations: Atlanta, Fort Worth and Seattle. The role of the Service Center is to provide shared services which promote standardization of processes, efficiency and effectiveness for the service units - En Route, Technical Operations, Terminal, and System Operations.

then sent to the appropriate FAA line of business to be investigated and adjudicated.

Furthermore, FAA has implemented four new Orders<sup>16</sup> that the ATO expects to improve the process of collecting safety data, tracking the trends, and evaluating risks. For example, the Air Traffic Organization Occurrence Reporting policy places more value on discovering why adverse safety events happen and in identifying risks, rather than determining who was at fault. This order provides guidance for processing mandatory ATO air traffic occurrence reports and identifies what occurrences to report and how to report them. FAA expects that the Orders will provide the processes to differentiate between increases in the number of events due to better reporting and an actual deterioration of safety.

As a result of these revisions to its mandatory and voluntary reporting processes, ATO officials claimed that the increasing trend in reported runway incursions from 2011 to 2013 was largely due to increased reporting.<sup>17</sup> However, our review found that the available data are insufficient to validate FAA's claim, especially because FAA has not established the necessary metrics to measure its progress. Moreover, according to FAA officials, there may still be runway incursions that continue to go unreported. In fact, because of the recent changes in runway incursion reporting procedures, FAA has no baseline to measure whether runway incursions have actually increased. In addition, runway safety officials caution that the number of reported runway incursions is likely to continue to rise as voluntary reporting increases. As a result, it will likely take several more years to establish a baseline that will allow the Agency to fully evaluate whether runway safety has improved. Until then, the true impact of FAA's improved reporting processes and the impact of its safety initiatives will remain unclear.

## CONCLUSION

Preventing collisions between aircraft, vehicles, and people on runways and taxiways is a key safety goal for FAA. It is important to reverse the trend of the recent rise in runway incursions to ensure the safety of the traveling public and prevent future accidents. FAA's recent changes to event reporting have been a step in the right direction to improve safety, but the Agency can take further action to ensure the Runway Safety Group has adequate resources, an updated annual runway safety plan, and clear lines of authority. Sustained commitment along with executive-level attention will be crucial to achieving long-term results in this important safety area.

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<sup>16</sup> FAAJO 7210.632 Air Traffic Organization Occurrence Reporting; FAAJO 7210.633, Air Traffic Organization Quality Assurance Program; FAAJO 7210.634, Air Traffic Organization Quality Control; FAAJO 7200.20, Voluntary Safety Reporting Program.

<sup>17</sup> We reviewed why overall Operational Incidents increased from 2009 to 2010 in our 2013 report: *FAA's Efforts to Track and Mitigate Air Traffic Losses of Separation Are Limited by Data Collection and Implementation Challenges* (OIG Report Number AV-2013-046), February 27, 2013.

## RECOMMENDATIONS

To improve FAA's implementation of runway safety initiatives and reporting of runway safety events, we recommend that FAA:

1. Realign the Runway Safety Group outside of FAA's operational lines of business to ensure the office effectively provides oversight and coordinates activities for investigating and mitigating runway incursions.
2. Develop a strategy and timeline to hire a permanent director for the Runway Safety Group.
3. Provide written guidance to regional Runway Safety Offices on how to conduct effective outreach in a resource-constrained environment.
4. Update the National Runway Safety Plan and identify all national runway safety-related initiatives, establishing specific and measurable milestones for each initiative.
5. Expedite the development of metrics to determine whether runway incursions are actually increasing and to assess the effectiveness of implemented runway safety initiatives.

## AGENCY COMMENTS AND OFFICE OF INSPECTOR GENERAL RESPONSE

We provided FAA with a copy of our draft report on July 30, 2014, and received its response on August 22, 2014. FAA's entire response is included in the appendix to this report. In its response, FAA stated that it generally agreed with our recommendations, with the exception of recommendation 1. However, FAA did not provide specific information on its planned actions or completion dates as requested in our draft report. The Agency stated it will provide a detailed response to each recommendation at a later date. Therefore, recommendations 2, 3, 4, and 5 will remain open and unresolved.

For recommendation 1, FAA stated that it does not concur because the Agency believes its current organizational structure is functioning well. However, as we reported, FAA's runway safety initiatives span across many different lines of business throughout the Agency, making it difficult for the Runway Safety Group to provide effective oversight. As such, aligning the Runway Safety Group outside of these lines of business would enhance FAA officials' ability to hold groups accountable for implementing the initiatives and ensuring that runway safety remains a priority. This is vital to facilitate continued improvement in runway safety. Therefore, we request that FAA reconsider its position on this recommendation.

Finally, FAA pointed to various actions the Agency has taken to enhance runway safety. However, FAA still has room for improvement in its efforts to effectively manage and oversee the implementation of new runway safety initiatives and runway incursion mitigation strategies in order to continue to enhance the margin of safety on the nation's runways.

## **ACTIONS REQUIRED**

We consider all recommendations open and unresolved pending receipt of FAA's detailed response to each of our recommendations. We ask that this response specifically address each recommendation with the actions planned and the date when those actions will be completed. We also request that FAA reconsider its position regarding recommendation 1. In accordance with DOT Order 8000.1C, please provide your written response within 30 days of issuance of this report.

We appreciate the courtesies and cooperation of FAA and NATCA representatives during this audit. If you have any questions concerning this report, please contact me at (202) 366-0500 or Bob Romich, Program Director, at (202) 366-6478.

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cc: DOT Audit Liaison, M-1  
FAA Audit Liaison, AAE-100



## **EXHIBIT A. SCOPE AND METHODOLOGY**

We conducted our work from May 2013 through July 2014 in accordance with generally accepted Government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

The audit included site visits to FAA Headquarters, 5 out of 9 FAA Regional Offices, and all 3 Service Area Offices. In addition, we visited 15 airport traffic control towers and their airport operators out of 583 towered airports. The airport locations visited were selected based on location, frequency of runway incursions, and traffic mix; and included both commercial and general aviation. In addition we interviewed officials from the Aircraft Owners and Pilots Association, American Airlines, Delta Airlines, and National Air Traffic Controllers Association. A full list of the air traffic facilities and additional organizations that we visited or contacted during our audit can be found in exhibit B.

To evaluate FAA's progress in implementing initiatives to prevent runway incursions, we interviewed the Director of FAA's Runway Safety Office to identify FAA's initiatives, and we reviewed criteria that outlined FAA's goals regarding runway safety improvements. We then determined the status of initiatives by interviewing the organizations responsible for their implementation; Air Traffic Organization (ATO) Safety and Technical Training, ATO Terminal Services, Flight Standards, and Office of Airports. In addition, we reviewed actions taken at specific airports by identifying initiatives developed through local RSAT meetings, and interviewed local air traffic, airport, and airline personnel. Finally, we followed up on the status of FAA actions taken in response to its 2007 Call to Action Plan for Runway Safety.

To evaluate FAA's effectiveness in reporting and evaluating runway incursions, we reviewed reporting criteria from FAA Orders 7210.633 and 7210.634. We also interviewed FAA Headquarters, industry, and field personnel, including those responsible for reviewing and validating reported runway incursions. Further, we determined the factors that contributed to the increase in runway incursions from fiscal years 2011 to 2012, by interviewing FAA national, regional and local management officials. We also analyzed information at the 15 air traffic facilities and the three ATO Service Areas that we contacted to identify any other contributing factors. We obtained runway incursion data from FAA's national runway incursion database and compared incursion data from fiscal year 2009 to fiscal year 2013 to determine the trend of runway incursions.

## **EXHIBIT B. ORGANIZATIONS VISITED OR CONTACTED**

### **FAA Organizations**

- Air Traffic Organization (ATO) Safety and Technical Training (including the Runway Safety Group and Regional Runway Safety Program Managers)
- ATO – Terminal Services
- Aviation Safety – Flight Standards Service
- Office of Airports

### **FAA Air Traffic Control Towers and Airport Operators**

- Atlanta Hartsfield-Jackson International, Atlanta, GA
- Chicago Midway International, Chicago, IL
- Chicago O’Hare International, Chicago, IL
- Dallas Fort Worth International, Dallas-Fort Worth, TX
- David Wayne Hooks Memorial, Houston, TX
- Falcon Field, Mesa, AZ
- Galveston Scholes International, Galveston, TX
- Las Vegas McCarran International, Las Vegas, NV
- Lone Star Executive, Houston, TX
- Los Angeles International, Los Angeles, CA
- New Orleans Lakefront, New Orleans, LA
- North Las Vegas, Las Vegas, NV
- Phoenix Deer Valley, Phoenix, AZ
- Phoenix-Mesa Gateway, Phoenix, AZ
- William P Hobby, Houston, TX

### **Airlines, Industry Associations, and other Federal Agencies**

- Aircraft Owners and Pilots Association
- American Airlines
- Delta Airlines
- National Air Traffic Controllers Association

**EXHIBIT C. MAJOR CONTRIBUTORS TO THIS REPORT**

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Robert Romich	Program Director
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## Federal Aviation Administration


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# Memorandum

Date: August 22, 2014

To: Matthew E. Hampton, Assistant Inspector General for Aviation Audits

From: H. Clayton Foushee, Director, Office of Audit and Evaluation, AAE-1 

Subject: Federal Aviation Administration's (FAA) Response to Office of Inspector General (OIG) Draft Report: Runway Safety Initiatives

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Since 2001, the runway safety initiatives implemented and overseen by the FAA have coincided with a 57 percent reduction in the number of serious runway incursions. In 2001, 2011, and 2014, the FAA gave careful consideration to the Office of the Inspector General's recommendations that the Runway Safety Program be realigned to the Deputy Administrator based primarily upon the OIG's assertion that the program is unique among other FAA safety programs because it requires coordination with several FAA organizations. As before, the FAA does not agree with this recommendation, and the significantly improving safety trend supports the Agency's position that our current structure is functioning well. Virtually all safety programs require wide coordination among operational units. We believe that risk management initiatives are most effective when fully integrated into the operation and aggressively managed by the FAA's operating units. We continue to make improvements in the processes and infrastructure needed to manage risk across the Agency.

Based upon our review, we generally agree with most of the OIG recommendations. We disagree with some of the report's assertions, unrelated to the recommendations, because the Agency believes that they are not supported by data and are based upon hearsay obtained in OIG interviews.

With regard to the OIG's draft report, the FAA:

- Continues to pursue cross-organizational improvements through the Administrator's Strategic Initiatives and the implementation of an FAA-wide Safety Management System
- Hired a permanent Group Manager for Runway Safety, Scott R. French. He joins several executives directly accountable for the FAA's Runway Safety performance: the Vice President for Safety and Technical Training; the Deputy Vice President for Safety and Technical Training; and, the Director for Safety.

- Published the *National Runway Safety Plan for 2015-2017*. With this plan, we reaffirm our commitment to approaching runway safety, working together across all FAA operational units to achieve our goals. This is the third in a series of 3-year plans that began in 2009. All of these are available to the public online at: [http://www.faa.gov/airports/runway\\_safety/publications/](http://www.faa.gov/airports/runway_safety/publications/)
- Provided written guidance and strategies on how to conduct outreach and other runway safety activities in a resource-constrained environment in the *2015-2017 National Runway Safety Plan*. We also provided outreach toolkits to our Regional Runway Safety Program managers, including a template for conducting local Runway Safety Action Team meetings. In addition, runway safety promotion products (videos, presentations, interactive mobile applications) are available online for outreach activities. These resources are available upon request.

The FAA continues to make progress in the development of risk-based metrics. The Agency will provide a detailed response to each of the OIG recommendations after the publication of the final report.

We appreciate this opportunity to offer additional perspective on the OIG draft report. Please contact H. Clayton Foushee at (202) 267-9000 if you have any questions or require additional information about these comments.