
Office of Inspector General

Audit Report

**Federal Aviation Administration's
Runway Incursion Program**

**Report Number AV-1998-015
Date Issued: December 8, 1997**





**U.S. Department of
Transportation**

Office of the Secretary
of Transportation

Office of Inspector General

Memorandum

Subject: **INFORMATION:** Federal Aviation
Administration's
Runway Incursion Program
Report No. AV-1998-015

Date: December 8, 1997

From: 
Lawrence H. Weinrob
Assistant Inspector General for Auditing

Reply to
Attn of:

To: Federal Aviation Administrator

On November 13, 1997, at a hearing of the Subcommittee on Aviation, Committee on Transportation and Infrastructure, U.S. House of Representatives, we provided observations on the Federal Aviation Administration's (FAA) Runway Incursion Program based on the results of our recent review. A copy of our statement is attached for your information.

To reverse the upward trend in runway incursions, FAA must have a strong Runway Incursion Program to solve systemwide problems and expedite solutions. We recommend that FAA (1) assign specific responsibility for implementing the Runway Incursion Action Plan, (2) disseminate local initiatives that work nationwide, (3) improve runway incursion data, and (4) focus on projects to reduce pilot deviations. At the local level, FAA needs to have a more focused Runway Incursion Program. We recommend that FAA establish regional focal points to oversee runway incursion activities. These focal points should also periodically analyze runway incursion data for their airports and implement airport specific action plans when needed.

At a meeting with Mr. Ronald Morgan, Director of Air Traffic, on November 19, 1997, he concurred with our recommendations and agreed to take appropriate actions. FAA's specific actions taken or planned will be incorporated in our final audit report to be issued shortly.

In addition to our recommendations presented in the testimony, the report will address the need for FAA to formalize its goal of reducing runway incursions. FAA's current goal is to reduce the 204 occurrences in 1994 to 41 by the year 2001, an 80 percent reduction. The Department's Performance Plan for Fiscal Year 1999 includes a goal to reduce the number of reportable transportation incidents. This plan is being prepared as required by the Government Performance and Results Act of 1993. We recommend that FAA's Runway Incursion Program goal be formally adopted and incorporated in the Department's plan.

The Office of Inspector General will continue to monitor FAA's progress in improving the Runway Incursion Program. If I can answer any questions or be of any further assistance, please call me on x61992 or Alexis M. Stefani, Deputy Assistant Inspector General for Aviation, on x60500.

Attachment

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**Before the Subcommittee on Aviation,
Committee on Transportation and Infrastructure,
U.S. House of Representatives**

For Release on Delivery
Expected at
9:30 a.m. EST
Thursday
November 13, 1997
Report Number: AV-1998-015

Federal Aviation Administration's Runway Incursion Program

**Statement of Kenneth M. Mead
Inspector General
U.S. Department of Transportation**



Mr. Chairman and Members of the Subcommittee:

Thank you for the opportunity to testify on FAA's Runway Incursion Program. Incursions are incidents on the runway that create a collision hazard or result in aircraft being closer than allowed by air traffic control requirements. Runway incursions can have serious consequences. Eleven runway accidents dating back to 1972 have claimed a total of 719 lives and destroyed 20 aircraft. Since 1990, four major runway accidents claimed 45 lives.

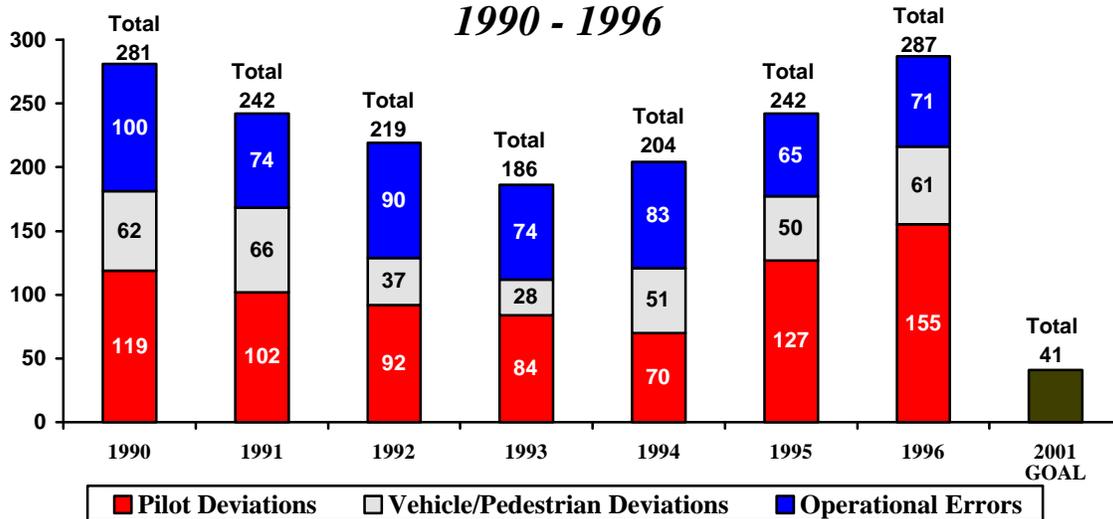
We have completed a review of FAA's Runway Incursion Program, which evaluated the adequacy of FAA's efforts to meet its goal of reducing runway incursions. FAA's current goal is to reduce the 204 occurrences in 1994 to 41 by the year 2001, an 80 percent reduction. However, without improvements in FAA's Runway Incursion Program, it is unlikely that FAA will achieve its goal.

Our testimony today will address four areas:

- The continued increases in runway incursions,
- Need for a strong Runway Incursion Program to solve systemwide problems and expedite solutions,
- Need for focused local projects and initiatives to solve airport specific runway incursion problems, and
- Actions FAA should undertake to improve its Runway Incursion Program.

Over the last 4 years, runway incursions have increased 54 percent from 186 in 1993 to 287 in 1996. This trend continued upward in 1997. In the first 9 months of 1997, runway incursions increased 12 percent from the first 9 months of 1996.

Runway Incursions By Type 1990 - 1996



The increase in the number of runway incursions from 1993 to 1996 was primarily caused by pilot deviations; errors by a pilot such as failing to stop short of an active runway. In 1996, general aviation aircraft were involved in 72 percent of the pilot deviations. From Fiscal Year 1993 to Fiscal Year 1996, the rate of runway incursions per 100,000 airport operations also increased from .30 to .46.

If the upward trend continues, increases in air traffic, through normal expansion and the introduction of the Free Flight Concept¹, could intensify the safety risk at airports. Using satellite technology, Free Flight will allow for more efficient spacing or metering of arriving aircraft to airports, thus, increasing the activity on the runways.

To reverse the trend is a challenge involving many groups. The Runway Incursion Program crosses FAA organizational lines, which necessitates extensive coordination. Air Traffic, Airports, Flight Standards and Acquisition staffs have a role in reducing incursions. Reducing runway incursions also involves pilots, air traffic controllers, airport operators, aviation organizations, and the airlines.

Solutions to prevent runway incursions are both systemwide and local. Systemwide solutions include technology enhancements to aid controllers or pilots in decision making or to warn them of potential incursions, or nationwide educational efforts aimed at reducing pilot deviations. Two acquisitions FAA currently has in process will assist air traffic controllers in preventing runway accidents: the Airport Surface Detection Equipment, Model 3 (ASDE-3) radar; and the Airport Movement Area Safety System, a system to provide controllers with automated alerts and warnings of potential runway accidents.

Solutions to prevent runway incursions can also be local or airport specific in nature. Local projects can be as simple as painting a concrete surface green like grass to prevent airplanes from taxiing on the area, placing warning lights at runway intersections, and providing tower controllers with warning lights to remind them which runway is in use.

We found the 1995 Runway Incursion Action Plan, designed to coordinate runway incursion prevention and reduction activities and initiatives, is not working as intended. The team assigned to implement and coordinate the 22 runway incursion projects listed in the 1995 plan was never formed. Regional officials we visited were not familiar with the plan, or with FAA's goal to reduce runway

¹ The Free Flight concept envisions that pilots will be allowed to fly user preferred routes, providing they can do so safely, given air traffic and airport capacity constraints.

incursions by 80 percent. FAA has only completely implemented 1 of 10 recommendations made by a consultant in 1994 and 1996 to reduce pilot deviations on the runway, which accounted for 54 percent of the runway incursions in 1996. Lastly, the \$74.1 million Airport Movement Area Safety System, originally scheduled to be implemented in 1996, is now scheduled to be completely installed in August 2000.

Additionally, we found that regional offices did not focus their efforts on airports with the most runway incursions. The regional offices visited did not (1) have a person designated to identify the causes of runway incursions at local airports or (2) periodically analyze runway incursion data for their airports.

To reverse the upward trend in runway incursions, FAA must have a strong Runway Incursion Program to solve systemwide problems and expedite solutions. We recommend that FAA (1) assign specific responsibility for implementing the plan, (2) disseminate local initiatives that work nationwide, (3) improve runway incursion data, and (4) focus on projects to reduce pilot deviations. At the local level, FAA needs to have a more focused Runway Incursion Program. We recommend that FAA establish regional focal points to oversee runway incursion activities. These focal points should also periodically analyze runway incursion data for their airports and implement airport specific action plans when needed.

FAA recognizes the need to improve its Runway Incursion Program. It is currently revising its Runway Incursion Action Plan and expects to issue the new plan in 1998. In August, FAA established a committee made up of FAA and aviation organizations to revise its action plan. This committee has been tasked to ensure the plan adequately focuses on reducing general aviation pilot deviations. Additionally, program officials have agreed to implement our recommendations.

What is a Runway Incursion?

A runway incursion is “Any occurrence at an airport involving an aircraft, vehicle, person, or object on the ground, that creates a collision hazard or results in the loss of separation² with an aircraft taking off, intending to take off, landing, or intending to land.” FAA’s runway incursion definition only applies to airports with operating aircraft control towers.

Human error, rather than equipment failure, is the primary cause of runway incursions. Runway incursions are classified into three categories: pilot deviations, operational errors, and vehicle or pedestrian deviations.

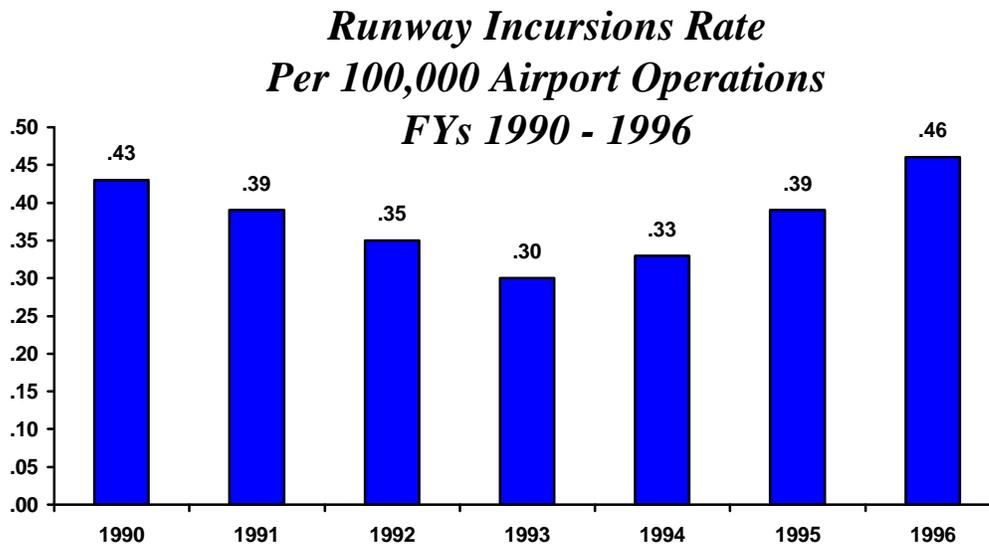
² A loss of separation means that aircraft involved in the incident were closer than allowed by air traffic requirements.

- **PILOT DEVIATIONS** are errors by a pilot that violate Federal Aviation Regulations. For example, a pilot fails to follow air traffic controller instructions to stop short of an active runway, causing another aircraft to abort its departure or arrival.
- **OPERATIONAL ERRORS** are occurrences attributable to air traffic control which result in less than the required separation between aircraft.
- **VEHICLE or PEDESTRIAN DEVIATIONS** involve the presence of vehicles, non-pilot operated aircraft, or pedestrians in runways or taxiways without authorization from a controller.

Continued Increases in Runway Incursions

FAA's Runway Incursion Program has not been effective in reducing runway incursions. FAA's current goal is to reduce the 204 occurrences in 1994 to 41 by the year 2001, an 80 percent reduction. Runway incursions increased 54 percent over a 4-year period, from 186 incursions in 1993 to 287 incursions in 1996. The 287 incursions are seven times the current goal of 41 (see chart on page 1).

In 1997, runway incursions continued to increase. In the first 9 months of 1997, there were 234 runway incursions, an increase of 12 percent from the first 9 months of 1996. FAA's data indicates that runway incursion rates per 100,000 airport operations have increased from 0.30 in Fiscal Year 1993 to 0.46 in Fiscal Year 1996.



In 1996, FAA reported 155 pilot deviations on the runway. Of these, 16 involved commercial air carriers. We could not make a finer breakout (e.g., commercial to commercial, general aviation to commercial) because FAA's database did not contain these details. Further, information on operational errors and vehicle/pedestrian deviations by type of operator was not available in FAA's database.

FAA and the National Transportation Safety Board are very concerned about the increases in runway incursions and potential accidents. In April 1997, FAA expressed concern that the continued upward trend in runway incursions increases the probability of a runway accident. FAA stated that 11 runway-conflict accidents dating back to 1972 have claimed a total of 719 lives and destroyed 20 aircraft.

Also, in April 1997 testimony before the Committee on Appropriations, Subcommittee on Transportation, the Chairman of the National Transportation Safety Board recognized that runway incursions have increased 19 percent from 1995 to 1996 and expressed concerns about the progress being made by FAA in addressing the risks associated with the potential for ground collisions. The Chairman stated that the installation of airport runway incursion avoidance systems is on their "Most Wanted" list of recommendations to be implemented.

FAA forecasts that total aircraft operations will increase from 124 million in 1996 to 133.7 million in 2008. Using satellite technology, FAA may be able to accommodate at least some of the increase in operations by reducing separation requirements for aircraft approaching an airport. This could transfer congestion to the surface operations as airport operations increase. This is one important reason why the Nation, as a matter of aviation policy, must attach a sense of urgency and focus to achieve a sharp reduction in runway incursions.

We are concerned with FAA's progress in reducing runway incursions. While FAA's goal is to have only 41 incursions by the year 2001, the trend is going in the wrong direction. If the upward trend in runway incursions continues, increases in air traffic, through normal expansion and the introduction of the Free Flight Concept, will intensify the safety risk. In order for FAA to reverse the upward trend, it must find solutions to preventing runway incursions that address both systemwide and airport specific problems.

Systemwide Solutions to Runway Incursions

In 1991, following an accident in Detroit and a record 281 runway incursions in 1990, FAA developed a Runway Incursion Plan. The plan called for a more centralized approach for addressing the runway incursion problem. This plan included 45 initiatives and acquisition projects to reduce or prevent runway

incursions. It also established an FAA focal point for runway incursions and a coordination process for cross-organizational activities within FAA.

Coordination of initiatives was determined to be vital to the plan's success. Solutions to the runway incursion problem involve numerous organizations within FAA, as well as the aviation community. Within FAA, Airports, Air Traffic, Flight Standards, and Acquisition staffs may be involved in finding and implementing runway incursion solutions. Because the incursions may be caused by various factors, such as human error or airport design, different organizations must be involved to prevent their occurrence. These groups include pilots, controllers, airport operators, airlines, and other aviation organizations.

In April 1995, FAA revised the plan and issued a Runway Incursion Action Plan. Again, coordination of initiatives within FAA and the aviation community was the purpose of the plan.

The April 1995 plan contained 22 systemwide projects addressing human performance, communications, guidance, surveillance, and surface traffic management. The systemwide projects included procedural improvements, such as developing land and hold short procedures and updating lighting standards. The plan also included five acquisition projects for new technologies to prevent runway accidents. Two major projects were the ASDE-3 radar and the Airport Movement Area Safety System (AMASS), designed to assist controllers in identifying and preventing potential runway accidents.

Our review of the effectiveness of the 1995 Runway Incursion Action Plan determined that the plan is not working as intended. We found:

- Specific program responsibilities to oversee and coordinate initiatives and projects in the plan to reduce runway incursions should be implemented.
- Local initiatives to reduce runway incursions need to be coordinated with the Runway Incursion Program Manager at FAA Headquarters and other regions and airports.
- FAA needs to increase its focus on reducing pilot deviations; a significant systemwide problem.
- FAA's data on runway incursions and the related causes are not accurate and could be enhanced.
- The development and installation of major technology to aid controllers in preventing runway accidents has been slow.

Specific Program Responsibilities Need to be Implemented. An FAA team was to implement and coordinate the 22 runway incursion projects listed in the 1995 plan within FAA and the aviation industry. However, the team was never started.

Quarterly status reports containing action item accomplishments and future plans were not prepared. Consequently, documentation was not readily available to determine the status of the 22 projects included in the 1995 Runway Incursion Action Plan and whether established timeframes have been met.

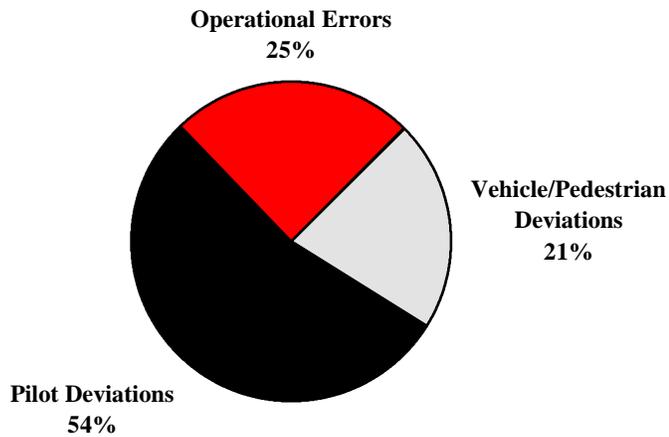
What is particularly disturbing is the lack of awareness of the Runway Incursion Program at the regional level. During our work at FAA's Eastern, Great Lakes, and Western Pacific Regions, we found that FAA Headquarters had not coordinated the Runway Incursion Action Plan with the regional offices. We found that regional officials were not familiar with the Runway Incursion Action Plan, the national goal established for reducing runway incursions, or even FAA's definition of runway incursions.

Local Initiatives Should Be Disseminated to Others. Local initiatives to reduce runway incursions at airports were usually not shared with the national Runway Incursion Program Manager. For example, a contractor was developing a state-of-the-art vehicle management system for Minneapolis-St. Paul Airport using Global Positioning System technology. Neither the FAA Air Traffic Manager at the airport nor the Runway Incursion Program Manager were familiar with this project, which could reduce vehicle deviations on the runway.

Also, tower controllers at McCarran International Airport in Las Vegas, Nevada placed markers on their workspace to remind them that a runway was occupied. At the Los Angeles International Airport, local initiatives included adding in-pavement lighting, adding additional signage, and painting certain concrete surfaces green to prevent airplanes from taxiing on the areas. The Runway Incursion Program Manager should disseminate successful local initiatives to other regions and airports.

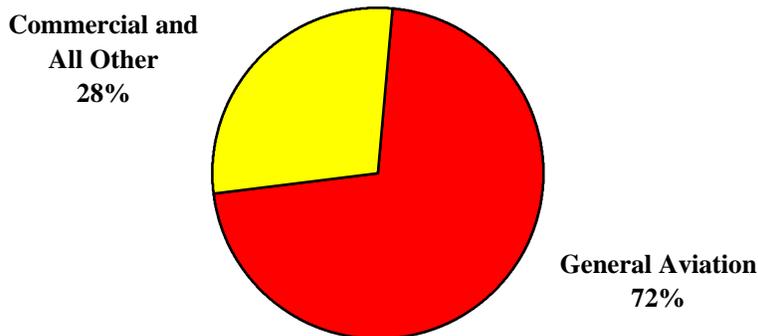
Increased Focus Needed on Reducing Pilot Deviations. FAA's runway incursion data from 1993 to 1996 show that approximately 70 percent of the increase in runway incursions was caused by pilot deviations. Pilot deviations in 1996 represent 54 percent of the reported runway incursions, as shown on the following chart:

Causes of 1996 Runway Incursions



Further analysis of pilot deviations in 1996 shows that general aviation pilots were involved in 72 percent of the pilot deviations on runways as shown on the following chart.

Pilot Deviations Causing Runway Incursions 1996



In 1992, FAA requested MITRE to investigate causes of pilot deviations on the runway and recommend methods of prevention. MITRE conducted a study and issued reports in 1994 and 1996. MITRE's reports concluded that many of the

solutions required a low level of technology, were relatively inexpensive, and easily implemented.

MITRE recommended 10 areas for improvement. These recommendations related to improvements associated with pilot familiarity with airports, navigation, communications, pilot memory and attention, compliance with Federal Aviation Regulations, and dissemination of safety related information. To date, FAA completed improvements in one of the 10 areas. To improve airport surface navigation aids, FAA developed requirements for the use of new surface painted markings for taxiway direction and location, and developed a standard for runway holding position lights. Also, FAA designed signs, markings, and procedures to assist pilots and controllers in determining when an aircraft is clear of the runway. Of the other nine recommendations, one FAA did not agree to, six are partially completed, and two were not started.

The National Transportation Safety Board supports MITRE's recommendations to reduce pilot deviations. In a September 21, 1995 letter to the FAA Administrator, the Safety Board Chairman noted public hearing testimony by MITRE indicated that the solutions proposed were not costly and were doable.

While general aviation pilots are causing a majority of pilot deviations on the runway, FAA's Runway Incursion Action Plan does not include projects to specifically address this problem. An official from the Aircraft Owners and Pilots Association, a general aviation association, advised us that they are aware that a large number of runway incursions are caused by general aviation pilots. FAA should establish a joint project with the Aircraft Owners and Pilots Association to educate general aviation pilots on runway incursions.

Runway Incursion Data Need to be Improved. FAA's database used to identify airports with the highest incidence of runway incursions and the causes of runway incursions was not accurate. An accurate database is important because it serves as a basis for FAA to identify causal trends or problem airports and better target the actions it takes to reduce runway incursions. Specifically, (1) runway incidents were not reported, (2) runway incursions were not recorded properly, and (3) preliminary reports of runway incursions were not validated.

- Runway incidents were not reported. Tower managers at five airports we visited said not all runway incidents are reported. Also, FAA full-facility evaluations performed at two of these airports identified underreporting of incidents.
- Runway incursions were not always recorded properly. We compared 60 runway incursions recorded in FAA's runway incursion database to reports of

investigations obtained at regional and field offices. Four occurrences on the runway, which met FAA's definition of a runway incursion, should have been recorded as runway incursions. We also found the opposite occurred. Four occurrences initially classified as runway incursions were later changed because of insufficient evidence to investigate. FAA's database did not reflect the reclassifications.

- Preliminary reports of runway incursions were not validated. FAA field offices are required to submit copies of final investigative reports of pilot deviations to FAA's Office of System Safety within 90 days. We found 14 final investigative reports on pilot deviations initially identified as runway incursions were 76 to 1,343 days (more than 3 1/2 years) past due.

We also noted that FAA could improve its Runway Incursion Program by analyzing data on what types of aircraft are involved in runway incursions. FAA's runway incursion database identifies whether a pilot deviation involved a general aviation or commercial aircraft (see exhibit A). However, a finer breakout of pilot deviations (commercial to commercial, general aviation to general aviation, and general aviation to commercial) could not be obtained from the database.

Further, FAA was unable to provide trend data on general aviation or commercial aircraft involved in operational errors or vehicle/pedestrian deviations. Although FAA's form for collecting information on operational errors contains the aircraft tail number, it does not readily identify the aircraft type. The form for vehicle/pedestrian deviations does not require reporting of aircraft type. In our opinion, having such information will help FAA focus their efforts on identifying the causes of and solutions to runway incursions.

Development and Installation of Major Technology Has Been Slow. FAA's runway incursion plans included five projects using new technologies to help to respond to human errors that lead to runway incursions. The two major projects are the ASDE-3 and AMASS.

The ASDE-3 radar detects aircraft and vehicles moving on the aircraft surface and displays positions to the air traffic controller. This radar enables tower controllers to monitor ground movement of aircraft and other vehicles during periods of low visibility and darkness. A General Accounting Office Report, dated May 1995, noted that the last site implementation of the radar was delayed 4 years to November 1999 because of systems added to the project, disagreement with the contractor over contract terms, and site selection and preparation problems.

As of October 1997, ASDE-3 radars have been delivered and accepted at 33 of 40 sites, and commissioned at 27 sites. Currently, the last site delivery is scheduled for June 1999.

AMASS is an automated conflict alert system that continually monitors airport surface traffic and automatically alerts controllers in all weather conditions to potential conflicts. AMASS uses data from the ASDE-3 to identify aircraft on the surface. The contract for three AMASS units was awarded in June 1996. In August 1997, the first of these systems was deployed to Detroit, where it is being tested and evaluated.

The full production contract was awarded in January 1997 for 20 systems. As of September 30, 1997, the first operational AMASS system scheduled to be deployed at San Francisco airport, has been delayed from July 1998 to December 1998. According to FAA, the 5 month delay with AMASS deployment can be attributed to the contractor's inability to meet the time schedule established in the June 1996 contract, and difficulty in finalizing the full production contract. The last system from this contract is to be deployed by August 2000. As shown on the following chart, costs had increased \$14.3 million and the project was delayed by 4 years.

AMASS Key Milestone and Funding Information

Plan	Baseline Cost	Last Installation Completed
1993	\$59.8 M	1996
1997	\$74.1 M	2000

Local Solutions to Runway Incursions

Runway and taxiway configurations and the type and number of aircraft operations vary from airport to airport. Consequently, solutions to runway incursion problems may be local or airport specific. However, regional offices did not focus their efforts on their airports with the most runway incursions, which limits FAA's ability to identify and correct airport specific problems. We found:

- Regional offices did not focus resources on causes of runway incursions.
- Regional offices were not using runway incursion data to identify airports with the most runway incursions.

Regions Need to Ensure Resources are Focused on Causes of Runway Incursions.

None of the three FAA regions visited--Eastern, Great Lakes, and Western

Pacific--have a person designated to serve as a regional focal point to periodically analyze runway incursions and identify the causes of runway incursions at local airports. Instead, runway incursions are investigated independently by FAA's Regional Flight Standards District Offices, Air Traffic Division, or Airports Division. Depending on the causal factor, each of the three groups report directly to a different FAA Headquarters office without any regional focus.

The effect of not having a regional focal point is evident from what we observed in the Eastern Region. Eastern Region officials were not aware of the seven runway incursions that occurred at Newark International Airport in 1996, and no review was made to determine the cause of the occurrences and whether corrective action was needed. At our request, regional officials reviewed five of the seven runway incursions caused by pilot deviations. They concluded the incursions were due to close parallel runways and short taxiways. As a result, regional officials determined a need to place warning lights before intersecting runways. The airport operator agreed to pursue the purchase of the warning lights costing \$60,000.

Additionally, there is no requirement for regional offices to coordinate with the national Runway Incursion Program Manager. Consequently, the Runway Incursion Program Manager does not know whether the regions are focusing resources on airports with the most incursions and taking action to prevent future runway incursions.

During our review, FAA began using Runway Incursion Action Teams to analyze specific airport runway incursion problems. This practice had been stopped in 1993. These evaluations are a positive step in identifying airport specific problems and solutions.

Regional Offices Need to Analyze Available Data to Focus Their Efforts. Regional offices did not periodically analyze runway incursion data for their airports. FAA Headquarters provides regional offices with runway incursion data monthly and annually, which identifies airports with four or more runway incursions over the preceding 12-month period. None of the three FAA regions visited used this runway incursion data to focus on identifying causes of incursions and corrective action to be taken at their airports.

Additionally, the regions should use runway incident data collected by the National Aeronautics and Space Administration (NASA) to supplement FAA's data. NASA collects reports on runway transgressions and incursions. Its purpose is to assist FAA in reaching its goal of eliminating unsafe conditions and preventing aviation accidents.

Unlike FAA's runway incursion definition, another aircraft does not have to be present for the incident to be counted by NASA. For example, an incident where an aircraft continues past the point where it was told to stop and enters an active runway, but does not interfere with another aircraft, will be a transgression and included under NASA's definition. Also, the NASA data will be different from FAA's because reports of runway transgressions are submitted voluntarily by pilots, air traffic controllers, and others to NASA, and are not validated.

FAA was not using NASA's data to identify airports with the most runway incidents. However, NASA's data could be used to supplement FAA's own data by aiding in identifying potential problem airports. While a transgression is not as significant a safety problem as an incursion, it does help to point out where future incursion problems may occur. For example, NASA identified Pittsburgh International Airport as the second worst airport in the nation in 1996, with 11 runway transgressions. In contrast, FAA did not show any incursions for this airport. Exhibit B shows differences between NASA and FAA's data for the top five airports in 1996 and six airports that according to NASA had large numbers of pilot deviations during 1994 through 1996.

Actions Needed to Improve the Runway Incursion Program.

Without improvements in FAA's Runway Incursion Program, runway incursions will continue to pose a threat to aviation safety. Further, it is unlikely FAA will achieve its goal to reduce runway incursions nationwide to 41 by the year 2001.

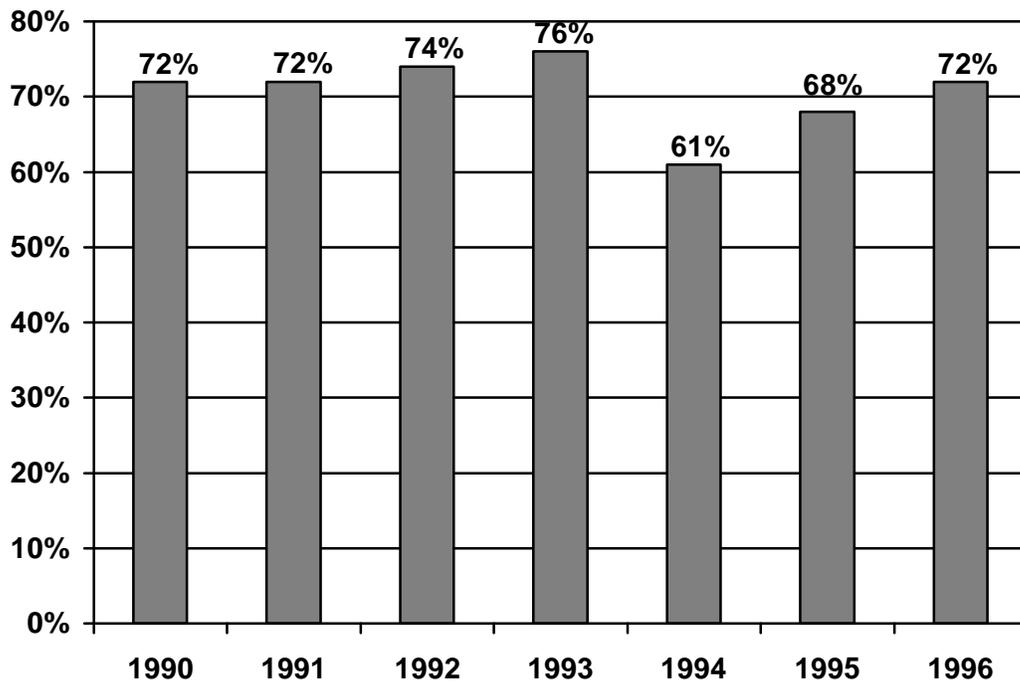
FAA recognizes the need to improve its Runway Incursion Program. It is currently revising its Runway Incursion Action Plan and expects to issue the new plan in 1998. In August, FAA established a committee made up of FAA and aviation organizations to revise its action plan. This committee has been tasked to ensure the plan adequately focuses on reducing general aviation pilot deviations. Further, program officials have agreed to take action on our recommendations to:

- implement specific responsibilities to oversee and coordinate initiatives and projects in the plan at the Headquarters and regional levels;
- coordinate local initiatives to reduce runway incursions with the Runway Incursion Program Manager to enable successful local initiatives to be shared nationwide;
- increase focus on projects to reduce pilot deviations and establish a joint project with the Aircraft Owners and Pilots Association to educate general aviation pilots on runway incursions;
- institute controls to ensure accurate runway incursion data, and collect and analyze data on the type of aircraft involved in operational errors and vehicle/pedestrian deviations on the runways;

- establish regional focal points to analyze data to ensure that resources are focused on causes of runway incursions;
- require regional offices to periodically analyze runway incursion data for their airports;
- require regional focal points to implement local action plans directed at airport specific incursion problems; and
- use NASA's runway transgression data to aid in identifying potential problem airports.

Mr. Chairman, this concludes our statement. I would be pleased to answer questions.

*Percentage of Pilot Deviations
Involving General Aviation Aircraft*



***Differences In NASA and FAA
Runway Incident Data³***

Top Five Airports in 1996 Identified by NASA

Airport	NASA	FAA		NASA Rank	FAA Rank
Cleveland	19	9		1	1
Pittsburgh	11	0		2	Not Ranked
St. Louis	6	7		3	3
Louisville	6	5		3	6
Dallas/Ft. Worth	6	3		3	Not Ranked

**Airports Identified by NASA with the Most Pilot Deviations
1994 Through 1996**

Airport	NASA Data	FAA Data	Difference
Cleveland	35	9	26
Pittsburgh	22	1	21
St. Louis	15	5	10
Dallas/Ft. Worth	19	2	17
Chicago (O'Hare)	21	5	16
Washington (National)	17	2	15
Total	129	24	105

³ Airports with the same number of runway incursions have the same ranking. NASA data includes runway transgressions and runway incursions, whereas FAA data only includes runway incursions.