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The Federal Aviation Administration's Fiscal Year 2014 Budget Request: Key Issues Facing the Agency

Statement of
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Madam Chairman and Members of the Subcommittee:

Thank you for inviting me to testify on the Federal Aviation Administration's (FAA) fiscal year 2014 budget. As you know, FAA strives to maintain safe operation of the National Airspace System (NAS) while ensuring efficiency through modernization efforts such as the Next Generation Air Transportation System (NextGen). The sequestration's mandated budget cuts require Agencies across the Federal Government to rethink their priorities and make difficult tradeoffs. FAA is no exception. The audits conducted by my office aim to improve safety—FAA's number one priority—and to control costs, create efficiencies, and assist in establishing priorities.

My testimony today focuses on three significant challenges for FAA: (1) more effectively managing its workforce, (2) managing strategies for NextGen and modernization, and (3) continuing efforts to ensure the safety of the NAS.

IN SUMMARY

Our recent and ongoing work has identified opportunities for FAA to improve the management of its workforce, the Agency's largest cost driver. Specifically, FAA can increase the efficiency of its air traffic controller and safety workforce by strengthening its controller training program, revising its controller staffing and scheduling practices, and developing an effective method for determining how many safety inspectors it needs and where they are most needed. At the same time, FAA must protect its investment in its multibillion-dollar NextGen efforts and infrastructure improvements that are critical to ensuring the future viability of the NAS. This will require FAA to set priorities and establish sound management strategies to achieve near- and long-term benefits, enhance its contract oversight, and prevent misuse of airport revenue and Federal grant funds. Finally, FAA must not lose sight of its number one priority: ensuring the continued safety of the NAS. One of FAA's key safety issues remains effectively collecting and analyzing data on air traffic controller errors that create air and ground collision risks. FAA also faces new challenges with safely integrating unmanned aircraft systems into the NAS, implementing a safety data sharing system to proactively assess risks, and ensuring effective oversight of its voluntary safety disclosure program for air carriers.

BACKGROUND

FAA's budget funds four accounts: Operations; Facilities and Equipment (F&E); the Airport Improvement Program (AIP); and Research, Engineering, and Development (RE&D).

- **Operations** is FAA's largest cost driver and funds most of the Agency's day-to-day activities, including safety oversight and air traffic control functions. Salaries and benefits for controllers, safety inspectors, and other FAA personnel make up 71 percent of FAA's operations costs.

- **F&E** funds the Agency's NextGen initiatives and other modernization activities such as improving aging infrastructure, power systems, navigational aids, and weather systems.

- **AIP** funds grants to airports to pay for runway construction and other related projects.

- **RE&D** provides funds for NextGen and other research areas such as fire research and safety, and aging aircraft.

FAA's total fiscal year 2014 budget request of $15.6 billion represents about a 2 percent decrease from the Agency's 2012 budget. However, the 2014 request includes $3 billion in Immediate Transportation Investments spending for AIP and NextGen programs (see table 1). FAA proposes to shift the focus of its AIP account to smaller commercial and general aviation airports and eliminate guaranteed AIP funding for large hub airports. The proposal would also increase the passenger facility charge limit from $4.50 to $8.00 per enplanement for all eligible airports, giving large hub airports greater flexibility to generate their own revenue.

Table 1. FAA Budget, Fiscal Year 2012 Through Fiscal Year 2014 (Dollars in Millions)

Account	2012 Actual	2013 Continuing Resolution Annualized[1]	2014 Request	Increase/ Decrease From 2012 to 2014
Operations	$9,653	$9,712	$9,707	0.6%
F&E	$2,731	$2,777	$2,778	1.7%
AIP	$3,350	$3,350	$2,900	-13.4%
RE&D	$168	$169	$166	-1.2%
Subtotal	**$15,902**	**$16,008**	**$15,551**	**-2.2%**
Immediate Transportation Investments	$0	$0	$3,000	
Total	**$15,902**	**$16,008**	**$18,551**	**16.7%**

Source: FAA.

Due to sequestration, FAA must reduce its remaining fiscal year 2013 budget by $637 million dollars. The majority of this reduction will be absorbed by the Operations account. FAA expects that cuts to the Operations account will result in the closure of 149 contract towers, and FAA plans to require controllers, technicians, and other employees to take up to 11 unpaid furlough days through the end of September. Most of the remaining reduction will be absorbed by the F&E account. This reduction will require FAA to adjust its cost and schedule baselines for individual NextGen and other modernization programs, which could delay completion of these projects.

[1] This amount excludes the $637 million reduction in funding due to the sequestration.

FAA HAS OPPORTUNITIES TO MORE EFFECTIVELY MANAGE ITS CONTROLLER AND INSPECTOR WORKFORCE

FAA plans to place thousands of new air traffic controllers at its more than 300 air traffic facilities nationwide—a significant challenge, as new controllers can require several years of training to become certified at their assigned locations,[2] and each facility has unique operations and air traffic volume. Although the Agency has had a major controller training support contract in place since 2008, the contract has experienced cost overruns and has not met its goal to reduce total training times. FAA must also continue in its efforts to address controller workload issues, particularly in terms of improving productivity, which could create cost savings. Finally, to effectively oversee a dynamic aviation industry, it is critical that FAA place its approximately 4,000 flight standards safety inspectors where they are most needed.

Challenges in FAA's Training Programs and Contract Oversight Jeopardize FAA's Efforts To Ensure a Proficient Controller Workforce

To replace retiring controllers who were hired immediately after the 1981 strike,[3] FAA plans to hire and train more than 11,700 new controllers over the next 10 years.[4] In 2004, we reported that FAA's controller training program was extremely decentralized for such a large national undertaking and that the efficiency and quality of training varied extensively by location. With the large numbers of new controllers entering the workforce and veteran controllers retiring or eligible to retire, FAA must have reliable information on how many certified controllers it needs to effectively manage the NAS. FAA executed a contract to train its new controllers; however, it has not been effectively managed.

FAA's $859 million Air Traffic Controller Optimum Training Solutions (ATCOTS) contract continues to be a significant issue for the Agency. FAA awarded the contract in 2008 to provide up to 10 years of controller training support and to assist in modernizing the Agency's training program.[5] Key ATCOTS goals include reducing total training costs, reducing training time, and developing training innovations that can be adapted to new technologies—particularly those related to NextGen. However, 4 years into the contract, the goals have not been achieved. For example, between 2009 and 2012, the average training time for newly hired controllers increased 41 percent from 1.9 years to 2.7 years.

[2] New controllers achieve certification on each position as they move through facility training. After they have certified on all positions within their assigned area, they are commissioned as a certified professional controller at that facility.
[3] In 1981, following a period of labor unrest, an overwhelming majority of the air traffic control workforce went on strike on August 3. President Reagan ordered those controllers to return to duty within 48 hours. When those 10,438 striking controllers did not return to work, President Reagan fired them on August 5.
[4] Over the past 5 years, FAA has hired more than 6,600 new controllers.
[5] The ATCOTS contract consists of a 5-year base period, worth $437 million, and two option periods (a 3-year period and a 2-year period) worth $422 million.

In 2010, we reported that the ATCOTS contract faced significant cost overruns, poor procurement practices, and a lack of effective contract oversight.[6] For example, in its first 2 years, the ATCOTS contract exceeded negotiated contract values by $46 million. Our current review continues to show that FAA has not implemented sufficient changes to improve its program and contract oversight. For example, in 2012, after 4 consecutive years of cost overruns (totaling approximately $89 million), FAA chose to extend the ATCOTS contract by 3 years without clearly defining the contract's training requirements or ensuring that it can produce sufficient training innovations to meet its training goals.

Additionally, since awarding the 10 year contract in September 2008, FAA paid the contractor over $31 million in cost incentive fees and award fees that were ineffective at motivating contractor performance. For example, to reduce contract costs, FAA paid the contractor $19 million in cost incentive fees and award fees related to cost containment despite the $89 million in cost overruns. FAA also awarded the contractor over $12 million for meeting performance measures that do not link to important training goals, such as training innovations.

In May 2011, FAA created an Independent Review Panel of industry and academic professionals to evaluate all aspects of how the Agency hires, assigns, and trains new controllers. To date, the panel has identified 49 recommendations, many incorporating actions we previously recommended, that could significantly improve FAA's controller hiring and training processes. However, most are in the early stages of development, and timeframes for actual implementation are not yet known.

We plan to issue reports on FAA's ATCOTS contract and air traffic controller facility training later this year and will continue to monitor the Agency's cost-saving efforts in these areas.

FAA Could Realize Cost Savings Through Improved Controller Productivity and Scheduling

Since 1998, FAA has introduced a series of initiatives intended to increase controller productivity and reduce operating costs. These initiatives include eliminating alternate work schedules, matching controller staffing to facility workload, reducing operational overtime costs, and developing an automated official time reporting system. However, it is unclear whether these initiatives are achieving the anticipated productivity gains and cost savings. FAA data suggest that its overall staffing may not be optimal. Since 2000, total air traffic operations have declined by 23 percent, while the total number of controllers slightly increased. We are currently conducting a review of FAA's controller productivity initiatives.

[6] *FAA's Air Traffic Controller Optimum Training Solution Program: Sound Contract Management Practices Are Needed To Achieve Program Outcomes* (OIG Report No. AV-2010-126), September 30, 2010. OIG reports are available on our Web site at http://www.oig.dot.gov/.

As directed by the FAA Modernization and Reform Act of 2012,[7] we are also conducting a review of the cost impacts of new FAA controller schedules—developed in response to concerns about the impact of FAA scheduling practices, particularly during overnight shifts, on controller performance and air traffic safety. While most of FAA's new controller scheduling policies have not significantly affected costs, our ongoing work indicates the Agency could realize some cost savings through better scheduling. For example, 72 facilities that do not meet the Agency's minimum traffic guidelines for continuous overnight operations continue to have a minimum of two controllers during the midnight shift. Reducing air traffic control services at these facilities during a portion of or the entire midnight shift could reduce operating costs. However, FAA has not yet calculated the potential savings. We expect to report on our reviews of FAA's controller productivity and scheduling later this year.

FAA Has Not Developed a Reliable Method for Determining Its Safety Inspector Workforce Needs

FAA currently employs approximately 4,000 flight standards safety inspectors who oversee all facets of aviation safety, from general aviation to air carrier operations. However, the Agency has not determined where these resources are most needed or the extent to which there may be a shortfall in its inspector workforce. A 2006 National Research Council (NRC) study,[8] conducted at the direction of Congress, found that FAA's methodology for allocating aviation safety inspector resources was ineffective. NRC recommended that FAA develop a new approach, and, in response, FAA introduced a new staffing model in October 2009.

We have evaluated the model as part of an ongoing audit of inspector staffing, as requested by Congress.[9] Thus far, FAA officials are not confident in the accuracy of the model's staffing projections and therefore have not fully relied on the number projected by the model when developing plans and annual budget requests. As of January 2013, FAA had reported the results of its staffing model six times, with each iteration showing very different nationwide employee shortages (see figure 1).[10]

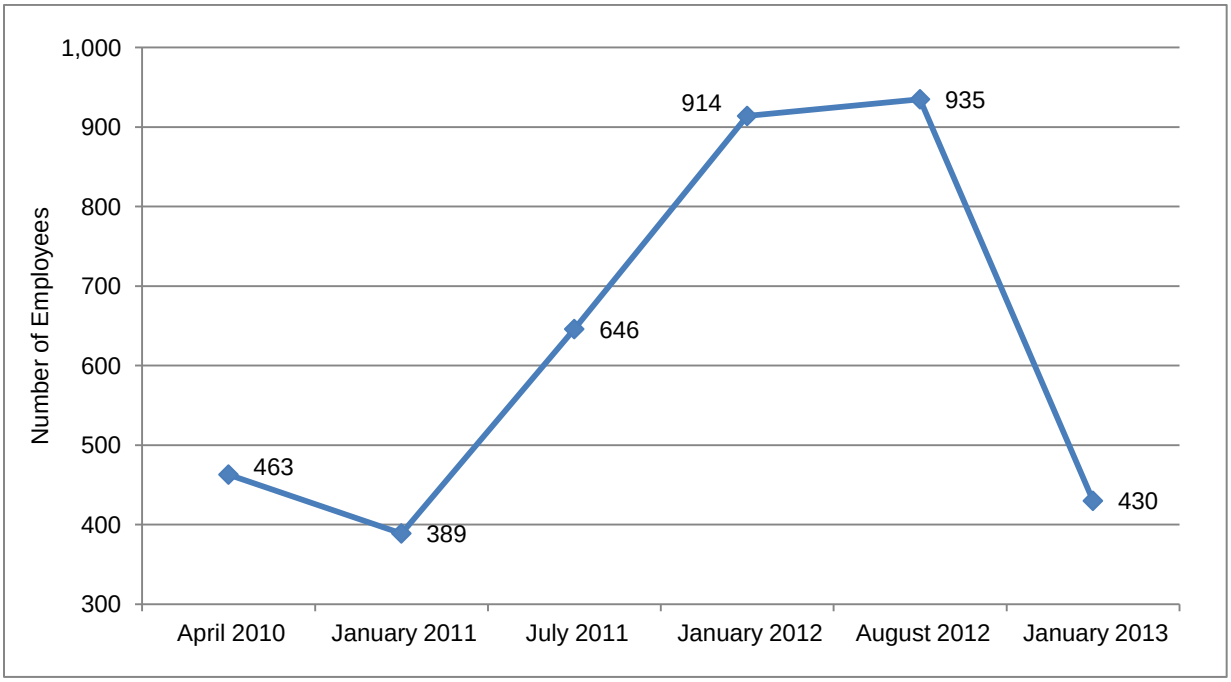
[7] Public Law 112-95.

[8] "Staffing Standards for Aviation Safety Inspectors," September 20, 2006.

[9] Congress directed our office to review inspector and analyst staffing issues in Section 205 of the Airline Safety and FAA Extension Act of 2010, Pub. L. No. 111-216, enacted August 1, 2010.

[10] Based on our analysis of FAA data, these fluctuations appear to be caused by a number of underlying issues such as inaccurate and outdated data.

Figure 1. FAA's Model-Projected Safety Employee Shortfalls



Source: OIG analysis of FAA data.

FAA is working to further refine the model so that it more effectively identifies the number of inspectors needed and where they should be placed to address the greatest safety risks and get the best return on investment. We expect to issue our report on inspector staffing later this year.

SOUND MANAGEMENT STRATEGIES ARE KEY TO THE COST-EFFECTIVE IMPLEMENTATION OF FAA'S MODERNIZATION AND INFRASTRUCTURE EFFORTS

FAA has numerous efforts under way to modernize the air transportation system and upgrade infrastructure—most notably its multibillion dollar NextGen transformational programs.[11] The success of these efforts depends on the Agency's ability to set priorities, control costs, deliver benefits, and maintain stakeholder support. However, FAA has been challenged to maximize near-term benefits through its metroplex initiative, while addressing cost and schedule risks related to implementing critical automation systems such as the En Route Automation Modernization (ERAM) program. In addition, FAA has not yet developed an integrated master schedule to help advance and prioritize key transformational programs. Other challenges include improving contract oversight and management, upgrading aging air traffic control facilities, and protecting airport investments.

[11] FAA's transformational programs, defined as programs directly related to the delivery of NextGen capabilities, will fundamentally change the NAS by enhancing communications, improving the tracking of aircraft, and revamping overall air traffic management.

Integrating New Performance-Based Navigation Routes Is Critical To Maximizing Near-Term Benefits and Ensuring User Support

In 2010, FAA launched its metroplex initiative—a 7-year effort to improve the flow of traffic and efficiency at congested airports in 13 major metropolitan areas. A key part of this effort and a stepping stone for NextGen is the introduction of new performance-based navigation (PBN) procedures, such as Area Navigation (RNAV) and Required Navigation Performance (RNP),[12] which can provide significant near-term benefits such as more direct flight paths, improved on-time aircraft arrival rates, greater fuel savings, and reduced aircraft noise. FAA has completed initial studies or begun design work at 8 of the 13 metroplex locations but continues to face challenges with shifting from planning to implementation. FAA has extended the expected completion date for all metroplex sites by 15 months to September 2017 after determining that its initial schedule was too aggressive.

While the metroplex approach is a step in the right direction to achieving the near-term benefits of reduced congestion, we reported in August 2012 that industry representatives were concerned that FAA had not yet integrated efforts from other related initiatives, such as better managing surface operations.[13] In addition, many airspace users that are equipped with advanced avionics would like more advanced PBN procedures than FAA's current efforts provide—specifically, those that regularly allow for more precise and curved approaches. We also identified a number of barriers to FAA's metroplex effort, including the need to work across diverse Agency lines of business, update policies, streamline the process for implementing new flight procedures, apply environmental regulations, upgrade controller automation tools, and train controllers on new advanced procedures. FAA is currently working to address our recommendations, including developing milestones for a more integrated metroplex approach and addressing barriers in a timely manner.

FAA has several efforts under way to identify and resolve obstacles to PBN use. For example, FAA has tasked MITRE to obtain and analyze data to measure the use of PBN procedures and quantify their benefits. While our analysis of MITRE's preliminary data shows high RNP use at some small- to medium-sized airports, such as Oakland, overall RNP usage is low, particularly at busy metroplex airports, such as New York.[14] According to MITRE, one of the obstacles to using the procedures in busy metroplex locations is the lack of controller tools to manage mixed operations—that is merging

[12] RNAV is a method of navigation in which aircraft use avionics, such as Global Positioning Systems, to fly any desired flight path without the limitations imposed by ground-based navigation systems. RNP is a form of RNAV that adds on-board monitoring and alerting capabilities for pilots, thereby allowing aircraft to fly more precise flight paths.

[13] *Challenges With Implementing Near-Term NextGen Capabilities at Congested Airports Could Delay Benefits* (OIG Report No. AV-2012-167), August 1, 2012.

[14] PBN usage data is as of January 2013. MITRE has ongoing efforts to update the data and improve the formulas. MITRE is only capturing data for RNP procedures with curved approaches because it cannot distinguish RNP procedures with straight-in approaches from conventional procedures.

aircraft using straight-in approaches with those on curved paths.[15] It is important for FAA to use MITRE's data to determine why procedures are not being used and what it will take to obtain benefits. FAA currently has a team developing an action plan to address obstacles, such as the need to update policies and procedures to allow PBN use, and expects to issue a report later this year. FAA is also working to streamline its process for implementing new procedures in response to recommendations from an internal FAA review—the NAV Lean project. However, FAA has only implemented 3 of the 21 recommendations thus far and does not expect to complete all recommendations until September 2015.

Despite Progress, FAA Faces Programmatic and Cost Risks With Automation Systems in the Critical Path of NextGen

FAA's goals for NextGen ultimately depend on the success of its ongoing efforts to deploy ERAM—a $2.1 billion system for processing flight data. Without ERAM, the key benefits of FAA's transformational programs, such as new satellite-based surveillance systems and data communications for controllers and pilots, will not be possible. FAA originally planned to complete ERAM by the end of 2010, but significant software problems impacted the system's ability to safely manage and separate aircraft and raised questions as to what capabilities ERAM will ultimately deliver. As a result, FAA rebaselined the program in June 2011, pushing its expected completion to 2014 and increasing cost estimates by $330 million.

FAA is making considerable progress toward getting ERAM on track. The Agency is now using ERAM at 16 of 20 sites either on a full- or part-time basis—a significant step forward given the extensive problems at the two initial sites. FAA plans for all 20 sites to achieve full operational capability and to decommission[16] the legacy system by August 2014. However, as FAA deploys ERAM to the Nation's busiest facilities, such as New York and Washington, DC, it expects to identify new problems that could impact cost and schedule. FAA is currently spending about $12 million a month on the ERAM F&E portion of the contract, excluding NextGen efforts funded through the ERAM contract. If the current contract burn rate does not decline significantly, the Agency will need additional funds to complete this stage of the program.[17]

Moreover, controllers and experts continue to raise concerns about ERAM's capabilities. While these issues are not expected to delay ERAM's 2014 implementation, they will need to be addressed for the system to support NextGen initiatives.

[15] According to MITRE, other causal factors, such as weather or operational conditions that do not necessitate the use of PBN instrument approaches, can also affect RNP use.
[16] Decommissioning involves the disconnection, removal, and disposal of the HOST computer system once ERAM has been declared operationally ready at a site.
[17] The Office of Management and Budget (OMB) approved shifting $44 million of ERAM O&M funding to F&E funding, increasing total ERAM F&E funding to $374 million. As of February 2013, FAA had spent a total of $241.86 million (F&E)—about 64.7 percent of the $374 million in F&E funding allocated since the June 2011 rebaseline.

- **Flight Plan Trajectory Modeler—**This is an ERAM capability that models aircraft flight paths and is used to predict conflicts and ensure accurate handoffs between controllers and other facilities. However, the modeler software has often required adjustments to change the flight plan trajectory to ensure accurate handoffs. According to controllers, improvements are needed in order to support current operations and NextGen capabilities that use trajectory-based operations.[18]

- **Aircraft Tracking and Sensor Fusion—**This capability allows ERAM to integrate—or 'fuse"—multiple radars and satellite-based information for controllers. However, thus far, controllers have not been able to take advantage of this improved capability because of tracking issues. A MITRE analysis found that the ERAM tracker will require adjustments to use the Automatic Dependent Surveillance-Broadcast system (ADS-B)[19] and radar together to manage air traffic. Until these issues are addressed, it is unlikely FAA will be able to reduce separation between aircraft at high altitudes.

Similar to ERAM, FAA's Terminal Automation Modernization/Replacement (TAMR) effort is on the critical path to NextGen. FAA's TAMR program aims to modernize or replace all of the automation systems that controllers rely on to manage traffic at terminal facilities with a single automation platform—the Standard Terminal Automation Replacement System (STARS) system. If effectively implemented, TAMR is expected to reduce Agency costs and facilitate the implementation of NextGen capabilities.

TAMR currently involves modernizing automation systems at 11 terminal facilities, 7 of which are the largest and busiest in the Nation. FAA estimates this effort will cost $438 million and be completed between 2015 and 2017. However, the Agency faces significant cost, schedule, and technical risks in this effort. Specifically, FAA has yet to identify and finalize all "gaps"—that is, the software and hardware requirements that are needed to successfully replace the existing automation system[20] with STARS. Finalizing these gaps requires extensive software development and testing—a lengthy and potentially costly process should issues arise in testing. FAA is currently developing software to address 94 gaps but anticipates identifying more gaps once it begins transitioning to STARS at the busiest facilities. Moreover, because full STARS capability at the 11 sites is still years away, FAA continues to add new capabilities to existing systems at select facilities to support air traffic operations. The longer FAA must maintain and update existing systems at these sites, the greater the implementation and cost risk because FAA will have to add the same new capabilities to STARS to maintain operations at the sites. To improve FAA's effectiveness in achieving terminal modernization, we made a number of recommendations to better and more cost

[18] Trajectory-based operations focus on more precisely managing aircraft from departure to arrival with the benefits of reduced fuel consumption, lower operating costs, and reduced emissions.
[19] ADS-B, one of NextGen's transformation programs, is a satellite-based surveillance technology that combines the use of aircraft avionics and ground-based systems.
[20] Common Automated Radar Terminal System (CARTS-IIIE) automation systems currently exist at the 11 large terminal facilities.

efficiently manage this effort. We anticipate receiving FAA's response and issuing our final report soon.

FAA Lacks an Integrated Master Schedule To Manage and Prioritize Key NextGen Programs

Setting realistic plans, budgets, and expectations for key NextGen programs is critical to controlling NextGen costs. FAA now spends almost $1 billion annually on NextGen efforts and plans to spend $2.4 billion between 2013 and 2017 on the six transformational programs that will provide NextGen's foundational technologies and infrastructure.[21] These include ADS-B, with a current approved cost of $2.7 billion, and Data Communications, with a current approved cost of $741.5 million.

However, FAA has yet to complete an integrated master schedule to manage implementation of these six programs—many of which are interdependent. Without a master schedule, FAA will be challenged to (1) fully address operational, technical, and programmatic risks; (2) prioritize and make informed tradeoffs for programs' costs and schedules; and (3) determine what capabilities should be delivered first. In response to a recommendation we made in April 2012,[22] FAA is working on the integrated master schedule and expects to have it completed by December 2013.

Ineffective Planning and Oversight Have Contributed to Cost Overruns and Delays for Efforts Needed To Support NextGen

Since 2005, FAA has experienced cost overruns, schedule delays, or both on half of its major air traffic control programs, including ERAM. Weaknesses in FAA's contract planning have hindered the Agency's ability to efficiently and effectively advance programs and protect its investments. For example, when designing ERAM's contract structure, FAA did not fully adopt best practices for information technology (IT) acquisitions—such as modular contracting, which calls for dividing a large contract into manageable contract segments delivered in shorter increments. In addition, ERAM's cost incentive fee did not motivate the contractor to stay below cost targets because FAA simply increased the target costs as requirements grew. At the time of our review, FAA paid the contractor over $150 million in cost incentives fees even though ERAM costs exceeded the budget by at least $330 million. Further, FAA did not detect or mitigate significant risks until almost 2 years after software problems surfaced at a key test site. In response to our recommendations, FAA has modified the ERAM contract to implement a more modular structure, revised incentives for new software releases, and improved ERAM's risk management process.[23]

[21] These six programs are ADS-B, System Wide Information Management, Data Communications, NextGen Network Enabled Weather, NAS Voice System, and Collaborative Air Traffic Management Technologies.
[22] *Status of Transformational Programs and Risks to Achieving NextGen Goals* (OIG Report No. AV-2012-094), April 23, 2012.
[23] *Weaknesses in Program and Contract Management Contribute to ERAM Delays and Put Other NextGen Initiatives at Risk* (OIG Report No. AV-2012-179), September 13, 2012.

FAA has also awarded contracts without resolving differences between the Agency's cost estimates and those provided in contractor proposals, resulting in unreliable budget estimates. For example, to accomplish NextGen and efforts related to maintaining the NAS, FAA awarded seven Systems Engineering 2020 (SE-2020) contracts for technical and professional support services, which have a cumulative maximum value of $7.3 billion—the largest award in FAA history. However, when FAA awarded these SE-2020 contracts in 2010, it included 18 million more labor hours than needed, overstating potential contract costs by $2 billion. As a result, FAA cannot be sure that the contract's cost baseline is an accurate benchmark for monitoring costs. For FAA's ATCOTS contract, FAA did not resolve the 29 percent difference between the contractor's proposed costs and FAA's independent Government cost estimate. In addition, the contract experienced a 35 percent cost increase during the first contract year due to underestimating controller training requirements.

FAA's problems in these areas are further exacerbated by weaknesses in its review and approval process for major acquisitions. OMB requires Federal agencies to monitor and evaluate performance of IT investments through a capital planning and investment control process. In response, FAA's Joint Resources Council (JRC) was established to ensure capital investments fulfill mission priorities and maximize resources. However, JRC sometimes lacks complete information when making investment decisions. Further, FAA does not consistently follow the JRC approval and oversight process. As a result, FAA risks making investment decisions with incomplete information, which could jeopardize the success of critical FAA programs. For example, since 2005, FAA has experienced cost overruns, schedule delays, or both on 7 of its 14 major air traffic control IT programs, including the Wide Area Augmentation System program, which exceeded original cost estimates by $2 billion. FAA has established a new control group within its Program Management Office that, once appropriately staffed, will begin to assess program planning documentation.

FAA Must Address Key Issues To Achieve Potential Cost Savings Through Facility Realignments and Consolidations

A critical—and costly—step in FAA's NextGen effort is the extent to which it realigns and consolidates its aging infrastructure. To sustain its current facility infrastructure, in fiscal year 2014, FAA plans to spend $125 million to replace or improve its terminal radar approach control (TRACON) facilities and air traffic control towers, $53 million to maintain en route centers, and $85 million to sustain electrical power systems. The average age of an en route center is 51 years, while the average age of a TRACON is 29 years. Moreover, many of these facilities are in poor or fair condition, and the infrastructure at some facilities cannot support NextGen and other modernization initiatives.

FAA's current plans call for an integrated control facility in the New York metropolitan area—a significant step in achieving operational efficiencies. However, to successfully

realign and consolidate facilities, FAA needs to make informed decisions regarding cost, schedule, technical capabilities, and the impact on the aviation workforce. In July 2012, we recommended that FAA develop and regularly update comprehensive cost estimates for construction, equipment, increased salaries, relocation expenses, and training for its consolidation effort.[24] As FAA's plans evolve, addressing these issues early will better position the Agency to achieve potential cost savings and NextGen benefits. FAA expects to provide a detailed cost estimate for the integrated New York facility by the end of 2014. To completely implement our recommendation, FAA will need to produce detailed financial information for consolidating facilities in other locations.

Further Actions Are Needed To Protect Federal Investment in Airport Infrastructure

FAA projects that U.S. passenger traffic will grow by 2.6 percent annually in the next 5 years, and that by 2033 there will be 1.15 billion passengers. Ensuring enough capacity at the Nation's airports is essential to meeting this demand, reducing delays, and realizing the full benefits of NextGen. However, NextGen alone will not address capacity constraints at some airports. While FAA has made progress in overseeing airport infrastructure improvements at our Nation's airports,[25] including new runways, the Agency must ensure that current and planned runway projects and their corresponding capacity-enhancing airspace changes remain on schedule. Moreover, FAA needs to improve its grant oversight to protect its significant investments in these projects.

FAA is pursuing several airspace redesign projects nationwide—including major efforts to revamp airspace in the Atlanta, Chicago, and New York-New Jersey-Philadelphia areas. To ensure runways at these sites have sufficient capacity to accommodate the additional air traffic, FAA must synchronize its airspace redesign and runway efforts, as it did at the Chicago O'Hare International Airport. Completing a new runway and extending an existing runway in 2008[26] allowed FAA's airspace redesign efforts in that area to move forward.

However, the remaining infrastructure and related airspace projects for O'Hare, as well as the planned infrastructure and related airspace projects for the Philadelphia International Airport, are at risk due to the uncertain future of these capacity enhancement programs (see table 2). Although FAA has committed nearly $1.4 billion in AIP funds for the next 20 years—with annual outlays of more than $60 million—the Agency faces multiple implementation challenges. To protect these investments and ensure sufficient capacity,

[24] *The Success of FAA's Long-Term Plan for Air Traffic Facility Realignments and Consolidations Depends on Addressing Key Technical, Financial, and Workforce Challenges* (OIG Report No. AV-2012-151), July 17, 2012.
[25] According to FAA, since the start of fiscal year 2000, 24 airfield projects have opened at 20 major airports. These include 16 new runways, 3 taxiways, 3 runway extensions, 1 airfield reconfiguration completed (included relocating a runway and constructing a new center taxiway), and 1 airfield reconfiguration to be completed this year (includes a runway extension and a new runway that have been completed, and another runway due to open in October 2013).
[26] Infrastructure projects as part of Phase 1 of the O'Hare Modernization Program.

FAA needs to work closely with airports, airlines, and other stakeholders to resolve differences and make decisions about these projects so they can move forward.

Table 2. Status of Major New Runway Projects

Airport	Phase	Estimated Completion Date	Total Cost Estimate (in millions)
Chicago O'Hare (Runway 10C/28C)	Construction	Sep 2013	$1,290
Chicago O'Hare (Runway 9R/27L[a])	Design[b]	2020	$520
Chicago O'Hare (Runway 9C/27C)	Design[b]	2020	$1,130
Chicago O'Hare (Runway 10R/28L)	Construction	Dec 2015	$516
Philadelphia (Runway 9R/27L) (Runway 8/26[a]) (Runway 9R/27L[a])	Some Site Prep[bc]	TBD	$5,200

[a] Extension of existing runway.
[b] Funding for construction has not been secured and is subject to ongoing negotiations with the Airlines.
[c] Extension of runway 9R/27L (which will be renamed 9C/27C when the new runway is built) is in the design phase with a 2015 estimated completion date. Due to lack of funding, completion dates for the remaining projects have yet to be determined.

Insufficient oversight of airport revenue and AIP grants further jeopardizes FAA's investments. Over the past 10 years, we have identified nearly $376 million in airport revenue that was illegally diverted, used for non-airport purposes, or was simply lost. Had these revenues been used for airport operations, the airports would have been more self-sufficient and less reliant on Federal funding. While FAA conducts airport revenue reviews, the reviews have been limited to a few airports a year. In general, FAA relies primarily on three oversight methods that have proven inadequate to prevent the diversion and loss of valuable airport revenue: (1) review of airport sponsors' annual revenue use reports, (2) single audit reports, and (3) third-party complaints. At the request of several House members from California, we are currently conducting an audit on FAA's oversight of Los Angeles International Airport revenue use.

Finally, reducing and recovering improper AIP grant payments has been a longstanding challenge for FAA. In 2010, we reported that FAA had made an estimated $31 million in recoverable improper payments[27] during fiscal year 2008 and had not detected them. More recently, we reported that FAA's oversight was insufficient to prevent or detect more than $1.4 million in recoverable improper American Recovery and Reinvestment

[27] In 2002, Congress passed the Improper Payments Information Act (IPIA), providing a framework for agencies to use in testing for improper payments, identifying their causes, and implementing solutions to reduce them. In August 2006, OMB established detailed requirements for complying with IPIA. OMB further clarified that improper payments include the following payments to ineligible recipients: duplicate payments, payments in incorrect amounts, payments for ineligible services or services not received, or payments having insufficient documentation.

Act of 2009 (ARRA) grant payments. In particular, we found that San Francisco International Airport officials improperly billed ARRA for over $832,000 for unapproved taxiway and drainage work, as well as ineligible survey equipment. To address this challenge, FAA began implementing a new risk-based grant oversight process and an electronic grant payment system in 2012. However, it is too soon to know whether this additional step will significantly improve FAA's ability to prevent or detect future improper payments.

OPPORTUNITIES REMAIN TO BETTER ENSURE THE SAFETY OF THE NATIONAL AIRSPACE SYSTEM

While FAA works to achieve efficiencies in its operations, programs, and overall costs, it must continue to address ongoing safety concerns. FAA has several opportunities to enhance safety by improving its collection and analyses of safety data, including data on air traffic controller errors that create air and ground collision risks. FAA will need to enhance its oversight of aircraft repair stations and implement key provisions of the Airline Safety Act related to pilot safety. FAA also faces challenges with safely integrating unmanned aircraft into the NAS, developing a safety information sharing system to proactively assess risk, and improving its voluntary safety disclosure program for air carriers.

Data Collection and Analysis Enhancements Are Needed To Identify and Mitigate the Root Causes of Separation Losses

A top priority for FAA is to accurately count operational errors—events where controllers do not maintain safe separation between aircraft—and identify trends that contribute to them. FAA statistics indicate that reported operational errors rose by 53 percent between fiscal years 2009 and 2010. While operational errors remained at these levels during fiscal years 2010 and 2011, FAA reports that the most serious reported errors continued to rise by 49 percent from fiscal year 2009 to fiscal year 2011 (from 37 to 55, respectively).

In January 2012, FAA issued new policies and procedures for collecting, investigating, and reporting separation losses.[28] However, their effectiveness is limited by incomplete data and implementation challenges. FAA lacks an accurate baseline on the number of separation losses due in part to its limited review of Traffic Analysis and Review Program (TARP) data[29] and exclusion of some potential operational errors reported under the Air Traffic Safety Action Program (ATSAP)[30] from its official count. At the time of

[28] Losses of separation occur when aircraft do not maintain the minimum required distance apart. Most losses of separation are classified as either an operational error (if the controller's actions caused the loss) or a pilot deviation (if the pilot's actions caused the loss).
[29] TARP is an automated system that detects losses of separation at air traffic terminal facilities.
[30] ATSAP is a voluntary, non-punitive program in which controllers can self-report safety incidents and concerns.

our ATSAP review last year, approximately 50 percent of all ATSAP event reports[31] were classified as "unknown," and therefore some errors may have been excluded.[32] Further, as we reported last month, FAA does not analyze and report all separation losses automatically flagged by TARP. Instead, FAA investigates losses of separation identified by TARP when aircraft come within less than 70 percent of the required separation distance.

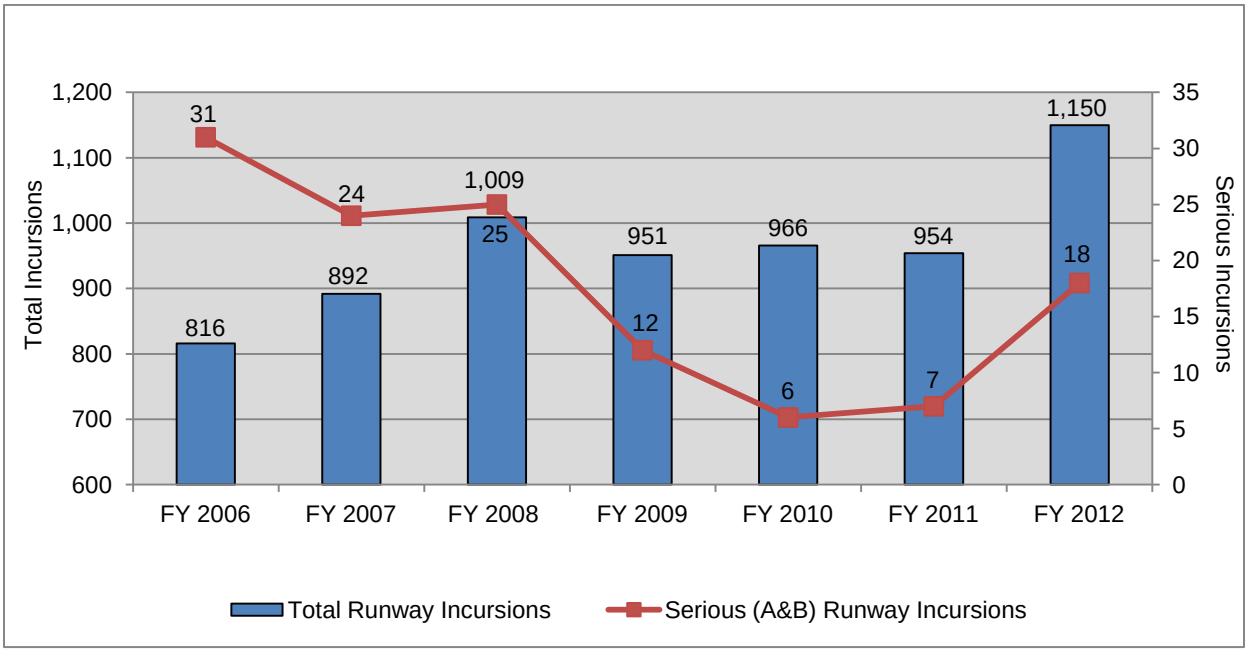
In July 2012, we reported a number of management issues with ATSAP that the Agency must address to correct known deficiencies and realize the program's full potential. These include a lack of formal processes to review ATSAP committee decisions on errors and enforce key program guidelines and requirements. Failure to address these issues not only undermines efforts to improve NAS safety but also may lead to the perception that ATSAP is an amnesty program that automatically accepts reports of serious incidents, regardless of whether they properly qualify under the FAA directive establishing the program.

Runway Incursions Continue To Increase

Runway incursions—potential ground collisions—are a key safety concern for FAA that requires heightened attention at all levels of the Agency. As we noted in July 2010,[33] the number of the most serious runway incursions—incidents in which a collision was barely avoided—decreased after runway safety initiatives detailed in FAA's August 2007 Call to Action plan were implemented.[34] However, shortly after our 2010 report, the trend reversed dramatically. Between fiscal years 2010 and 2012, reported runway incursions increased about 19 percent, and serious runway incursions tripled (see figure 2)—despite the fact that total air traffic operations declined by 1 percent between fiscal years 2011 and 2012. In addition, for the period of October through December 2012, total incursions increased by approximately 20 percent compared to the same period in 2011. As a result of these concerns, we plan to initiate another review of FAA's Runway Safety Program later this year.

[31] Event reports identify actual or potential losses of separation, including operational errors, or other situations that may degrade air traffic safety.
[32] FAA changed how it categorizes event reports in January 2012. However, the committees that review ATSAP reports still do not contact facilities if they believe an event is unknown to management.
[33] *Review of FAA's Call to Action Plan for Runway Safety* (OIG Report No. AV-2010-071), July 21, 2010.
[34] Specifically, these incidents declined from 25 reported in fiscal year 2008 to 6 reported in fiscal year 2010.

Figure 2. Runway Incursions, Fiscal Years 2006 Through 2012



Source: OIG analysis of FAA data.

To help reverse these trends, FAA deployed the Airport Surface Detection Equipment-Model X (ASDE-X) system at 35 major airports in fiscal year 2011, at a cost of approximately $550 million. ASDE-X enhances runway safety by providing detailed information to air traffic controllers regarding aircraft operations on runways and taxiways. However, ASDE-X does not directly alert pilots, as recommended by the National Transportation Safety Board (NTSB) in 2000. To address this shortcoming, FAA plans to integrate the use of ASDE-X with three other systems—Runway Status Lights (RWSL), ADS-B, and In-Cockpit Moving Map Displays. Integrating various systems to improve surface safety requires establishing requirements for technical upgrades, validating system performance and integrity, and determining whether ASDE-X capabilities can meet FAA's goals for increasing safety and capacity. We are currently assessing FAA's progress in integrating ASDE-X with other technologies such as RWSL and ADS-B to improve runway safety.

Oversight of Repair Stations Remains a Concern

According to FAA, there are nearly 4,800 FAA-certificated repair stations worldwide that perform maintenance for U.S.-registered aircraft. Forecasts show that the maintenance, repair, and overhaul industry will grow annually by 4.4 percent over the next 10 years, yielding a market value of between $50 billion to $65 billion for this segment of the aviation industry. These upward trends are expected to continue as airlines look to cut maintenance costs and increase profitability. However, since 2003, we have recommended that FAA strengthen its oversight of air carriers' contracted maintenance

providers by developing a comprehensive, standardized approach to repair station oversight and targeting inspector resources based on risk.

In 2007, FAA implemented a new risk-based system to target its surveillance of repair stations. However, our ongoing review indicates that inspectors continue to complete mandatory inspections instead of targeting resources to where they are needed based on risk. Additionally, some inspectors do not use the risk assessment process at all; those that do are hindered in their ability to assess risk, due in part to limitations in data availability and quality. As a result, FAA has been ineffective at conducting risk-based oversight.

FAA's surveillance at foreign and domestic repair stations also lacks the rigor needed to identify deficiencies and verify they have been addressed. Systemic problems we identified during our 2003 review—such as inadequate mechanic training, outdated tool calibration checks, and inaccurate work order documentation—persist at the repair stations we recently visited. FAA guidance requires inspectors to review these specific areas during repair station inspections, but inspectors overlooked these types of deficiencies.

Given U.S. air carriers' continued reliance on repair stations to perform their aircraft maintenance domestically and abroad, it is imperative that FAA improve its risk-based system to provide more rigorous oversight of this industry. We plan to issue our report on FAA's oversight of repair stations this month.

FAA Faces Challenges in Implementing Key Pilot-Related Provisions of the Airline Safety Act

The fatal Colgan Air crash in 2009 raised concerns about a number of pilot performance issues, which culminated in the Airline Safety and FAA Extension Act of 2010.[35] Since the Act's passage, FAA has made important progress in implementing many of the Act's requirements, such as advancing voluntary safety programs and improving pilot rest requirements. However, FAA has not met the Act's timelines for updating pilot training standards, implementing pilot mentoring and leadership programs, or establishing safety management systems.

In addition, FAA missed the Act's deadline to substantially raise airline pilot qualifications by August 2012. The Act mandates that all Part 121 pilots obtain an Airline Transport Pilot certificate,[36] which requires 1,500 flight hours—six times the current minimum of 250 hours needed for a commercial pilot's certificate. Although FAA's proposed rule would provide some flexibility in meeting these requirements for pilots with relevant degrees or military flight experience, air carrier representatives remain

[35] Airline Safety and Federal Aviation Administration Extension Act of 2010, Pub. L. No. 111-216, (2010).

[36] An Airline Transport Pilot (ATP) Certificate is the highest level of pilot certification. Pilots certified as ATP are authorized to act as pilot-in-command of an aircraft in commercial airline service. Additional eligibility requirements are contained in 14 CFR 61.153.

opposed to the new requirement, contending that the quality and type of flying experience should be weighted more heavily than the number of flight hours. However, if FAA does not issue its final rule, the Act's requirements will automatically go into effect for air carriers in August 2013, and FAA must ensure that carriers make the necessary adjustments to their pilot training and qualification programs.

FAA has also been challenged to develop an Act-required pilot records database to enhance the screening process for newly hired pilots. For example, FAA needs to determine how to incorporate data from FAA, air carriers, and the National Driver Registry in a way that is accessible for air carriers to review during the pilot hiring process. The Act did not establish a milestone for when the database should be completed, and the Agency has yet to make key long-term implementation decisions.

FAA's Safety Oversight Role Continues To Expand as New Technologies and Programs Are Introduced Into the NAS

Over the next several years, FAA will be challenged by the introduction of unmanned aircraft, new integrated data systems for proactively identifying risk, and further use of voluntary disclosure programs.

- **Unmanned Aircraft Systems (UAS)—**FAA predicts there will be roughly 10,000 active UAS in the United States in 5 years, with more than $89 billion in worldwide UAS spending over the next 10 years. However, FAA has approved these operations on a limited, case-by-case basis, due in part to the safety risks associated with UAS integration into the NAS. While the capabilities of unmanned aircraft have significantly improved, they have a limited ability to detect, sense, and avoid other air traffic. Given the growing interest and potential safety issues associated with UAS flights, Congress recently directed the Secretary of Transportation, through the FAA Modernization and Reform Act of 2012, to develop a comprehensive plan for integrating UAS into the NAS no later than September 30, 2015. At the request of the Chairmen and Ranking Members of the Senate Commerce Committee and the House Committee on Transportation and Infrastructure, as well as their Aviation Subcommittees, we are currently assessing FAA's progress in integrating UAS into the NAS. We expect to issue a report later this year.

- **Aviation Safety Information Analysis and Sharing (ASIAS)—**In 2007, FAA implemented ASIAS to collect and analyze data from multiple databases and proactively identify and address safety risks. ASIAS enables authorized users to obtain data from confidential databases—including voluntary safety programs such as the Flight Operational Quality Assurance program and the Aviation Safety Action Program—as well as from publicly available data sources such as NTSB's Accident and Incident Reports database. However, access to ASIAS data for FAA and industry representatives has been limited due to airline proprietary concerns.

In the Airline Safety and FAA Extension Act of 2010, Congress directed our office to assess FAA's ability to establish a comprehensive information repository that can accommodate multiple data sources and be accessible to FAA aviation safety inspectors and analysts who oversee air carriers. Accordingly, we are currently assessing FAA's progress in implementing ASIAS, its process and plan for allowing system access at both field and headquarters levels, and its use of ASIAS data to assist in commercial air carrier safety oversight. We expect to issue our report later this year.

- **Voluntary Disclosure Reporting Program (VDRP)—**As mandated in the FAA Modernization and Reform Act of 2012, we are conducting a review of VDRP, a program that allows air carriers to voluntarily report adverse safety issues to FAA without fear of enforcement actions, provided that carriers develop comprehensive solutions to identified safety issues. As part of this review, we are examining whether FAA ensures reports meet VDRP requirements, including the development and implementation of corrective actions, and whether the Agency uses VDRP data to identify safety risks.

CONCLUSION

FAA faces many difficult decisions in the months ahead. To resolve the complex issues we identified, the Agency must think strategically to prioritize those programs that can achieve the greatest benefits in the most cost efficient and effective manner possible. At the same time, FAA needs to protect its investments and assets that are vulnerable to misuse and abuse, while remaining focused on safety. Fully implementing our recommendations would better position FAA to control costs and create efficiencies as it works to enhance operations, successfully implement key programs, and address safety concerns. We will continue to work with FAA to ensure it meets its mission while protecting taxpayer dollars.

Madam Chairman, this concludes my prepared statement. I would be happy to address any questions that you or other Members of the Subcommittee may have.