
Office of Inspector General

Audit Report

CHALLENGES WITH IMPLEMENTING NEAR-TERM NEXTGEN CAPABILITIES AT CONGESTED AIRPORTS COULD DELAY BENEFITS

Federal Aviation Administration

Report Number: AV-2012-167

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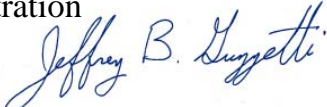
Memorandum

**U.S. Department of
Transportation**

Office of the Secretary
of Transportation
Office of Inspector General

Subject: **ACTION:** Challenges With Implementing Near-
Term NextGen Capabilities at Congested Airports
Could Delay Benefits
Report No. AV-2012-167
Federal Aviation Administration

Date: August 1, 2012

From: Jeffrey B. Guzzetti 
Assistant Inspector General
for Aviation and Special Program Audits

Reply to
Attn. of: JA-10

To: Acting Federal Aviation Administrator

The Federal Aviation Administration (FAA) estimates that there are about 7,000 aircraft in the air over the United States at any given time. To better manage this traffic and meet future air travel demands, FAA is developing the Next Generation Air Transportation System (NextGen), a satellite-based air traffic control system intended to replace the current ground-based system. NextGen involves a significant overhaul of the National Airspace System (NAS) that will require multibillion-dollar investments from both Government and airspace users.

In September 2009, an RTCA¹ task force of government-industry representatives—established at FAA's request—made 32 recommendations for accelerating NextGen's deployment² (see exhibit A). These recommendations were intended to quickly generate airspace user benefits, support cross-cutting improvements to air traffic management and communications, and encourage operator investment and confidence in FAA's ability to implement new capabilities.

The Chairmen and Ranking Members of the House Committee on Transportation and Infrastructure and its Subcommittee on Aviation asked us to review FAA's actions to address the task force's recommendations. Accordingly, our audit

¹ Organized in 1935 as the Radio Technical Commission for Aeronautics, RTCA, Inc., is a private, not-for-profit corporation that develops consensus-based recommendations regarding communications, navigation, surveillance, and air traffic management (CNS/ATM) system issues. It functions as a Federal Advisory Committee.

² RTCA, "NextGen Mid-Term Implementation Task Force Report," September 9, 2009.

objectives were to assess the extent to which FAA is (1) responding to the recommendations, including adjusting its budgets and establishing mechanisms for continued industry collaboration, and (2) addressing barriers that may hinder its ability to successfully implement the recommendations.

As agreed with the requesters, we assessed FAA's overall response to the task force recommendations, but focused specifically on FAA's efforts to implement an initiative known as "metroplex," which aims to improve the efficiency of airspace that affects multiple airports near large metropolitan areas. One of the most critical task force recommendations called for FAA to expedite its efforts to relieve congestion and delays at major metropolitan area airports by using expert teams that focus on implementing quality improvements at each location. FAA launched the metroplex initiative to expedite the delivery of high value performance-based navigation (PBN) procedures and associated airspace changes.

On December 21, 2010, we issued an interim report on the status of FAA's response to RTCA's recommendations.³ At that time, we reported that FAA was incorporating the RTCA's recommendations in its NextGen plans but had not specified how it would execute key initiatives for addressing delays in major metropolitan areas.

We conducted this audit in accordance with generally accepted Government auditing standards prescribed by the Comptroller General of the United States. Exhibit B details our scope and methodology. Exhibit C lists the specific locations visited or contacted.

RESULTS IN BRIEF

While FAA quickly incorporated the task force's recommendations into its NextGen strategic plans and budgets and established a mechanism for continued industry collaboration, its efforts are delayed in key areas such as metroplex, airport surface operations, and data communications. While FAA has focused on one of the most critical recommendations—metroplex airspace—it missed milestones at the first two sites due to unresolved staffing issues and lack of a project plan. The expected completion date for all metroplex sites is now 15 months later than FAA's earlier, more aggressive plans. Further, industry representatives are concerned that the effort may not deliver all planned/desired benefits since FAA has focused only on near-term airspace and procedure improvements rather than maximizing new technologies and advanced procedures

³ OIG Controlled Correspondence CC-2011-001, Letter to Chairmen Oberstar and Costello and Ranking Members Mica and Petri Regarding FAA's Efforts To Implement RTCA Task Force Recommendations for NextGen, December 21, 2010. OIG reports are available on our Web site at <http://www.oig.dot.gov>.

as recommended by the task force. For example, of the 136 metroplex solutions proposed for the first 7 metroplex sites, only 3 are for the more advanced procedures that allow aircraft to fly more precise routes and curved approaches to airports. Additionally, FAA has not yet integrated efforts from other related initiatives, such as better managing surface operations, into its metroplex initiative. As a result of continued delays, uncertain benefits, and ineffective communication on key metroplex initiatives, airspace users are skeptical about FAA's ability to implement the task force recommendations and remain reluctant to equip with new avionics.

FAA has not yet resolved many of the barriers that will impede the implementation of the task force recommendations. These barriers include working across diverse agency lines of businesses, updating policies, streamlining the process for implementing new flight procedures, applying environmental regulations, upgrading controller automation tools, and training controllers on new advanced procedures. While FAA has plans to address these barriers, progress has been slow, and none of its initiatives have been fully implemented. For example, in September 2010, FAA completed a study⁴ that identified 21 recommendations for streamlining the process for developing and deploying new flight procedures; however, FAA has yet to implement the majority of the recommendations and estimates it may take as long as 5 years to implement all of them. Removing the barriers to fully implementing the metroplex initiative will be difficult because FAA does not have a process to effectively track, resolve, and mitigate specific barriers (e.g., procedures and training) identified at each metroplex site. As a result, FAA's metroplex effort and implementation of other recommendations will likely face delays, and benefits may not be realized within recommended timeframes.

We are making recommendations to improve FAA's ability to effectively implement the task force recommendations in a timely manner while maintaining industry coordination and support.

BACKGROUND

In January 2009, FAA asked RTCA to reach a consensus on the NextGen operational improvements planned for the 2012–2018 timeframe. In September 2009, the RTCA task force delivered its final report to FAA, which identified the following overarching issues for advancing NextGen:

- Users are willing to support FAA communications, navigation, and surveillance infrastructure programs that require user investments only if

⁴ FAA's Navigation Procedures (NAV Lean) Instrument Flight Procedures Final Report, September 2010.

those programs provide a clear path to immediate and tangible benefits to the users.

- Focusing on delivering near-term operational benefits, rather than on the entire infrastructure, would help gain operator confidence in FAA plans and encourage users to invest in NextGen. A key element for this is to obtain industry and FAA agreement on common metrics to measure benefits.
- Assigning responsibility, accountability, authority, and funding within the Agency is critical to accomplish all required non-infrastructure tasks (i.e., development of procedures and policy) and to achieve NextGen benefits.

The task force made 32 recommendations mainly in 5 primary areas—surface, runway access, metroplex, high-altitude cruise, and access to the NAS—calling for FAA to take advantage of existing technologies and onboard aircraft equipment that can quickly generate benefits.

DELAYS IN ADDRESSING KEY TASK FORCE RECOMMENDATIONS ARE DISCOURAGING INDUSTRY INVESTMENT IN NEXTGEN

While FAA quickly endorsed the task force's recommendations by incorporating them into its NextGen strategic plans and budgets and establishing a mechanism for continued industry collaboration, it has made limited progress in implementing them. FAA's efforts have been delayed in key areas, such as airport surface operations, metroplex, and data communications. Additionally, unresolved issues with the metroplex initiative could slow its deployment, increase costs, and delay the delivery of much needed benefits at congested airports. As a result, industry representatives have expressed concerns over FAA's delayed execution of the task force recommendations and the Agency's ineffective communication on projects—which may ultimately make users reluctant to invest in NextGen equipment and advance NextGen at key locations.

FAA Is Responding to Task Force Recommendations but Has Made Only Limited Progress in Areas Critical for Improving the Performance of the NAS

Within 4 months of the RTCA report, FAA issued a plan to implement all task force recommendations and incorporated its response in the NextGen Implementation Plans⁵ as recommended by the task force. In addition, FAA allocated over \$600 million in funding for fiscal years 2011 and 2012 to fund task

⁵ FAA's NextGen Implementation Plan is an annual plan that sets out FAA's vision for NextGen, now and into the midterm. The plan further identifies the goals FAA has set for technology and program deployment and the commitments FAA has made in support of that vision.

force-related activities. Further, FAA established the NextGen Advisory Committee (NAC)⁶ in September 2010 to address the task force's recommendation for providing a mechanism for continued industry collaboration. However, while FAA has begun work to address all of the recommendations, FAA's efforts in critical areas, such as the metroplex, airport surface operations, and data communications have been delayed. For other recommendation areas, such as runway access and high altitude cruise, FAA is not planning according to the timelines and locations recommended by the task force.

- **Metroplex Airspace (*Improve airspace affecting multiple airports near large metropolitan areas*)**—FAA has focused most of its efforts on metroplex. Specifically, FAA has identified 21 metroplex sites,⁷ developed a method to prioritize them, and completed 7 studies to propose potential solutions involving airspace and procedures in each metroplex.⁸ However, problems with selecting FAA managers to fill project lead positions and developing a project plan delayed the design and implementation phases for the first two sites. The expected completion date for all metroplex sites is 15 months later than earlier, more aggressive plans.
- **Airport Surface Operations (*Improve management of airport taxiways, gates, and parking areas*)**—While FAA has various airport surface initiatives underway, the Agency has yet to integrate these initiatives with its metroplex plans as envisioned by the task force. In March 2011, FAA designated an office director with responsibility for implementing surface initiatives—18 months after the task force recommended it. This is a high priority for the taskforce, yet it took FAA a considerable amount of time to appoint an agency employee to lead and manage this effort. Ongoing surface management projects span multiple air traffic organizations without a coordinated plan.
- **Runway Access (*Improve the use of converging or closely spaced runways during low visibility conditions*)**—Runway studies are ongoing. FAA adopted the task force dates and locations for closely spaced parallel operations projects but has not defined locations and dates for implementing key recommendations (e.g., a precision surveillance system for runways and a new automated tool to maximize benefits of routes).

⁶ The NAC is a Federal advisory committee that will develop recommendations for NextGen priorities with an emphasis on the midterm (through 2018). The NAC includes representation from affected user groups, including operators, manufacturers, air traffic management, aviation safety, airports, and environmental experts.

⁷ Washington, DC; North Texas (Dallas); Charlotte; Atlanta; Northern California; Houston; Southern California; New York/Philadelphia; Chicago; Seattle; Las Vegas Valley; South Florida; Boston; Denver; Orlando; Detroit; Memphis; Phoenix; Minneapolis-St. Paul; Cleveland; Tampa.

⁸ Subsequently, FAA reduced the number of metroplex projects from 21 to 13 by combining some and dropping others because of other ongoing airspace and PBN initiatives. The sites dropped were: New York/Philadelphia, Minneapolis-St. Paul, Seattle, and Las Vegas Valley.

- **High-Altitude Cruise** (*Improve high-altitude flight by better using available airspace to increase capacity and reduce delays*)—The task force wanted FAA to take action in 2011 to expand the use of an existing high-altitude automated controller tool for managing aircraft. Instead, FAA focused its actions on implementing a longer-term solution called Time-Based Flow Management.⁹ FAA’s target date for this system is not until November 2014, which is about 3 years beyond the timeframe recommended by the task force.
- **Data Communications (DataComm)** (*Enable more efficient use of available or forecast capacity*)—Due to delays in modernizing related automation that controllers use to manage high-altitude air traffic, FAA’s timeline for developing this capability slipped by 2 years, from 2016 to 2018. Industry representatives stated that they need assurance that the revised implementation date for high altitude is attainable. They view DataComm as the key “building block” needed to shift from clearance-based air traffic control to NextGen’s concept of more precisely managing aircraft from departure to arrival with the benefits of reduced fuel consumption, lower operating costs, and reduced emissions.

While FAA has completed portions of its action plan in response to the task force recommendations, task force representatives remain concerned with FAA’s overall timelines for these projects. For example, the task force stated that if some DataComm capabilities are delayed to 2018, as FAA has currently proposed, airspace users will need to revisit their business cases and commitment to advance NextGen. Meeting implementation dates is critical to closing a business case for operator investment. Task force industry representatives emphasize the need for FAA to shift from planning to implementation.

The task force also expected that FAA would adopt an approach that integrates key recommendations at critical metroplex sites. For example, in its 2009 report, the task force recommended surface and runway access improvements specifically for the Atlanta metroplex. However, FAA limited its metroplex initiative to only airspace and procedures that can be implemented without any additional aircraft equipment or improvements to the automation system controllers used to manage traffic.¹⁰ In the early stages of FAA’s metroplex initiative, task force leaders encouraged FAA to adopt a more integrated approach by including surface and runway access improvements in its metroplex effort. In October

⁹ Time Based Flow Management enhances system efficiency and improves the traffic flow by leveraging the capabilities of controller decision support tools designed to optimize the flow of aircraft into capacity constrained areas.

¹⁰ FAA officials told us that the Agency did not commit to an approach that integrates other capabilities in the near-term.

2010, over 1 year after the task force report, FAA tasked the NAC to develop recommendations on how FAA can better integrate its efforts.¹¹

FAA Has Efforts Underway To Implement its Metroplex Initiative, but Delays Have Occurred

The task force and FAA identified the metroplex initiative as a key area that could provide the most near-term benefits by improving the flow of traffic and reducing delays at congested airports in 21 major metropolitan areas. Work at each of these 21 sites will consist of study and design phases that will take about 3 years (see figure 1). FAA first uses study teams¹² to provide a strategic look at each metroplex site and then uses design and implementation teams¹³ to accomplish its metroplex work. FAA planned the metroplex initiative as a 5 to 7-year effort, but there are unresolved issues with some sites that could slow its deployment, increase costs, and delay benefits.

Specifically, FAA has completed initial studies at 7 of the 21 locations and has begun design work at 6 of these locations.¹⁴ Although FAA's early plans were to complete work at all metroplex sites by June 2016, the Agency shifted the end date by 15 months to September 2017 because it determined the initial schedule was too aggressive. FAA does not consider this a delay because the Agency still expects to finish implementation within the overall 5 to 7-year timeframe estimated for the metroplex initiative. However, in addition to a later completion date, FAA has also reduced the number of metroplex sites. For example, a critical site with system-wide impacts, such as New York, is not included in FAA's current metroplex effort due to an ongoing legacy airspace and procedures project. Further, this schedule does not reflect adjustments FAA will have to make once it adopts a more integrated metroplex approach, as recommended by the task force.

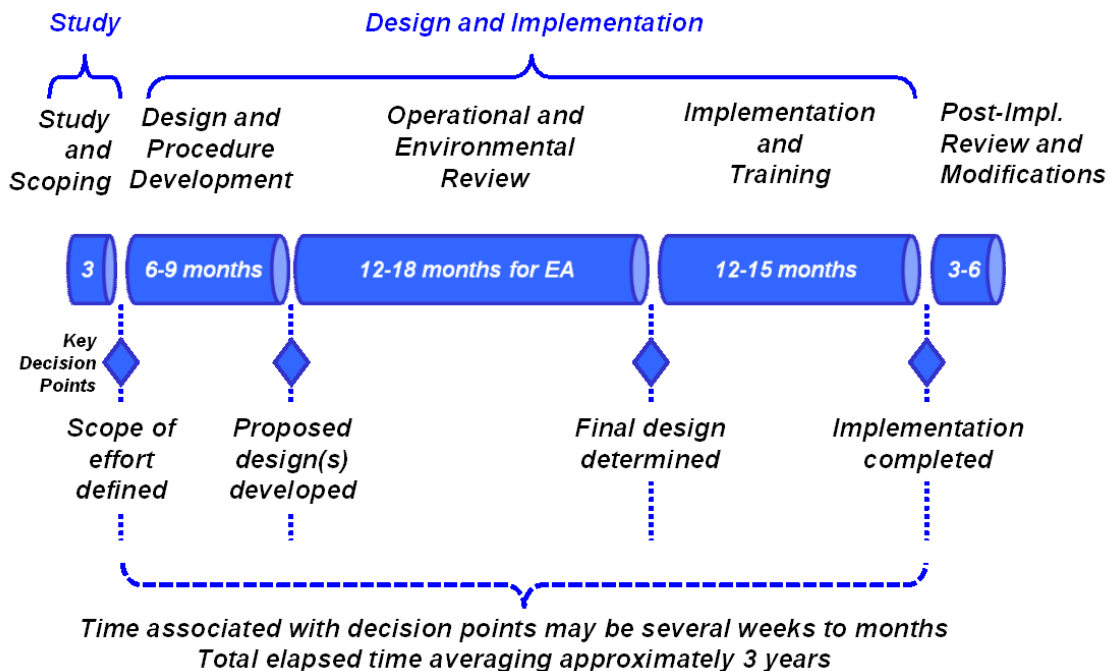
¹¹ A NAC subcommittee is continuing its effort to reprioritize metroplex sites and make recommendations for integrating other capabilities.

¹² Study teams are the first step in the metroplex process to provide a front-end strategic look at each major metroplex. These teams analyze the operational challenges, assess current/planned airspace and procedures efforts, explore new solution opportunities, and issue a study report with recommended procedure and airspace solutions.

¹³ Design and implementation teams are responsible for executing the design, evaluation, and implementation portions at each metroplex site.

¹⁴ The seven locations are Washington, DC; North Texas (Dallas); Charlotte; Northern California; Houston, Atlanta, and Southern California. Design work has begun at Washington, DC; North Texas; Charlotte; Houston; and Atlanta.

Figure 1. Notional Timeline for Each Metroplex Site



Source: FAA

At the first two metroplex locations (Washington, DC and North Texas), delays of 4 to 5 months from the scheduled start date of design and implementation occurred due to FAA's difficulty in establishing a project level agreement (PLA)¹⁵ and assigning staff. FAA did not complete the metroplex PLA until June 2011, 4 months after the scheduled start date for the first design and implementation team. Further, after the study teams completed their work at the first two sites, it took FAA up to 6 months to identify FAA project leads to oversee the design and implementation work. Part of this delay was due to reluctance by air traffic facility managers to release selected candidates because they could not backfill those positions. FAA and industry representatives have expressed concern that staffing large teams on a continuous, rotational basis for the next 5 to 7 years will be a significant challenge because there is a lack of critical expertise in both FAA and industry and the Agency has not successfully implemented these types of projects in the past. Some industry representatives suggested that the current process could possibly be streamlined by combining study and design team efforts to accelerate the timeline.

FAA is also challenged with managing and prioritizing the competing demands to develop new flight procedures for metroplex and non-metroplex airports. FAA estimates that in FY 2012 and beyond, 60 to 70 percent of its flight procedure

¹⁵ FAA uses project level agreements to define and document the work agreement and responsibilities between different offices within FAA and to provide milestones, deliverables, and spending plans.

development work will be at the metroplex locations. However, at the same time, FAA will continue to be involved in developing and implementing flight procedures for other non-metroplex airports. FAA officials told us that the Agency plans to prioritize its metroplex work to ensure that both types of projects will be completed as planned. However, this will be challenging given the complex and large-scale nature of the metroplex initiative and the fact that FAA does not have an effective system for prioritizing the development and implementation of new instrument flight procedures.

Airspace Users Are Concerned That FAA's Current Metroplex Initiative Will Not Maximize Operational Benefits

FAA's current metroplex effort is limited to airspace and procedure improvements and does not take advantage of new technologies and more advanced procedures as envisioned by the task force. As a result, airline representatives are concerned that FAA has not yet clearly defined expected benefits for proposed metroplex activities and that maximum benefits—shorter flight paths and fuel savings—may not be achievable. This is important to the airlines who are key stakeholders in the metroplex initiative. According to the RTCA task force report, airline representatives stated they will only support FAA's metroplex initiative if it provides a clear path to immediate and tangible benefits. Our review found three primary areas of concerns, described below.

FAA's Metroplex Plans Have Not Kept Pace With Airlines Already Equipped for Advanced RNP Procedures

FAA's metroplex initiative focuses primarily on adding high-value Area Navigation (RNAV) procedures¹⁶ and optimizing descent and climb profiles. While these procedures offer some benefits, industry representatives who have aircraft equipped with advanced avionics are concerned that FAA's plans are not taking advantage of more advanced Required Navigation Performance (RNP) procedures.¹⁷ Three of the seven metroplex study teams suggested that the design and implementation teams explore RNP procedures but did not include them as part of their final recommendations. While the RTCA task force recommended that FAA optimize RNAV procedures everywhere and use RNP where beneficial, the first 7 study teams proposed only 3 of the 136 possible solutions (2 percent) for RNP procedures. For those airlines that are equipped with RNP, this creates the risk that the procedures recommended by FAA will be obsolete and not used by airlines because they do not allow for more precise and curved approaches.

¹⁶ 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.

¹⁷ 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.

Airline representatives want FAA to focus its efforts on developing new flight paths that provide for more precise and curved approaches, rather than the Agency's past practice of mostly designing RNAV and RNP procedures that overlay existing flight paths. In past years, FAA officials viewed this approach as a necessary step in training pilots and controllers on using the technology. In addition, FAA designed procedures to accommodate the performance capability of the least capable RNAV/RNP equipped aircraft to include as many operators as possible. FAA officials assert that because more aircraft are equipped for and qualified to use RNAV, it is more prudent to deploy RNAV procedures, particularly when air traffic controllers are faced with challenges that involve sequencing equipped and non-equipped aircraft at busy airports. While this approach may seem logical from an industry-wide perspective, it does not accommodate the nearly half of all active commercial aircraft that are equipped to fly RNP procedures with curved approaches. Representatives from air carriers who are equipped stated that FAA's approach offers little operational and financial benefits to airlines. According to those representatives, the approach using RNAV is based on decades-old technology, and their carriers can conduct more efficient turns and fly shorter approaches using RNP.

Industry objections to FAA's focus on RNAV rather than RNP procedures are particularly well illustrated at the North Texas Metroplex, which includes the two major Dallas airports—Dallas-Fort Worth International Airport and Dallas Love Field. A large percentage of major air carrier aircraft that operate at the Dallas airports have operational approval to conduct advanced RNP operations—over 80 percent at Love Field. Yet, FAA has not developed any RNP procedures for Love Field; hence, airlines cannot perform RNP operations. Additionally, the metroplex study team only recommended one RNP procedure at this airport due to the team's primary focus on deploying RNAV procedures, lack of experience with RNP, and desire to avoid extensive environmental studies.

Limitations in FAA's current metroplex effort may prove problematic at other sites as well, given the large percentage of commercial aircraft equipped with RNP. In keeping with the original task force's findings, a NAC work group also found that confidence in the benefits and timing of FAA initiatives is critical for operators to commit to invest in more advanced equipment.¹⁸ As a result, the work group recommended that FAA develop policies, procedures, and related improvements for controllers to allow currently equipped aircraft to routinely use RNP. These actions may also encourage additional carriers to equip with RNP. Airline representatives also want FAA to move toward implementing new

¹⁸ A Report of the NextGen Advisory Committee in Response to Tasking from the Federal Aviation Administration, NextGen Equipage: User Business Case Gaps, September 2011.

procedures that deconflict air traffic¹⁹ between adjacent airports. FAA has already implemented these procedures at Chicago O'Hare and Midway airports. Similar actions could measurably increase the capacity of other airports within the metroplex.

FAA has taken recent action to better enable PBN procedures as part of its transition to NextGen. In December 2011, FAA published a Notice of Proposed Rulemaking seeking comments on its proposed strategy to transition from the legacy navigational aids to one that enables a performance-based system as part of NextGen. FAA is also exploring ways to decommission its legacy navigation systems to support RNAV and RNP capabilities using Global Positioning System navigation.

Firm Estimates of Benefits Have Yet To Be Determined

While FAA expects the metroplex initiative to generate fuel savings, and reduce track distances and carbon emissions, it has yet to clearly define these benefits due to a lack of actual operational data. For example, benefits estimated by the study team for all airlines flying into the Washington, DC, metroplex ranged widely from a low of \$6 million savings per year to a high of \$19 million. Similarly, for the Dallas, TX, study, annual estimates ranged from a low of \$10.3 million to a high of \$21.7 million per year for all airlines flying into the North Texas airports. Industry representatives stated that benefits are difficult to predict and can only be accurately measured once the lead carrier(s) fly the procedures in their flight simulators during the design and implementation phase, which has only recently begun. Without a clearer picture of the potential return on their investment, airlines are likely to delay making business and operational decisions.

FAA Does Not Have a Clear Process That Ensures All Projects Are Properly Reviewed and Prioritized

FAA officials told us that if study teams identify a procedure within a metroplex project that demonstrates significant benefits but is deemed outside the timeframes established for metroplex, it will be removed from the metroplex program and managed separately. FAA recently established a process for study teams to formally submit issues that are identified outside the scope of the current metroplex initiative to appropriate offices within FAA. However, it is not clear how FAA will prioritize these projects among the Agency's other flight procedure work and how the metroplex program plans to track the status of those projects. This could lead to delays in implementing these more efficient flight

¹⁹ Deconflicting air traffic is separating aircraft arrivals and departures for two or more adjacent airports to improve throughput and access.

procedures and increases the uncertainty as to whether these beneficial procedures will ever be implemented.

FAA's Communication and Collaboration With Local Airline and Air Traffic Management Officials Has Been Limited

FAA has established an overall mechanism through the NAC to ensure continued industry collaboration in implementing the RTCA recommendations, including the metroplex effort. However, we identified shortcomings in communication at the regional and local FAA levels as well as with industry. For example, FAA did not communicate information concerning the delays of the design and implementation teams to local facilities, and none of the officials we spoke with at these facilities were aware of the timing for the next phase. Therefore, many FAA and industry representatives question whether FAA has the ability to carry out its agenda for metroplex.

Airlines that conduct the majority of operations at the Dallas locations and would stand to benefit the most from improvements voiced concerns about the extent of FAA's collaborative efforts. While industry officials are on the NAC and the metroplex study teams, some key airline representatives we interviewed said they did not agree with the proposed solutions from the study teams. For example, an airline representative from one of the major airlines stated that there were deficiencies in the study team's notional designs for the Dallas Fort Worth International Airport and Dallas Love Field. For instance, the proposed procedures contained numerous incremental changes in altitude rather than a continuous descent, which reduced the benefits to the airline. According to this representative, the new procedures preferred by the airline conflicted with FAA's more limited implementation approach or resulted in extensive environmental reviews, which are not yet included in FAA's metroplex initiative.

FAA HAS NOT FULLY ADDRESSED KEY BARRIERS TO IMPLEMENTING TASK FORCE RECOMMENDATIONS

FAA faces organizational, policy, and training barriers that could undermine its efforts to implement the RTCA task force recommendations and delay expected benefits. These barriers include working effectively across diverse agency lines of business, making policy changes, developing new flight procedures, ensuring controllers are adequately trained on new procedures, and developing new automation tools to allow controllers to effectively manage traffic. These barriers vary with each metroplex location, with some more critical at certain sites. Without a consistent, documented process to track and resolve these barriers and mitigate risk at each site, further delays may occur. We also found that FAA's corrective action plans to improve policies and procedures could take years to implement. FAA recognizes that fundamental changes are needed in how it

manages near-term NextGen initiatives and has efforts underway that should help address these barriers.

FAA Lacks a Coordinated and Integrated Approach To Effectively Manage NextGen

To complete RTCA recommendations, FAA will have to work across diverse agency lines of business—including its Aircraft Certification Service, Flight Standards Service, and Air Traffic Organization (ATO)—which it has not done effectively in the past. For example, as we testified in July 2009, organizational barriers and fragmented efforts hindered FAA’s process to approve new flight procedures.²⁰

Although FAA’s Flight Standards Service is responsible for approving new procedures, representatives from Flight Standards are not yet a required part of the metroplex teams, and it is unclear what Flight Standards’ role will be in the design and implementation phase. FAA Headquarters officials told us that they do not believe that Flight Standards needs full-time participation on most metroplex teams because the Agency only plans to focus on flight procedures that rely on current FAA standards and criteria. Further, Flight Standards is available for consultation as necessary. However, we found different views among FAA Headquarters, field and industry representatives, and from FAA’s NextGen strategic plans regarding whether Flight Standards personnel should participate on metroplex teams.

So far, Flight Standards representation on metroplex study teams has been limited. Although one of FAA’s Office of Aviation Safety NextGen goals is to include personnel from Flight Standards on teams to optimize PBN procedures, only one of the metroplex study teams included a Flight Standards representative. It will be important for Flight Standards personnel to be involved in metroplex because Flight Standards approves all new flight procedures. Additionally, if the study teams identify RNP procedures that will cause a change in existing standards, Flight Standards’ early involvement could help to expedite these more efficient procedures and ensure safety. As we have reported in the past, coordination between Flight Standards and ATO is important in ensuring the safe development and integration of new flight procedures.²¹

In October 2010, ATO reorganized several key programs to form the Mission Support Services organization. This group provides shared services to ATO’s operational lines of businesses: Terminal, En Route, Oceanic, Technical Operations, and System Operations Services. While this reorganization may help

²⁰ OIG Testimony Number CC-2009-086, “Challenges in Implementing Performance-Based Navigation in the U.S. Air Transportation System,” July 29, 2009.

²¹ OIG Report Number AV-2011-025, “FAA Needs To Implement More Efficient Performance-Based Navigation Procedures and Clarify the Role of Third Parties,” December 10, 2010.

resolve stovepipes within the ATO, it does not address the issue of working with organizations outside the ATO, including Flight Standards and Aircraft Certification.²² FAA also established a new office in response to the task force's recommendation for a single point of responsibility for surface initiatives, which span several ATO organizations. FAA is making other significant organizational changes in how it manages NextGen, but it is too soon to determine whether these changes will improve FAA's ability to work effectively across different lines of business.

FAA Has Not Yet Resolved Key Policy Issues

The task force encouraged FAA to continue to develop a “best-equipped, best-served policy” (i.e., prioritizing air traffic control services for those users equipped with new systems) and to revamp information sharing systems to better manage airport surfaces. FAA recognizes that these are important issues and continues to work with industry to reach a consensus on strategies concerning equipage for NextGen and identifying processes and standards for data sharing. However, FAA does not yet have a clear plan for transitioning to the new policies.

Additionally, many air traffic control policies and procedures have not been updated to incorporate the increased capabilities of satellite-based technologies. For example, to accommodate PBN operations, controllers will require new guidance on areas such as phraseology and separation requirements to allow them to safely manage RNAV/RNP operations in a mixed equipage environment; however, FAA has not yet updated the controller handbook with this guidance. To its credit, the Agency recently adopted a key policy change to allow RNP operations at airports with parallel runways, an issue that had been hindering controllers' ability to give pilots the clearance to land. However, this limited action occurred only after a lengthy 4-year safety study conducted at the George Bush Intercontinental Airport (IAH) in Houston. Further, inconsistent interpretation of FAA's environmental policies has caused delays. To address this problem, FAA is standardizing environmental specialist training to ensure consistent compliance with environmental regulations for all instrument flight procedures, but it will take 4 to 5 years to completely develop the training curriculum.

²² FAA's Aircraft Certification Service (AIR) supports NextGen by administering safety standards that govern the design, production, and airworthiness of aircraft, engines, and avionics.

FAA Faces Challenges With Timely Implementation of New Flight Procedures

FAA's process for developing and implementing new flight procedures is time-consuming and fragmented. In a September 2010 internal study,²³ FAA concluded that the current system is ineffective. FAA reported numerous problems, such as the lack of an expedited process for approving procedures that have only minor revisions, inconsistent interpretation of environmental policies and guidance, and inconsistencies in data. To address these problems, FAA made 21 recommendations for streamlining the process for deploying new procedures.

In June 2011, FAA issued its Navigation Procedures Implementation Plan (NAV Lean) for executing the 21 recommendations. However, the metroplex initiative may not benefit from these significant streamlining efforts. While some of the recommendations can be implemented within relatively short timeframes and may provide incremental benefits when completed, realizing maximum benefits will not be achieved until FAA completes all 21 recommendations. Those efforts could take as long as 5 years and by that time the Agency will be nearing the end of its metroplex program. Although airlines representatives commended FAA for launching the NAV Lean program to expedite the deployment of high-value procedures, they have stated that they cannot afford to wait that long because the technology already exists today.

Implementing the NAV Lean recommendations in a timely manner will be especially important for the Houston metroplex project. In October 2011, the White House announced that the Houston metroplex project had been selected as 1 of 14 infrastructure projects nationwide to be expedited through more efficient and effective permitting and environmental reviews. This initiative is one of the Administration's steps to help projects nationwide move more quickly from start to finish. Through this initiative, FAA will also be held accountable for tracking progress to ensure the project is completed within 24 months, which is much sooner than the original timeframe of 3 years established for each metroplex project. With the Houston project, FAA will be expected to accelerate its work by streamlining the environmental review process, a key focus of the NAV Lean recommendations.

FAA also published its first Aviation Safety (AVS) Work Plan in March 2010 and updated it in March 2011 to incorporate safety-related actions in response to RTCA task force recommendations. While many of these initiatives are underway, some of these initiatives will likely take years to complete. For example, updating air traffic policies concerning separation standards will require, comprehensive, and lengthy safety assessments. Another time-consuming

²³ FAA's Navigation (NAV) Lean Instrument Flight Procedures Report, September 2010.

initiative involving implementing PBN for closely spaced parallel runway operations is not expected to be completed until 2015.

FAA Faces Challenges With Training Controllers on New, Advanced Flight Procedures

While FAA is training controllers on NextGen initiatives, FAA's training on existing and emerging NextGen procedures has been limited. National Air Traffic Controllers Association officials stated that training on new RNAV and RNP procedures should be timely and include simulator training to be effective. Yet, FAA's recent NextGen-related training has often only consisted of briefings rather than comprehensive training on RNAV and RNP.

Moreover, as we also reported in January 2012, FAA's national training program has not yet provided critical facilities with the training resources (e.g., simulator training) they need, and NextGen deployment will further strain training resources as both a large number of new hires²⁴ and veteran controllers must learn new air traffic procedures. The controller workforce will not only have to work with existing systems and procedures but also transition to new roles and responsibilities—from controlling to managing air traffic—as envisioned for NextGen. Therefore, keeping controller training and resources up to speed with NextGen developments and procedures will be difficult, especially at metroplex locations. For example, our work has identified at least 8 facilities that are included in the metroplex initiative that have more than 25 percent of their controllers in training (the national average).²⁵ At these facilities, FAA will be heavily focused on training new controllers for their regular duties at the same time it is deploying new NextGen flight procedures.

To its credit, FAA has begun working to improve the effectiveness of its controller training methods. For example, FAA has redesigned training courses to accommodate changes in automation technology. However, without adequate training and familiarity with new instrument flight procedures, controllers are reluctant to allow pilots to use these new procedures, especially in a mixed equipage environment where many aircraft are not equipped or approved to use the new procedures.

²⁴ FAA plans to hire and train nearly 11,000 new controllers through fiscal year 2020 to replace the large number of controllers retiring.

²⁵ As we recently reported, new controllers comprise up to 25 percent of the air traffic controller workforce, with some high activity locations as high as 40 percent. OIG Report Number AV-2012-039, "Enhanced Oversight of Staffing and Training at FAA's Critical Facilities Is Needed To Maintain Continuity of Operations," January 12, 2012.

Metroplex Benefits Are Contingent on Modernizing Systems That Controllers Rely on To Manage Air Traffic

A roadblock for the Metroplex effort in terms of realizing the full near- and long-term benefits of new routes is FAA's ability to modernize the displays and processors controllers rely on to manage takeoffs and landings, the most critical phases of flight. The RTCA task force report, as well a February 2012 report from the NAC,²⁶ emphasized that to obtain the full benefits of new performance-based routes, controllers need new automated tools, such as the Relative Position Indicator,²⁷ to help merge and sequence aircraft in complex and busy airspace.

A key segment of FAA's modernization effort involves the installation of new controller displays and computers at 11 high activity locations, such as New York, Chicago, and Atlanta. However, there is uncertainty on when these installations will be completed and when new controller tools for enhancing capacity can be implemented. FAA will be unable to deliver the full range of benefits from its metroplex initiative, including more flexible routes, or introduce new capabilities until the systems controllers rely on to separate aircraft are modernized. In a separate audit, we are examining FAA's efforts in modernizing terminal automation.

CONCLUSION

NextGen is an important effort to fundamentally change the way air traffic is managed and enhance the capacity and efficiency of the NAS. FAA's response to the RTCA task force is an initial but important step toward implementing NextGen. However, FAA's success in addressing the task force's recommendations depends on timely follow-through and overcoming key barriers. To provide a solid foundation for NextGen, FAA must resolve the safety, policy, training, and organizational issues addressed by the task force. Further, both Government and industry must synchronize their planning and implementation efforts to effectively roll out NextGen initiatives and realize tangible benefits. Continued uncertainty about these efforts could undermine industry's commitment to investing in NextGen technology—a critical element for successful implementation.

²⁶ Applying the Metroplex Prioritization Criteria & Mapping the Integrated Capabilities to Identified Metroplexes, February 2012.

²⁷ The Relative Position Indicator is automation pioneered by the MITRE Corporation to help controllers manage performance-based navigation operations at busy airports. The tool accounts for complex aircraft flight path and allows controllers to detect potential conflicts and address them sooner than with current technology.

RECOMMENDATIONS

1. Develop and commit to a plan with milestones for the more integrated and sophisticated metroplex capabilities as envisioned by airspace users and the task force.
2. Establish a process to select metroplex team leads well in advance of the time that design and implementation teams are scheduled to begin and include all stakeholders, including Flight Standards' personnel, involved in implementing new flight procedures.
3. Evaluate combining the metroplex study and design team processes to accelerate the completion of FAA's metroplex initiative.
4. Adequately document and prioritize projects identified by metroplex teams that have the potential for significant benefits, but are not included in metroplex.
5. Establish a formal mechanism to communicate metroplex progress that allows continual feedback and coordination with airlines and local FAA air traffic officials as work progresses at each metroplex site.
6. Develop a comprehensive RNAV/RNP controller training program on applying new metroplex advanced procedures in a mixed-equipage environment.
7. Establish a formal process for reporting barriers identified by metroplex teams (i.e., policies, procedures, operational approval processes, training, criteria, and equipage and technology issues) and put in place a mechanism to ensure they are adequately resolved.

AGENCY COMMENTS AND OFFICE OF INSPECTOR GENERAL RESPONSE

We provided FAA with our draft report on May 14, 2012, and received its response on July 3, 2012. FAA's response is included in its entirety as an appendix to this report. FAA concurred or partially concurred with six recommendations and did not concur with one recommendation. Based on FAA's response, we consider recommendation 2 resolved but open pending completion of planned actions. We also consider recommendation 5 resolved and closed. However, we are concerned that FAA's responses did not meet the intent of recommendations 1, 4, 6, and 7. In addition, we are requesting a target date for the alternative actions proposed for recommendation 3, as detailed below.

FAA concurred with recommendation 1 and requested that we close it based on milestones established in FAA's current metroplex initiative. However, as stated in our report, this effort does not include milestones for completing an approach that integrates other related capabilities recommended by the task force, such as better managing surface operations. As FAA indicated in its response, the NAC will be issuing recommendations in this area in September 2012; therefore, FAA should be well positioned at that time to develop milestones. Accordingly, we are requesting that FAA provide a target date for completing a detailed plan with milestones for the more integrated metroplex approach.

FAA did not concur with recommendation 3, but requested that we close the recommendation based on the Agency's determination that combining the study and design phases would not produce any benefits. Instead, FAA provided alternative actions to streamline the overall metroplex process using lessons learned from the Houston Expedited metroplex project. FAA's planned alternative actions meet the intent of our recommendation; however, we are requesting that the Agency provide us with a target date for these actions.

FAA concurred with recommendation 4 and requested that we close it based on a recently developed process outlined in the Agency's metroplex operational plan. However, as stated in our report, FAA's current process for prioritizing and tracking those projects is unclear—an issue that has also prompted concerns by industry representatives. Accordingly, we request that FAA provide additional information regarding the process established to prioritize and track those projects that are currently outside the scope of the metroplex initiative.

FAA partially concurred with recommendation 6 and requested that we close it based on future plans to train controllers on procedures developed in the metroplex initiative and strategic efforts to align current training with NextGen future training requirements. However, FAA did not provide target dates for any of the future training initiatives. Additionally, FAA responded that it is too soon to develop controller training on operations in a mixed equipage environment. Yet, controller concerns about the lack of training on managing aircraft with differing capabilities are already limiting the use of more advanced procedures at several airports today. Accordingly, we request that FAA reconsider its position to delay this advanced training and provide target dates for accomplishing the training.

FAA requested that we close recommendation 7 based on a recent process established in the metroplex operational plan. However, this process does not include a procedure or mechanism to verify that identified barriers, such as outdated policies or a lack of training, are adequately resolved, particularly at the local level. To advance NextGen and realize expected benefits, FAA must aggressively track its progress on resolving such barriers, so that the Agency can

move to the more integrated approach envisioned by the task force. Accordingly, we request that FAA provide clarifying information on actions taken or planned to ensure identified barriers are adequately resolved.

ACTIONS REQUIRED

FAA's actions taken and planned for recommendation 2 are responsive and we consider it resolved but open pending completion of the planned actions. We consider recommendation 5 resolved and closed. In accordance with DOT Order 8000.1C, we request that FAA provide additional information or reconsider its position for recommendations 1, 3, 4, 6, and 7 within 30 days of this report.

We appreciate the courtesies and cooperation of FAA representatives during this audit. If you have any questions concerning this report, please call me at (202) 366-0500 or Robin Koch, Program Director, at (404) 562-3770.

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cc: Pierre McLeod, AAE-100
Martin Gertel, M-1

EXHIBIT A. KEY RTCA TASK FORCE RECOMMENDATIONS FOR NEXTGEN'S MID-TERM PHASE

Rec's	Area	Recommended Capability
4	Airport Surface Operations	Improve the management of airport taxiways, gates, and parking areas by revamping systems for sharing information between FAA, airline operations centers and airports. Candidate locations include all major airports beginning with the New York area airports.
5	Runway Access	Improve the use of converging or closely spaced runways during low visibility conditions. Candidate airports include Kennedy, Las Vegas, and Newark.
4	Metroplex Airspace	Improve the capacity of airspace that affects multiple airports near large metropolitan areas, including Chicago, New York/New Jersey, and Southern California.
4	High-Altitude Cruise	Improve high-altitude flights by, among other things, increasing the availability of real-time data on the status of airspace used jointly by civilian and military aircraft. The first candidate location is Minneapolis Center.
2	Access to the National Airspace System	Improve service at smaller airports by implementing more precision approaches and departures and expanding ways to track aircraft in non-radar airspace. Full range of candidate locations is still under development.
Cross-Cutting		
4	Integrated Air Traffic Management	Create an Integrated Air Traffic Management System that leverages new technologies and collaboration with users and implement solutions to traffic flow problems that are effectively integrated across air traffic control domains to achieve service providers' and users' efficiency goals.
5	Data Communications	Improve cruise and transition operations by using data communications to enable more efficient use of available or forecast capacity in the National Airspace System. Increase the ability to better adapt to changing conditions through improved dissemination of tactical reroutes around weather forecast and congestion.
Overarching		
1		Achieve existing separation standards.
1		Incentivize equipage.
1		Streamline the operational approval and certification processes for new flight procedures.
1		Establish institutional mechanisms for transparency and collaboration in the planning, implementation, and post-execution assessments.
Total:		
32		

Source: OIG

EXHIBIT B. OBJECTIVES, SCOPE, AND METHODOLOGY

At the request of the Chairmen and Ranking Members of the House Committee on Transportation and Infrastructure, and Subcommittee on Aviation, we performed an audit of FAA's response to the RTCA Task Force recommendations. The objectives of this audit were to assess the extent to which FAA is (1) responding to the Task Force recommendations, including adjusting its budgets and establishing mechanisms for continued industry collaboration, and (2) addressing barriers that may hinder FAA's ability to successfully implement the recommendations. On December 21, 2010, we issued an interim report on the status of FAA's response to RTCA's recommendations to then Ranking Members Mica and Petri and Chairman Oberstar and Costello.¹ As agreed with the requesters, we assessed FAA's overall response to the task force recommendations, but focused our audit specifically on FAA's efforts to implement an initiative known as "metroplex," which aims to improve the efficiency of airspace that affects multiple airports near large metropolitan areas.

To determine the extent to which FAA responded to the recommendations, we analyzed the March 2010 and March 2011 NextGen Implementation Plans to determine how FAA allocates its resources and the milestones to implement the recommendations. Further, we reviewed the 2010 NextGen Segment Implementation Plan for detailed milestones. We also reviewed work at FAA Headquarters and interviewed officials at program offices responsible for planning and executing the RTCA recommendations in each of the five major areas along with the cross-cutting and overarching recommendations. We met with the Director of NextGen Implementation Performance & Reporting and the Director of NextGen Integration and Implementation to determine how FAA is managing implementation.

To assess the extent to which FAA is adjusting its budgets we examined FAA's operational plans, project level agreements, Capital Investment Plans, and other budget documents. We interviewed FAA budget officials and NextGen Solution Set Managers. Finally, we reviewed FAA's portfolio management program.

To examine the mechanisms for continued industry collaboration, we met with several major airline representatives. We discussed their views of the metroplex effort to date. Further, we interviewed the RTCA Inc. president and attended the NextGen Advisory Committee (NAC) and subcommittee (NACSC) meetings. During these meetings we engaged industry members to determine their assessment of FAA's efforts to respond to the task force recommendations.

¹ OIG Report CC-2011-001, Letter to Chairmen Oberstar and Costello and Ranking Members Mica and Petri Regarding FAA's Efforts to Implement RTCA Task Force Recommendations for NextGen, December 21, 2010. OIG reports are available on our website: www.oig.dot.gov.

To assess barriers that may hinder FAA's ability to successfully implement the task force recommendations, we evaluated any differences between the recommendations and FAA's plan. We reviewed the results of the Washington DC, North Texas (Dallas), Houston, Northern California, and Charlotte metroplex study teams, and interviewed several members of the Washington DC and North Texas teams. We also conducted site visits to key air traffic facilities in the Dallas and Washington DC metropolitan areas.

We conducted this audit from June 2010 through April 2012 in accordance with generally accepted Government auditing standards prescribed by the Comptroller General of the United States. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence that provides 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.

EXHIBIT C. ORGANIZATIONS VISITED OR CONTACTED

FAA Headquarters, Washington DC

- Air Traffic Organization
 - NextGen and Operations Planning
 - Mission Support Services
 - Terminal Operations Services
 - En Route and Oceanic Services
- Aircraft Certification Service
- Flight Standards Service
- Office of Environment and Energy

FAA Field Facilities

- Fort Worth Air Route Traffic Control Center (Center), Fort Worth, TX
- Dallas Fort Worth (DFW) International Airport Air Traffic Control Tower, Fort Worth, TX.
- DFW Terminal Radar Approach Control (TRACON), Dallas, TX
- Eastern Service Office, College Park, GA
- Fort Worth Naval Air Station Joint Reserve Base, Fort Worth TX
- Meacham International Airport, Fort Worth TX
- Potomac TRACON, Warrenton, VA
- Southern Region Office, College Park, GA
- Washington Center, Leesburg, VA

Aviation Stakeholders

- American Airlines, Fort Worth, TX
- Delta Airlines, Atlanta GA
- GE Aviation PBN Services, Renton WA
- MITRE Corporation, McLean VA
- National Air Traffic Controllers Association (NATCA), Washington DC
- RTCA Inc., Washington, DC
- US Airways, Phoenix, AZ
- Southwest Airlines, Dallas, TX
- Air Line Pilots Association, Washington, DC

EXHIBIT D. MAJOR CONTRIBUTORS TO THIS REPORT

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Federal Aviation Administration

Memorandum

Date: July 3, 2012

To: Jeffrey B. Guzzetti, Director, Assistant Inspector General for Aviation and Special Program Audits

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

Subject: FAA Response to Office of Inspector General (OIG) Draft Report on Implementing Near-Term NextGen Capabilities

As part of the implementation of the Next Generation Air Transportation System (NextGen), FAA is working with industry recommendations of near-term improvements through the initiation of the Optimization of Airspace and Procedures in the Metroplex (OAPM) effort. The aim of this effort is to have study groups identify near-term Performance Based Navigation (PBN) improvements coupled with airspace sector adjustments that can be completed in a major metropolitan area in approximately three years. These metroplex areas include complicated airspace management issues usually encompassing a number of major commercial airports, as well as general aviation airports. FAA will continue to work with the aviation community to meet the broader set of integrated metroplex capabilities beyond airspace and procedures, as they mature and are ready for operational use. Given the complexity of operations in the National Airspace System (NAS) and the number of capabilities expected in the mid to far term such as Data Communications, Automatic Dependent Surveillance – Broadcast, etc., Metroplex work will be ongoing for years to come.

RECOMMENDATIONS AND RESPONSES

Recommendation 1: Develop and commit to a plan with milestones for the more integrated and sophisticated metroplex capabilities as envisioned by airspace users and the task force.

FAA Response: Concur. FAA has committed to an integrated approach for delivery of airspace and procedures through OAPM. The OAPM initiative is an FAA program designed to deliver the benefits of Performance Based Navigation through the development and deployment of Area Navigation (RNAV) and Required Navigation Performance (RNP) in terminal, en route, and approach procedures in a focused geographic area called a metroplex. Benefit delivery is predicated on consistent and repeatable processes used to identify, design, and deploy the right procedure(s) for the

right metroplex location. There are always a wide range of possible solutions to deliver benefits. Those solutions must integrate with all air traffic flows to allow safe and efficient operations. An RNP approach is one kind of PBN solution possible. The OAPM Study Teams consider all PBN solutions but whether RNP is chosen as a solution depends on whether it will provide benefit to the overall operation of the Metroplex when all operational needs are considered. RNP does not work everywhere and will not be deployed everywhere in the near to mid-term. There are 13 metroplex sites that OAPM will cover in the next 5 years. Those are DC Metro; North Texas; Charlotte; Northern California; Houston; Atlanta; Southern California; Florida; Phoenix; Chicago; Memphis; Cleveland/Detroit; and Boston. Procedures are currently in development in DC Metro, North Texas; Charlotte; Houston; Atlanta; and Northern California with implementations beginning in FY13 and FY14. Procedure development will begin in Southern California in FY13; with implementation to begin in FY15. Study activities began in Florida in FY12; development will be in FY13 and implementation will begin in FY15. Work in Phoenix and Chicago will start in FY13 with implementation beginning in FY15. Memphis; Cleveland/Detroit; and Boston begin work in FY14 with implementation beginning in FY16 and FY17. The OAPM Dash Board Summary provided in Attachment 1 at the end of this document shows the milestones for the OAPM project.

In addition, PBN work is being done at a host of other sites outside the OAPM program. Some of those sites are Seattle; Las Vegas; Reno; Charleston; Louisville; Raleigh; Denver; Nashville; LaGuardia; St. Louis; Philadelphia; Anchorage; Long Beach; and Minneapolis. Over 750 PBN departure and arrival procedures are in the NAS today with another 300 planned within the next 18 months. In addition, over 300 RNP Authorization Required are in the NAS today with another 120 or so planned within the next 18 months.

As previously noted, there are other NextGen capabilities that will be integrated into the Metroplex as they mature. FAA is working collaboratively with the NextGen Advisory Committee (NAC) on the implementation of the broader set of integrated metroplex capabilities beyond airspace and procedures. The NAC recently completed the mapping of NextGen capabilities to specific metroplexes and FAA expects to have additional inputs from the Committee in the form of actionable recommendations in September 2012. FAA request that this recommendation be closed.

Recommendation 2: Establish a process to select metroplex team leads well in advance of the time that design and implementation teams are scheduled to begin and include all stakeholders, including Flight Standards' personnel, involved in implementing new flight procedures.

FAA Response: Partially Concur. The FAA agrees that early selection of team leads will be a critical factor in the timeliness and success of this effort. FAA now has a process to recruit and select qualified team leads in place since the roll-out schedule is complete. To meet programmatic needs, we are using a combination of permanent and detailed Headquarters management positions through competitive selection processes to oversee OAPM activities. The job announcements for the permanent selections are in process in the Office of Human Resources. We expect permanent selections to be in

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place by the end of CY12. In addition, the Air Traffic Organization instituted a “detail” approval process in early FY12 to insure proper coordination and approvals were obtained for all detailed personnel. This process has worked smoothly to date to insure release dates and adequate lead time.

Our current formal processes such as the 18-Step PBN process include multiple lines of business, Aeronautical Navigation Products, and Flight Standards, among others, by directive. Flight Standards is also engaged at the program level through the Metroplex Core Team, and has knowledge of all OAPM procedure production plans through the Regional Airspace Procedures Team/National Airspace Procedures Team process. Since OAPM primarily focuses on procedures that meet current standards and criteria, full-time participation by Flight Standards is not necessary, though they are available for additional consultation as needed. FAA believes that we have met the intent of the recommendation and request that this recommendation be closed.

Recommendation 3: Evaluate combining the metroplex study and design team processes to accelerate the completion of FAA’s metroplex initiative.

FAA Response: Non-concur. FAA has evaluated combining study and design. The study phase is conducted by non-locally staffed study teams that identify issues and propose potential PBN and/or airspace solutions through facility and industry interface meetings. The result of this phase is a set of conceptual designs, with a high-level assessment of benefits, costs, and risks.

Design & Implementation (D&I) teams are more locally focused as it is recognized that local expertise and acceptance is a critical part of the more intricate D&I process. Combining the two team structures would not take full advantage of the separate strengths that each team provides. Additionally, the study results are used to determine if potential benefits warrant proceeding with subsequent phases. Therefore, FAA believes that combining these two teams will not produce any benefits to the metroplex initiatives. FAA is however committed to streamlining the overall OAPM process wherever possible using lessons learned. FAA believes the lessons learned from the Houston Expedited OAPM activity could allow FAA to shorten the timeline for subsequent projects.

Recommendation 4: Adequately document and prioritize projects identified by metroplex teams that have the potential for significant benefits, but are not included in metroplex.

FAA Response: Concur. Study teams document all identified issues and categorize those that are outside of the OAPM scope (i.e., outside timeline, beyond Environmental Assessment, etc.) for consideration within other initiatives. The OAPM Operational Plan outlines the process that will be followed:

“If the Study Team identifies issues that cannot be addressed within the timeframe, budget and/or criteria boundaries of an OAPM project, these issues are directed to appropriate offices within the FAA. These issues are to be documented in a formal memo by the Operational

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Program Manager for OAPM for signature by the Airspace Services Director.”

FAA request that this recommendation be closed.

Recommendation 5: Establish a formal mechanism to communicate metroplex progress that allows continual feedback and coordination with airlines and local FAA air traffic officials as work progresses at each metroplex site.

FAA Response: Concur. The FAA has a formal mechanism to inform internal and external FAA stakeholders on the status and progress of OAPM efforts. Internally, weekly teleconferences are held with Headquarters, Facility and Service Area personnel. The NextGen Management Board reviews status on a monthly basis, and teams conduct regular briefings on site, and at Service Areas/Service Centers. Externally, the FAA shares progress through many groups including the NextGen Advisory Committee Airspace and Procedures Working Group and regional Task Groups, Airlines for America (A4A) Operations Group and A4A Air Traffic Operations Council. Status and progress is also shared via the White House Infrastructure Dashboard and the NextGen websites. A summary of the dashboard report for the OAPM project is provided (attachment 1). FAA request that this recommendation be closed.

Recommendation 6: Develop a comprehensive RNAV/RNP controller training program on applying new metroplex advanced procedures in a mixed-equipage environment.

FAA Response: Partially Concur. The FAA concurs that a controller training program commensurate with the scope of the changes introduced at each metroplex site will be developed. In the 2013-2015 metroplex time frame, operational improvements are planned to be based on existing equipage to improve efficient descents, diverging departure paths and the decoupling of operations among airports within the metroplex airspace. These types of changes can be handled using existing controller training development and deployment techniques, tailored to the unique criteria of each metroplex environment.

The FAA has strategic efforts underway to align current training with NextGen future training requirements and is working closely with the NextGen Human Factors offices on a Strategic Training Needs Assessment initiative. The curriculum architecture effort aims to align training with a comprehensive occupational job task analysis so that critical functions can be traced to training elements such as instructional methods, training equipment (e.g., simulation), and assessment strategy. In addition, the FAA has funded research projects to examine NextGen training alternatives and methodologies.

While it remains possible that elements of advanced training on operations in a mixed equipage environment will be needed in the near term to support metroplex activities at certain locations, the operational plan for such a change needs to mature further prior to training development. FAA believes that we have met the intent of the recommendation and request that this recommendation be closed.

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Recommendation 7: Establish a formal process for reporting barriers identified by metroplex teams (i.e., policies, procedures, operational approval processes, training, criteria, and equipment and technology issues) and put in place a mechanism to ensure they are adequately resolved.

FAA Response: Concur. FAA formal process for reporting barriers exist in the OAPM Operational Plan. Barriers that are identified by teams are documented and forwarded to the appropriate FAA office for resolution as called for in the OAPM Operational Plan. FAA request that this recommendation be closed.

OAPM FY 12 & FY 13 Milestones Summary and Dashboard Status *a/o* June 18th, 2012

No.	FY 12 Milestone	Completion
1	So. California Study Report	Dec 2011
2	Houston Evaluation Kickoff	Jan 2012
3	DC Design Phase	Mar 2012
4	No. California Design Phase Kickoff	Mar 2012
5	No. Texas Design Phase	Apr 2012
6	DC Evaluation Kickoff	Apr 2012
7	No. Texas Evaluation Kickoff	May 2012
8	So. Florida Design Phase Kickoff	May 2012
9	Houston Design Phase	Jul 2012

No.	FY 13 Milestone	Completion
1	Charlotte Design Phase	Nov 2012
2	Atlanta Design Phase	Nov 2012
3	No. California Design Phase	Dec 2012
4	Houston Evaluation Phase	Jan 2013
5	Houston Implementation Kickoff	Jan 2013
6	DC Evaluation Phase	Jun 2013
7	No. Texas Evaluation Phase	Jun 2013

Complete
On Track
May Be Missed
Missed

Site	Study Start	Study End	Design Start	Design End	Environmental Start	Environmental End	SMS Start	SMS End	Implementation Start	Implementation End	Post-Implementation Initiation
DC	9/9/2010	11/12/2010	6/11/2011	3/1/2012	4/6/2012	6/28/2013	9/29/2012	3/29/2013	7/1/2013	6/30/2014	9/30/2014
North Texas	8/1/2010	12/16/2010	7/1/2011	4/1/2012	5/4/2012	6/28/2013	9/1/2012	4/30/2013	7/1/2013	6/30/2014	9/30/2014
Charlotte	2/3/2011	5/13/2011	2/13/2012	11/16/2012	4/19/2012	2/19/2014	4/22/2013	11/18/2013	2/28/2014	2/27/2015	5/29/2015
Northern California	2/10/2011	5/20/2011	3/19/2012	12/21/2012	4/17/2012	3/31/2014	5/13/2013	12/13/2013	3/31/2014	3/31/2015	6/30/2015
Houston	5/10/2011	8/19/2011	1/9/2012	6/15/2012	2/14/2012	1/12/2013	10/1/2012	12/31/2012	1/13/2013	12/28/2013	3/31/2014
Atlanta	8/3/2011	12/1/2011	2/27/2012	11/30/2012	4/19/2012	10/18/2013	4/1/2013	10/1/2013	12/12/2013	12/12/2014	3/31/2015
Southern California	8/11/2011	12/1/2011	10/15/2012	7/8/2013	7/29/2013	12/31/2014	2/28/2014	10/31/2014	12/31/2014	12/31/2015	3/31/2016
South/Cent Florida	5/15/2012	9/28/2012	4/15/2013	1/24/2014	2/10/2014	12/31/2014					
Phoenix	10/28/2012	3/14/2013	6/17/2013	12/31/2013							
Chicago	3/4/2013	6/14/2013	9/16/2013	3/31/2014							