NEXTGEN: A REVIEW OF THE RTCA MID-TERM IMPLEMENTATION TASK FORCE REPORT

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HEARING

BEFORE THE

SUBCOMMITTEE ON
AVIATION

OF THE

COMMITTEE ON
TRANSPORTATION AND
INFRASTRUCTURE
HOUSE OF REPRESENTATIVES

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October 27, 2009

SUMMARY OF SUBJECT MATTER

TO: Members of the Subcommittee on Aviation

FROM: Subcommittee on Aviation Staff

SUBJECT: Hearing on "NextGen: A Review of the RTCA Mid-Term Implementation Task Force Report"

PURPOSE OF HEARING

The Subcommittee on Aviation will meet on Wednesday, October 28, 2009, at 2:00 p.m., in room 2167 of the Rayburn House Office Building to consider "NextGen: A Review of the RTCA Mid-Term Implementation Task Force Report".

BACKGROUND

Currently, the U.S. air transportation system transports about 700 million passengers a year and, combined with general aviation activity, results in about 80,000 flights over a 24-hour period. By 2025, increases in passengers (up 57 percent to 1.1 billion per year) and general aviation activity will result in air traffic increasing to more than 95,000 flights every 24 hours. It is widely acknowledged that the current U.S. air transportation system will not be able to meet these air traffic demands. In 2003, Congress created the Joint Planning and Development Office (JPDO) in H.R. 2115, "Vision 100 – the Century of Aviation Reauthorization Act" (P.L. 108-176) within the Federal Aviation Administration (FAA), and tasked it with developing a Next Generation Air Transportation System (NextGen) that will meet anticipated traffic demands by 2025.

The NextGen plan will consist of new concepts and capabilities for air traffic management and communications, navigations, and surveillance that will involve: transitioning from a ground-based radar system to a more automated, aircraft-centered, satellite-based surveillance system; developing more direct and efficient routes through the airspace; improving aviation weather systems; developing data communications capabilities between aircraft and the ground to reduce controller and pilot workload per aircraft; and creating shared and distributed information

technology architectures. To date, the FAA has focused its effort to implement NextGen on deploying five core "transformational" infrastructure programs: Automatic Dependent Surveillance – Broadcast (ADS-B); System Wide Information Management (SWIM); NextGen Networked Enabled Weather (NNEW); Data Communications; and National Airspace System (NAS) Voice Switch (NVS).[1]

Yet, while NextGen has been planned over a long horizon, with a target date of 2025, many stakeholders have come to the conclusion that more can and must be done now to address inefficiencies and delay in the system by more fully taking advantage of existing technologies, procedures, and capabilities rather than waiting for deployment of new systems and equipping aircraft with new technology. Because of the airline industry's economic distress, there has been more urgency to improve the efficiency and effectiveness of the air traffic control system in the near to mid-term without damaging the long-term NextGen goals. In addition, industry stakeholders have urged the FAA to provide more detail on commitments needed to deliver real operational benefits in the mid-term that would help the industry justify and plan for the investments it needs to make in aircraft equipage.

On January 16, 2009, Hank Krakowski, the Chief Operating Officer (COO) of the FAA Air Traffic Organization (ATO), and Margaret "Peggy" Gilligan, FAA Associate Administrator for Aviation Safety (AVS), sent a letter to RTCA, Inc. (RTCA)[2] requesting that it establish a government-industry NextGen Mid-Term Implementation Task Force (RTCA Task Force) to forge an aviation community consensus on NextGen operational improvements to be implemented between now and 2018, maximizing NextGen benefits in the near-term, and developing a business case for industry investment. On September 9, 2009, the RTCA Task Force issued its final report.

I. RTCA Methodology and Recommendations

a. Methodology

The RTCA Task Force consisted of approximately 335 individuals from 141 different organizations. Aviation industry stakeholder participants included users from the four major operating communities (airlines, business aviation, general aviation and the military), manufacturers, suppliers, vendors, and the analytic resources of MITRE-Center for Advanced Aviation System Development (CAASD).[3]

The RTCA Task Force report recommended a prioritized list of desired operational capabilities (and corresponding technologies, procedures, pilot and controller training, policies, etc.

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[1] A description of these programs can be found in the March 18, 2009, "ATC Modernization and NextGen: Near-Term Achievable Goals" Hearing Summary of Subject Matter.
http://transportation.house.gov/hearings/hearingDetail.aspx?NewsID=825

[2] RTCA is a private, not-for-profit corporation that develops consensus-based recommendations regarding communications, navigation, surveillance, and air traffic management system issues. RTCA functions as a Federal Advisory Committee and includes roughly 335 government, industry and academic organizations from the United States and around the world. Members represent all facets of the aviation community, including government organizations, airlines, airspace users and airport associations, labor unions, aviation service and equipment suppliers.

[3] MITRE is a non-profit organization and the CAASD was established in 1990 within MITRE. MITRE-CAASD is sponsored by the FAA as a Federally Funded Research and Development Center (FFRDC). A FFRDC meets certain special long-term research or development needs that cannot be met as effectively by existing in-house or contractor resources.

needed to achieve those capabilities) to be fully deployed by 2018. In addition, the RTCA Task Force sought to maximize the benefits of existing aircraft equipage.

At the outset, the leadership of the RTCA Task Force set forth a number of principles that guided the work of the participants. Foremost among these principles was the requirement to have at least one "committed"[4] user for any candidate operational capability to be considered by the RTCA Task Force. In fact, the RTCA Task Force report states that each RTCA Task Force recommendation will have the understanding and backing of the financial decision-makers within the operator organizations (e.g., airline chief financial officers).[5] This means, according to the RTCA Task Force report, that if the FAA implements the elements of a recommended operational capability for which it is responsible, the operators who requested that capability will commit to making all necessary investments (e.g., training and equipage) in coordination with a rational and definable plan to be able to fly and achieve the benefits of such capability.[6]

Moreover, in addition to identifying operational capabilities and specific operators willing to commit to those capabilities, the RTCA Task Force attempted to define when and where each capability should be implemented. Regarding *where* capabilities should be implemented, it is important to note that the Task Force report represents a sort of localized, "airport centric" approach to NextGen – delivering measurable efficiency improvements through targeted deployment of capabilities at the key airports and large metropolitan areas, the bottlenecks where problems are most acute and most likely to ripple through the NAS before implementing NextGen solutions across the entire NAS.

b. Highlights of Key Task Force Recommendations

Overall, the RTCA Task Force recommended a total of 29 operational capabilities in five key areas and two cross-cutting areas: Surface Operations (i.e., safer, more efficient movement of aircraft on the airport surface), Runway Access (i.e., improving the utilization and capacity of airport runways), Metroplex (i.e., deconflicting airspace and traffic flows among adjacent airports in major metropolitan areas), Cruise (i.e., high altitude/en route airspace), and Access to the NAS (i.e., access to low altitude airspace and smaller airports – primarily for General Aviation operators); Data Communications Applications (i.e., implementing controller-pilot data/text communications); and Integrated Air Traffic Management (including pre-flight FAA/system operator flight planning collaboration).

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[4] The RTCA Task Force defined a "commitment" as an agreement to make the necessary investments to fully implement the operational capability in the specific location identified. This could include some or all of the following: Equipage; Training; Testing/Validation; Time/Staff hours. RTCA, *NextGen Mid-Term Implementation Task Force Report* (Sep. 9, 2009) at 4.

[5] *Id.* at 3.

[6] *Id.*

High-Level Description of Key RTCA Mid-Term Task Force Recommendations

RTCA Recommended Capability	Description
Airport Surface Operations	Improve the management of airport arrivals, departures, and taxi operations including ramp operations by expanding surveillance coverage and implementing real-time sharing of this information between FAA, flight operations centers and airports. Candidate locations include all major airports beginning with the New York City area airports. Some key enabling technologies may include Airport Surface Detection Equipment, Model X (ASDE-X),[7] and SWIM.
Runway Access	Improve the use of converging, intersecting, and closely-spaced parallel runways during low visibility conditions. Candidate airports include John F. Kennedy (JFK), Las Vegas, Newark, Seattle, and Memphis.
Metroplex Airspace	Improve the capacity of airspace that affects multiple airports near large metropolitan areas, including Chicago, New York/New Jersey, and Southern California. Airspace redesign efforts and area navigation (RNAV)/ required navigation performance (RNP)[8] will play key roles.
High Altitude Cruise	Improve efficiency and reduce delays of high altitude flights by, among other things, increasing the availability of real-time status of special activity airspace (i.e., used by civilian aircraft and to meet national security objectives and improved routing and re-routing around chokepoints). The first candidate locations are Memphis and Atlanta Centers.
Access to the National Airspace System	Improve efficient and safe access to low altitude airspace and smaller airports by publishing precision approaches and adding surveillance services at these locations, which are often not served by radar. The full range of candidate locations are still under development. ADS-B and Global Positioning System/Wide Area Augmentation System (WAAS)[9] will be a key enabling technologies.
Data Communications	Improve traffic efficiency through air to ground digital data communication of revised pre-departure clearances on the airport surface, and controller-pilot datalink and multiple aircraft weather reroutes for aircraft in cruise portion of flight. The FAA's Data Communications program will be a key enabling technology.
Integrated Air Traffic Management	Integrate Traffic Flow Management solutions across pre-fight and in-flight to minimize delay and maximize ability of operators to achieve business objectives.

[7] ASDE-X is an airport surface surveillance platform that fuses surveillance data from multiple sources (e.g., radar, multilateration sensors, ADS-B sensors, etc.) to determine the position and identification of aircraft and transponder-equipped vehicles on the airport movement area, as well as of aircraft flying within five miles of the airport.

[8] RNAV allows aircraft to fly any desired flight path without the limitations imposed by ground-based navigation systems. RNP is RNAV with the addition of an onboard monitoring and alerting capability for pilots that takes advantage of an aircraft's onboard navigation capability to fly more precise, efficient, and even curved paths into and out of airports.

[9] WAAS is an air navigation aid developed by the FAA to augment GPS. Essentially, WAAS is intended to enable aircraft to rely on GPS for all phases of flight, including precision, or near precision, approaches to any airport within its coverage area.

With regard to Surface Operations, the RTCA Task Force report notes that tarmac delays, passenger inconveniences, and excess emissions are partially caused by inefficient airport surface operations, in both the movement (i.e., areas where aircraft movement is controlled by FAA controllers such as taxiways and runways) and non-movement areas (i.e., areas where aircraft movement is generally handled by system operators such as gates and ramps). Ground movements are complicated and delayed by the lack of stakeholder planning information and gate availability information. Airport infrastructure, such as runways, taxiways, gates, and other parking areas, is not used efficiently, thus extending engine run time and passenger time on board the aircraft.

To reduce taxi time, lower aircraft engine run time, and improve situational awareness among users, the RTCA Task Force recommended expanding the deployment of ASDE-X to capture surface activity in both the movement and non-movement areas and disseminate the surveillance data to both the FAA and system operators. Though ASDE-X was originally deployed as a runway safety tool to prevent runway incursions, the Task Force's recommendation proposes making full use of the runway information provided by ASDE-X to achieve additional efficiency benefits over and above the safety benefit.

The RTCA Task Force Report also notes that as traffic and the demand for Runway Access continues to increase, effective use of runway capacity is becoming increasingly more critical. Reduced access to runways during low visibility conditions (approximately 25 percent of the time on average) leads to much of the delay experienced daily in the NAS.

In particular, FAA rules limit aircraft access to closely-spaced converging, intersecting, and parallel runways during low visibility conditions due to a risk of blunders (i.e., when an aircraft on final approach to a runway makes an unexpected turn toward another aircraft on approach to the adjacent runway) and wake encounters (i.e., when an aircraft passes through the turbulent air caused by the aircraft in front of it; they are particularly hazardous during takeoff and landing when aircraft are at lower air speeds and higher angles of attack, and generally spaced more closely together).[10] However, the RTCA Task Force report states that these limitations are based on older technologies, on the ground and in the air, and that the FAA and industry have lacked data critically needed to review these limitations and the assumptions that drive them.[11] Therefore, the RTCA Task Force recommended that FAA conduct a study that establishes the safety case for operating simultaneous independent approaches to allow closer runway spacing than currently allowed.[12]

In the Metroplex environment, near busy airports and metropolitan areas, aircraft follow arrival and departure routes by tracking ground-based navigational signals or by following the instructions of air traffic controllers, usually referred to as receiving radar vectors that often require aircraft to fly unpredictable, inefficient, zigzag-like patterns. In addition, adjacent airports with overlapping airspace and traffic flows can also hamper efficiency in this environment. The RTCA Task Force emphasized the use of RNAV and RNP procedures to increase throughput and efficiency.

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[10] Specifically, simultaneous aircraft approaches and departures on closely spaced (i.e., less than 4,300 ft. centerline-to-centerline for dual independent operation or 5,000 ft. for triple independent operations), parallel, crossing, or converging runways are prohibited during low visibility conditions.

[11] RTCA *supra.*, note 4 at 22.

[12] *Id.*

RNAV and RNP procedures rely on aircraft avionics to enable aircraft to fly more precise and potentially more efficient, shorter and more direct routes. However, some industry stakeholders have criticized that, to date, the FAA has largely deployed RNAV/RNP routes that overlay existing routes that track ground-based navigational aids. These overlays do not maximize the benefits that can be achieved by RNAV/RNP because they do not provide shorter routes. At a July, 2009, Aviation Subcommittee hearing, the U.S. Department of Transportation (DOT) Inspector General's (IG) Office testified that:

> While FAA has met or exceeded its annual RNP production goals, most of the RNP procedures it has rolled out have been overlays of existing routes because the Agency's goals primarily focus on the number of procedures produced. While overlaid routes can be deployed more quickly because they do not have to go through an extensive environmental review, they do not maximize the benefits that can be achieved through RNP procedures. As a result, industry is dissatisfied with the overall quality of RNP procedures, and they are not widely used.[13]

In fact, FAA Administrator Babbitt recently acknowledged industry criticisms of the FAA's RNAV and RNP deployment, stating: "The critics who pointed out that we had some RNP and RNAV approaches in ineffective spots are right. We're going to push for these approaches where they deliver the greatest efficiencies."[14] Likewise, the RTCA Task Force report recommends that the FAA optimize RNAV and RNP operations "that do not necessarily just overlay existing conventional procedures. . .", and institute FAA/Industry "Tiger Teams"[15] that focus on delivering quality, beneficial results for system operators at each location the procedures are deployed. According to GAO, roughly 90% of the airline fleet is equipped to use RNAV routes and roughly 60% are equipped to fly at least some kind of RNP route.

The RTCA Task Force also made four overarching recommendations to "encourage operator investment and enhance aviation community confidence,"[16] which include: (1) working toward close adherence to current aircraft separation standards by ATC; (2) providing incentives for equipping aircraft that will provide the needed business case for operators wishing to equip; (3) streamlining the operations safety certification and environmental approval process; and (4) following-up on and tracking recommendations to ensure implementation. The first, adhering to the existing three and five mile aircraft ATC separation standards, will require a more collaborative approach between air traffic controllers and FAA management, including increasing transparency and use of the controller Air Traffic Safety Action Program (ATSAP).[17]

To encourage NextGen equipage, the Task Force suggested four areas of operator incentives, including: financial aid; a NextGen equipage bank; accelerating implementation; and the

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[13] Statement of Ann Calvaresi-Barr, Principal Assistant IG for Auditing and Evaluation (DOT), *Challenges in Implementing Performance-Based Navigation in the U.S. Air Transportation System*, Before the Committee on Transportation and Infrastructure Subcommittee on Aviation, U.S. House of Representatives (Jul. 29, 2009) at 4.

[14] J. Randolph Babbitt, FAA Administrator, ATCA Convention Speech: *Cooperation, Collaboration and Interoperability* (October 5, 2009).

[15] The RTCA Task Force suggests that these Tiger Teams might include personnel with the following different types of expertise, including human factors, procedures, air traffic controllers, pilots, flight standards, airspace and procedure design, airport operations, environmental, and safety. RTCA *supra.*, note 4 at 33.

[16] *Id.* at 64.

[17] ATSAP is a voluntary safety reporting program that allows controllers and other employees to report safety problems without fear of punishment unless the incident is deliberate or criminal in nature.

concept of "best-equipped, best-served" (BEBS). Financial aid might consist of subsides, no- or low-interest loans, and tax credits. A NextGen equipage bank would allow operators to equip with a NextGen technology provided it could show a plan for implementation and how the equipage would help the NAS overall. Accelerating implementation focuses on using existing technology and streamlining existing FAA policies, procedures, regulations, avionics certifications, and operational approvals needed to realize the benefits of those investments.

Under BEBS, the FAA would offer those aircraft operators who choose to equip their aircraft as soon as possible with various operational benefits, such as preferred airspace, routings, or runway access. BEBS requires that air traffic controllers and operators know when and where the policy is being used, and for controllers to know what aircraft would be considered "best equipped" and how to apply the policy consistently. However, the National Air Traffic Controllers Association (NATCA) has expressed concerns that BEBs could require changes to automation displays (e.g., aircraft equipage levels might be another information item that would have to be added to the information on a controller's scope) and additional controller training, and potentially complicate the predicable, albeit inefficient, traffic flows into airports.

II. Challenges to Implementing NextGen in the Mid-Term: FAA Culture, Organizational Structure, Business Practices and Workforce Challenges

a. Delivering Capabilities v. Delivering Infrastructure

While technologies will clearly play a major role in achieving the RTCA Task Force's recommended capabilities, stakeholders have also stressed the criticality of reforming FAA culture, business practices, organizational structure, and processes needed for successful implementation. The RTCA Task Force report states, "The FAA should primarily focus on delivering near-term operational benefits, rather than the delivery of infrastructure, as the best way for stakeholders to gain confidence in FAA plans and encourage users to invest in NextGen equipage."[18]

Implementing the capabilities recommended in the RTCA Task Force report will require that FAA change from its culture of system development and acquisition to a more integrated and coordinated approach across all FAA lines of business responsible for completing tasks and taking actions to achieve the recommended operational capabilities and associated benefits.

According to the Government Accountability Office (GAO), the FAA has traditionally been an agency that develops and acquires new systems through its acquisition process—the Acquisition Management System (AMS), in place since 1996. AMS provides guidance for selecting and overseeing technology investments over their lifecycle. Most of these acquisitions are part of the air traffic control system and managed through FAA's ATO. The successful deployment of a system has generally been measured by the deployment of infrastructure to key sites within cost and schedule parameters laid out at the program's inception, rather than measuring the amount of benefit the system is providing operators and the government over a given period of time.

However, the GAO notes that most NextGen technologies and capabilities, such as ADS-B and RNP, rely on components in the aircraft, on the ground, and in space for them to work. Moreover, they also require training of controllers and pilots and development of flight procedures

[18] *Id.* at vii.

to maximize their benefits. Different offices within FAA including the Aircraft Certification Service, the Flight Standards Service, and ATO, among others, have responsibilities to ensure that the all the activities required to maximize use of technology or capability are completed and at a level of safety equivalent or better than current safety procedures. Given this, several stakeholders informed the GAO that FAA is still too stove-piped and does not coordinate well-enough across the Agency to ensure that all the components necessary to maximize use of a technology or capability in the NAS are completed efficiently. The DOT IG has made comparable observations, stating before the Aviation Subcommittee in March that FAA must manage Mid-Term NextGen initiatives as "portfolios":

> FAA must manage NextGen capabilities as portfolios because several systems, new procedures, and airspace changes funded through different accounts will be required to deliver benefits. FAA is developing various portfolios and understands the need to manage them in an integrated fashion. However, as an FAA study points out, FAA's Acquisition Management System was not designed for managing NextGen investments. Rather, FAA's system focuses on baselines and specific capital programs—not a collection of investments. FAA recognizes that it must modify its system to effectively manage multiple NextGen efforts. FAA could also strengthen its NextGen Implementation Plan by clearly assigning responsibility, authority, and accountability for specific NextGen portfolios.[19]

b. FAA Organizational Structure and "Responsibility, Accountability and Authority"

Similarly, the RTCA Task Force also commented on the organizational structure of the FAA stating, "the FAA must commit to delivering benefits by assigning appropriate Responsibility, Accountability and Authority (RAA) and funding within the agency to accomplish all the associated and necessary non-infrastructure tasks (i.e., development of procedures and policy) critical to achieving those benefits."[20]

Stakeholders have also expressed concerns over the organizational structure of the FAA vis-à-vis the development and implementation of NextGen. In 2007, the GAO reported that the JPDO's placement within FAA and its dual reporting to both the FAA Administrator and the ATO's COO hindered its ability to interact on equal footing with ATO and other Federal agencies. In addition, industry stakeholders expressed concerns that the dual reporting structure would subordinate the JPDO's long-term planning mission to the COO's day-to-day operational priorities. Therefore, the GAO suggested that the JPDO should have some independence from the ATO and recommended that the JPDO Director report directly to the FAA Administrator.

Nevertheless, in May 2008, the FAA announced a reorganization of its NextGen management structure and named a Senior Vice President for NextGen and Operations Planning who reports to the COO. As part of this reorganization, JPDO is now housed within the new NextGen and Operations Planning Office and reports through the Senior Vice President for NextGen and Operations Planning only to ATO's COO. Under this new structure, JPDO will

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[19] Statement of Calvin L. Scovel III, IG (DOT), *Federal Aviation Administration: Actions Needed to Achieve Mid-Term NextGen Goals*, Before the Committee on Transportation and Infrastructure Subcommittee on Aviation, U.S. House of Representatives (Mar. 18, 2008) at 16.

[20] RTCA *supra.*, note 4 at vii.

focus on long-term planning and inter-agency cooperation. Other offices within the NextGen and Operations Planning Office will carry out other aspects of implementing and planning for NextGen. Now that JPDO is no longer a separate, independent office within the FAA and no longer reports directly to the FAA Administrator, its organizational position within the FAA has declined. Note that to increase the authority and visibility of the JPDO, H.R. 915, the "FAA Reauthorization Act of 2009," elevates the Director of the JPDO to the status of Associate Administrator for NextGen within the FAA, reporting directly to the FAA Administrator.

During the same period, the FAA also instituted that NextGen Management Board (NMB) and NextGen Review Board (NRB), governance structures that grew out of the FAA's 2008 decision to the use Operational Evolution Partnership[21] – now called the NextGen Implementation Plan – as the framework for achieving NextGen. The NMB is chaired by the FAA's Acting Deputy Administrator and composed of FAA Associate Administrators, the ATO's COO, ATO's Senior Vice Presidents, the Director of the JPDO, and representatives of the NATCA and the Professional Aviation Safety Specialists (PASS). The NRB, composed of FAA executives, resides under the NMB and looks at more technical issues including approving and prioritizing NextGen activities and making funding recommendations.

Currently, it is unclear if there is a single point of responsibility, authority, and accountability for NextGen implementation. In March 2009, the Senior Vice President for NextGen and Operations Planning, Ms. Victoria Cox, testified before the Aviation Subcommittee that she "will be accountable for delivering NextGen to the NAS. . ."; and that she "was responsible for implementation of all elements of NextGen and have authority over all matters related to FAA NextGen research, technology development, acquisition, integration, and implementation including allocation within the FAA of NextGen budgets."[22]

However, the DOT IG testified at the same hearing that while the ATO's Senior Vice President for NextGen and Operations Planning will manage demonstration projects, other ATO Vice Presidents will manage major modernization projects considered to be essential platforms for NextGen such as En Route Automation Modernization (ERAM), SWIM and ADS-B.[23] In addition, the FAA's AVS, which will have an increasingly critical role in managing several NextGen-related processes (e.g., operational approvals and certification of aircraft avionics), does not report to the Senior Vice President for NextGen and Operations Planning, or even to the COO of the ATO.

More recently, FAA officials have emphasized the Deputy Administrator's role in NextGen as the Chairman of the NMB, characterizing the Deputy Administrator in a recent briefing for the Aviation Subcommittee as the "accountable official" for NextGen.[24]

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[21] The FAA's Operational Evolution Plan (OEP) was released in June 2001 by Administrator Jane Garvey. It was a 10-year plan for operational improvement focused largely on increasing capacity and building runways. In 2006, Administrator Marion Blakey expanded and renamed the original OEP to become the "Operational Evolution Partnership," a plan more focused on tracking the integration of NextGen transformational operating concepts into the NAS. In 2008, the OEP became the NextGen Implementation Plan under Acting Administrator Bobby Sturgell, which details the FAA's plans for NextGen through 2018. Correspondingly, the "OEP Associates Team" governance structure became the NMB.

[22] Statement of Victoria Cox, Senior Vice President for NextGen Operations and Planning Services (FAA ATO), *Hearing on ATC Modernization and NextGen: Near-Term Achievable Goals*, Before the House Committee on Transportation and Infrastructure Subcommittee on Aviation, U.S. House of Representatives (Mar. 18, 2009) at 3.

[23] Scovel, *supra.*, note 20 at 14.

[24] FAA, *RTCA Task Force Action Plan* (October 22, 2009).

c. Operational Approval and Certification Processes

The RTCA Task Force recommended streamlining the environmental and operational approval and certification processes, and that failure to streamline these processes will likely have far-reaching implications and negatively impact FAA and industry progress toward NextGen implementation.[25]

Operational approval is a process used to authorize an operator to conduct operations using a specific aircraft and associated equipment in a specific operating environment.[26] For example, an operator must obtain operational approval, from AVS's Flight Standards Service, to use RNP.

FAA's certification process ensures, among other things, the safety of aircraft equipment entering the NAS.[27] An example of this would be the approval of Garmin to produce WAAS navigation equipment for sale and subsequent installation on aircraft.

According to GAO, stakeholders, including airlines, general aviation groups, and avionics manufacturers, have said that these processes take too long and impose costs on industry that discourage them from making the investment in NextGen aircraft equipment. For example, one stakeholder expressed concern with the timely development of standards for NextGen technologies like Data Communications and ADS-B. Without standards in place for these technologies that industry is confident will not change, operators cannot equip because the standard is not there or will not equip because they fear any technology investment will become obsolete if standards are revised.

Moreover, RTCA reports that FAA aircraft certification offices face resource issues, and applicants for many required equipment installation approvals wait about six months until FAA engineers are available to approve their project. Some stakeholders have advocated for increasing the staffing at FAA's certification offices to process applications and for having NextGen-specific equipment certification processes to allow for quicker approval. In fact, the FAA will be confronted by a number of staffing and workforce challenges as it moves forward with the implementation of NextGen. In September 2008, the National Academy of Public Administration (NAPA) issued a report that identified 26 competencies - including software development, systems engineering, research and development, strategic planning, financial budget analysis, and contract administration – where the FAA currently lacks both the capacity and capabilities to execute NextGen implementation.

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[25] RTCA *supra.*, note 4 at ix.

[26] The operational approval for a commercial operator includes: the approval of flight crew procedures; the approval of maintenance procedures; and the approval of training programs. With respect to NextGen, the operational approval process focuses on all of these areas. According to FAA officials, particular emphasis will be placed on the flight crew training and procedures due to both the unique technologies and the new operations required by NextGen. In addition, the operational approval also considers the ability of the aircraft to support the operation (aircraft qualification).

[27] Aircraft certification includes: the approval of the design of the aircraft, including avionics and their integration; the ability of a manufacturer to produce aircraft consistent with the design; and the approval of design and production of appliances or parts of the aircraft. With respect to NextGen, FAA officials emphasize that the aircraft certification evaluation process considers the design of the system, potential failure conditions, and crew interface issues to ensure that the equipment can support its intended function.

d. Performance Metrics

Another key challenge before FAA is the establishment of performance metrics that accurately measure the extent to which NextGen benefits are achieved. The RTCA Task Force report identified the establishment of performance metrics as an important part of following up and tracking its recommendations. Some stakeholders have expressed concern that the performance metrics currently used by FAA do not, in some cases, measure the achievement of value provided to FAA or the industry. One stakeholder has suggested that FAA adopt "outcome" based metrics that would measure whether FAA's actions yielded beneficial outcomes to both FAA and the industry. Examples of outcome-based metrics would include:

- Safety - Yearly improvement in accident rates;
- Capacity - Change in allowable/schedulable runway operations per hour at major airports;
- Capacity - Number of new runways enabled in high density regions;
- Fuel, Environment and Airspace Efficiency - Reduction in scheduled block time between major city pairs; and
- Air Navigation Service Provider (ANSP) Efficiency - FAA Unit Cost per Operation.

WITNESSES

PANEL I

Ms. Margaret T. Jenny
President
RTCA, Inc.

Mr. Hank Krakowski
Chief Operating Officer
Air Traffic Organization
Federal Aviation Administration

Ms. Margaret Gilligan
Associate Administrator for Safety
Federal Aviation Administration

The Honorable Calvin L. Scovel, III
Inspector General
U.S. Department of Transportation

Dr. Gerald Dillingham
Director, Physical Infrastructure Issues
U.S. Government Accountability Office

Dr. Agam N. Sinha
Senior Vice President and General Manager
The MITRE Corporation

PANEL II

Mr. James C. May
President and CEO
Air Transport Association

Mr. Jens C. Hennig
Vice President, Operations
General Aviation Manufacturers Association

Mr. Dale Wright
Director, Safety and Technology
National Air Traffic Controllers Association

Mr. Neil Planzer
Vice President, ATM Strategy
The Boeing Company

Mr. Ed Bolen
President and CEO
National Business Aviation Association

HEARING ON NEXTGEN: A REVIEW OF THE RTCA MID-TERM IMPLEMENTATION TASK FORCE REPORT

Wednesday, October 28, 2009,

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON AVIATION,
COMMITTEE ON TRANSPORTATION AND INFRASTRUCTURE,
Washington, DC

The Subcommittee met, pursuant to notice, at 2:00 p.m. in room 2167, Rayburn House Office Building, the Honorable Jerry F. Costello [Chairman of the Subcommittee] presiding.

Present: Representatives Costello, Petri, Oberstar, Boccieri, Boozman, Boswell, Coble, Ehlers, Griffith, Graves, Guthrie, Lipinski, LoBiondo, Norton, Richardson, Schauer, and Schmidt.

Mr. COSTELLO. The Subcommittee will come to order.

It's good to see my former Chairman, Chairman Roe here, who when I saw him sitting in the chair, I thought maybe there was a coup when I was gone.

The Subcommittee will come to order. The Chair will ask that all Members, staff and everyone turn electronic devices off or on vibrate.

The Subcommittee is meeting today to hear testimony regarding NextGen and to review the RTCA Mid-Term Implementation Task Force report. The Chair will give an opening statement, and then call on Mr. Petri, the Ranking Member, to give his remarks or his opening statement, and then call on other Members for brief remarks, and then go to our first panel of witnesses.

I welcome everyone to today's hearing. This is the third hearing that we have held on NextGen, that Ranking Member Petri and I have held this year to focus on near-mid-term Next Generation implementation.

Over the last two years, and as a result of many meetings, roundtable discussions, and hearings, it became very clear, I think, to Mr. Petri and I and others that, one, the stakeholders, users of NextGen were left out of both their input and the implementation or design of NextGen, and frankly the FAA had a very difficult time defining and describing what NextGen really looked like or what they intended to accomplish with NextGen.

So it became clear to us that the FAA had to change course, and that they had to look both at short-term steps without losing sight of the long-term goals. And they have done exactly that. They have brought the stakeholders in, the users, and to listen to them and involve them in the process. And as a result of the persistence on

the part of many people, some in this room today and others, as well as the persistence and the aggressive oversight of this Subcommittee, that is exactly what has happened. The RTCA was created, and we are, of course, examining their mid-term report today.

First, I want to commend Hank Krakowski and Peggy Gilligan for commissioning the RTCA. They did exactly the right thing, what all of the stakeholders and what we wanted them to do, the RTCA, a private not-for-profit corporation that develops consensus-based recommendations to create a NextGen Mid-Term Implementation Task Force.

Over 335 individuals from 141 organizations, which included users from the operating community such as the airlines, business aviation, general aviation and the military, as well as participation from the controllers, airports, avionics, manufacturers and others played an integral role in identifying the challenges and offering solutions for a way forward.

The RTCA was instructed to work with the industry and prioritize which NextGen capabilities should be deployed first, and where they should be deployed to achieve the greatest benefits. The final report was delivered to the FAA in September.

By bringing together representatives from all segments of the aviation industry, specific recommendations and action items were developed and a consensus on NextGen operational improvements for the near-to mid-term was forged. I commend the hard work and cooperation of all of the participants. I believe the RTCA Task Force report is a positive step forward and represents a significant breakthrough for the NextGen effort.

Now, it is up to the FAA to determine how to modify its existing plans and programs in response to the Task Force recommendations. In the past, the FAA has struggled to define NextGen and to clearly articulate what benefits government and industry should reasonably expect from the system. The RTCA Task Force report provides, and I would quote Administrator Babbitt, "clear, actionable and achievable recommendations that will help guide us forward."

Moreover, the RTCA Task Force report is distinguished by the support and, more importantly, the commitments that it has received from industry. Each of the Task Force's recommendations has operator commitments to make the critical investments to achieve benefits. I believe that the industry consensus embodied in this report represents an enormous opportunity for the Obama Administration to undertake NextGen implementation.

While technologies will clearly play a major role in achieving the RTCA Task Force recommended capabilities, industry stakeholders have also stressed the importance of reforming the FAA culture, business practices, organizational structure and processes needed for successful implementation. I intend for this Subcommittee to provide consistent and rigorous oversight of NextGen near-term implementation, including many of the issues raised in the RTCA's report, while also staying focused on NextGen's long-term goals.

For example, several different offices within the FAA, including the Aircraft Certification Service, the Flight Standards Service, and the Air Traffic Control Organization have responsibilities that relate to NextGen. However, the Government Accountability Office

will testify today that some of the stakeholders have raised concerns that the FAA does not have adequate coordination across the agency to efficiently integrate NextGen-related infrastructure and processes.

On this topic, the RTCA Task Force reports that the FAA must commit to delivering benefits by assigning appropriate responsibility, accountability and authority and funding within the agency. Chairman Oberstar and I both expressed concerns at our NextGen hearing last March about whether the FAA's current organizational structure adequately supports NextGen. I am still unclear whether there is a single point of responsibility, authority and accountability for NextGen activities, with the stature to leverage the interagency coordination that the NextGen will require. I look forward to hearing from Mr. Krakowski and others concerning that issue today.

In addition, there are specific recommendations in the Task Force that the Subcommittee needs to examine more closely. For example, the report recommends streamlining the operational approval and certification processes for aircraft avionics. In addition, many of the witnesses also discussed in their testimony the importance of streamlining these processes. I am aware it takes several months for an operator to gain approval once the process is initiated, and it is complicated and expensive. Again, I would like to hear more from our witnesses concerning this issue.

Further, the FAA may be confronted by a number of staffing and workforce challenges as it moves forward with the implementation of NextGen. In September of 2008, the National Academy of Public Administration issued a report that identified several areas, including software development, systems engineering, and contract administration, where the FAA currently lacks both the capacity and the capabilities to execute NextGen implementation. Congress and this Subcommittee stands ready to work with the FAA to ensure that the agency has the resources that it needs to meet its workforce challenges.

Finally, I believe that post-Task Force engagement such as continued collaboration and joint decision-making among all members of the aviation community is a key component to ensure successful implementation of NextGen. I strongly encourage the FAA to continue a high level involvement and engagement with stakeholders, including operators and air traffic controllers, to ensure success.

In addition, I agree that specific metrics to measure pre-and post-implementation operational performance is important data for the FAA to track. This Subcommittee has already requested that the Department of Transportation Inspector General monitor FAA's process in responding to the Task Force recommendations and to determine if the FAA has a system in place to assess progress and measure benefits.

Before I recognize Mr. Petri for his opening statement, I ask unanimous consent to allow two weeks for all Members to revise and extend their remarks, and to permit the submission of additional statements and materials by Members and witnesses.

Without objection, the Ranking Member of the Subcommittee, Mr. Petri, is recognized.

Mr. PETRI. Mr. Chairman, thank you for providing leadership to have diligent oversight of the NextGen process. It is very important.

When the RTCA NextGen Mid-Term Implementation Task Force was chartered in January, Task Force members were asked to achieve industry consensus on what steps must be taken over the next several years to deliver NextGen benefits to users. The Task Force, comprised of over 300 members, released its report and recommendations in early September.

The Task Force's recommendations do not focus on which research and development activities will lay the groundwork for an end state NextGen architecture. Rather, the report's recommendations focus on activities that can maximize the potential benefits on existing aircraft avionics and airport technologies in the near term.

Well, some have reacted by saying, well, that is not really NextGen. The report does mark an important milestone in the long history of air traffic control modernization. Without user buy-in, the FAA's NextGen efforts will fail. However, the direct involvement of stakeholders and financial officers in making these recommendations to FAA indicates a willingness on the part of industry to make the financial commitments needed to carry out the recommendations.

Another valuable outcome of the Task Force is the clear call for collaboration across FAA lines of business. This will be critical to timely delivery of near-and long-term NextGen capabilities. For example, the delivery of key platforms such as ERAM, ADS-B, and SWIM are the necessary infrastructure for NextGen. But without procedures, standards and regulations, users will not be able to benefit from the technological improvements.

Critical to maximizing benefits derived from technologies both old and new is the development of operational procedures overseen by the FAA's Office of Aviation Safety. I am pleased that Associate Administrator for Aviation Safety, Mrs. Gilligan, is participating today. I am interested in hearing how the agency plans to streamline the development and implementation of operational and environmental approval processes.

The Task Force report has been characterized as a confidence-building exercise between users and the FAA. Specifically, the Task Force stated that if the FAA can maximize benefits of past avionics investments, users will be more confident in making future avionic investments. I am interested in hearing how the FAA will take advantage of this opportunity to work with the industry in delivering improvements.

While ADS-B is regarded as the backbone of NextGen, it was not the focus of the Task Force recommendations. Unfortunately, there still is no clarity from the FAA on the business case for ADS-B equipage. The Task Force has been praised for its work in developing industry consensus and what is specifically needed in the near term to deliver NextGen. I am interested in hearing from both panels what the best process is for answering the challenging questions surrounding the shape and size of ADS-B.

Finally, while it is important to set near-term goals, FAA must also be held accountable for delivering the long-term vision in a timely fashion. I am interested in hearing how the FAA will allo-

cate its resources to strike the necessary balance between answering the users' demand for operational improvements in the near term, while maintaining efforts on the ground necessary to achieve the NextGen vision.

The last thing we want to do is meet again on this topic five years from now, having invested billions of dollars, and find ourselves nowhere near to a modernized air traffic control system. I am sure that the user community shares my dread for a NextGen Groundhog Day.

Once again, I thank the Chairman for calling this hearing, and look forward to the discussion.

Mr. COSTELLO. The Chair thanks the Ranking Member, and would ask, are there Members who have opening statements or comments?

If not, the Chair will recognize our first panel: Ms. Margaret Jenny, who is the President of RTCA, Incorporated; Mr. Hank Krakowski, Chief Operating Officer, Air Traffic Control Organization with the FAA; Ms. Margaret Gilligan, who is the Associate Administrator for Aviation Safety with the FAA; the Honorable Calvin Scovel, III, who is the Inspector General with the U.S. Department of Transportation; Dr. Gerald Dillingham, who is the Director, Physical Infrastructure Issues, with the U.S. Government Accountability Office; and Dr. Agam Sinha, who is the Senior Vice President and General Manager at The MITRE Corporation, Center for Advanced Aviation Systems Development.

Let me say before I call on Ms. Jenny for her testimony that, as I stated in my opening remarks, this Subcommittee urged the FAA to begin the process of including stakeholders when it was very obvious to us a few years ago that stakeholders were not being consulted. The very people who would operate and use the system were on the outside, as we saw it at that time, and needed to be included not only in order to make the system work, but also in order to take advantage of their expertise and the advice that they could lend to not only building NextGen, but in bringing the process forward.

I am very pleased that Mr. Krakowski and Ms. Gilligan and you, Ms. Jenny, are here today on behalf of all of your Task Force members. I am very pleased with the work that you have done. I think it is a major breakthrough. It moves us forward and I want to commend you for the action that you have taken, and want you to know that we consider ourselves not only a Subcommittee that has responsibility for oversight for NextGen and the FAA, but also we want to be a partner in this process to make sure that it happens and happens in a reasonable period of time.

So again, I commend those of you, all of you who were involved in this process. It is something that we look forward to seeing happen, and it has happened, and now what we need to do is, it falls on the FAA to figure out how they are going to look at their structure, their policies, to blend in the recommendations that have been made by the Task Force.

With that, we have a five-minute rule normally with our witnesses. We would ask you to summarize your testimony in five minutes, which would allow time for questions, as we have a sec-

ond panel that will follow you. And we want you to know that your full statement will be entered into the record.

With that, the Chair now recognizes Ms. Jenny.

TESTIMONY OF MARGARET T. JENNY, PRESIDENT, RTCA, INC., HANK KRAKOWSKI, CHIEF OPERATING OFFICE, AIR TRAFFIC ORGANIZATION, FEDERAL AVIATION ADMINISTRATION; MARGARET GILLIGAN, ASSOCIATE ADMINISTRATOR FOR AVIATION SAFETY, FEDERAL AVIATION ADMINISTRATION; THE HONORABLE CALVIN L. SCOVEL, III, INSPECTOR GENERAL, U.S. DEPARTMENT OF TRANSPORTATION; DR. GERALD DILLINGHAM, DIRECTOR, PHYSICAL INFRASTRUCTURE ISSUES, U.S. GOVERNMENT ACCOUNTABILITY OFFICE; AND DR. AGAM N. SINHA, SENIOR VICE PRESIDENT AND GENERAL MANAGER, THE MITRE CORPORATION, CENTER FOR ADVANCED AVIATION SYSTEM DEVELOPMENT

Ms. JENNY. Thank you. Good afternoon, Chairman Costello, Ranking Member Petri and Members of the Subcommittee. Thank you for inviting me to participate in today's hearing on NextGen.

A few words about RTCA might help set the stage for my remarks. RTCA is a private, not-for-profit corporation that is utilized by the FAA as a Federal advisory committee, providing a venue for stakeholders to forge consensus on aviation-related issues. RTCA provides two categories of recommendations: first, policy and investment priorities to facilitate the implementation of national airspace system improvements; and second, performance standards used by the FAA as a major input for certification of avionics.

My testimony today will describe the RTCA Mid-Term Implementation Task Force Initiative and the resulting recommendations.

The Task Force was established in February in response to a request from Hank Krakowski and Peggy Gilligan. Over 335 individuals from 141 different organizations participated in the Task Force, bringing technical, operational and, for the first time, financial expertise. Forging a consensus was a challenge, but at the end of the day, the shared desire to improve the Nation's air transportation system prevailed. On September 9, RTCA delivered a consensus-based set of recommendations to the FAA.

First, the Task Force stressed the importance of implementing operational capabilities versus technologies, and deriving benefits from existing equipage. This approach will help relieve congestion in today's system, but success will also increase the community's confidence in the FAA's ability to implement NextGen.

Second, the Task Force recommended an airport-centric approach to NextGen, delivering capabilities at key airports and large metropolitan areas where the problems are most likely to ripple through the Country, causing unnecessary flight delays, misconnections, and cancellations. Many capabilities will require deploying an integrated suite of capabilities. This will require a new way of doing business.

Third, for each capability recommended, the report identified the location, as well as the list of operators committed to making the investments.

The Task Force made recommendations in seven key areas. First, improve the airport surface traffic situational awareness and data-

sharing for enhanced safety and reduced delays. Establish a single point of accountability within the FAA to oversee the implementation of operational capabilities for the airports serviced.

Second, increase throughput at airports and closely spaced parallels converging at intersecting runways.

Third, increase metroplex capacity and efficiency by deconflecting the traffic to and from the airports in the metropolitan area.

Fourth, increase the cruise efficiency through enhanced use of special activity airspace, increased use of aircraft metering and spacing at the bottlenecks, and increase the use of flexible RNAV routing.

Fifth, enhance access to low-altitude non-radar airspace for general aviation traffic, and increase the availability of GPS approaches to more general aviation airports.

Sixth, deploy air-ground data digital data communication applications to decrease gate departure delays and to enhance efficiency and safety of airborne traffic, especially when re-routing of multiple aircraft around weather is necessary.

And seventh, improve the overall efficiency by enhancing the collaborative decision-making between the FAA and the users' flight operations centers.

The Task Force also made four critical overarching recommendations. The first is to achieve the existing three-and five-mile separation by eliminating buffers now applied. Second is to streamline operations approval process. Third is to incentivize equipage. Fourth is to utilize the RTCA mechanism, as well as joint government-industry implementation teams to facilitate the collaborative planning and implementation and tracking of NextGen.

The report makes another critical point. Closing the business case for NextGen investments requires delivering benefits within a requisite payback period. Many of the NextGen investments have high costs, long payback period, and low confidence of payback, due in part on the dependence of outside forces such as the FAA.

One way to close the business case for such investments is to achieve a faster return. For example, the Task Force analysis showed that while no individual DataComm capability would close the business case, when five capabilities were delivered for one investment, the business case closed for the airlines. The Task Force documented all known challenges to delivery and the benefits as well.

Some have asked whether the FAA can afford to implement the Task Force recommendations, as well as the NextGen vision. The answer is that we cannot afford not to. The recommendations solve current problems, while laying the necessary groundwork for the longer term NextGen. The recommendations are in effect a risk mitigation program for NextGen.

Thank you for the opportunity to testify on this important topic. I would be happy to answer any of your questions.

Mr. COSTELLO. The Chair thanks you, Ms. Jenny. And again, we thank you for your work on the Task Force.

The Chair now recognizes Mr. Krakowski.

Mr. KRAKOWSKI. Thank you, Chairman Costello, Ranking Member Petri, Members of the Subcommittee. I will be making the opening statement for FAA today.

I would like to start out by also thanking Margaret Jenny and Captain Steve Dixon from Delta Airlines, and the Task Force leads for leading what we think is a definitive jump start to actually implementing NextGen.

The two major principles of the Task Force were: prioritize initiatives that have a near-term effect; and continued cooperation and involvement of the industry in the execution and the evolution of the plans.

To prioritize the initiatives, we are reviewing the NextGen implementation plan, along with the Task Force recommendations in the guise of the Operational Evolution Partnership, which has now become the NextGen Management Board. It is the OEP which brought us three runways on time and under budget, as well as other improvements to the NAS. It also helped us achieve being removed from the GAO high risk list.

To do the needed follow-up, the FAA is committing to work with our stakeholders through the ATMAC, which is a sub-group of the RTCA, and its work groups. The ATMAC's work will complement the work of the NextGen Management Board, as I have described, as well as the Review Board which resides under it for detailed work. And through that process, we will bring all the relevant issues together to make the right strategic decisions.

It is important to know that the NextGen Management Board is chaired by the Deputy Administrator of the FAA, and it is Randy Babbitt's intention to make the Deputy Administrator the central point of focus for the over arching implementation issues through this process at FAA.

In the meantime, we are pleased that the Task Force did reaffirm that we are on the right track. Airport surface improvements are a good place to start. It is where much of the congestion does exist. We have been deploying ASDE-X, as well as other technologies, on the surface. Now, we have an opportunity to use it more effectively.

The metroplex. Instead of looking at this from singular airport perspectives, it is important to look at it as a system of airports and integrated airspace, so as we make decisions around improving the metroplex areas, you do have to consider all of the different aspects and interdependencies of what we are trying to achieve.

Access to the NAS. This means approaches. This means our NAS procedures, places in particular for general aviation aircraft to gain access, which were prohibited by the lack of infrastructure in avionics in the past.

Incentivizing equipage. This is probably going to be one of the more interesting conversations. We have to sort out what "Best-Equipped, Best-Served" means; and how we possibly fund incentive of equipage. There are a lot of different conversations going on here in Washington about how to do that.

And lastly, streamlining. Streamlining our process within the ATO, streamlining the processes within AVS and coming together to create a single performance-based navigation point of focus and office within the FAA is our intention.

As we move forward with examining the Task Force recommendations, we welcome Congress' continued interest, and commit to moving NextGen forward to heighten safety and maximize efficiency throughout the national airspace system, and we intend to see this commitment through.

Chairman Costello, Congressman Petri, and Members of the Subcommittee, this concludes our prepared remarks, and we look forward to answering any questions.

Mr. COSTELLO. The Chair thanks you, Mr. Krakowski.

And now we will recognize Inspector General Scovel.

Mr. SCOVEL. Mr. Chairman, Ranking Member Petri, Members of the Subcommittee, thank you for inviting me here today to discuss the status of NextGen's implementation.

When fully implemented, the satellite-based system is expected to improve air traffic management and yield significant economic and environmental benefits. Yet our body of work on NextGen has shown that these benefits will remain elusive unless FAA addresses a number of operational and management issues now and into the future.

Last month, an RTCA Task Force reported its findings on NextGen and made a number of recommendations on what FAA needs to achieve in the near-and mid-term, actions consistent with those we have recommended over the past five years. While FAA has concurred with our past recommendations and endorsed RTCA's, FAA needs to take action now to transition from planning to implementation.

Today, I will focus on five overarching near-and mid-term capabilities that we and the RTCA have determined FAA must address if it hopes to implement NextGen successfully. The first capability concerns the capacity of airspace in metropolitan areas with multiple airports, such as New York, Chicago, and Southern California.

Of particular concern is FAA's implementation of RNAV/RNP procedures. As we have previously reported, FAA needs to track data on the use of RNP procedures to determine which routes are not being used and why. We found that air carriers' limited use of new RNAV/RNP procedures is due largely to FAA's practice of overlaying RNP routes over existing ones, out of date traffic policies, and insufficient pilot and controller training. At Atlanta's Hartsfield-Jackson Airport alone, controllers have yet to use any of the 10 RNP procedures FAA implemented two and a half years ago.

The Task Force also emphasizes the need to shift from the quantity of RNAF/RNP procedures implemented to the quality of the routes.

The second capability concerns runway access. A key transition issue for NextGen is determining whether throughput at already congested airports can be increased. This is particularly important for airports with complex runway configurations, such as converging or closely spaced runways. Updated safety assessments are also needed to ensure unanticipated hazards are not introduced, particularly during periods of low visibility.

FAA must also address longstanding concerns with terminal modernization, the equipment controllers rely on to manage aircraft in the vicinity of airports. The Task Force parallels our work

on the need to address exactly how various technologies and procedures can unlock congested airports and improve arrival rates under all weather conditions.

The third and fourth capabilities concern high-altitude cruise and access to the national airspace system. To improve high-altitude flights and service at smaller airports, FAA needs to increase the availability of real-time data on the status of airspace use. Our concern about the impact of mixed equipage on NextGen is relevant here. Understanding and mitigating the impacts of air carriers' different capabilities and procedures are important for several mid-term efforts, including RNAV/RNP, datalink communications for controllers and pilots, and satellite-based surveillance systems for tracking aircraft positions.

In addition to these four capabilities, RTCA also calls for a major reevaluation of airport surface operations to enhance use of taxiways, gates and airport parking areas. These needed capabilities and RTCA's recommendations highlight a number of NextGen policy questions.

For example, RTCA discussed several sources of funding to implement its recommendations, such as providing financial incentives, possibly in the form of low interest loans, direct subsidies for equipment, or income tax credits. Whether such incentives should be used is a policy decision for Congress. If incentives are used, they must be properly designed and timed to achieve their objectives at minimal cost to taxpayers.

A related policy concern focuses on the proposed best-equipped/best-served concept as a way to advance NextGen. The concept, first mentioned in FAA's January 2009 NextGen implementation plan, gives preferential treatment to airspace users equipped with new systems. Historically, however, FAA's policy for providing air traffic control services has been first come, first served. A best-equipped/best-served policy would, therefore, represent a significant change in how traffic is managed. Key concerns include ensuring equity among users in implementing the policy at specific locations.

To set realistic expectations for NextGen, FAA needs to take several actions now. First, implementing RTCA's recommendations will require FAA to adjust budgets and plans. Accordingly, FAA must develop plans to initiate action and establish a five-year funding profile for the NextGen mid-term.

Second, FAA must develop metrics for assessing progress, measuring benefits, and identifying problems in order to put timely corrective actions in place.

Third, FAA must determine how a best-equipped/best-served policy could be implemented.

And finally, FAA must develop and implement a strategy for linking near-and mid-term efforts with long-term plans for NextGen's major transformational programs.

Mr. Chairman, this concludes my statement. I would be happy to answer any questions you or Members of the Subcommittee may have.

Mr. COSTELLO. The Chair thanks you, Inspector General Scovel, and now recognizes Dr. Dillingham.

Mr. DILLINGHAM. Thank you, Mr. Chairman, Ranking Member Petri and Members of the Subcommittee.

The RTCA Task Force report and its recommendations can be viewed as a blueprint for the transition from the current air traffic control system to NextGen. This transition phase is often referred to as NowGen, as distinguished from the NextGen Program.

My testimony today highlights some of the challenges that we believe FAA needs to consider as it develops its response to the Task Force recommendations.

These challenges fall into three areas: first, allocating its resources for developing and certifying RNAV and RNP procedures and addressing the related environmental issues; second, managing FAA's organizational culture and business practices to support a new way of operating; and third, deciding on cost-effective options for encouraging operators to equip their aircraft for new systems capabilities.

The first group of challenges involves allocating resources to prioritize and expedite the development of procedures that allow more direct flight paths than existing RNAV and RNP procedures, and redesigning airspace in congested metropolitan areas.

Our work suggests that FAA will have to prioritize its development of RNAV and RNP procedures because at the current pace, it will take decades to complete the thousands of procedures targeted for development.

This challenge also includes finding ways to expedite environmental review processes and proactively addressing the environmental concerns of nearby communities. Both of these efforts have oftentimes contributed to very significant delays in implementing new procedures and redesigning airspace.

The second group of challenges involves adjusting FAA's organizational culture and business practices. Traditionally, FAA's culture and business practices have supported the acquisition of individual air traffic control systems. Implementing NowGen will require FAA to increase its emphasis on integration, coordination and measurable outcomes. Specifically, FAA will have to work with a greater number and variety of external stakeholders, as well as across multiple internal lines of business, and may have to reprioritize some of its current NextGen implementation plans and programs.

At the same time, FAA must ensure that its near-term plans align with its longer term NextGen vision. Additionally, with NowGen, FAA must ensure that standards, procedures, training protocols, and other necessary requirements to operate in the NAS are developed and certified in a sequence that supports the timely implementation of capabilities. Furthermore, streamlining these processes is critical.

The last group of challenges involves ensuring that operators are equipped for NowGen and NextGen. Although the Task Force assumed that for the most part, Federal funds would not be required to implement its recommendations, our work has shown that for a variety of reasons, from establishing the credibility of FAA's long-term commitment, to the financial condition of the industry, the Federal Government may be asked to provide financial assistance incentives for NextGen aircraft equipage. If Federal resources are

used, we believe that it is important that key considerations include a focus on what would be in the national interest, rather than the best interest of any one or more stakeholder groups, and that the Federal assistance will not displace private investment.

Mr. Chairman, we agree with the Task Force conclusions that its report should be seen as a beginning, and not an end. I would add that successful next steps for NowGen will require the same kind of cooperation, collaboration and transparency among stakeholders that was shown in the work of the RTCA Task Force, as well as the continued oversight that has been provided by this Subcommittee.

Thank you, Mr. Chairman.

Mr. COSTELLO. Thank you, Dr. Dillingham.

The Chair now recognizes Dr. Sinha.

Mr. SINHA. Good afternoon, Chairman Costello, Ranking Member Petri, and Members of the Subcommittee. Thank you for inviting me to participate in today's hearing on NextGen: A Review of the RTCA Mid-Term Implementation Task Force Report, commonly known as Task Force 5.

My testimony today will address the RTCA Task Force 5 recommendations, their feasibility and challenges, and post-task force priorities.

It is important to begin by acknowledging that the way the Task Force was conducted constitutes a transformational process for how government and industry should forge consensus. I would like to highlight three unique aspects that led to the success of this activity and that should be viewed as best practices for future collaborative efforts.

First, the recommendations and conclusions of Task Force 5 are rooted in data and analysis that was collected and made available to all participants. This transparent data-driven approach provides traceability for the decision-making process and allows new information to be incorporated as it becomes available.

Second, participation by stakeholders finance representatives is unprecedented and was a key success factor for this Task Force. In the past, representation from stakeholders' operational and technical personnel left out key considerations that are required to successfully drive the users' investment decision-making.

Finally, commitments by operators were focused on implementation at specific locations based on expected benefits. Capabilities were identified that provide benefits for each operator group, including general aviation, business aviation, commercial and military.

The Task Force did a commendable job in reaching consensus amongst the diverse set of participants. However, there is much work to yet to be done to successfully achieve the operational improvements and associated benefits.

Tier one recommendations for the near term are based on mature technologies and procedures already under development and are targeted to benefit all operator groups. One example is optimizing RNAV and RNP procedures. The operational capability description includes selected, high-benefit locations and recommends instituting joint government-industry "tiger teams" to focus on the qual-

ity of the RNAV procedures as they are implemented, and to identify and resolve issues early in the implementation process.

Some capabilities will require FAA to accelerate or redefine the current plans. An example is expediting implementation of data communications. The recommendation calls for deployment of the initial data link capability to deliver revised departure clearances and en-route clearances to the pilot, thereby providing early benefits.

Some tier one near-and mid-term capabilities, though well defined, still require further work in areas including safety, certification, human factors and potentially some policy changes. For example, expanded parallel runway operations need additional human-in-the-loop simulations and blunder analysis to support enhancements to closely spaced parallel runway operations.

Another key challenge that was identified across many of the proposed operational changes was the need to accelerate processes related to avionics certification and operational approval.

The tier two and three recommendations identified by the Task Force were deemed to have lower benefits and/or higher risks. The community should continue its R&D activities to better define and integrate evolutionary capabilities to build on those in tier one.

Integrated human-in-the-loop experiments, fast-time modelings and simulation, data analysis capabilities, and operational demonstrations and evaluations at selected sites will provide necessary verification and validation or needed modifications of concepts, technologies and procedures.

Availability and use of these resources will be a critical factor to support further refinement of the recommendations in all tiers, and to ensure their successful implementation.

Now, looking to post-Task Force engagement, the complexity and challenges of moving forward will require continued collaboration and joint decision-making among all members of the aviation community. Specific metrics should be agreed upon to measure pre-and post-implementation operational performance, and determine if expected benefits are materializing.

Stakeholders will need to collaborate to address complex policy issues related to airspace design, congested airspace access, data security and environmental considerations. Further, definition of best-equipped/best-served policies and procedures in a mixed equipage environment will need to be addressed as each operational capability is agreed to and corresponding locations are prioritized.

The Task Force report calls for responsibility, accountability and authority and funding stability as necessary components of the stakeholders' commitment. The FAA should capitalize and build on past examples of successful stakeholders' engagement and project execution.

For example, both the Free Flight Program and Operational Evolution Plan have demonstrated the ability to deliver on promised benefits. Both FAA and the operators need to engage their workforces to develop procedures and training for pilots, controllers, system implementors, and maintainers. This will ensure that they will be ready at the same time and place, so that available avionics can be used as intended to deliver improved operations and benefits.

Finally, although key NextGen foundational programs such as ERAM and ADS-B are not included in the Task Force recommendations, progress and assessment of these programs must proceed and also be transparent to all the stakeholders.

Mr. Chairman, this concludes my testimony. I would be happy to answer any questions the Committee may have.

Mr. COSTELLO. The Chair thanks you, Dr. Sinha.

Ms. Jenny, in your testimony you talk about the importance of a single point of accountability within the FAA. You know of the FAA's plans to name a yet to be named Deputy Administrator to put that person in charge of NextGen. I am not sure how that relationship between the Deputy Administrator and JPDO will work, but if you will elaborate a little bit about what the RTCA found or addressed in their concerns about single point of accountability and why that is necessary.

Ms. JENNY. Yes, I would be happy to, speaking for the Task Force.

It should be noted that the Task Force limited its recommendations to the FAA on what needed to be implemented between now and 2018, and not how. Having said that, the Task Force participants felt fairly strongly because once we stepped back and looked at the set of capabilities that we recommended, so many of them require an integrated suite of capabilities to be deployed at specific locations, as opposed to doing things, investments in infrastructure across the Country, that it was felt that there needed to be some higher level accountability that would require, that would force that kind of integration across the FAA.

So I think that most of the Task Force participants would be pleased for that to be something that would be a responsibility of the Deputy.

Mr. COSTELLO. What was the Task Force recommendation for follow-up after the report now has been delivered to the FAA? Did you make any recommendations as to what follow-up should be done between the Task Force and the FAA?

Ms. JENNY. Yes, we did, Mr. Chairman. There were three parts to that recommendation. The first was to establish the group of leadership of the Task Force. That is about 18 or 20 people who led the different sub-groups of the Task Force, and have key understanding of its recommendations. The idea was that that sub-group would be stood up as an RTCA sub-group under our advisory committee, and would work collaboratively with the FAA to provide more input into what the recommendations meant, and to understand from the FAA how they are integrating them into their plan.

At the end of that would be new NextGen implementation plan, and that group would probably stand down, and we would move into a use of the RTCA sub-groups under ATMAC to monitor the implementation of the recommendations and the implementation of NextGen, both the milestones, how they are being achieved, and how the performance is improving. We are agreeing to stand up specifically the finance sub-group that will have all the finance people from carriers to stay as a standing group to help us with the kinds of things that Dr. Sinha referred to in terms of updating all that data that we have supporting the costs and the benefits needs more work.

And the third part was to establish government and industry joint implementation teams for those things that we agree we are going to implement at specific locations, and have all the stakeholders working together to synchronize their investments and their activities.

Mr. COSTELLO. Thank you.

Mr. Krakowski, again I mentioned we commend you and the FAA for doing what we and others have asked you to do in seeking the input of the stakeholders. Now that you have their input through the RTCA Task Force, let me ask you. There were 29 recommendations, if my memory serves me correctly, that the Task Force specifically made. How many of those 29 recommendations do you agree with and intend to move forward with?

Mr. KRAKOWSKI. Well, they are kind of bucketed in about seven different buckets. The key issue in my mind is, as was stated earlier, this is just a beginning because we now need to sort out with the RTCA and the Task Force and the members what the real priority needs to be, and in some cases, what are we going to stop doing or delay so we can get to a more near-term focus on some of the capabilities.

Tomorrow will be the first ATMAC meeting that we will have since the recommendations came out. And tomorrow, in our view, starts that very process. Now that FAA has had six weeks to take a look at the recommendations, reference them against what we are currently doing with the NextGen implementation plan and other activities going on, and identify what are the gaps.

And then tomorrow, we expect to enter into a discussion on how we are going to work through reprioritizing it so we can satisfy our commitment to make the Task Force recommendations become real. And that is going to, I think, be an iterative process for a few months here, leading up to a NextGen implementation near-term plan to be published in January, which is what we always we do, with the intention of having as much of this defined in that document as we can.

Mr. COSTELLO. And it is my experience, at least in the past in dealing with the FAA, as well as other agencies, that if we do not set goals and time lines, that things can drag on forever. So my question to you is, is there a time line that you have within the agency to analyze these recommendations, as you are beginning to do now with the Task Force, and you have been looking at them for the last six weeks internally. Is there a time line where you are going to pull the trigger and say, by this date, we are going not only to identify the priorities, but by a date, we are going to make a decision as to which we are going to accept and act on, and which we disagree with?

Mr. KRAKOWSKI. We don't have any solid time lines quite yet. I think we are, quite frankly, a little early in the process. But the intention is to have as much of this framed out for that January NextGen Implementation Plan publication, so from that point we can actually then be talking about realistic time lines. Because what is different about this is this isn't just about FAA making commitments to make this happen. The industry has to agree to it with some specificity. That is going to take some work.

Mr. COSTELLO. And the industry will say, I am sure, in the second panel that their willingness to commit financially and otherwise will depend on the action taken by the FAA and the benefits that you can demonstrate that they will receive. So I understand where you are coming from. I would encourage you to try and look at some time lines and also to continue to communicate on a regular basis with Ms. Jenny.

With that, the Chair would recognize the Ranking Member, Mr. Petri.

Mr. PETRI. Thank you very much, Mr. Chairman.

As I indicated in my opening remarks, this is another in a several years series of hearings we have had, and I just wanted to say that I am actually kind of encouraged because we are seeing the problem being broken down and brought more immediate, and trying to get different players to focus on solutions, and getting things moving forward, rather than some huge project that is not going to really be implemented, when suddenly in 25 years we will have this wonderful new world.

I mean, that can be a long-term framework, but within that framework, how do we get from here to there? And how can we start collaborating? So I am very, very encouraged by the Task Force report and your response to it, and look forward to the next panel's discussion about how to work the collaboration so we don't get into a chicken and egg problem, but can try to figure out how to actually move forward profitably for the airlines and efficiently and safely for the traveling public, because there are a lot of benefits for our Country and the public in this process.

One thing, if you could, both Ms. Jenny and Mr. Krakowski, discuss a little bit the airport-centric approach, how you envisage that reducing delays in the national airport system. And I think for Mr. Krakowski, how you would expedite the implementation of RNP/RNAV routes for operators that are so equipped? And is there room for streamlining the procedure approval for that process, both in safety certification and in environmental approval?

We know the political side of environmental approvals particularly, and it is a no-win situation, but we need to move forward and airplanes are quieter than they were. And so the real-world consequences of doing this are probably a little less than they might have been some time ago. Could each of you comment?

Ms. JENNY. Thank you. One of the things that we did in the Task Force was we started with a large, a fairly longer list of operational capabilities. And then we looked at each one and defined its benefits and its costs, and we brought in as many studies as we can find. And then we looked at ranking them.

And when we did that, it became very clear that the highest benefit, the biggest bang for the buck we would get out of all of the recommendations were those things revolving around large metropolitan areas with many airports. So we had actual data to look at.

And it is pretty clear when you look at the data that if you can solve the delay problem in the New York area or the Chicago area, those delays ripple through the whole system. So if you can solve those, you solve a large percentage of the problems in the whole transportation system.

So those sort of naturally made their way to the top because of the process that we used and the process we hope to continue to use moving forward.

Mr. KRAKOWSKI. Clearly, we concur with what Ms. Jenny said.

Relative to the streamlining of RNAV and RNP procedures, there is a lot of opportunity here. We are taking certain specific steps. For example, within ATO, there are three organizations under two different Vice Presidents who have been processing RNAV/RNP procedures from the air traffic point of view. We don't think that that is a successful model for implementing the Task Force recommendations, so we are consolidating that into a single performance-based navigation office under our Senior Vice President for Operations, Rick Day. And it also links up with service areas where a lot of the customers have direct contact with our people who are doing these procedures and creating them in their regions and at their local airports. So we think that will go a long way in helping streamline our ability to deliver procedures that are approved.

Now, Ms. Gilligan has the other side of the house with the approvals from a flight standards point of view.

Ms. GILLIGAN. Yes, sir. And we agree that we can streamline the approval process for the procedures. I think we, and industry, had a lot to learn as we started down this road because obviously we want to implement these procedures, but we don't want to introduce any unintended safety hazard or safety consequence.

We have learned a lot. We have worked with the manufacturers and with the operators to better understand who needs to bring what data to the table, so that we can streamline the process. The Task Force recommends that we establish a standard process. Up until now, individual applicants have come in and they have wanted to do what may have worked well for them in their individual airline or at their individual operation. We are going to standardize that, and that will help to reduce the time as well.

It took a long time at the start, but I think each of the new applicants would agree that it has gotten better and easier as we have gone along, and we are going to focus on enhancing that even more.

Mr. COSTELLO. The Chair now recognizes the distinguished Chairman of the full Committee, Chairman Oberstar.

Mr. OBERSTAR. Thank you very much, Mr. Chairman. And thank you for staying close on the hide of all these participants in NextGen. You have been doing a terrific job, and I thank Mr. Petri for partnering in this initiative.

I have a good deal more confidence about the future of modernization of the air traffic control system with the steps that have been taken.

Mr. Scovel and Dr. Dillingham, I have one question. Based on your review of FAA's management of NextGen, and of the numerous technologies—airport operations, runway access, metroplex airspace, high altitude cruise, continuous glide-path in and so on—give us your evaluation of FAA's ability to manage multi-billion dollar contracts.

Mr. DILLINGHAM. I will take a shot at it first.

Mr. OBERSTAR. You have been there before, Dr. Dillingham.

Mr. DILLINGHAM. Yes, Mr. Chairman.

Mr. OBERSTAR. With us, together.

Mr. DILLINGHAM. Yes, yes. In fact, we have been monitoring FAA for 15 years with regard to air traffic control modernization. I haven't been here the whole 15 years, but a lot of it.

FAA has definitely shown progress in its ability to monitor those large contracts. Part of that, we attribute to the Congress mandating the stand-up of the ATO and subsequently the business practices that, and operational practices that the ATO brought into being. As the COO just talked about earlier, we did remove them from our high-risk list after 12 years because they were able to do that.

What we are saying now is that should provide a foundation for what needs to be done with NowGen and NextGen, though they will have to shift from sort of concentrating on acquiring one system and deploying it nationwide, to this more integrated, cooperative, regional kind of orientation.

But we are definitely guardedly optimistic that FAA can make this happen, but it is indeed a complicated undertaking.

Mr. OBERSTAR. You remember, and this was before General Scovel's tenure, you remember the period in which FAA was mired in the advanced automation system, and the contract for that was supposed to be $500 million, and went up to well over $1 billion in a day when $1 billion was a lot of money.

[Laughter.]

Mr. OBERSTAR. And you remember my calling the Vice President of IBM in this hearing room and telling him, I am going to nail your shoes to the floor. He said, why? I said, because you keep moving around. You can't stay with one system until you have it completed. And the other thing is, you need to stay in one place and manage more than one system at a time.

Do you think they are able to do that?

Mr. DILLINGHAM. Yes, sir. I think, you know, we see things like when that system, when the IBM system was being developed, FAA used the concept of what we used to call the "big bang" theory. Let's, you know, all of this at once. And they since have moved to build a little, test a little. And that has proven to be a useful way to approach things.

So you learn as you go, and I think that, you know, they have a good chance. It is going to take that collaboration and cooperation that we saw with the RTCA Task Force, with industry being a part of it. But also it is going to require that this Subcommittee and the full Committee maintain that oversight that they have been doing for the last two decades.

Mr. OBERSTAR. Yes, a good deal of all those things you mentioned happened because of this Committee's, Subcommittee's oversight under various management. But you remember when Administrator Hinson, after we had quite some consultations, and with Linda Daschle, who was Acting Administrator, brought in Navy auditors to review FAA's contract management, and found there were just—it was deplorable, just deplorable. And Navy made a number of very pertinent and insightful recommendations, which then we took and translated into legislative language, and Mr. Hinson implemented.

Well, FAA has been able to do a number of major projects, but I still, with a question also: Is there an arm's length relationship with the contractors?

Mr. Scovel?

Mr. SCOVEL. Tall question, sir. In the context of NextGen, we will be looking at that very carefully when we look at how FAA undertakes its implementation of the RTCA's Task Force.

Mr. OBERSTAR. Remember Coast Guard, remember the IBM Days. You couldn't tell where FAA left off and IBM began and vice versa. Now, there is a contractual relationship. There has to be inclusiveness within FAA, with bringing the controllers in at the early design and engineering stages, and FAA can't be, as the Coast Guard was doing, telling contractors: you do it and certify to us that you are doing a good job.

Mr. SCOVEL. Yes, sir. I understand your cautionary comments along those lines, and I well recall in the context of aviation safety hearings that we have had in this hearing room where I have been privileged to appear before you, sir. And one of the lessons for all of us was the, in your words, sir, a cozy relationship between FAA and carriers.

Back to your earlier question, sir, about multi-billion dollar contracts. We can point to some successes on FAA's part. ERAM is certainly one of them. My staff's work has led us to conclude that stable requirements are an absolute key if FAA is to successfully carry off a contract of that nature.

On the other hand, you referred to WAAS, sir, and we are all familiar with STARS as well. As we look at NextGen implementation for the mid-term, terminal modernization, with its history of being virtually a trail of tears, has the possibility of being almost a showstopper for anything that can be accomplished in the near-to mid-term.

Mr. OBERSTAR. Let's all keep in mind, and all of us on this Committee do, I know, it is not the airlines. It is the air travelers who are paying for this system through their ticket tax. It is that excise tax that goes into the AIP account and to the F&E account and 80 percent of the operations account. And so we are very directly responsible to the air travelers for the investment they are making, and they are counting on us to make sure that this works.

And they are also counting on us not to over-promise and underdeliver. And I need you two watch-dogs to stay on top of it, as we will, this Committee as well, I assure you.

Thank you very much, Mr. Chairman.

Mr. COSTELLO. The Chair thanks you, Chairman Oberstar.

And let me mention to General Scovel, we are aware of the aggressive review that you are doing with ADS-B, and we take our responsibility as oversight of the agency and others involved in the system, and we appreciate the work that you are doing with ADS-B and the work that you do in general.

The Chair now recognizes the gentleman from North Carolina, Mr. Coble.

Mr. COBLE. Thank you, Mr. Chairman. Good to have the panelists with us today.

Mr. Chairman, as you pointed out earlier, much has been said about NextGen, and I am not sure that I am capable of intel-

ligently defining it. So I am going to be very elementary. I am going to have two questions. I am going to put the first question to Mr. Krakowski, and my second question to Mr. Scovel.

My first question, Mr. Krakowski, is: What is NextGen?

And my question to Mr. Scovel is: Who is in charge of NextGen?

And I hope I am not being too elementary, but I need to know the answers.

Mr. KRAKOWSKI. It is a frequent question in the last two years that has been asked. NextGen is an evolution, and as I think about NextGen, it is not a big-bang theory. It is not something you turn a light-switch on. It is a methodical modernization of how we run air traffic, not only here in the United States, but globally as well because our airplanes fly overseas, overseas aircraft fly here.

So we have to have a common approach with common technologies and procedures to be able to fly airplanes closer together, on more efficient routes, and the current technologies do not permit that.

One of the current problems with our system is it is somewhat like a hard-wired house with the old telephone system. It is not scalable. It is not flexible. It is not movable. If you look at the promise of satellite-based navigation, data communication, and all of the pieces that layer in, you are creating a system that has much more flexibility and scalability when traffic flows change, or when thunderstorms impact the system, so we can do it better than the current system allows right now.

So in my mind, it is a march toward a system that just keeps improving over time.

Mr. COBLE. Thank you for that.

Mr. Scovel, who is the boss? Who is in charge?

Mr. SCOVEL. That is a very tough question, sir. In fact, you may recall from my testimony back in March and at a roundtable last year where the question of FAA's organization for NextGen implementation was raised. I expressed skepticism on the part of my office as to how leadership is to be exercised within FAA.

It has been mentioned today that the incoming Deputy Administrator for the agency will have overall accountability for NextGen, and that is certainly true. But I would draw a distinction between political accountability, which of course rests with the Administrator and his Deputy. They are responsible for everything that happens or fails to happen in the agency, including NextGen, and day-to-day operational decision-making authority, which right now we see as being very diffused and fragmented.

There is a Senior Vice President within the Air Traffic Organization whose title is NextGen Implementation and Operations Planning. However, that official does not have either personnel or budgetary authority over many of the key programs that will be necessary for NextGen, not even those within the ATO, much less those that are on the outside of that organization. Perhaps they are over in Aviation Safety or even elsewhere in the organization.

In our view, for one of the key missions of the agency, if one of the key missions is to operate the NAS today safely, efficiently, effectively; another key mission, prepare to operate the NAS in the future safely, efficiently and effectively; FAA today is not properly organized to carry out that key second mission.

Mr. COBLE. Well, I thank you, sir.

Mr. Krakowski, back to you. Will implementing the recommendations of the RTCA Task Force require delays in the implementation of NextGen, A? And B, is FAA still aiming for a 2025 target window?

Mr. KRAKOWSKI. I actually think you accelerate and start moving us to NextGen faster by adopting the RTCA recommendations. One of the most important elements of NextGen is aircraft being equipped with high-fidelity GPS systems in the aircraft. And much of the Task Force recommendations point to an increased usage of that so we can get better safety and efficiency on the surface of airports, more efficient routes in the system.

So the more that we can provide near-term benefits closer in, moving the dial to the left, so that the airlines can be encouraged to equip with the higher-fidelity equipment, you start moving it toward a kind of a faster trajectory, and you actually make the system healthier as you are doing it.

Now, there is a distinction. The Task Force recommendations don't speak to the longer NextGen vision of ADS-B, some of the larger programs like System-Wide Information Management, but those are moving along. Those are going to continue to move through our NextGen plan that has been defined by the JPDO and then by the NextGen organization within ATO as well.

Mr. COBLE. So 2025 is still the target window?

Mr. KRAKOWSKI. We are not sure what we are going to end up with at 2025 at this point. I mean, it is an interesting target for some things to be in place, but the fact that the whole world is going to NextGen by 2025, I don't think we are there anymore.

Mr. COBLE. Mr. Chairman, can I ask one more quick question? The red light, I see, is illuminated.

Ms. Jenny, let me put a question to you. It has been suggested that since the RTCA report focuses on maximizing capabilities from existing equipage, the recommendations really are not about NextGen. Is that a fair criticism?

Ms. JENNY. Thank you. I don't think that is a fair criticism. I think I would agree somewhat with what Mr. Krakowski just said. The recommendations really are sort of a risk mitigation for moving toward the more sophisticated technologies. If we are going to develop and implement ADS-B and DataComm, to get the full benefit, if you just put the infrastructure out, nothing changes and you don't get a benefit. What you need to do to get the benefit is implement new procedures, train controllers and pilots, possibly change the way airspace is designed.

What the NextGen Task Force says is let's do some of those things for the existing capabilities, for things like multilateration for RNAV and RNP. We will make all of those changes so that when we can go to ADS-B, all of that work is done. That increases the confidence of the community that we can do it, and it is much more likely that we will close the business case and move to NextGen faster.

Mr. COBLE. Thank you.

Thank you, Mr. Chairman. I yield back.

Mr. COSTELLO. I thank the gentleman.

And now the Chair recognizes the gentleman from Iowa, Mr. Boswell.

Mr. BOSWELL. Thank you, Mr. Chairman, and thank you for having this hearing.

I won't address this to this panel, but I will just say this to you. Two weeks ago, I was all set to start all over again. I couldn't find you that day to talk about passengers' rights as I tried to travel across the skies of this Country, but I have calmed down since then, so I am good, but it is a concern.

On this issue here, it was interesting to hear Mr. Coble. It seems to me like we are moving awfully slow. You have heard that before. It is a big, big thing. And I have just observed, as a user, that it seems like general aviation has adapted quicker and maybe it is much more complicated for the airlines and corporations and so on. I don't know.

And then I get to thinking about the international side of it, and it is. So I think about the time you are getting ready to make a step forward, you find out Collins Radio or somebody has come up with a better idea to do it. The technology is moving so fast, so I don't know. Maybe Mr. Chairman, we just need to set a deadline and see what we could put together at that time, we do it. Otherwise, it seems like it stays open-ended, and that is something we might want to think about.

It has kind of changed a little bit here. Ms. Gilligan, would you explain the role that FAA's AVS plays in the NextGen and what are some of the specific processes that your office handles as it pertains to NextGen implementation?

Ms. GILLIGAN. I would be glad to.

There are two parts to the system, there always have been, the ground-provided infrastructure and the airplane. For many years, they were relatively separate. The ground provided service for separating air traffic and the airplane did things that assured that it was operating safely.

But now, they actually can share those responsibilities. The airplane actually has a tremendous amount of capability, technology that it can contribute to separating airplanes, as well as to operating safely. To do that, operators and manufacturers need to have approvals, and those approvals go through the Aviation Safety Organization. And as someone commented, we want to make sure as we are making—as we are introducing those new processes and procedures that we are understanding whatever risk we may be introducing and that we are eliminating that or managing that or mitigating it as we go along.

All of that is work that is done with our safety inspectors, with their operators, and with the manufacturers to understand the capability of the aircraft, to be sure the company, the operator develops processes and procedures, that they have training for their pilots and other staff members, and that that all comes together before we issue the approval to actually take advantage of what can be done in the system.

So that is the role that we play.

Mr. BOSWELL. I appreciate that.

Now, in my previous statement, and I mentioned Collins, for example. That was a compliment.

Ms. GILLIGAN. Yes.

Mr. BOSWELL. I have been to their site and their laboratory, if you will, and it is amazing what they are putting into this and what we can expect even day by day. It is a compliment to them. They are really, really good.

I would like to move on to Dr. Dillingham for a minute. In your testimony, you mentioned the need for FAA to change its culture to give NowGen and NextGen a better chance for success. What do you mean by culture change in this case? And how could this change be facilitated?

Mr. DILLINGHAM. Thank you, Mr. Boswell. I was referring to the tradition that FAA has with focusing on implementing or developing one system at a time and deploying it nationwide. The new paradigm has to be an integration and cooperation and multiple system deployment for the NextGen-kind of situation that we are in now.

And if I could just go back to your first comment about how technology is passing and time is getting ahead of us. I think part of the answer to your concern is a part of what we are talking about now, and it is instead of focusing on 2025 and what may or may not be possible to do by that time, the focus now has shifted back to technologies that we know and procedures that we know that will end up making a difference now.

So that I think that is why, you know, what RTCA and FAA has done is very, very important just because of the idea that you suggested, is that technology is moving awfully fast.

Mr. BOSWELL. Thank you very much, Mr. Chairman. I yield back.

Mr. COSTELLO. The Chair thanks the gentleman, and now recognizes the gentleman from New Jersey, Mr. LoBiondo.

Mr. LOBIONDO. Thank you very much, Mr. Chairman, for holding this hearing.

To our panel, thank you all for being here and for doing what you do.

Mr. Krakowski, I have a couple of questions, but first I want to say a very special thank you for all of your help and assistance in the recent groundbreaking that we have had for the Next Generation Aviation Research and Development Park at the FAA Tech Center which is in New Jersey's Second Congressional District. I really believe that this park will be a force enhancer for the Tech Center, that it will be a force multiplier and will assist in many ways. So I thank you.

Two pretty quick questions. First, Mr. Krakowski, as you know, in response to the recommendation of the GAO and others, this Committee included language in the FAA authorization bill to move the Joint Planning and Development Office out of the ATO and place it directly under the Administrator. My question to you is whether you think this is an appropriate organizational structure to ensure the success of NextGen? Or if you believe significant progress can be made under the current alignment?

Mr. KRAKOWSKI. I actually believe that the JPDO is less of an issue for the purposes of this Task Force because the Task Force recommendations are near term. The JPDO was never set up as an implementing organization. It really was set up for planning and collaborating across other agencies for kind of the long-term plan,

where are we going, what are the technologies that are going to get us here.

It is the FAA. It is our responsibility and it is our mission to implement that which is going to make the system better, and it is the people that run the system every day through the current structure of the NextGen Management Board, which exists under the leadership of the Deputy Administrator, and has been for quite some time. A new Deputy Administrator coming in ties it all together between the Aviation Safety organization, people that run airports, people that run government affairs, and the ATO as well at the highest level toward the Administrator.

So since we are more into an implementation role now versus planning and kind of long-term strategy, I think the current structure that I have described serves better, sir.

Mr. LOBIONDO. Okay. Thank you.

And the second one, I think we can all agree that to design and implement the NextGen system, the FAA will need to hire more staff, especially if it were successful in accelerating the program. I know that the RTCA has raised concerns with staffing levels and certification offices, and I would like to see the engineering capacity at the Tech Center grow.

But do you have a NextGen workforce plan for the coming years that you can share with the Committee?

Mr. KRAKOWSKI. Yes, I would be happy to sit down with you and give you some detail on that. But we do agree that if we do not attract and hire the right kinds of talent, the right type of people, with the quality that we need, the program will suffer. This is high on our radar scope.

Mr. LOBIONDO. Okay. Thank you.

Mr. Chairman, before I yield back, I would just like to recognize that who we affectionately call in New Jersey "Mr. Transportation and Infrastructure," Mr. Bob Roe. Thank you for joining us today, the former Chairman.

Mr. COSTELLO. The Chair thanks the gentleman, and now recognizes the gentleman from Ohio, Mr. Boccieri.

Mr. BOCCIERI. Thank you, Mr. Chairman.

Thank you to the panel.

I have a question for Mr. Krakowski. Earlier this year, our Ohio delegation sent a letter to you asking that the FAA's plan to consolidate several air traffic control facilities in our State be postponed until Congress has completed its work reauthorizing the FAA.

[Information follows:]

Congress of the United States

Washington, DC 20515

The Honorable Ray LaHood
Secretary of U.S. Department of Transportation
1200 New Jersey Avenue SE
Washington, DC 20590

February 24, 2009

Dear Sec. LaHood:

Our purpose in writing is to voice our collective concerns regarding the Federal Aviation Administration *(FAA)*'s efforts to separate radar and tower air traffic services from FAA facilities in the state of Ohio. Because we believe that such major adjustments to the functions of air traffic controllers should only be done after careful and thorough review and evaluation, we respectfully request that the FAA postpone its efforts in Ohio until Congress has had an opportunity to complete its work on *FAA* Reauthorization.

First, let us be clear: we are NOT asking the FAA to cancel its realignment efforts in Ohio. We are merely requesting that any plans be postponed until the Obama Administration and Congress can implement a process for consideration of facility and service realignments. Waiting until such a comprehensive review procedure can be employed would ensure that realignments serve their stated purpose: to provide operational benefit to users, increase safety, increase system efficiency and save money.

As you know, the FAA announced a proposal last year that would affect the air traffic operations at Dayton, Columbus, Cleveland, Toledo, Akron, Canton, Mansfield, and Youngstown. The Ohio congressional delegation remains unconvinced that all alternative configuration arrangements have been reviewed for FAA facilities in our state or that realigning these facilities would have any benefit to the flying public or the taxpayer. As such, we believe it to be in the best interest of all parties to delay the realignment efforts in Ohio until a process for realignment considerations can be put in place.

Additional realignment concerns include the fact that staffing a de-combined Tower and TRACON will require more controllers and managers because the Agency will lose the flexibility to shift controllers between tower and TRACON. In fact, an FAA Manager in Atlanta, a once-combined facility that was de-combined over a decade ago, recently acknowledged that he needed controllers to be certified in both Tower and TRACON operations, validating the efficiency of maintaining combined facilities.

Combined tower and terminal approach control TRACON facilities have served our communities well by providing first-rate services, efficiency, and safety to passenger and cargo aircraft. We believe that any efforts to de-combine such facilities should be done so only after proper vetting and scrutiny. In such cases where viable options exist that would help maintain the integrity of the facility, those options should be given all due consideration. As such, we once again request that the FAA suspend realignment efforts in Ohio until all issues above can be addressed to our satisfaction.

We appreciate your attention to these matters and await your timely response.

Sincerely,

Tim Ryan
Member of Congress

Steve LaTourette
Member of Congress

Marcy Kaptur
Member of Congress

Betty Sutton
Member of Congress

Mary Jo Kilroy
Member of Congress

Charlie Wilson
Member of Congress

Zack Space
Member of Congress

John Boccieri
Member of Congress

Pat Tiberi
Member of Congress

Dennis Kucinich
Member of Congress

Robert Latta
Member of Congress

Jim Jordan
Member of Congress

Steve Driehaus
Member of Congress

CC: Mr. Henry Krakowski, COO-Air Traffic Organization, Federal Aviation Administration

This Committee passed a bill that includes a process for aviation stakeholders to review and evaluate those consolidation proposals. The full House passed that bill. The Senate Commerce Committee has now passed the bill and we are waiting for the full Senate's action. Having these consolidations reviewed is important to me, and to the Ohio delegation and to the flying public in my State.

I would like you to tell me today if you can take these consolidations off the table until they can be properly vetted by the bill's review process.

Mr. KRAKOWSKI. Without actually thinking about that and having the document in front of me, it is difficult to answer it specifically. I would like to be able to do that with you at some other point.

However, I will say this. One of the key issues around consolidation has been the sensitivity of our relationship with the controllers union and our ability to work together to find out whether or not the consolidations overall make sense. Just in the past few weeks, there is new leadership at NATCA, and we do have the contract behind us. Mr. Rinaldi, the new president of NATCA, and I, are talking about that very subject. In fact, we will be meeting next week, actually, to start talking about what that looks like.

Until we get through that and until we understand what that looks like, we don't have any direct plans right now to continue marching toward consolidations in your area.

Mr. BOCCIERI. Just to be clear, sir, you are saying that consolidations are not going to be on the table until you have had a chance to vet them and clearly refine that process?

Mr. KRAKOWSKI. I would say we are putting them in abeyance right now until we get that process understood.

Mr. BOCCIERI. It will be in abeyance. I am a military pilot in that area, and we have flown, you know, quite frankly, many low-level missions training and what-not. And I can speak first-hand that they have saved our neck quite a few times. And to consolidate those to a point where I think would jeopardize the safety of that region—you know, we are in between two of the most busy airspaces in America, class B airspaces with respect to Cleveland and Pittsburgh, and there is a lot of air traffic, single engine and multiengine aircraft, doing, you know, just recreational flying, as well as military training in that area. So it would be detrimental to have that happen, in my opinion.

Mr. KRAKOWSKI. If I may, just one quick comment on that. In the longer term as we get away from radars and the radar-based navigation system, we are going to have to look at what the right structure is going forward under ADS-B, but that is many years downstream.

Mr. BOCCIERI. Great, great. We are going to get you a copy of this letter and maybe if I could have a moment of your time after the Committee to follow up with this.

Mr. KRAKOWSKI. Very good.

Mr. BOCCIERI. Thank you.

I yield back, Mr. Chairman.

Mr. COSTELLO. The Chair thanks the gentleman, and now recognizes the gentleman from Michigan, Dr. Ehlers.

Mr. EHLERS. Thank you, Mr. Chairman.

And before I get to any questions, I would like to respond to my colleague, Mr. Coble, who asked what the meaning was of NextGen. And all I can say is, you know, the media likes to lump things in generations, generation acts and so forth. But I am pretty well convinced, Mr. Coble, that you and I and probably Mr. Boswell are members of what could best be called BestGen.

[Laughter.]

Mr. EHLERS. I offer that in all humility.

At any rate—he is not going to touch that one. I understand why.

I have a question, a very broad question here. And I have head a lot of discussion about NextGen and I have had a lot of reassurances, but I haven't heard any mention today of how seriously you are working at incorporating general aviation into the whole process. That is a very important part of this. It is not the big money part, but a lot of small businesses depend on that. A lot of people depend on it. Air ambulances depend on it.

What is the involvement of general aviation in this? And how are you meeting their specific needs?

Ms. Jenny?

Ms. JENNY. Yes, I would be happy to take a run at that.

The Task Force had pretty major involvement from general aviation, both the business aviation and general aviation involved in all of the deliberations, and were part of the consensus at the end.

Of our seven categories of recommendations, one full category addresses general aviation needs, and that is the ability to fly in the low-altitude, non-radar airspace, and have more GPS approaches to the general aviation airports. It is one of the few recommendations that actually requires ADS-B. That was part of our report that went out.

So I think from their perspective, I would say they felt fairly well represented by these recommendations for the mid-term.

Mr. EHLERS. Any other comments from any of you, particularly——

Ms. GILLIGAN. If I could answer? In addition, we are working closely with GA community already in trying to approve their access. We have over 700 approvals, for example, for RNAV procedures. There are only about 90 airlines. So we are working with a lot of the general aviation and business community to make sure that they are able to participate in the system as well. Gulfstream, for example, is one of the leading manufacturers in helping provide the data we need to be able to approve operations for those people who fly Gulfstream aircraft.

So we think actually we are learning a lot working with the GA community that will help us streamline our approval processes for everybody who operates in the system.

Mr. EHLERS. And Mr. Scovel and Dr. Dillingham, do you, in your work there, have you noticed good involvement of GA in all the various stages?

Mr. SCOVEL. Sir, from our perspective, it seems that GA has been somewhat left on the sidelines in the overall discussion of NextGen long term. It is greatly encouraging to us that the RTCA Task Force has taken a step to bring general aviation to the table at least when it is talking about access to the NAS by improving service at smaller airports.

At this Committee's request, my office will be following up to observe and report on the actions of FAA in pursuing the RTCA Task Force recommendation in that specific area, sir.

Mr. EHLERS. Dr. Dillingham, do you have any——

Mr. DILLINGHAM. I don't have anything to add to that, Dr. Ehlers.

Mr. EHLERS. All right. Let me also make a comment. I have no further burning questions at this point. But we are dealing with an immensely complicated issue here. And I am not afraid of complications. In fact, I rather enjoy it. But I am feeling lost again. Every once in a while, I have to be in touch with reality.

And Mr. Krakowski, maybe you are the best one to address this to. I think it is time again for some product demonstration, just something that we can see hands-on and see how it works. And I don't know if you are at the point of taking us up in planes and seeing how that operates, but at least look at it from the airport perspective, perhaps a visit to National again or bringing in equipment here, as you have done a few times. I think it would be very beneficial for the Committee and I encourage you to think about putting that on again.

Mr. KRAKOWSKI. We would be delighted to do that.

I would like to report that the other day, I flew my first LPV approach, which is localizer performance with vertical guidance, and I had never seen that technology before until I flew it the other day in one of the FAA airplanes.

I was overwhelmed at the precision and the ease of flying that approach. And those are becoming more and more available in the system for general aviation every day.

Mr. EHLERS. Good. I am glad to hear that.

Thank you very much and I yield back.

Mr. COSTELLO. The Chair thanks the gentleman, and now recognizes the gentlelady from California, Ms. Richardson.

Ms. RICHARDSON. Thank you, Mr. Chairman.

Having an opportunity for folks listening to say that we have talked about this for decades, I can agree, because I have been here for two years and it seems like many of the hearings I have been to, it has already been several times. So I look forward to us getting to the end point.

My first question is for Ms. Jenny. Ms. Jenny, I don't know if you have had an opportunity to read the statement of Mr. Krakowski, but on page three, he talks about all the involvement of the board and the vice presidents and the chief operating officer. And yet in your testimony, you said that it really lacks the leadership and the focus.

Can you explain to us based upon what system they say that they have in place, why you feel that that is not sufficient?

Ms. JENNY. First, I should say that I can speak for the Task Force, and the recommendations in the Task Force, which again, as I said before, really did stop short of trying to tell the FAA how to go about implementing the recommendations.

But there was a concern that because the capabilities are so integrated and so location specific, that it is different from the way things have been implemented in the past. And to be able to make sure that all the pieces come together, both across the FAA and in

collaboration with the operators who also have to invest, that it takes a really key focus and a single point of accountability and responsibility to do that.

So I think the jury is out at this point. I understand the FAA is taking all these recommendations in and looking at these. So we did not address specifically what is in Mr. Krakowski's testimony.

Ms. RICHARDSON. Mr. Krakowski, would you agree with the Board's recommendation of needing a single point focus?

Mr. KRAKOWSKI. We believe we have that through the assignment of the Deputy Administrator. This is very different, what we are proposing here with these Task Force recommendations, than some of what was talked about with Dr. Dillingham and Mr. Scovel. These are not big programs being thrown out there. This Task Force is establishing a new way of doing business between FAA and the user community because they have to invest concurrently with us to make this happen. This is not just us modernizing our system and helping them with their current aircraft work in it better. They actually have to be part of this. So we have to look at each other almost every day going forward to make this happen. So this is going to be very different for all of us.

Ms. RICHARDSON. Mr. Krakowski, in the Board's recommendations, which I think there were 27 or 29—Mr. Scovel had several and Mr. Dillingham had several as well—could you please supply to the Committee the answers to whether you are either incorporating those or whether you intend not to and why. I notice in your testimony you covered a few of them but you certainly did not cover all of the recommendations that were provided.

Mr. KRAKOWSKI. Yes. There is a lot of detail. First of all, I absolutely commit to giving you those answers. I would anticipate having those maturely available some time in January after we have gone through some of the processes I talked about earlier at this hearing, working with the RTCA committee to start prioritizing.

Ms. RICHARDSON. I would just say January or sooner if this Committee meets prior to that about NextGen.

Mr. KRAKOWSKI. Okay.

Ms. RICHARDSON. Okay. Thank you, sir.

Then finally, this is the last question, Mr. Krakowski. How do you see that you are going to prioritize how the airports will actually receive and begin utilizing NextGen?

Mr. KRAKOWSKI. Again, the NextGen Management Board, which is going to be the governing body of FAA to pull it all together, has the Airports Associate Administrator on it. It has all of the key functionalities of FAA. Then, working with the RTCA Task Force, the ATMAC, and the Subcommittees going forward, all of that is represented there as well, too.

I think your point is well taken that at times as we have tried to modernize the system we have done it without sufficient recognition of the contribution of the airport and how it operates in the system. When you think of Kennedy Airport and some of the airports, a lot of the issues which were appropriately identified in the Task Force reports are about surface management. How do we taxi aircraft in and out of the gate areas? How do we avoid clogging up a taxiway because it is not being managed effectively?

Ms. RICHARDSON. Also in Los Angeles, we also had a recent incident.

Mr. KRAKOWSKI. Yes. Runway incursions—although we have got good news here, they are way down—that is always going to be——

Ms. RICHARDSON. I understand that we still had another one this week.

Mr. KRAKOWSKI. Yes.

Ms. RICHARDSON. Thank you. I yield back the balance of my time.

Mr. COSTELLO. The Chair thanks the gentle lady.

We thank this panel for testifying here today. We appreciate your testimony.

I would note for the Subcommittee Members that the Subcommittee has asked General Scovel to monitor the implementation of the recommendations of the Task Force. I might ask General Scovel when the Subcommittee might expect its first report from you on the Task Force recommendations?

Mr. SCOVEL. Sir, we would like a chance to look at FAA's promised January plan. We may have something to you six months thereafter.

Mr. COSTELLO. Very good.

Mr. Krakowski, I would just continue to encourage you to work with Ms. Jenny in implementing the recommendations that they have made. The Subcommittee certainly intends to monitor the implementation and to continue to hold hearings concerning NextGen so that we can be certain that progress is being made and that we can move forward.

Again, we thank you for being here today and offering your testimony.

The Chair would now ask the second panel of witnesses to come forward please. I want to introduce our second panel: Mr. James C. May, the President and CEO of the Air Transport Association; Mr. Jens C. Hennig, Vice President of Operations, General Aviation Manufacturers Association; Mr. Dale Wright, the Director of Safety and Technology, National Air Traffic Controllers Association; Mr. Neil Planzer, Vice President, Strategy at Boeing Air Traffic Management, on behalf of the Aerospace Industry Association; and Mr. Ed Bolen, who is the President and CEO of the National Business Aviation Association.

Again, we would say to the witnesses on this panel that your full statement will be entered into the record. We would ask you to summarize your statement.

The Chair now recognizes Mr. May.

TESTIMONY OF JAMES C. MAY, PRESIDENT AND CEO, AIR TRANSPORT ASSOCIATION; JENS C. HENNIG, VICE PRESIDENT OF OPERATIONS, GENERAL AVIATION MANUFACTURERS ASSOCIATION; DALE WRIGHT, DIRECTOR OF SAFETY AND TECHNOLOGY, NATIONAL AIR TRAFFIC CONTROLLERS ASSOCIATION; NEIL PLANZER, VICE PRESIDENT-STRATEGY, BOEING AIR TRAFFIC MANAGEMENT, ON BEHALF OF THE AEROSPACE INDUSTRY ASSOCIATION; AND ED BOLEN, PRESIDENT AND CEO, NATIONAL BUSINESS AVIATION ASSOCIATION

Mr. MAY. Thank you, Mr. Chairman, and thank you Members of the Committee. The NextGen Task Force, which I think was admirably led by Captain Steve Dixon of Delta Airlines, did an outstanding job of setting a course to transition to NextGen. As important as that accomplishment is, there is a larger lesson to be learned, however, which is the urgency of benefitting from NextGen as soon as possible.

The case for modernization is so compelling and so widely accepted and the need is so great that the introduction of what we all agree is readily available technology and the procedures to fully leverage it must become a national priority. To make that priority a reality, we think the Federal Government at the highest levels must provide decisive leadership and a substantial financial commitment.

We know what NextGen can do. The technology is proven. We know we need NextGen. We know that stakeholders uniformly want its benefits. We know what has to be done operationally and financially. We know what we now need is the Federal Government to assume the mantle of leadership to make NextGen an early reality.

The Federal role is indispensable if we are to have an airport and airway system that can responsively meet the air transportation needs of our Nation. The system does not do that today. The burden of this failure is about $41 billion annually on airlines and passengers.

Modernization of the ATC system, however, must be based on a positive business case. Without that justification, we will not see the level and pace of investment that will produce the operational and environmental benefits that are so achievable from NextGen. Such foregone opportunities are truly intolerable. We have already witnessed that, for instance, in the failure to have RNP/RNAV procedures available when SeaTac's $1 billion third runway opened last December or an RNP/RNAV procedure engineered in Palm Springs, California that has never been used because it is inefficient.

The Federal Government holds the keys to making NextGen a reality sooner rather than later. It must become, as I said, a national priority to which all necessary resources should be devoted.

Leadership and full funding can make it happen in several years, not in the third decade of this century as is assumed today. Accepting anything less ambitious will needlessly shortchange our Country. Leadership, I point out, includes exhibiting the wherewithal to overcome the political differences that an undertaking of this magnitude will inevitably create. We need to be candid and acknowl-

edge the state of affairs. For example, this means we cannot continue to dither over implementation of FAA's New York airspace redesign plan. NextGen will not work in New York, or anywhere, if individual interests frustrate the airspace improvements that will indisputably benefit us all.

Leadership also includes accountability. Clear metrics must be established to measure the progress of the Government as it quickly introduces NextGen. At the same time, we need clear performance metrics to be established.

Finally, leadership means a serious commitment to infrastructure investment. That is something we are all familiar with on the ground. It needs to be applied to equipping aircraft to take advantage of NextGen technology. Given the cost of equipage and the length of time it could take for an individual user to see a payback, such funding is crucial. This is infrastructure investment that can pay off in the next few years, and that payoff is within our reach. To place this into perspective, if Congress and the Administration were to provide a level of funding comparable, just comparable to the funding for high speed rail projects in this year's stimulus legislation, NextGen would be an early reality.

Without this leadership and funding, implementation of NextGen will drag on and our Nation will suffer even more from airport and airway congestion. This Task Force has ably prepared our flight plan. We need to speed up our arrival at our final destination.

Mr. COSTELLO. The Chair thanks you, Mr. May, and now recognizes Mr. Hennig.

Mr. HENNIG. Chairman Costello, Ranking Member Petri, and distinguished Members of the Subcommittee, my name is Jens Hennig and I am the Vice President of Operations for the General Aviation Manufacturers Association.

This hearing and other Subcommittee hearings earlier this year have contributed greatly to a better understanding about the NextGen program, where it stands today, and where it needs to go tomorrow to achieve the safety, economic capacity, and environmental benefits we all want to achieve.

The general aviation industry, like others, is struggling in today's economic environment. GAMA member companies by themselves have experienced more than 19,000 layoffs since September of last year, which is almost 14 percent of our workforce. Despite these tough times, our member companies continue our history of investing in new products to help stimulate economic growth and future employment in general aviation. I was in Orlando just last week at a convention and down there our member companies continued this tradition by announcing new availabilities of NextGen capabilities such as ADS-B OUT, RNP, and data applications.

From GAMA's perspective, there are two overarching points to be made about the Task Force. The first point is that we have reached a time where more focus needs to be placed on delivery rather than planning. The Task Force worked under the framework that "it is about implementation". Success in implementation now will mean more user confidence as we implement other transformational parts of the NextGen program.

The second point is industry's involvement in air traffic control modernization. When we look beyond the horizon of the Task Force

to the implementation of the full concept of operations for NextGen, the role of industry in its planning, research, and development remains essential. The Administration must continue to provide effective mechanisms for industry to continue to participate.

I will now highlight some of the key recommendations of the Task Force from a GAMA perspective.

The traditional process of modernizing our airspace was centered on ground equipment infrastructure. For NextGen, the term "aircraft-centric" is often used. It attempts to communicate this paradigm shift of moving part of the air traffic control infrastructure onto the aircraft. Greater reliance on aircraft avionics, however, makes an efficient process for avionic certification and FAA operational approvals even more important.

When we look at streamlining of avionics certification, we note that significant work has been done over the past several decades to streamline these processes. However, more needs to be done for these improvements to be fully realized. We are pleased to hear Associate Administrator Peggy Gilligan already is in the process of moving forward with improvements in this area.

As the RTCA report stresses, better coordination, clearly defined roles, and accountability between the Aviation Safety Organizations' different offices is needed.

The Task Force also takes an important step forward by identifying opportunities to streamline the operational approval process and focus the FAA resources on essential safety functions. In this area the Task Force makes some practical recommendations, including that approval requests be combined into a single, comprehensive application package and that a clear path be created for aircraft manufacturers for the aircraft portion of the approval. Both will achieve better efficiencies. These improvements also enhance manufacturers' ability to put new products and capabilities into operation, which directly ties to our ability to sell equipment, create and maintain jobs, and compete in the global marketplace.

GAMA has also long advocated for appropriate levels of FAA resources for certification. We have welcomed the attention of this Committee about this issue in the past. As we go forward with NextGen, ensuring that the FAA has adequate levels of engineering staffing resources to support ever-increasing levels of certification activity and the process improvements I have already described will become essential.

I would like to close by discussing the RTCA Task Force endorsement of financial incentives for aircraft equipage as one of its overarching recommendations. These incentives become important when benefits reside not with the individual operator but with the overall system, another operator, or with the U.S. Government. We believe Government support for equipage is appropriate as the ATC infrastructure of the past is increasingly moving to the aircraft. We must all consider whether it matters in terms of Government funding if the infrastructure that is funded is built on the ground or in the air. GAMA stands ready to work with Congress, the Administration, and other industry stakeholders to further NextGen through financial incentives for equipage.

In conclusion, Mr. Chairman, thank you for your leadership on this issue and for inviting GAMA to testify before the Sub-

committee. We look forward to continuing to work with the Committee to ensure the safety, economic, and environmental opportunities of NextGen are realized.

Thank you. I would be glad to answer any questions.

Mr. COSTELLO. The Chair thanks you and now recognizes Mr. Wright.

Mr. WRIGHT. Thank you, Chairman Costello, Ranking Member Petri, and Members of the Subcommittee. My name is Dale Wright. I am the Director of Safety and Technology for the National Air Traffic Controllers Association and was a professional air traffic controller for more than 32 years.

NATCA has been deeply involved with RTCA in its work on NextGen. I personally have served on several work groups including Task Force 5, whose recommendations we are discussing this afternoon.

The RTCA's NextGen Task Force is truly a collaborative environment. RTCA members from all aspects of the aviation community were given an opportunity to share their perspectives and expertise. RTCA recognizes the value of NATCA's knowledge of day-to-day air traffic control operation, the needs of the system, and the real world implementation of the proposals being considered. The collaborative nature of the Task Force helped RTCA to develop recommendations that were thorough and well-considered. I have a high level of confidence in the recommendations.

In general, RTCA's recommendations encourage improving and expanding the use of current technology. NATCA supports these initiatives which include deploying ASDE-X beyond the OEP 35 and expanding the use of precision runway monitoring and converging runway display aids. Each of these promotes improved situational awareness for both pilots and controllers, enabling the more efficient use of taxiways, runways, and air space.

It must be understood, however, that the RTCA recommendations are only guidelines. The technological and procedural details and implementation decisions remain to be determined by the FAA. The FAA would be well advised to learn a lesson from RTCA and collaborate with NATCA as they continue to develop their NextGen plans. Former collaboration between the FAA and NATCA has been a critical component of success for modernization projects in the past. We believe it will be equally vital to the successful development of NextGen.

We applaud the efforts by Administrator Babbitt to foster a partnership between NATCA and the FAA. But despite the clauses in the new contract that encourage collaboration through the efforts of the Administrator, the FAA's willingness to reach out to or work with NATCA has been inconsistent at best.

Last month, Representative Eddie Kragh spoke before this Subcommittee about his participation in the New York VFR Airspace Task Force, which was formed in response to the accident over the Hudson River. NATCA applauds the FAA for including NATCA in response to this tragedy. Unfortunately, the FAA has not taken this approach on other projects equally critical to aviation safety. The union has been rebuffed in our attempts to be meaningfully involved in airspace redesign efforts and ERAM. Just last week we

were even refused a formal briefing on ADS-B despite the centrality of each of these programs to the FAA's NextGen plans.

While NACTA is pleased to have the opportunity to participate in the RTCA Task Force, it is a privilege that we pay a membership fee for and is not a substitute for direct collaboration with the FAA.

Meaningful collaboration with NATCA will prove critical in addressing certain outstanding concerns. For example, the RTCA report dealt extensively with the best equipped, best served plan for incentivizing equipage. In order for any such plan to be workable, a controller must be able to determine at a glance the extent to which each aircraft is NextGen equipped. This information is not currently displayed on the radar scopes and most terminal controllers do not have access to flight progress strips that contain this information. In order for any best equipped, best served plan to be successful, this information must be displayed on each controller's scope.

The FAA must not forget that it is ultimately the people and not the technology that keeps the national airspace system operating safely and efficiently. This means that every new technology and procedure must be considered for its human factor implications. The FAA must also ensure that the human infrastructure is adequate to support the current and future traffic levels and the changes that NextGen will bring.

In April of 2009, the Inspector General reported that the FAA faces an increasing risk of not having enough certified controllers in its workforce. The air traffic controller workforce has an understandably high ratio of training and has suffered a troubling loss of experienced controllers over the past three years. As we prepare to transition into NextGen, training and experience are of paramount importance. Glitches in the implementation are unavoidable so it is critical to have controllers who are easily able to adapt and maintain safety during testing and early implementation.

The FAA must also ensure that any significant changes to technology or procedures be accompanied by comprehensive training for both pilot and controllers. NATCA is concerned by the recent precedent set by the FAA with regard to training. Often changes in operational procedures are implemented without any kind of meaningful controller training. Instead, a binder is placed in the operational areas containing memos announcing the change. Controllers are instructed to read and initial these announcements. By doing so, the controller assumes the responsibility for having learned the new rules. This is unacceptable.

Controllers must be fully briefed on all changes in technology and procedure and must have the opportunity to ask questions. If changes are significant, they must have the opportunity to participate in simulator training.

NATCA remains dedicated to ensuring that the national airspace system is safe, efficient, and accessible for all members of the flying public. We look forward to working with the FAA to improve the national airspace system and to being a meaningful part of finding solutions to the issues facing NextGen.

Thank you very much.

Mr. COSTELLO. The Chair thanks you. I might mention that NATCA and other stakeholders will, in fact, be at the table when the reauthorization bill passes and ends up on the President's desk. There is language both in the House bill and the Senate bill that mandates that NATCA and other stakeholders be at the table.

The Chair now recognizes Mr. Planzer.

Mr. PLANZER. Mr. Chairman and Ranking Member Petri, thank you for the opportunity to represent the Aerospace Industries Association today. Marion Blakey sends her regrets for not being able to be here today.

The Aerospace Industries Association, of which my company Boeing is a key member, represents 637,000 high wage, high skill positions in the United States. The Aerospace Industries Association's 300 members provide a trade surplus in excess of $57 billion. The future of the Aerospace Industries Association and its civilian members critically need NextGen's success. It is our intent to grow our employment, grow our surplus, and to continue to apply to America those economic strengths that this industry provides and has provided over the years.

RTCA did a very difficult task for this Government. At the request of this Committee the FAA, they did a review of what could be done in the short and near term. They should be credited for doing that. When we look at it, it is imperative to understand that what they did is not an end, but must be integrated and woven into the tapestry that is the integrated work plan for NextGen. When you take out of that context a couple of pieces, you realize that this is a difficult task.

When you look at RNP, Required Navigational Performance—a number of people have mentioned it today—you realize that we are measuring our success by activity. In order for NextGen to be successful, in order for the FAA to be successful, in order for us to proceed the way this Committee wants us to go, we need to start to measure outcome, not activity. A thousand new RNP procedures that do not reduce flight time, do not increase the safety of the system, do not reduce environmental emissions, and do not have city-paired times decreasing are really of very little value. I could say the same thing about ADS-B and other pieces. So we understand that the outcome that is necessary is what we are looking for, not the activity.

Let me take a moment to share with you a personal story. In 1957, as a very young child, my parents gave me the opportunity to visit my sister in Boston. I lived in New York. I remember it vividly because it was the first time I traveled by myself and my first time on an airplane. My dad drove me out to Idlewild Airport, which is now John F. Kennedy Airport, and they put me on a Capital Airlines DC-3. That airplane cruised at 160 miles per hour and that blessed trip that I remember so well took an hour and ten minutes from New York to Boston. We do that same trip today in a Boeing 737-800. It cruises at 595 miles an hour, yet the time between those cities has gone from an hour and ten minutes to an hour and forty-five minutes, almost 50 percent more. The last time I looked, those cities had not moved. So we know that the system has created a problem.

We need to measure our outcomes and that will drive the Agency and the industry to give this Committee what it wants. City-pair times need to be reduced. Safety needs to be increased. Runways need to be built where they are needed. Runway occupancy times are critical to understand how this system will expand capacity.

If all we do is efficiency, then we will not have the increased the capacity that my company and the Aerospace Industries Association is trying to foster in order to create what this Nation needs in value positions, high income, and high salaried jobs for this country. We are one of the few areas left that generates the kind of trade surplus that we do. I think it is critical that those metrics move in as part of the measurement of our success.

Everybody is talking about the great job that we have done. If we had done this two years ago, and you did, we would have heard a lot of the same answers. So the question for us moving forward is how do we need to change things so that we are not here in two, three, four, or five years. I would like to offer up on behalf of our constituency that metrics are the key point to that.

Thank you very much for the opportunity. I will enjoy any questions you may ask us.

Mr. COSTELLO. The Chair thanks you and now recognizes Mr. Bolen.

Mr. BOLEN. Thank you, Mr. Chairman. I would like to thank you, Ranking Member Petri, and this entire Subcommittee for holding this hearing today. For decades the United States has been able to say that it has the largest, the safest, the most efficient, and the most diverse air transportation system in the world. NextGen is about being able to say that same thing for decades to come.

General aviation has always been at the forefront of trying to promote system modernization. General aviation was among the first early adopters of GPS, which we all know will be the basic navigation technology in NextGen. We have been early and strong proponents of ADS-B, which we recognize will be the surveillance technology of NextGen. In fact, general aviation pushed to have ADS-B test programs in Alaska and at the Atlanta Olympics. We have pushed system capacity by supporting reduced vertical separation minima within the United States within this decade. And general aviation was on the commission that actually recommended what we are now calling NextGen.

As Jens Hennig pointed out, these are tough times for the general aviation industry. This past year has been among the worst we have ever endured. Nevertheless, we remain totally committed to NextGen. I believe that RTCA's Task Force 5 is a significant step toward making NextGen a reality. Among other things, RTCA's Task Force 5 has strategies for accelerating the timeframe for NextGen and strategies for incentivizing equipage. It brings home the fact that in order for us to receive real benefits from NextGen, we will need a critical mass of airplanes to be equipped. And it points out, significantly, that equipage not only means what the Government needs to do but what operators need to do as well.

Another significant point from Task Force 5 is it truly brought the industry to the table. Mr. Chairman, in your opening comments you talked about the fact that general aviation, the airlines, the controllers, the airport community, we were all there. And as Dr.

Sinha mentioned, it was not just the operational people or the technical people. Financial people were there as well.

Significantly, Task Force 5 does not rely on breakthrough technologies or breakthrough research. It builds on technologies that we already understand. We know how to get this done. I think it is also important that the timeframes that have been put forward by RTCA are very aggressive. They push us all beyond our comfort zone, but they are all achievable. They are within reason.

Now, at NBAA, we have a working definition of NextGen. We say that NextGen is the procedures, the policies, and the technologies necessary to expand system capacity, to reduce delays, to enhance safety, and to reduce our environmental footprint by improving situational awareness, allowing more direct routing, and having precise spacing.

We believe that to date the Joint Planning and Development Office has set the magnetic North for NextGen. We believe that the RTCA Task Force 5 recommendations give us those immediate steps to get us on our way. We support the recommendations. We are wanting to work with you on a close, collaborative basis to make NextGen a reality.

Thank you.

Mr. COSTELLO. We thank you, Mr. Bolen.

Mr. May, since you and I have discussed this more than once in person and in your testimony you say that we know what NextGen can do and the that technology is proven, for the record do you want to elaborate on that?

Mr. MAY. Thank you, Mr. Chairman. I think that the definition of NextGen that Mr. Bolen just delivered would be one shared by everyone at this table and certainly by ATA. It is the ability to have the processes and procedures to deploy the digital satellite technology that we need to begin to safely space our planes more closely together, to fly more efficient routes, and to save fuel.

I have a couple of counter examples to that. One of our carriers, Southwest Airlines, has invested over $175 million in RNAV/RNP procedures. They fly to 68 airports. There are roughly 68 or 69 RNP procedures at those airports with 410 runway ends. Of those, maybe six are actually efficient. The rest of it is wasted work on behalf of those that are engineering those procedures. I talked about the runway in Seattle—a $1 billion investment, but it did not have RNP/RNAV procedures for Alaska Airlines and all the rest that want to be able to use that.

So what you have heard here consistently and from almost every witness is that technology is available. Deploy it. The procedures, however, need to be worthwhile. We need to have them save fuel, have more direct routings, and have more efficient landings and take-offs. We need all of those things to be performance metrics, as Neil Planzer just talked about, to work into the system. That is what is going to be critical to us. Otherwise, all this investment is not going to be worth much of anything.

Finally, we need leadership at the very highest levels of this Government to determine that this is the Eisenhower era National Highway Reform project of our era. Air traffic control needs to be that kind of a priority. We cannot let politics stand in the way whatever we do.

Mr. COSTELLO. Thank you. Mr. Bolen, you indicated that you support the recommendations of the Task Force. You state in your testimony that utilizing existing equipment on aircraft today has produced little or no return on investment. I think I know what you mean by that statement. But for the record, would you elaborate?

Mr. BOLEN. Well, this gets to some of the GPS technologies which are available today and I think were illustrated in a compelling manner by Mr. Planzer as he talked. We, in fact, have a generation of airplanes in some cases that are being retired with the equipment onboard that has never really been utilized. We want to have an opportunity to use all of the available technologies we have today to create as much system capacity and as much efficiency as possible. Doing that is simply a matter of having policies and procedures that facilitate that.

That is why NextGen is not a big bang. It was talked earlier about how it is a build a little, test a little. It is a collection of policies, procedures, and technologies all working together. That is why there is so much we can do. It is not flipping a switch on something new. It is about making lots of little steps that collectively are going to be transformative in nature.

Mr. COSTELLO. Thank you. The Chair now recognizes the Ranking Member, Mr. Petri.

Mr. PETRI. Thank you very much. I just have limited time. I wonder if I could ask Mr. Planzer to expand a little bit on talking about benchmarks and trying to work in a more collaborative way. Start with how we can break the problem down and start moving forward. You talked about trying to not measure or benchmark inputs but to look at outputs.

I can remember as a kid riding the old 400. It was called the 400 in the midwest because it went 400 miles in 400 minutes. The high speed rail we are talking about today is not going to achieve that goal either. So partly, I guess, it is more congestion and a variety of factors.

But in any event, one other aspect to this, there is a whole parallel rollout of NextGen in military aircraft. They have 13,000 planes. When we talk about collaborative efforts, I am sure there are some things we could learn if we could get the Task Force working with the—you work with the Pentagon. Boeing makes planes for military as well as civilian use. A lot of the equipment overlaps. Some problems are different but there are certain things that we could learn from ourselves, in effect, in benchmarking or in moving this modernization process forward. Could you in any way explain how we could help to measure and encourage step-by-step progress in this area, knowing that airlines have to make money and so if we do a benchmark we would want to do it in a way that encourages, does not just tell them, but encourages them and makes it in their interest to move that part of it forward.

Mr. PLANZER. Congressman Petri, I will try to do that. I would like to say that I served for six years as a senior executive at the Department of Defense managing air traffic control, and also served in the Air Force as a much younger man. So I do have some understanding of it. I would offer you a couple of things.

Number one is, NextGen is not part of a civilian modernization. It is the modernization of a Federal air traffic control system. The reason we say it is Federal is because it serves both the civil and the military. Defenders and first responders are critically important to the growth of NextGen. And NextGen must show the value of a transformed system to those organizations. The function of the JPDO that should continue would be an integrated management of good Government integration for those two pieces. The outcomes, it is not even outputs, it is outcomes that you want to measure, are those things that are consequential to both. We know that the Air Force, the Air Mobility Command that operates the tankers and the lifters for our defense are critically operated very similar to the members that Mr. May represents. It is a Government use of airplanes on a schedule and has some ability to move forward. The outcome that they will want to measure is no different. The equipage that they have to put onboard is no different. The difference is it is a direct funding from the taxpayer in order for us to do that.

So when we look at outcomes, we want to measure those outcomes to what the industry, civil, the military, and first responders have to do. The FAA had a program called Network Enabled Operations that was demonstrating how to integrate those. One of the key functions, we have spent a lot of treasury developing a system-wide information management system that is the backbone of the DOD's defense structure. We are not fully utilizing that in the civilian world. And when I look at the SWIM process, system-wide information management that the civil side is doing, I am concerned that we are not pulling in all that expertise that the DOD owns and we have paid for over the past several decades.

A weak system-wide information management system that does not connect to the military or to DHS but only works on a limited basis within the civilian market is, in my opinion, speaking for myself, a mistake. So system-wide information management is a key component of NextGen that is siloed out and is not currently being developed. We should lean on the military and DHS and bring them in closer, and they have to trust the civilian world will meet their needs as well as those of the civilian enterprise.

Mr. PETRI. Thank you.

Mr. COSTELLO. The Chair thanks the Ranking Member. We now recognize the gentleman from Iowa, Mr. Boswell.

Mr. BOSWELL. Thank you, Mr. Chairman. Mr. Chairman, I think we all agree that everybody at this table is extremely important as we move this along. I just cannot imagine that anybody would not want everyone there. And sometimes over the last couple of years I have heard the discussions going on regarding, well, maybe not the controllers. I do not buy into that at all. I just think it is extremely important, at least when I am pushing the throttle, that those people who are monitoring, watching, working the mechanism, talking to me and everybody else of the 80,000 flights per day, or whatever it is, are extremely important. So I would just like to address this question to you, Mr. Wright, if I could. Do you feel—let me put it this way. The GAO has found that literally millions of dollars could be saved by getting stockholders involved. Will the new contract signed by the FAA and the air traffic control-

lers help foster the collaborative cooperation necessary to help build a better air traffic control system? Are you involved?

Mr. WRIGHT. Thank you, Mr. Boswell. I do believe that the new contract will foster that relationship. As you know, I am sure the Committee remembers back, the GAO did report in 2004 having experts and technical people on their light controllers to save like $500 million in STARS. As a matter of fact, I would like to submit two excerpts from that report from 2004 as part of my testimony. ANACA wants to be involved. We really appreciate the opportunity of the RTCA to be involved. We stand ready to be involved with the FAA. Our new contract has two articles for that, one specifically for NextGen, Article ll4, and we hope that things will change and we will be invited to be participating at the front end.

[The referenced material follows:]

FAA Needs to Ensure Better Coordination When Approving Air Traffic Control Systems
Government Accountability Office
November 2004 (GAO-05-11)

ASDE-X

Of the five systems we reviewed, FAA faced fewer schedule and cost challenges in approving ASDE-X for safe use in the national airspace system. This is partly because FAA included stakeholders early and throughout the approval process.... The ASDE-X program office brought in stakeholders, including maintenance technicians and air traffic controllers, beginning with the concept of operations phase and continued their stakeholder involvement through the requirements-setting, design-and-development, and test-and-evaluation phases and then continued involvement throughout the deployment phase. For example, FAA obtained the input of controllers and technicians at the beginning of the approval process, which helped to ensure that ASDE-X requirements were set at appropriate levels and not overspecified or underspecified. ... In addition, FAA brought ASDE-X stakeholders together at technical meetings to provide input on ASDE-X design and development, which allowed the ASDE-X program office to design a system that met requirements and incorporated stakeholders' needs.

STARS

Involving appropriate stakeholders, such as users and technical experts, throughout the ground system approval process. For example, during the design and development phase of the Standard Terminal Automation Replacement System, which is designed to replace air traffic controller workstations with new color displays, FAA did not involve users such as air traffic controllers and maintenance technicians in human factor evaluations, which examine how humans interact with machines, because the aggressive development schedule limited the amount of time available to involve them. Consequently, FAA and the contractor later had to restructure the contract to address the controllers' and technicians' concerns, such as the inconsistency of visual warning alarms and color codes, which contributed to the system being delayed by 3 years and a cost increase of $500 million.

Mr. BOSWELL. Thank you. Mr. Chairman, I just think we must insist this happens. I would be glad to work with you in any way I can, because I talk to a lot of people who are the drivers, the suppliers, the pilots, and you do, too, and I cannot imagine doing this safely without having the controllers involved in the discussion, in the hands-on of what they have to do, calling upon their expertise and experience that they have accumulated. Pretty much like Mr. Planzer was talking about. It is extremely valuable. It would be absolutely unacceptable not to include that in every step of the way. Thank you. I yield back.

Mr. COSTELLO. The Chair thanks the gentleman, and now recognizes the gentleman from Michigan, Dr. Ehlers.

Mr. EHLERS. Thank you, Mr. Chairman, and thanks to the panel. It has been a very good panel. You have stated your positions very clearly. Mr. Chairman, I have no questions. I think we have all benefitted from the testimony we have heard from these gentlemen. The only suggestion I could make is that we should have a few gentle ladies on the panel, too. But I want to thank everyone for being here. It has been very helpful. I yield back.

Mr. COSTELLO. The Chair thanks you and we will take that up with staff.

[Laughter.]

Mr. COSTELLO. The Chair now recognizes the gentle lady from California, Ms. Richardson.

Ms. RICHARDSON. Thank you, Mr. Chairman. Mr. May, could you give us any real world examples of your carriers' experience with NextGen technologies, like RNAV or RNP?

Mr. MAY. RNAV/RNP. I actually just gave an example. I think you were out of the room attending to other business. But a very quick example is Palm Springs, California, not far from your area of California, where they put in a RNAV/RNP procedure but it was longer and more cumbersome than the traditional ILS procedures going into that airport. So they spent all the money to develop the engineering and it is not being used. That is just one quick example. There are many others.

Ms. RICHARDSON. Has that information been shared with Mr. Krakowski?

Mr. MAY. It has been. Believe me, many times.

Ms. RICHARDSON. And what was the response, or have you gotten a response?

Mr. MAY. I think they are in the process, as he testified and I sat here and listened to him this morning, of coming up with new plans to redirect RNAV/RNP. But I think another classic example is the airport in Seattle. A brand new runway, nobody put in a RNAV/RNP procedure. And it can't be just an overlay of an existing ILS procedure. It has to be more efficient or it is not worth doing. It has to save us fuel, it has to allow us to fly more direct routes.

Ms. RICHARDSON. Are you at the table with these discussions? Are you included and one of the stakeholders of some of this review?

Mr. MAY. I co-chair the IMC, which is part of the industry advisory group for the JPDO. We have active involvement. One of our key management pilots led Task Force 5, or co-led Task Force 5.

So we have some very significant involvement and we hope to have even more.

Ms. RICHARDSON. Okay. Could you supply to this Committee if for any reason you are not satisfied with the response from Mr. Krakowski.

Mr. MAY. No.

Ms. RICHARDSON. Could you supply to this Committee——

Mr. MAY. I will be happy to reply to the Committee but I think Mr. Krakowski—this was done prior to his being onboard. So I think the direction he is headed is a much more productive and positive one.

Ms. RICHARDSON. Okay. Well, let us know if that changes.

Mr. MAY. Thank you.

Ms. RICHARDSON. Also Mr. May, in your testimony on page two you said that leadership also includes accountability and that clear metrics must be established to measure progress of the Government as it quickly introduces NextGen. Do you feel that is happening?

Mr. MAY. I think it needs to happen. I think the Chairman talked to Inspector General Scovel about making sure there were metrics involved and they were being adhered to. I think those are performance metrics that the FAA has to live up to. The other performance metrics are the ones that my good friend Mr. Planzer talked about, which is if you put these procedures in place, if you spend the money to invest in new technology, is it going to be better technology, more productive technology, are we going to cut down on our carbon footprint, are we going to burn less fuel, are we going to cut minutes from our travel schedules. And if you do not have those kind of performance metrics, then a lot of this is wasted effort.

Ms. RICHARDSON. Okay. If there are any others other than what you just stated that is on the record, feel free to supply them to the Committee. And I would say again, if you feel you are not being heard or responses being taken into consideration, please let us know before they come back, which I think Mr. Scovel was saying could be as late as June of next year.

Mr. MAY. We are not shy.

Ms. RICHARDSON. Okay. Thank you, sir. And then finally, I have a minute, Mr. Wright, like my colleague Mr. Boswell, I am a little concerned that it seems to me the last time we had this particular evaluation of NextGen there was the talk of the involvement of the Air Traffic Controllers. So am I understanding you correctly that there has been no better progress of the involvement?

Mr. WRIGHT. We still do not have any what we would call project representatives for NextGen. Myself and the other person that work in safety and technology attend most of the meetings in town with RTCA and industry. At the FAA, we have met with Ms. Cox, the Senior Vice President, a couple of times. We have discussed what reps are needed but there has been no progress made toward actually selecting representatives. So we are still not involved with the representatives at that level.

Ms. RICHARDSON. Okay. Then I would like to concur with my colleague, Mr. Chairman. If you would consider, maybe we could do

a letter or something urging their involvement once and for all. I yield back.

Mr. COSTELLO. The Chair thanks the gentle lady. Let me mention that NATCA was involved with the Task Force but has not been with the working group, has not been consulted. And that is addressed in the reauthorization bill. We actually direct the FAA that it is mandatory to have the stakeholders, including NATCA, at the table in all of the discussions, not only in the design but in the implementation of NextGen.

And let me mention as well to another one of your points, it has been one of the problems with NextGen, in my judgement, that in the past the FAA has not gone out and consulted with or gotten commitments from stakeholders. And this is the first time to my knowledge where we have through this Task Force, because of the demands of many in the industry and this Subcommittee, the hearings that we have held and the roundtables and the meetings that we have had with the FAA, this is the first time that it has been done in a comprehensive way through this Task Force.

And now that the recommendations are made, it is up to the FAA to figure out how they are going to implement these recommendations, and it will be up to us and the Inspector General, as the Subcommittee has asked him to monitor the implementation of these recommendations and to report to us, and we will be holding further hearings on NextGen where we will bring the FAA back to the table as well as the Inspector General to monitor the implementation and also to make certain that the stakeholders involved are in fact being heard. So the Chair thanks the gentle lady.

The Chair now recognizes the gentle lady from the District of Columbia, Ms. Norton.

Ms. NORTON. Thank you very much, and thank you very much for this important hearing, Mr. Chairman. This question can be answered perhaps by any of you but particularly Mr. Hennig and Mr. Wright might want to respond. It has to do with related work in which I am involved on the Homeland Security Committee. I am interested in what you are doing in relationship to technology of course, which is one of the driving forces here as far as the Government is concerned. I worked on the part of a bill that passed that Committee that establishes a working group to try to conform the large aircraft protocols to fit general aviation.

I am also very much aware particularly in the case of general aviation, who we are talking about We are talking about small operators, small businesses. Certainly you, Mr. Hennig, are aware that we have virtually destroyed general aviation in the Nation's Capital. It is almost inconceivable that there would be any capital even of some tiny country that did not feel it could defend itself well enough to let aircraft carrying business people and dignitaries come in. Indeed, within days general aviation was up in New York City. That is where 9/11 occurred. That is where most of the chatter is about, not the Nation's Capital. That is where they have skyscrapers which are easy targets. They are up. And you can call us up but, of course, we are no such thing.

I am interested in whether you think the technology with which you are working provides adequate security for general aviation instead of what we have today? An operator has to have an armed

marshal. There are very few of them. This is not their day job. So you cannot even get one. If you want a small plane that has four seats, well there goes one of them to this armed guard. And then you still cannot come in here. You have to go to some gateway airport. And if you are willing to do all of that, you have got to make sure you have done paperwork by the ton to get into Washington, D.C. Do we have the technology to get rid of that and to resurrect or to let general aviation become a part of doing business with the Nation's Capital today?

Mr. HENNIG. Thank you Congresswoman Norton. Let me start by saying thank you for your support related to the Large Aircraft Security Program. We have seen great progress with the TSA over the past six months since May. They have sat down with industry in various settings and tried to work towards a practical solution. We are being told we are going to see a new version, a new proposal coming out of the agency towards the end of this year or the beginning of the new year that incorporates this feedback that we have been able to provide back to the TSA through the type of work group that you identified.

When it comes to the District of Columbia, obviously there is still a lot more work that needs to be done. Anybody that flies here in the airspace knows about the issues that exist. TSA and the other agencies involved, Secret Service and others, sees the District as a very unique set of airspace. When we work with TSA the one technology solution that we have really come to identify as a long term solution is that the agency is really interested in knowing more about the aircraft that are up there flying. There are some immediate solutions that are already out there. We have a system called ACARS that we are working loosely to try to test. It is a partnership actually between my colleague Ed Bolen and the TSA to look at the opportunities to just provide information back to the TSA on a security perspective on what is going on in the cockpit. That is one solution.

Near term, I think a lot of the solutions we have for security are, unfortunately, procedure oriented. There are people managing those procedures. It is the controllers playing an important role. So.

Mr. BOLEN. If I could follow up on that. You are exactly right that we say Reagan National is open for business, but it is not. Prior to 9/ll we would have 30,000 operations per year at Reagan National Airport. Today we have about 300. Which means that we have effectively eliminated 99 percent of the general aviation operations at Reagan National Airport with these restrictions. I think we are having some progress being made with the TSA along those lines.

With regard to NextGen technologies, I will say that the backbone of the NextGen surveillance technology is ADS-B. ADS-B will allow us to know more about the identity and the intent of all airplanes. So in that respect, there is a NextGen component that could be enormously helpful at promoting operations. Because at some point we have got to move beyond these restrictions that are in place. They are effectively killing general aviation.

Mr. WRIGHT. And as to the controller perspective, we have the equipment now. It is just the rules that prevent the general avia-

tion. As a pilot, I would much rather fly my plane to D.C. than drive it about every week. It would save me a ton of time if they could do that.

Ms. NORTON. Thank you very much. I think these comments are very important and the feedback that you give us about how TSA may be looking more closely at, if I may say so, this Gen but certainly NextGen to try to get us back in the real 21st century world of general aviation. I thank you for your work. Thank you, Mr. Chairman.

Mr. COSTELLO. The Chair thanks the gentle lady and now recognizes the distinguished Chairman of the full Committee, Chairman Oberstar.

Mr. OBERSTAR. Mr. May, you have some very thoughtful comments, questions in your written testimony, unfortunately I was not able to hear your oral delivery. I had some other Committee work. You say the technology is proven. But there are many parts. NextGen is not one technology, it is many parts. Which parts are proven?

Mr. MAY. I think RNAV/RNP is proven. I think a lot of the elements of data com are proven.

Mr. OBERSTAR. To the satisfaction of your carriers, is that what you are saying?

Mr. MAY. Yes, sir. And it is not the technology of RNAV/RNP. That was developed, as you better than anyone else knows, during the Capstone project in Alaska by Alaska Airlines and others. So the technology is there but it does not do any good to have that technology if it is not correctly applied, number one. If it is simply overlaid over ILS procedures, it is not going to be efficient. It has to give us meaningful, measurable results that cut down on our carbon footprint, that save us fuel, that save us time.

That is what makes the business case and it does not exist right now. We have to have a full collaborative coordination with Dale and the rest of the folks at NATCA so that we know that if you are going to institute fan departures out of Philadelphia or JFK in New York, some of the most complicated airspace in the world, that the controllers are actually onboard with the policies and the procedures set by FAA.

Mr. OBERSTAR. That is what I am getting at. There are pieces of NextGen that are tested, proven, some operable. What are those parts that are going to be, what are those aspects of NextGen that are going to be the most valuable to commercial aviation? Continuous glide path, for example, climb out procedures, not having to do the step down, and are there pieces that will have time and fuel saving benefits for air carriers that can be implemented independently without sequencing them into the whole structure that FAA has laid out?

Mr. MAY. Mr. Chairman, I do not think that they can. I think that it is a function of not just the pure nature of the technology of ADS-B, for instance, or RNAV/RNP, but the use of that technology, the procedures that are involved, the pilot training, the controller training, how they are deployed.

So if we are going to have real positive benefits in New York, for instance, it is going to start with New York airspace redesign and then it is going to have to have NextGen deployed in New York.

It is one of the recommendations of Task Force 5 that it be in a metroplex like New York.

We think they have identified the technologies. I think they have also identified the hurdles that we have to get over, which is we have got to have FAA give us performance metrics and we have to have reliability that we have a fully functioning system that involves the air traffic controllers, our pilots, others to make it work.

ATA's position has been from the get-go, and we shared this, at his request, with Dr. Larry Summers in the NEC and the Administration, that I think the best way to jump start this process is to fund the equipage for all aircraft, GA as well as military as well as civilian, so that we do not force the controllers to deal with mixed equipage as we go into a lot of these places. But at the end of the day, it is a three-or four-legged stool that involves controllers, it involves policies and procedures, and it also involves having performance metrics.

Mr. OBERSTAR. I am glad you had that encounter, let us say, with Dr. Summers. But do not hold your breath. I do not.

[Laughter.]

Mr. OBERSTAR. This is a $40 billion program, $20 billion is going to have to be born by industry itself.

Mr. MAY. That is right.

Mr. OBERSTAR. Your response was very important that you cannot just break out pieces that are the most beneficial; there is some sort of sequencing that has to happen as FAA has laid it out in order for industry to get these real world benefits that we all want and are hoping for. But when you say redesign, not yet again, the New York airspace.

Mr. MAY. Sir, it has not been redesigned yet.

Mr. OBERSTAR. That is the point. There have been at least five redesigns that I am aware of, that I have lived through that have never been implemented.

Mr. MAY. Right. But it is one of the many precursors to deploying NextGen technology in the New York metropolitan market.

Mr. OBERSTAR. Mr. Wright, are you controllers being included in the early phase of design and engineering? You have probably answered this. I know Mr. Costello is very keen on this issue, as I am, have been. But do you see your members being included in the earliest design and engineering phases of these various elements of NextGen?

Mr. WRIGHT. No, sir.

Mr. OBERSTAR. No?

Mr. WRIGHT. No.

Mr. OBERSTAR. They have not learned?

Mr. WRIGHT. We have asked to be involved. A lot of the airspace redesign things were back when we were involved and now they are sort of cherry picking what they want. But like Mr. May said, you cannot take part of it. It all has to go together. And we have not been involved in that, no, sir.

Mr. OBERSTAR. It cost several hundred million dollars to redo pieces of STARS because when the FAA directed Raytheon, the contractor, to make certain changes, they went and made the changes. And then they brought in the controllers after and they

said oh, no, these are the wrong changes, these are wrong things to do, and they had to go back and do it all over again.

Now, it is not the contractor doing this. It is the FAA not engaging controllers who are the point of contact in the very earliest stages of design and engineering of these very complex systems. I am disappointed to hear you, not disappointed you are saying it, disappointed they are not doing it.

Mr. WRIGHT. Yes, sir. We asked for a formal briefing on the implementation of ADS-B, what is really the cornerstone of NextGen, and they——

Mr. OBERSTAR. Maybe you could ask Mr. Planzer why they are not doing it. He was there at FAA when a lot of this was happening. You probably do not want to ask him, but I can.

Neil, what is happening over there? Have they not learned anything?

Mr. PLANZER. This Committee over the past decade has offered up gifts to the Executive Branch at the FAA to proceed with implementation. And it seems to me the cycle in the organization is several years before that gift that is offered up is understood and accepted. So I would offer to you, sir, when I was in charge of requirements at the FAA 15 years ago, we had liaisons from NATCA in every part and parcel. There are lots of reasons they do not have them today. But the reality is, I would argue on this issue with Dale, that you need to have that integration woven through the fabric. It is not there. The reason I push metrics, the metrics forces you to understand that it will achieve those outcomes by how you are going to have to operate. You cannot legislate good management. You can legislate good metrics.

Mr. OBERSTAR. You can legislate good structure of organization. What do you mean by metrics? That is a rather loosely used term to cover a wide variety of things that people suspect someone else understands what they are saying when they say metrics.

Mr. PLANZER. The example I used, sir, was require navigational performance, RNP, where we have put out thousands of overlays and the metrics that was used to measure it was how many of these have we put out.

Mr. OBERSTAR. You mean the measurement unit?

Mr. PLANZER. That is the measurement. It is the wrong measurement. The measurement should be has the procedures reduced the use of fuel, has it reduced emission, has it reduced city-pair time, has it improved safety. Those are the types of outcomes you want to measure.

Another measure that seems to be controversial that I will represent from my own point of view is does it reduce the unit cost of operations for the FAA. If you look at those metrics, they will force you as an employee—I get metrics measurements every day and I can look at them and know how I am going to be evaluated, and I operate the organizational structure to meet those outcomes, not the activity.

For us at this table, activity is not success, only the positive outcome. That is what I mean by the right measurements. So if I know, you used the Raytheon example which I am familiar with, I would offer to you that if my outcome was on time deployment, with agreement from the employees to utilize this equipment and

a comfort level and I did not do it the way you described, then I would be in trouble. So it forces me to have as that metric a relationship with the union. I am not going to argue whether what they want is not right, I am not going to argue whether the contractor is not right, but it forces me to have a compromise and also forces Dale to understand that that metric is there.

Mr. OBERSTAR. That is a very much appreciated candid answer. Mr. Bolen, do you think general aviation is going to benefit?

Mr. BOLEN. I do think general aviation will benefit and a couple of reasons——

Mr. OBERSTAR. You did not have very many hopeful signs in your testimony about this, the costs but not a whole lot of benefits for general aviation, including not being able to operate out of National Airport. What did you say, 300 flights?

Mr. BOLEN. Three hundred flights, yes.

Mr. OBERSTAR. Maybe if we changed the name of the airport you would be able to get in more frequently.

Mr. BOLEN. I will leave that to you, sir.

[Laughter.]

Mr. OBERSTAR. Very wise answer.

Mr. BOLEN. The thought behind moving toward NextGen is that it will increase system capacity. That is very important to general aviation because what we have seen is that anytime there is congestion at airports or in airspace we effectively get squeezed out. If you go back and look at Midway Airport, it was an outstanding general aviation airport. It no longer is. We have seen the same thing in San Jose. We have seen the same thing in Manchester. We have seen it at Fort Lauderdale. We end up at secondary airports, tertiary airports getting pushed further and further out.

Our hope is that if we expand system capacity we will be able to participate in that capacity and we will be able to have access to airports and air space. The way it is today, we are effectively 4 percent of the traffic at the 10 busiest airports. We would like an opportunity to have greater access. We also see clearly that there is an opportunity to have safety improved throughout the system, precision access at a number of general aviation airports where we do not have it today, and we see fuel system savings across the board. So we are supportive of the move to NextGen.

Mr. OBERSTAR. Well, all of you can be very helpful by walking 200 meters across the front of the Capitol and telling the Senate to move the aviation bill. We passed it twice through the House and it sits over there just like the dead letter office. It is just frustrating to me beyond expression of my exasperation. If we do not get that bill passed and the authorization in place for the funding increases that you need to make these investments, then we are not going to achieve all these benefits that you are talking about. Well, thank you.

Mr. Chairman, keep up the heat on them. Mr. Petri, keep up the heat on them.

Mr. COSTELLO. Chairman Oberstar, thank you. And just for the record, I call the other body the black hole. Everything that goes over there disappears and never comes back.

Mr. OBERSTAR. That is right. And no light even comes out of the galactic black hole, not even light. We are not even getting that out of the other body.

Mr. EHLERS. Mr. Chairman, as a physicist, I guess I object to denigrating that as a black hole. With a black hole you get energy out. In this case we get nothing.

[Laughter.]

Mr. OBERSTAR. Mr. Ehlers, thank you. With your scientific mind you can help us. You are right, we should not denigrate black holes by likening them to the Senate.

Mr. COSTELLO. Maybe we should start calling it the Bermuda Triangle.

Any other Members have questions for this panel? If not, gentlemen, let me thank you for offering your testimony here today. It has been very helpful. Let me assure you, as I did the first panel, that we will continue to monitor the progress of NextGen and will make certain, as he always does, that General Scovel will be reporting to our Subcommittee. We will keep the heat on the FAA to try and move this process forward and do it in a responsible manner. And I would reiterate what Chairman Oberstar said, to please pick up the telephone or walk across the Capitol to the other body and encourage them to pass the reauthorization bill. We have been told several times how close they are to taking the bill up in Committee and reporting it to the floor. But we have not seen any progress or action as of this date. Again, we thank you for your testimony.

The Subcommittee stands adjourned.

[Whereupon, at 4:45 p.m., the Subcommittee was adjourned.]

OPENING STATEMENT OF
THE HONORABLE RUSS CARNAHAN (MO-03)
HOUSE TRANSPORTATION AND INFRASTRUCTURE COMMITTEE
AVIATION SUBCOMMITTEE

Hearing on
"Next Gen: A Review of the RTCA Mid-Tem Implementation Task Force Report"

Wednesday, October 28, 2009
2167 Rayburn House Office Building

Chairman Costello and Ranking Member Petri, thank you for holding this hearing on "NextGen: A Review of the RTCA Mid-Term Implementation Task Force Report."

It is critical to take advantage of existing technologies, procedures, and capabilities that can help address inefficiencies and delays in the air traffic control system in the near and mid-term while also working toward the long-term goals of Next Gen. I would like to commend the FAA's Chief Operating Office, Mr. Krakowski, the FAA's Associate Administrator for Safety, Ms. Gilligan, for having the foresight to request RCTA establish a Task Force to develop a aviation community consensus on NextGen operational improvements that can be implemented to maximize NextGen's benefits in the near-term.

The RCTA Task Force report has identified which NextGen capabilities should be deployed first and where they should be deployed first to ensure the maximum return. This report is a clear step in the right direction for the NextGen effort. I look forward to hearing from the FAA today on steps they plan to take to respond to recommendations made by the Task Force for improving the implementation for NextGen.

The steps taken by Chief Operating Officer Krakowski and Associate Administrator Gilligan to ensure all interested parties are working together toward effective implementation of NextGen are critical. It is important for the FAA to continue to engage these stakeholders as they continue to work toward implementation of NextGen.

In closing, I want to thank our witnesses for joining us today and I look forward to their testimony.

OPENING STATEMENT OF REP. STEVE COHEN

The Subcommittee on Aviation

"NextGen: A Review of the RTCA Mid-Term Implementation Task Force Report"

October 28, 2009

I am pleased to be here today to receive testimony from representatives of the Federal Aviation Administration and esteemed individuals representing all sides of the aviation industry.

As the Congressman of Memphis, Tennessee, I have the great privilege of representing the Memphis International Airport, which is the home of the Fed Ex SuperHub and the largest cargo operations by volume airport in the world for the last sixteen years. The Memphis airport is also a Delta/Northwest hub and provides world-class passenger service to more than seven million passengers a year. With an annual total aircraft operations of nearly 250,000 flights a year, efficient management and safe navigation of these aircrafts are integral to effectively operating the airport.

Successful implementation of NextGen will be critical to the success and economic competitiveness of the Memphis International Airport. The Memphis airport will soon begin to see the positive effects of NextGen, as the first precision landing system in the United States using global positioning satellites has been approved for the airport and will be operational early next year. For this work and additional efforts to incorporate NextGen into the air transportation system, I would like to commend the Federal Aviation Administration and the aviation community.

I look forward to hearing from our witnesses today about the RTCA Task Force Report and future efforts to incorporate NextGen into air transportation system.

STATEMENT OF
THE HONORABLE JERRY F. COSTELLO
SUBCOMMITTEE ON AVIATION
HEARING ON
"NEXTGEN: A REVIEW OF THE RTCA MID-TERM IMPLEMENTATION TASK FORCE REPORT"
OCTOBER 28, 2009

- I welcome everyone to the Aviation Subcommittee hearing on "NextGen: A Review of the RTCA Mid-Term Implementation Task Force Report." Today's hearing is the third NextGen hearing Ranking Member Petri and I have held this year focused on near-to-mid-term NextGen implementation.

- Two years ago, at a hearing on "Airline Delays and Consumer Issues," I called upon government and industry to begin a "frank discussion about what near-term relief can realistically be provided by new technology." Since that time, economic distress within the airline industry has generated more urgency to improve the efficiency and effectiveness of the air traffic

control system in the near-term without damaging the long-term NextGen goals.

- I will continue to hold regular hearings about NextGen related issues to ensure Congress continues its oversight role and provide a forum for open dialogue to work through the challenges that lay ahead. Important objectives are at stake, such as enhancing safety, expanding system capacity, reducing delays, cutting long-term costs, and reducing carbon emissions. How operational and management challenges in the near-to-mid-term are addressed will affect the transition to NextGen.

- I commend the foresight of the FAA's Chief Operating Officer, Hank Krakowski, and the Associate Administrator for Safety, Peggy Gilligan, for commissioning RTCA – a private, not-for-

profit Corporation that develops consensus-based recommendations – to create a NextGen Midterm Implementation Task Force. Over 335 individuals from 141 organizations, which included users from the operating communities, such as the airlines, business aviation, general aviation, and the military, as well as participation from the controllers, airports, avionics, manufacturers, and others played an integral role in identifying the challenges and offering solutions for a way forward.

- The RTCA was instructed to work with industry and prioritize which NextGen capabilities should be deployed first, and where they should be deployed to achieve the greatest benefits. A final report was delivered to the FAA in September. By bringing together representatives from all segments of the aviation industry, specific recommendations and action items were

developed and a consensus on NextGen operational improvements for the near to mid-term was forged. I commend the hard work, and cooperation of all the participants.

- I believe that the RTCA Task Force's report is a positive step forward and represents a significant breakthrough for the NextGen effort. Now, it is up to the FAA to determine how to modify its existing plans and programs in response to the Task Force's recommendations.

- In the past, the FAA struggled to define NextGen and to clearly articulate what benefits government and industry should reasonably expect from the system. The RTCA Task Force report provides, to quote Administrator Babbitt, "clear,

actionable and achievable" recommendations that will help guide us forward.

- Moreover, the RTCA Task Force report is distinguished by the support, and more importantly, the commitments that it has received from industry. Each of the Task Force's recommendations has operator commitments to make the critical investments to achieve benefits. I believe that the industry consensus embodied in this report presents an enormous opportunity for the Obama Administration as it undertakes NextGen implementation.

- While technologies will clearly play a major role in achieving the RTCA Task Force's recommended capabilities, industry stakeholders have also stressed the importance of reforming

FAA culture, business practices, organizational structure and processes needed for successful implementation. I intend for this Subcommittee to provide consistent and rigorous oversight of NextGen near-term implementation, including many of the issues raised in the RTCA's report, while also staying focused on NextGen long-term goals.

- For example, several different offices within FAA including the Aircraft Certification Service, the Flight Standards Service, and the Air Traffic Organization, have responsibilities that relate to NextGen. However, the Government Accountability Office (GAO) will testify today that some stakeholders have raised concerns that FAA does not have adequate coordination across the Agency to efficiently integrate NextGen-related infrastructure and processes.

- On this topic, the RTCA Task Force report states that "FAA must commit to delivering benefits by assigning appropriate Responsibility, Accountability and Authority and funding within the agency." Chairman Oberstar and I both expressed concerns at our NextGen hearing last March about whether the FAA's current organizational structure adequately supports NextGen. I am still unclear whether there is a single point of responsibility, authority and accountability for NextGen activities, with the stature to leverage the intra-agency coordination that NextGen will require. I look forward to hearing from our witnesses on this issue.

- In addition, there are specific recommendations in the Task Force that the Subcommittee needs to examine more closely. For example, the report recommends streamlining the operational approval and certification processes for aircraft

avionics. In addition, many of the witnesses also discussed in their testimony the importance of streamlining these processes. I am aware it takes several months for an operator to gain approval once the process is initiated and it is complicated and expensive. Again, I would like to hear more from the witnesses on this issue.

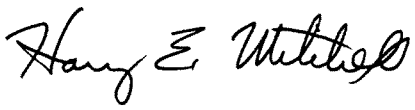
- Further, FAA may be confronted by a number of staffing and workforce challenges as it moves forward with the implementation of NextGen. In September 2008, the National Academy of Public Administration (NAPA) issued a report that identified several competencies - including software development, systems engineering, and contract administration – where the FAA currently lacks both the capacity and capabilities to execute NextGen implementation. Congress and this Subcommittee stands ready to work with the FAA to ensure

the Agency has the resources it needs to meet its workforce challenges.

- Finally, I believe post Task Force engagement, such as continued collaboration and joint-decision making among all members of the aviation community is a key component to ensure successful implementation of NextGen. I strongly encourage the FAA to continue a high level of involvement and engagement with stakeholders, including operators and air traffic controllers, to ensure success. In addition, I agree that specific metrics to measure pre-and-post implementation operational performance is important data for the FAA to track. This Subcommittee has already requested that the Department of Transportation Inspector General (DOT IG) monitor FAA's progress in responding to the Task Force's recommendations

and to determine if the FAA has a system in place to assess progress and measure benefits.

- Before I recognize Mr. Petri for his opening statement, I ask unanimous consent to allow 2 weeks for all Members to revise and extend their remarks and to permit the submission of additional statements and materials by Members and witnesses. Without objection, so ordered.



Statement of Rep. Harry Mitchell
House Transportation and Infrastructure Committee
Subcommittee on Aviation
10/28/09

--Thank you Mr. Chairman.

--By 2025, our nation's aviation system is going to need to accommodate more than a billion passengers, and we need to be ready.

--In the Phoenix metropolitan area, where the Federal Aviation Administration has already warned that we will need additional capacity, we are taking steps to prepare. In addition to improvements at Phoenix Sky Harbor Airport, now one of the busiest in the United States, we are developing Phoenix-Mesa Gateway Airport as a reliever.

--However, all the improvements we are making in Arizona won't matter if we don't also upgrade our national aviation system as well.

--And that's where NextGen comes in.

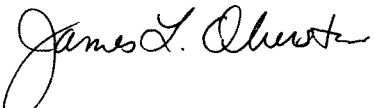
--When implemented, we will be able to make better use of our nation's air space. It will enable us to transition from ground-based radar to a satellite based system, which will give us more direct and efficient routes.

--While NextGen's target date is not until 2025, there are additional efficiencies that can be achieved sooner, using existing technology.

--Toward that end, today we will hear from the Radio Technical Commission for Aeronautics (RTCA) Mid-Term Implementation Task Force about its recent report and recommendations regarding NextGen.

--I look forward to hearing about the report as well as what the rest of our witnesses have to say about it.

--At this time I yield back.



OPENING STATEMENT OF
THE HONORABLE JAMES L. OBERSTAR
SUBCOMMITTEE ON AVIATION
NEXTGEN: A REVIEW OF THE RTCA
MID-TERM IMPLEMENTATION TASK FORCE REPORT
OCTOBER 28, 2009

I want to thank Chairman Costello for calling today's hearing on "NextGen: A Review of the RTCA Mid-Term Implementation Task Force Report." Today's hearing is the third Next Generation Air Transportation System (NextGen) hearing that the Aviation Subcommittee has held this year, and all three hearings have focused on implementing NextGen in the near- to mid-term.

In the summer of 2007, the United States was suffering terrible airline delays – over a quarter of all flights were delayed, cancelled or diverted. At that time, Chairman Costello counseled the FAA at a 2007 hearing on "Airline Delays and Consumer Issues" to begin a "frank discussion about what near-term relief can realistically be provided" by NextGen. Since that time, economic distress within the airline industry has also generated an urgent need to improve the efficiency and effectiveness of the air traffic control (ATC) system in the near-term, without damaging long-term NextGen goals.

To its credit, the FAA has been responsive. Earlier this year, the FAA's Air Traffic Organization (ATO) and Office of Aviation Safety (AVS) jointly

commissioned a NextGen Mid-Term Implementation Task Force through RTCA[1] to develop a consensus plan with industry about what capabilities are most needed, and where they are most needed between now and 2018. The RTCA Task Force consisted of approximately 335 individuals from 141 different organizations, including airlines, business aviation, general aviation and the military, manufacturers, suppliers, vendors and labor organizations.

On September 9, 2009, the RTCA Task Force issued its final report, which recommended a total of 29 operational capabilities sought by system operators. For example, the Task Force recommended that the FAA expand surveillance coverage of aircraft and share the information between FAA, airline flight operations centers and airports to improve the management of airport arrivals, departures and taxi operations including ramp operations. The Task Force also recommended that the FAA reassess the safety assumptions that limit the use of converging, intersecting, and closely-spaced parallel runways during low visibility conditions. In addition, the Task Force recommended that the FAA deploy FAA/industry "Tiger Teams" that focus on implementing area navigation (RNAV) and required navigation performance procedures (RNP) at airports near large metropolitan areas.

[1] RTCA is a private, not-for-profit corporation that develops consensus-based recommendations regarding communications, navigation, surveillance, and air traffic management system issues.

I believe that the RTCA's work is a major milestone for NextGen. Many in the industry expressed concern that the NextGen vision had grown unclear because it did not provide for tangible, near-term benefits. The FAA appeared to struggle at times to simply define what NextGen was, or why it was important. As Administrator Babbitt noted, the RTCA Task Force report provides "clear, actionable and achievable" recommendations that will help shape the FAA's vision and mission for the mid-term.

The Task Force report is also a turning point for NextGen because it represents a level of industry commitment to the NextGen effort that we have not seen thus far. Each recommendation in the report required operators to pledge to make the investments necessary in avionics, training or other expenses required to achieve the benefits. With these industry commitments in hand, the FAA is well-positioned to execute NextGen.

Some have expressed concern that the FAA's new focus on the 2018 timeframe may come at the expense of a more ambitious NextGen end-state vision. However, I do not believe that mid-term NextGen and a NextGen end-state are mutually exclusive. Our ATC system has evolved over time, and its future must have a firm foundation in the present. NextGen will be an evolutionary process too.

Since FAA first announced the ATC modernization program in 1981, the United States has spent a little over $50 billion on ATC improvements and installed over 63,000 pieces of technology.

For example, the Display System Replacement (DSR) program replaced workstations that were connected to the HOST computer system in en route centers. The primary reason for the upgrade to DSR was the technological obsolescence of the existing displays in use at en route centers. Additionally, DSR provided a Y2K compliant system that began to incorporate the use of color as an information management technology for ATC, and user customizable workstations that allowed controllers to precisely tailor display systems to their preferences. The DSR program was initiated in 1995 after the cancellation and restructuring of the Advanced Automation Program. DSR was implemented between 1997 and 2000 for about $1 billion.

Weather information has been an important component of ATC modernization. There are now 246 total surveillance and weather radar systems, which includes ASR-9, ASDE-E, ARSR-4, TDWR, and NXRAD. Automated Surface Observing System (ASOS) provides 24-hour, real time weather data to the aviation community. There are 576 ASOS systems installed. Since 1985, there have been about 200 commissioned ATC towers and Terminal Radar Approach Controls (TRACONs), or a combination thereof.

Initiated in 1996, the FAA's Standard Terminal Automation Replacement System (STARS) has completely upgraded 47 terminal automation systems, adding full color displays, enhanced graphics including maps and weather display for terminal controllers. In addition, STARS provided enhanced accuracy by adding "Fusion Tracking" capability -- the ability to simultaneously synthesize and display information from multiple radar feeds.

NextGen end-state concepts like trajectory-based operations will transform the airspace by breaking through our current inter-state highway like grid in the sky, alleviating chokepoints in the system, and offering users more direct and fuel efficient routes. However, trajectory-based operations will not be possible without the past, present and near-term investments we are making in terminal and en route modernization.

Many associate NextGen with the transition to satellite-based capabilities. In the last decade, the FAA has developed a new satellite-based, near-precision approach system, the Wide Area Augmentation System (WAAS), which will provide greater access and safety at airports all over the country. In addition, while automatic dependant surveillance – broadcast (ADS-B) has been described as the "backbone of NextGen," ADS-B is dependant on the Global Positioning System, which has already been built and must continually be modernized.

For NextGen to succeed, its progress must continue to be evolutionary, built on sound contract management by the FAA. For its part, Congress must provide strong oversight in these foundational years.

Thank you again, Mr. Chairman, for holding this hearing. I look forward to hearing from our witnesses.

CONGRESSWOMAN LAURA RICHARDSON (CA37)

COMMITTEE ON TRANSPORTATION
SUBCOMMITTEE ON AVIATION

HEARING:
"NEXTGEN: A Review of the RTCA [Radio Technical Commission for Aeronautics] Mid-Term Implementation Task Force Report"

WEDNESDAY, OCTOBER 28, 2009
2:00 P.M.
2167 RAYBURN

Mister Chairman, thank you for convening this very important hearing today to review the Radio Technical Commission for Aeronautics mid-term implementation task force report. Thank you to our witnesses for taking the time to appear before Congress today.

As a proud representative of the 37th Congressional District of California and a member of the General Aviation Caucus, I understand the importance of aviation to our nation. There are 11 airports in my region, with three in my district. The Los Angeles airport handles the sixth most

passengers of any airport in the world annually, 1,000 cargo flights each day, and has an annual economic impact of $60 billion. 1 in 20 jobs in Southern California are attributed to LAX operations. With this kind of influence on our economy, we cannot afford to wait on improving and upgrading our air transportation system.

We have all heard the recent stories of close calls at airports around the country. For example, just this weekend two planes came within 100 feet of crashing at LAX when a jet did not follow instructions. Officials said this is the most serious near-collision at LAX since an upgraded safety system was installed two years ago.

FAA's new runway incursion definition has shined new light on the nature of this problem. In 2008 there were over 1000 runway incursions, and despite investments into the National Airspace System and airlines cutting down their

flights due to the recession, the number of incidents has remained relatively steady this year. Given these frightening statistics we are lucky the majority of these incidents have just been close calls. It is clear that improving the efficiency and effectiveness of safety procedures, as recommended in the NTCA report, cannot come a moment too soon.

But safety is just one of many concerns at airports around the country. Delays and congestion are an everyday problem as well. A report released last week by the Department of Transportation said 79.7% of flights by 19 U.S. airlines landed on or close to schedule in August. While this number has been slowly improving, it still means that more than 1 in 5 flights land significantly later than originally scheduled. Every delayed flight takes a heavy toll on travelers and the economy. We are all seeking solutions to this problem, and the RTCA report has offered some valuable recommendations.

However, we all know of the challenges in implementing all of the elements that comprise the Next Generation Air Transportation System (NextGen). I am happy to hear the many recommendations contained in the NTCA report, and it is clear that now is the time for action. The Aviation Subcommittee and I are focused on putting the findings and recommendations into place.

I am concerned that, according to the initial testimony by the RTCA, it seems to be unclear where the responsibility, authority, and accountability for NextGen implementation comes from. Without clear leadership this complex set of programs encompassing so many different stakeholders will be next to impossible to fully implement.

I look forward to hearing from our distinguished panel of witnesses regarding the implementation of the systems,

the timelines they envision, and the obstacles that we may face. Improving the efficiency, effectiveness, and safety of our air transportation system is critical, and we cannot accept further shortcomings and delays. The potential costs are simply too great to waste any more time in fixing these issues.

Thank you again, Mr. Chairman, for convening this hearing. I yield back the balance of my time.

STATEMENT OF ED BOLEN

PRESIDENT AND CEO

NATIONAL BUSINESS AVIATION ASSOCIATION

BEFORE THE

SUBCOMMITTEE ON AVIATION

COMMITTEE ON TRANSPORTATION AND INFRASTRUCTURE

U.S. HOUSE OF REPRESENTATIVES

OCTOBER 28, 2009

STATEMENT OF ED BOLEN
PRESIDENT AND CEO
NATIONAL BUSINESS AVIATION ASSOCIATION

Mr. Chairman and members of the Subcommittee, my name is Ed Bolen, and I am the President and CEO of the National Business Aviation Association. I am grateful for the opportunity to appear before you today. NBAA commends the Subcommittee for holding this important hearing to discuss the future of our national air transportation system and the recently released RTCA NextGen Mid-Term Implementation Task Force report. We strongly support your work to improve our nation's aviation system, which will also significantly contribute to economic growth and job creation. In these challenging economic times, the importance of a robust transportation system cannot be overemphasized.

The general aviation (GA) community has long been at the forefront of expanding and enhancing our nation's air traffic system, and that community involvement in ATC modernization has allowed me to become personally immersed in the effort. At the beginning of this decade, I was able to get a first-hand look at the FAA's modernization programs during my tenure on the FAA's Management Advisory Council, an entity I had the honor of chairing from 2000 to 2004. In 2002, I was fortunate to have been appointed by President Bush to serve on the twelve-person Commission on the Future of the US Aerospace Industry which outlined the need for our country to transition to a next generation air traffic system and recommended the creation of a Joint Planning and Development Office (JPDO) to help make NextGen a reality. Today, I along with others on this panel, serve on the Institute Management Council of the JPDO. I am also a member of the Aviation Advisory Board for Mitre's Center for Advanced Aviation System Development and I serve as chairman of the RTCA.

THE NATIONAL BUSINESS AVIATION ASSOCIATION

NBAA was founded 62 years ago to represent companies that utilize general aviation aircraft as a tool for meeting some of their transportation challenges. NBAA and our Members are committed to working with Congress to transform and modernize the nation's aviation system. Likewise, we are committed to modernization policies that support the continued growth of each aviation segment, including general aviation, which plays a critical role in driving economic growth, jobs and investment across the U.S. We strongly support the shared goal of keeping our national aviation system the largest, safest and most efficient in the world.

General aviation is an essential economic generator, contributing more than $150 billion to annual U.S. economic output, and directly or indirectly employing more than one million people. Most general aviation aircraft

operating around the world are manufactured and/or completed in the U.S., and our industry is continuing to build a strong American manufacturing and employment base that contributes positively to our national balance of trade. Congress recognized just how fundamental general aviation is to our nation's transportation system, rural economies, manufacturing capability, and balance of trade when it passed the General Aviation Revitalization Act a little more than a decade ago.

FACTS ABOUT BUSINESS AVIATION

Business aviation, as many members of the Subcommittee know, is an FAA-defined term. According to the FAA, business aviation is the use of any general aviation aircraft – piston or turbine – for a business purpose.

From creating growth opportunities and global connectivity for America's small towns and rural areas to supporting the nation's productivity, business aviation is an important economic engine, creating jobs and investment, while contributing to the world's leading aviation system. Simply put, business aviation is a vital part of the nation's economy and transportation system.

The U.S. aviation system is fully integrated. Each player is critical to the success, strength and growth of our economy. The system is made up of three segments:

- Scheduled operations, including passenger airlines;
- Military, and;
- General aviation.

General aviation includes diverse operations, with business uses that range from agriculture, to law enforcement, to fire and rescue services, to varied government, educational, nonprofit and business organizations. Servicing and supporting these organizations are FBO's, maintenance technicians, suppliers and service providers.

The business aviation fleet is dominated by pistons and turboprops, with over 80 percent of the 15,000 registered business aircraft in the U.S. having cabins about the size of an SUV, and flying on average less than 1,000 miles. The vast majority of these GA operators use small aircraft that seat no more than eight people.

A Vital Lifeline for Main Street

In small towns and rural areas across America, business aviation is an essential tool that enables businesses to thrive, grow and create jobs in their hometowns. That's because in many instances, there are no other transportation options that meet their needs.

Many small and mid-size businesses are located in areas without scheduled airline service. Businesses of all sizes require in-person travel for such operations as sales, technical support and other types of customer service. Such trips may call for multiple stops in a short period of time or travel to remote locations. Often, the distances are too long to drive or airline service is not available.

A 2009 survey of business aviation pilots and passengers, conducted for NBAA by Harris Interactive, concludes that managers and other mid-level employees are the typical passengers on business aircraft. Only 22% of passengers on business aircraft are top management (i.e., a company's Chairman, Board Member, CEO or CFO); the majority are other managers (50%) and or technical, sales or service staff (20%).

A Lifeline in Disaster and Emergency

The business aviation community is not only an economic lifeline for thousands of our nation's communities; it also supports people and communities in times of crisis.

For example, in the days and weeks following Hurricane Katrina, hundreds of thousands of pounds of supplies were transported into small airports throughout the Gulf Coast region aboard business aircraft. These aircraft also were used to transport victims out of harm's way.

General aviation has snapped into action when there's a need to confront floods in the Midwest, fires in the West, or a whole host of other natural disasters. The business aviation community – working mostly on a volunteer basis – has been quick to help assess damage, rescue those affected by these disasters, and carry in lifesaving support and supplies to the affected regions.

The people who rely on a general aviation aircraft for business are also dedicated to helping provide lifesaving flights to the communities in which they live and work. Operations like the Corporate Angel Network arrange free air transportation for cancer patients traveling to treatment using the empty seats aboard business airplanes. Angel Flight America's seven member organizations and 7,200 volunteer pilots arrange flights to carry patients to medical facilities.

Veterans Airlift Command uses business airplanes and unused hours of fractional aircraft ownership programs to provide free flights for medical and other purposes for wounded service members, veterans and their families.

Veterans Airlift finds volunteers in the business aviation community to fly missions on request and contribute the full cost of their aircraft and fuel for the missions flown.

ECONOMIC CHALLENGES FACING GENERAL AVIATION

Unfortunately, the people and businesses in general aviation, like other industries, are weathering one of the worst economic storms anyone has ever seen. The impact of the flagging economy on the companies and communities that rely on general aviation is visible in all parts of the country.

This past year, we have seen business aviation flying decrease by as much as 35 percent. The inventory of used airplanes available for sale reached an all-time high. Prices for business airplanes have declined by 40 percent, and employment at leading general aviation companies has fallen by as much as 50 percent.

NEXTGEN AND THE RTCA REPORT

While much has changed for the industry I represent as a result of the recession, one thing has remained constant – our continued support for modernization of the nation's air traffic control system. We commend the Subcommittee for conducting a thorough examination of all of the issues related to system modernization.

Accelerating the transition to the Next Generation air transportation system will advance important national objectives including: further reducing the industry's environmental footprint, reducing long-term costs at the FAA, enhancing safety, expanding system capacity and reducing delays.

As I said in my introduction, general aviation has long been at forefront of the modernization effort. We were early adopters of GPS navigation systems. We helped initiate the ADS-B test program in Alaska – a test program that is now the cornerstone technology of the modernization effort. We also participated in the ADS-B experiments at the Atlanta Olympics in 1996. In 2005, we supported our nation's transition to Reduced Vertical Separation Minima (RVSM) which effectively doubled our enroute airspace capacity.

So, while general aviation has never been nor is it projected to be a major cause of system delays, we have a strong record of working tirelessly to expand system capacity and improve system efficiency. Thus, it should come as no surprise that general aviation has been a leading proponent of NextGen.

As you know, the RTCA NextGen Mid-Term Implementation Task Force submitted its final report to the FAA on September 9, 2009. The Task Force recommendations are intended to establish a blueprint for NextGen implementation. The Task Force brought together high-ranking

representatives from all segments of the aviation industry (including airlines, manufacturers, general aviation, and airports). The Task Force developed a list of action items and recommendations in the following areas: surface, runway access, metroplex, cruise, and access to the national airspace system (NAS).

Mr. Chairman and members of the Subcommittee, this report represents industry consensus on NextGen operational improvements for the period 2009 to 2018. The report recommends "strategies for accelerating benefits, and strategies for encouraging equipage." The report also includes recommendations aimed at facilitating the transition to NextGen by streamlining the operations approval process and establishing effective government-industry collaboration.

In our opinion, the report proposes realistic objectives and is focused on very practical operational improvements in the near to mid term. Achieving these benefits simply requires solid FAA program management and execution along with similarly aligned performance by other related government agencies. The report outcomes are not dependent on any significant "unknowns," like the results of long-term research or the development of new technology.

To meet these objectives, FAA management of implementation, in close coordination with industry via the recommended follow up mechanisms in the report, will be critical. Additionally, a key issue is potential incentive for avionics equipage and/or capabilities by aircraft operators. The longer it takes for a critical mass of aircraft to be equipped, the longer it will take for airspace modernization to occur. It is essential that both FAA and aircraft owner investment be made on complementary time scales to ensure maximum efficiency and productivity in achieving overall NextGen goals.

While the term NextGen is widely used, it is important to note that "NowGen" was an important focus of the report. The report reflects the desire of stakeholders to utilize the existing equipment on aircraft today that has produced little or no return on investment. By accomplishing these near-term tasks, FAA has an opportunity to earn industry confidence and enhance the commitment to future NextGen efforts.

At this point, I would like to address some of the details contained in the report.

Surface Operations

It is important to understand that in the context of the report, the term "Surface" is not concerned solely with taxiing operations from parking to the runway. Rather, as used in the report, it has a continuum starting from the point of pre-flight planning, through "push back," through taxiing both on the non-movement area and movement area, through takeoff, and finally to the departure fix out of the TRACON's airspace. As the report states, "The efficiency of surface movement management will be improved by the development of surface traffic management decision support tools. This will provide more reliable, predictable, and timely access to and from gates and more efficient use of ground support assets for arriving/departing flights."

Runway Access

Smooth and efficient traffic flows into high volume metropolitan airports are absolutely critical to successful implementation of NextGen. NBAA fully supports the increased use of such tools as the converging runway display aid (CRDA) to support curved paths, the Arrival/Departure Window (ADW) tool, and Landing and Hold Short Operations (LAHSO). Controller training in the use of the tools that enable higher capacity operations is critical as well. Operators also need to train pilots in the use of new procedures.

Metroplex

As stated in the report, "...high density flight operations in major metropolitan areas precipitate the majority of current NAS-wide delays." NBAA is in agreement that the dual solutions RNAV and RNP, along with the maximum use of 3 nautical mile separation in the terminal area are core solutions that must be implemented. In a sense, a metropolitan airspace, such as New York, New Jersey, and Philadelphia "sinks or swims" as an integrated, dependent system. Therefore, NBAA fully supports looking at Metroplex areas as "systems" that must be fully integrated from the perspective of traffic flow management and supports the recommendations in the report.

Cruise

This section of the report addresses access to what has been known as Special Use Airspace, and now referred to Special Activity Airspace, use of Time Based Metering (TBM) and full implementation of Area Navigation (RNAV) Based En Route navigation. NBAA supports the TBA and RNAV efforts, and we would like to especially commend the FAA on the proactive manner in which it has embraced increasing access to Special Activity Airspace for all operators. Interestingly, not only do all civil operators have to avoid this airspace, but also the DoD itself, as well as other State aircraft,

face the same restrictions to utilizing that airspace with their non-participating aircraft. For some time, industry has been asking FAA to create a program office dedicated to bringing to bear modern tools and procedures to allow non-participating aircraft to more frequently use airspace that is not being used by the DoD for critical national defense training needs. It is important to note that at no point has industry asked DoD to give up airspace it does not legitimately need to train military operators to defend our nation. Rather, industry felt that this valuable national asset could be used more efficiently and consistently with national security needs. We commend FAA for the creation of an office at FAA headquarters to lead this effort. Much progress has been made in a short period of time, and we are optimistic this program can return early benefits to all operators in the NAS.

Access to the NAS

Non-OEP airports (FAA's operational evolution plan includes 35 of the busiest commercial service airports) are the lifeblood of general aviation. As you know, of the 5,000 public use airports in this country, the commercial airlines fly to approximately 10% of the public airports available to general aviation in the United States. In fact, in the last year, over 100 cities across America saw a decline in scheduled commercial airline service. Communities and businesses are dependent on access to these airports for everyday commerce, medical and law enforcement flights, and disaster response, among other needs. As a result, NBAA fully supports the recommendations to increase low altitude non-radar access to airports and to implement LPV approaches to airports without current precision approach capabilities.

Finally, the RTCA report also has several "cross cutting" and "over arching" recommendations. One of the over arching recommendations involved Required Navigation Performance Area Navigation (RNP/AR) approach procedures. RNP/AR procedures are one of the core solutions for implementing NextGen over the next several years. NBAA fully supports this core solution. Early on, NBAA saw the benefit of RNP approaches in order to gain safety and access benefits that older technology, such as ILS systems, could never achieve. We have advocated for this operational capability loudly and often.

Unfortunately, despite of our vocal support, a large segment of the business aviation community is locked out of actually using these modern, NextGen procedures. The reasons are two-fold. First, the onerous operational certification process for flight departments is a very steep mountain to climb. While improvements have been made, it currently takes several months of complicated interaction with the FAA for an operator to gain approval once they initiate the process. The process is so complicated that the only successful applicants to date have had to utilize what the FAA calls "third parties" in order to complete their applications. These "third party vendors"

are approved by the FAA to accomplish this process on behalf of operator flight departments and charge just short of $100,000 for complete, turn-key, application packages. That cost is prohibitive for the majority of NBAA Part 91 members who typically operate one, two or three aircraft.

Second, once the initial certification process is complete there are recurring database verification and subscription fees of approximately $6,000 per aircraft per year. This database verification process is mandated by the FAA. The FAA is mandating that third-party vendors take the data the FAA produces and review it for errors and accuracies. This is an extremely costly process for our members.

This cumbersome and expensive process has resulted in just five business aviation operators, out of a potential pool of thousands, obtaining operational approval to fly RNP/AR procedures. While our members see the tremendous potential of RNP/AR, we are also highlighting that the obstacles to gaining this approval are far too steep. In the report, Appendices K and L address potential solutions to these obstacles and should receive high emphasis from the FAA.

CONCLUSION

In conclusion, aviation plays a critical role in driving economic growth and investment across the country. Our air transportation system is critical to the nation's economy.

We are committed to working with the Congress to expedite the transformation of our air traffic control technology and operations that achieves our shared goal of keeping the U.S. aviation system the safest, largest and most efficient in the world. NBAA and our Member Companies across the nation look forward to working with this Subcommittee to accomplish this vital national objective.

U.S. House of Representatives
Committee on Transportation and Infrastructure

James L. Oberstar
Chairman

David Heymsfeld, Chief of Staff
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Washington, DC 20515

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Ranking Republican Member

James W. Coon II, Republican Chief of Staff

October 30, 2009

Mr. Ed Bolen
President and CEO
National Business Aviation Association
1200 – 18th Street, NW, Suite 400
Washington, D.C. 20036

Dear Mr. Bolen:

On October 28, 2009, the Subcommittee on Aviation held a hearing on **"NextGen: A Review of the RTCA Mid-Term Implementation Task Force Report."**

Attached are questions that I would like you to answer for the hearing record. I would appreciate receiving your written response to these questions within 14 days so that they may be made a part of the hearing record.

Sincerely,

Jerry F. Costello
Chairman
Subcommittee on Aviation

JFC:gg/pk
Attachment

SUBCOMMITTEE ON AVIATION
HEARING ON
"NEXTGEN: A REVIEW OF THE RTCA MID-TERM IMPLEMENTATION TASK FORCE REPORT"

QUESTIONS FOR THE RECORD
TO:
MR. ED BOLEN
PRESIDENT AND CEO
NATIONAL BUSINESS AVIATION ASSOCIATION

1. Mr. Bolen, Section 314 of S. 1451 of the "FAA Air Transportation Modernization and Safety Improvement Act" requires the FAA to develop an implementation plan for the deployment of area navigation and required navigation performance procedures at Operational Evolution Partnership airports. Do you have an opinion or any concerns about this provision? If so, please provide a detailed response.

2. Mr. Bolen, Section 315 of S. 1451 the "FAA Air Transportation Modernization and Safety Improvement Act" requires FAA to mandate the use of Automatic Dependent Surveillance (ADS-B) "Out" technology, which allows the broadcast of ADS-B transmissions from aircraft to air traffic control, in all aircraft by 2015. Section 315 also requires the FAA to initiate a rulemaking that mandates the use of ADS-B "In" technology, which allows aircraft to receive ADS-B data on cockpit displays, on all aircraft by 2018. Do you have an opinion or any concerns about this provision? If so, please provide a detailed response.

Written responses of Mr. Ed Bolen, President and CEO of the National Business Aviation Association

Question 1: Mr. Bolen, Section 314 of S. 1451 of the "FAA Air Transportation Modernization and Safety Improvement Act" requires the FAA to develop an implementation plan for the deployment of area navigation and required navigation performance procedures at Operational Evolution Partnership airports. Do you have an opinion or any concerns about this provision? If so, please provide a detailed response.

Answer: Mr. Chairman, the provision you reference in S. 1451 requiring FAA to establish procedures at Operational Evolution Partnership (OEP) airports is appropriate at those airports experiencing congestion due to current procedures that are inefficient and result in excessive fuel burn and noise impacts. NBAA also believes that RNAV and RNP approaches should be established at key reliever airports in large metropolitan areas to enable the safe and efficient separation of general aviation traffic. It is important to note that GA operations are a very small percentage of the operations at the OEP airports. However, congestion at those airports can drive delays throughout the system, so expanding OEP capacity is vital to system efficiency.

Question 2: Mr. Bolen, Section 315 of S. 1451 of the "FAA Air Transportation Modernization and Safety Improvement Act" requires FAA to mandate the use of Automatic Dependent Surveillance (ADS-B) "Out" technology, which allows the broadcast of ADS-B transmissions from the aircraft to air traffic control, in all aircraft by 2015. Section 315 also requires the FAA to initiate a rulemaking that mandates the use of ADS-B "In" technology, which allows aircraft to receive ADS-B data on cockpit displays, on all aircraft by 2018. Do you have an opinion or any concerns about this provision? If so, please provide a detailed response.

Answer: Mr. Chairman, NBAA did participate in the recent efforts to review and develop Next Gen implementation plans (ADS-B Aviation Rulemaking Committee (ARC) and RTCA Task Force 5). With regard to ADS-B "Out", both forums recommended a 2020 deadline--which was based on the assumption that the full equipage cost would have to be borne by the aircraft operator. An earlier date like 2015 might be feasible if the government were to provide funding to support equipage as was done in the case of the Capstone Program in Alaska. Such a government investment would also stimulate jobs in the economy. The recommendations developed jointly by FAA and aviation industry stakeholders participating in the ARC and the recent RTCA Task Force 5 report did not recommend a mandate for ADS-B "In" services since operators would be required to install additional display equipment to receive "In" services/data and further that any such equipage should be based on benefits received by the individual operator.

United States Government Accountability Office

GAO

Testimony

Before the Subcommittee on Aviation, Committee on Transportation and Infrastructure, House of Representatives

For Release on Delivery
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October 28, 2009

NEXT GENERATION AIR TRANSPORTATION SYSTEM

FAA Faces Challenges in Responding to Task Force Recommendations

Statement of Gerald L. Dillingham, Ph.D.
Director, Physical Infrastructure Issues

GAO-10-188T

GAO
Accountability Integrity Reliability

Highlights

Highlights of GAO-10-188T, a testimony before the Subcommittee on Aviation, Committee on Transportation and Infrastructure, House of Representatives

October 28, 2009

NEXT GENERATION AIR TRANSPORTATION SYSTEM

FAA Faces Challenges in Responding to Task Force Recommendations

Why GAO Did This Study

On September 9, 2009, the Next Generation Air Transportation System (NextGen) Midterm Implementation Task Force (Task Force) issued its final report and recommendations. The Task Force was to reach a consensus on the operational improvements to the air transportation system that should be implemented between now and 2018. Its recommendations call for the Federal Aviation Administration (FAA) to develop improvements that allow operators to take advantage of equipment that has been widely deployed or is available for installation in existing aircraft. FAA is now considering how to modify its existing plans and programs in response to the Task Force's recommendations and must do so in a way that retains safety as the highest priority.

This testimony highlights the NextGen challenges previously identified by GAO and others that affect FAA's response to the Task Force's recommendations. GAO groups these challenges into three areas: (1) directing resources and addressing environmental issues, (2) adjusting its culture and business practices, and (3) developing and implementing options to encourage airlines and general aviation to equip aircraft with new technologies. GAO's testimony updates prior GAO work with interviews with agency officials and industry stakeholders and includes an analysis of the Task Force report.

To view the full product, click on GAO-10-188T. For more information, contact Gerald L. Dillingham at (202) 512-2834 or dillinghamg@gao.gov.

What GAO Found

Directing resources and addressing environmental issues. Allocating resources for advanced navigational procedures and airspace redesign requires FAA to balance benefits to operators against resource limits and other challenges to the timely implementation of NextGen. Procedures that allow more direct flights—versus those that overlay existing routes—and redesigned airspace in congested metropolitan areas can save operators time, fuel, and costs, and reduce congestion, delays, and emissions. However, FAA does not have the capacity to expedite progress towards its current procedure development targets. While FAA has begun to explore the use of the private sector to help develop procedures, issues related to public use of these procedures and oversight of developers remain. In addition, required environmental reviews can be lengthy, especially when planned changes in noise patterns create community concerns during reviews. Challenges to FAA include deciding whether to start in more or less complex metropolitan areas, and finding ways to expedite the environmental review process and proactively ameliorate community concerns.

Changing FAA's culture and business practices. According to stakeholders and Task Force members, and as GAO has previously reported, FAA faces cultural and organizational challenges in implementing NextGen capabilities. Whereas FAA's culture and organization formerly supported the acquisition of individual air traffic control systems, FAA will now have to integrate and coordinate activities across multiple lines of business, as well as reprioritize some of its plans and programs, to implement near-term and midterm capabilities. FAA is currently analyzing what changes may be required to respond to the recommendations. Streamlining FAA's certification, operational approval, and procedure design processes, as a prior task force recommended, will also be essential for timely implementation. And sustaining a high level of involvement and collaboration with stakeholders—including operators, air traffic controllers, and others—will also be necessary to ensure progress.

Developing and implementing options to encourage equipage. The Task Force focused on making better use of equipment that has already been widely deployed in aircraft, but as NextGen progresses, new equipment will have to be installed to implement future capabilities and FAA may have to offer incentives for operators to accelerate their installation of equipment that may not yield an immediate return on investment. While FAA could mandate equipage, mandates take time to implement and can impose costs, risks, and other disincentives on operators that discourage early investment in equipment. The Task Force identified several options to encourage equipage, including offering operational or financial benefits to early equippers. Challenges to implementing these options include defining how operational incentives would work in practice, designing financial incentives so as not to displace private investment that would otherwise occur, and targeting incentives where benefits are greatest.

Mr. Chairman and Members of the Subcommittee:

I appreciate the opportunity to testify before you today on efforts to transform the nation's current air traffic control (ATC) system to the Next Generation Air Transportation System (NextGen). Today's air transportation system is straining to meet current demands. Thus far in 2009 more than one in five airline flights have been delayed or canceled. These problems have occurred even though air traffic has declined during the current recession, and they are expected to worsen as the economy recovers and air traffic increases. NextGen improvements include new integrated systems, procedures, aircraft performance capabilities, and supporting infrastructure needed for a performance-based air transportation system that uses satellite-based surveillance and navigation and network-centric operations. These improvements are intended to improve the efficiency and capacity of the air transportation system while maintaining its safety so that it can accommodate this anticipated future growth. NextGen improvements have been planned over a long horizon. The initial planning for NextGen focused on implementing improvements through 2025, but more recently the Federal Aviation Administration (FAA) has emphasized improvements that can be implemented in the midterm, defined as between 2012 and 2018. Additionally, many stakeholders have concluded that more can and must be done in the near term—generally thought of as between now and 2012—to address inefficiencies and delays in the system. In their view, it is time to take full advantage of existing technologies and capabilities rather than waiting for new systems to be deployed and for aircraft to be equipped with new technology.

Recognizing the importance of near-term and midterm solutions, FAA requested that RTCA, Inc.—a private, not-for-profit corporation that develops consensus-based recommendations on communications, navigation, surveillance, and air traffic management system issues—create a NextGen Midterm Implementation Task Force (referred to in this statement as the Task Force) to reach consensus within the aviation community on the operational improvements that can be implemented between now and 2018. The Task Force focused on maximizing benefits in the near term, and paid particular attention to aligning its recommendations with how aircraft operators decide to invest in aircraft equipment. On September 9, 2009, the Task Force issued its final report, which contained a list of recommendations to implement operational capabilities in five key areas—surface operations, runway access, congestion relief in metropolitan areas, cruise operations, and access to certain airspace—and two cross-cutting areas—data communication

applications and integrated air traffic management. The Task Force also made four overarching recommendations to (1) work toward closer adherence to current separation standards (criteria for spacing between aircraft), (2) establish incentives that will ensure a return on investment for those wishing to install new technology and equipment on aircraft, (3) streamline the operational approval process that ensures the safety of equipment and the training of those that use the equipment in the national airspace system, and (4) follow up on and track recommendations to ensure their implementation. These recommendations represent a consensus view from industry on how to move forward with NextGen. The Task Force includes representation from the four major operating communities—airlines, business aviation, general aviation, and the military—as well as participation from controllers, airports, avionics and aircraft manufacturers, and other key stakeholders. FAA is now considering how it will modify its NextGen Implementation Plan in response to the Task Force's recommendations and do so in a way that retains safety as the highest priority. Our work over the last few months has identified a number of findings similar to those the Task Force reported.[1]

My testimony today highlights challenges previously identified by GAO[2] and others that affect FAA's response to the Task Force's recommendations. We group these challenges into three areas: (1) directing resources and addressing environmental issues to ensure the timely implementation of capabilities, (2) adjusting FAA's culture and business practices to support the implementation of operational improvements, and (3) developing and implementing cost-effective options to encourage airlines and general aviation operators to equip their aircraft with NextGen technologies. My statement is based on recent related GAO reports and testimonies updated with more recent FAA data,

[1]This work is part of a comprehensive review and monitoring effort that GAO is undertaking for the House Transportation and Infrastructure Committee, House Science and Technology Committee, and Senate Commerce, Science, and Transportation Committee. The work includes a number of planned reviews related to the ongoing implementation of NextGen.

[2]See GAO, *Responses to Questions for the Record: March 18, 2009, Hearing on ATC Modernization: Near-Term Achievable Goals*, GAO-09-718R, (Washington, D.C.: May 20, 2009); GAO, *Next Generation Air Transportation System: Status of Transformation and Issues Associated with Midterm Implementation of Capabilities*, GAO-09-479T (Washington D.C., Mar. 18, 2009); and GAO, *Next Generation Air Transportation System: Status of Systems Acquisition and the Transition to the Next Generation Air Transportation System*, GAO-08-1078 (Washington, D.C.: Sept. 11, 2008).

our analysis of the Task Force report, and our discussions with selected senior FAA officials and aviation industry stakeholders, including airlines, general aviation stakeholders, avionics industry representatives, and the National Air Traffic Controller Association (NATCA). We discussed this testimony with FAA and received technical comments from RTCA, which we incorporated as appropriate. Our work was conducted in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the work to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

FAA Faces Challenges in Directing Resources and Addressing Environmental Issues to Ensure Timely Implementation

Developing Navigation Procedures with Significant Benefits in a Timely Manner

Developing Area Navigation (RNAV) and Required Navigation Performance (RNP) procedures,[3] often called performance-based navigation procedures,[4] with significant benefits is one way to leverage existing technology in the near term and provide immediate benefits to industry, but developing these procedures expeditiously will be a challenge for FAA. According to the Task Force, developing RNAV and

[3]RNAV enables aircraft to fly on any path within coverage of ground- or space-based navigation aids, permitting more access and flexibility for point-to-point operations. RNP, like RNAV, enables aircraft to fly on any path within coverage of ground- or space-based navigation aids, but also includes an onboard performance monitoring capability. RNP also enables closer en route spacing without intervention by air traffic control and permits more precise and consistent arrivals and departures.

[4]A flight procedure is the plan of operations that an aircraft must follow to depart or land in the vicinity of an airport.

RNP procedures could be a key part of relieving current congestion and delays at major metropolitan airports. Benefits of RNAV and RNP can also include reduced fuel usage, reduced carbon emissions, reduced noise, shorter flights, fewer delays, less congestion, and improved safety. For example, Southwest Airlines demonstration flights show that RNP can reduce fuel burn and carbon dioxide emissions by as much as 6 percent per flight. In 2008, Alaska Airlines estimated that it used RNP procedures 12,308 times and saved 1.5 million gallons of fuel, thereby reducing carbon dioxide emissions by approximately 17,000 metric tons and operating costs by $17 million. Even greater benefits can be realized when the procedures are part of a comprehensive airspace redesign that includes more efficient flight paths, and are not simply overlays of historical aircraft flight paths.[5]

Deriving benefits from RNAV and RNP technology depends less on equipping aircraft with the technology required to fly these procedures, than on developing procedures with significant benefits in a timely manner. MITRE Corporation,[6] which collects and retains data on equipage levels for the existing fleet, estimates that for aircraft in commercial operations in 2009, equipage rates are more than 90 percent for RNAV, more than 60 percent for RNP, and more than 40 percent for RNP equipment that allows for higher levels of precision. These figures indicate that the equipment necessary to take advantage of RNAV and RNP technology is already substantially deployed. However, comparatively few procedures have been developed for airlines to use the equipment. Since 2004 FAA has published 305 RNAV procedures, 206 RNAV routes, and 192 RNP approaches, but much remains to be done (see table 1). FAA believes that it can annually develop about 50 RNAV and RNP procedures, 50 RNAV routes, and 50 RNP approaches. At this pace of development, a simple calculation suggests that it would require decades to complete the thousands of procedures currently targeted for development.

[5]FAA has produced overlay procedures at the request of industry. Overlay procedures can produce benefits by making those procedures more precise, but industry maintains that benefits of overlays have been minimal.

[6]MITRE Corporation is a not-for-profit organization chartered to work in the public interest. MITRE manages four Federally Funded Research and Development Centers, including one for FAA. MITRE has its own independent research and development program that explores new technologies and new uses of technologies to solve problems in the near term and in the future.

Table 1: Estimate of the Number of Procedures Needed for Performance-Based Navigation in the National Airspace System

Procedure type	Estimated number of procedures completed (end of fiscal year 2009)	Number of procedures targeted for development
RNAV and RNP procedures (arrivals and departures)	305	2,000 to 4,000
RNAV/RNP routes	206	800 to1,200
RNP approaches	192	1,000 to 2,000

Source: FAA

The Task Force report suggests that FAA and industry create joint teams to focus on performance-based navigations issues at certain locations and to prioritize procedures for development at these locations. Such an effort would likely lead to changes in FAA's current development targets. Nonetheless, accelerating the development of procedures would require a shift in FAA's resources, or additional human resources and expertise. In addition to FAA, numerous companies have expertise and experience to develop procedures and are doing this work for air navigation service providers around the world. FAA recognizes the potential benefits of involving these private companies and has taken steps to use them more. FAA recently authorized one such company, Naverus, which has a long history of expertise in procedure development, to validate public and private flight procedures that the company has developed for the U.S. market. This authorization will allow the company to validate performance-based navigation flight procedures from beginning to end. While private sector development may be one way to accelerate procedure development, issues related to FAA's capacity to approve these procedures remain, according to some stakeholders. In addition, questions such as who can use the procedures and how oversight of third-party developers is to be provided must also be resolved.

While FAA tracks the number of navigation procedures completed, stakeholders have told us that developing procedures with significant benefits is more important than developing a specific number of procedures. For example, according to Southwest Airlines, FAA has developed 69 RNP procedures for the routes it flies, 6 which they view as useful to the airline because of the resulting reduction in flight miles or emissions. Some stakeholders have suggested that FAA use other metrics that better capture benefits to industry from advanced procedures, such as fuel savings, time savings, or mileage savings, which could lead to more of a focus on the development of procedures that maximize these benefits.

The Task Force report identified the establishment of performance metrics as an important part of following up on and tracking the implementation its recommendations, and we have ongoing work for this committee reviewing FAA's performance metrics related to this and other aspects of NextGen development.

Completing Timely Environmental Reviews and Addressing Local Concerns

As FAA develops new procedures to make more efficient use of airspace in congested metropolitan areas, it will be challenged to complete the necessary environmental reviews quickly and address local concerns about the development of new procedures and airspace redesign. Anytime an airspace redesign or a new procedure changes the noise footprint around an airport, an environmental review is initiated under the National Environmental Policy Act (NEPA). Under NEPA, varying levels of environmental review must be completed depending on the extent to which FAA deems its actions to have a significant environmental impact. There are three possible levels:

1. *Categorical exclusion determination.* Under a categorical exclusion, an undertaking may be excluded from a detailed environmental review if it meets certain criteria and a federal agency has previously determined that the undertaking will have no significant environmental impact.

2. *Environmental assessment/finding of no significant impact (EA/FONSI).* A federal agency prepares a written environmental assessment (EA) to determine whether or not a federal undertaking would significantly affect the environment. If the answer is no, the agency issues a finding of no significant impact (FONSI).

3. *Environmental impact statement (EIS).* If the agency determines while preparing the EA that the environmental consequences of a proposed federal undertaking may be significant, an EIS is prepared. An EIS is a more detailed evaluation of the proposed action and alternatives.

The more extensive the analysis required, the longer the process can take. A full EIS can take several years to complete. EAs and categorical exclusions, by contrast, take less time and resources to complete. Because NEPA does not allow consideration of the net impact of an action such as the introduction of new procedures or broader airspace redesign—which may increase noise in some areas but increase capacity at an airport and reduce noise and emissions overall—these actions can often result in

extensive and time-consuming reviews. FAA is exploring situations in which it might be more appropriate to use a categorical exclusion or an EA instead of an EIS. The 2009 FAA reauthorization legislation includes language that may expedite the environmental review process. For example, the legislative proposal would allow airport operators to use grant funds for environmental reviews of proposals to implement flight procedures. The proposal would also allow project sponsors to provide FAA with funds to hire additional staff as necessary to expedite completion of the environmental review necessary to implement flight procedures.

Because airspace redesign and new procedures can change noise patterns, there is the potential for community concerns and legal challenges to the environmental review process, which can further delay efforts to use the airspace more efficiently. For example, redesign has been particularly controversial in the New York, New Jersey, and Philadelphia areas.[7] It took nearly 7 years to complete the New York, New Jersey, and Philadelphia areas' airspace redesign, and despite an FAA Record of Decision in September 2007, the project still faces a number of legal challenges as well as challenges related to implementation complexities. These difficulties suggest that it may be desirable to begin redesign efforts in less complex metropolitan areas. How to prioritize airspace redesign efforts will be a key decision that FAA and stakeholders will need to make in the near future. Regardless of where FAA begins, if airspace design is to help reduce delays in congested airspace in the near term or midterm, the Task Force report concluded that FAA must begin the environmental review processes now.

[7]See GAO: *FAA Airspace Redesign: An Analysis of the New York/New Jersey/Philadelphia Project*, GAO-08-786 (Washington, D.C.: July 31, 2008).

FAA Faces Challenges in Changing Its Culture and Business Practices in Order to Respond Effectively to the Task Force's Recommendations

Changing from an Organization and Culture Focused on System Acquisition to an Emphasis on Integration and Coordination

According to stakeholders and Task Force members, and as we have previously reported, FAA faces organizational and cultural challenges in implementing NextGen operational capabilities.[8] FAA has traditionally developed and acquired new systems through its acquisition process. However, most NextGen technologies and capabilities, such as Automatic Dependent Surveillance Broadcast (ADS-B),[9] rely on components in the aircraft, on the ground, and in space for their use. They also require controllers and pilots to be trained and flight procedures to be developed in order to maximize their benefits. Different offices within FAA—including its Aircraft Certification Service, Flight Standards Service, and Air Traffic Organization (ATO),[10] among others—are responsible for ensuring the completion of all the activities required to maximize the use of a technology or capability. While FAA has recently made organizational changes to address integration issues, several stakeholders told us, and our previous and ongoing work suggests, that FAA's structure and culture continues to hamper its ability to ensure that all the actions necessary to maximize use of a technology or capability in the national airspace system are completed efficiently. For example, stakeholders identified coordination and integration as particular challenges to implementing operational capabilities in the surface operations area identified by the Task Force. Implementing capabilities in this area will require greater

[8]GAO-09-479T.

[9]ADS-B is a satellite navigation system that is designed, along with other navigation technologies, to enable more precise control of aircraft during en route flight, approach, and descent.

[10]FAA's Air Traffic Organization consists of 35,000 controllers, technicians, engineers, and support personnel responsible for moving air traffic safely and efficiently.

coordination among offices within ATO, airport operators, pilots, and controllers, among others.

Reprioritizing or Changing Some Aspects of Plans and Programs to Implement the Task Force's Recommendations

While many of the operational improvements identified by the Task Force align with FAA's current plans, a senior FAA official indicated that in several instances, FAA may need to adjust its plans, budgets, and priorities as it decides how it will respond to the Task Force's recommendations. According to this senior FAA official, potential budgetary changes are already being identified, and a comprehensive analysis of what additional changes to existing plans would be necessary to respond to the recommendations is underway. Until this analysis is completed, it is difficult to know exactly what changes FAA would need to make to implement the Task Force's recommendations. In some cases, the Task Force's recommendations, if accepted and fully implemented, will require altering the course of initiatives that are already underway or programs that are being implemented. For example, a recommendation to expand surveillance of airspace around certain general aviation airports may require an increase in the scope of the current ADS-B program, which does not cover those areas. In addition, recommendations to expand information sharing to improve surface situational awareness and traffic management could affect the current plans for FAA programs such as System-Wide Information Management (SWIM),[11] according to one stakeholder. Responding to the Task Force's recommendations will require a willingness to change and reprioritize current plans and programs.

[11] *SWIM* is an information management architecture for the national airspace system, acting as its "World Wide Web." SWIM will manage surveillance, weather, and flight data, as well as aeronautical and system status information, and will provide the information securely to users.

Streamlining Certification, Operational Approval, and Procedure Design Processes

Inefficiencies in FAA's certification,[12] operational approval,[13] and procedure design processes constitute another challenge to delivering near-term benefits to stakeholders, instilling confidence in FAA plans, and investing in new equipment. Our prior work has identified this issue and concluded that the time required to complete such activities will have to be balanced against the need to ensure reliability and safety of procedures and systems before they are used in the national airspace system.[14] Stakeholders, including airlines and general aviation groups, including one that represents avionics manufacturers, as well as the Task Force, have said that these processes take too long and impose costs on industry that discourage the stakeholders from investing in NextGen aircraft equipment. For example, the President of GE Aviation Systems recently testified, and other stakeholders have told us, that the process of approving and deploying RNP navigation procedures remains extremely slow and that FAA's review and approval of a given original RNP design often takes years. A 1999 RTCA task force also identified a need to streamline the certification and operational approval processes and made a number of recommendations to FAA. According to a senior FAA official, while FAA has made progress in addressing many of these recommendations, it has yet to take action on others and some challenges remain. For example, the NextGen Task Force reports that FAA aircraft certification offices face resource issues and applicants for many required installation approvals wait about 6 months until FAA engineers are available to oversee their project. Other suggestions to streamline the equipment certification process include increasing staffing at FAA's certification offices to process applications and having NextGen-specific equipment certification processes that allow quicker approvals of equipment.

Effectively Engaging Stakeholders

Another challenge for FAA will be to continue involving stakeholders—including industry and controllers, as well as others as appropriate—in implementation and key decisions related to the Task Force's recommendations. The Task Force recommends, and we agree, that FAA and industry establish institutional mechanisms to facilitate continued

[12]FAA's certification process ensures the safety of aircraft equipment entering the national airspace system.

[13]FAA's operational approval process ensures, among other things, that pilots are trained in the use of new equipment and procedures, and technicians are trained in the maintenance of them before the equipment is used in the national airspace system.

[14]GAO-09-479T.

transparency and collaboration in planning and implementing actions to address the Task Force's recommendations, particularly as these actions lead to changes in the NextGen Implementation Plan. The Task Force recommended the creation of a NextGen Implementation Workgroup under the RTCA Air Traffic Management Advisory Committee (ATMAC). An FAA official indicated that several mechanisms, including a variety of advisory boards and working groups, currently exist and can also be used to improve collaboration among stakeholders. We have previously reported that the roles of these various groups have become somewhat unclear, even to stakeholders involved in them.[15] FAA will need to work with industry and key stakeholders to come to agreement on how, where, and when stakeholders will be involved. Continued transparency and collaboration are key to developing industry's trust that FAA is making changes to implement NextGen.

In addition, FAA will need to continue to work toward changing the nature of its relationship with controllers and the controllers' union to create more effective engagement and collaboration. In September 2009, FAA and NATCA signed a new 3-year contract. FAA views the new contract as a framework for helping meet the challenges of implementing NextGen. NATCA states that the contract starts a process to discuss ways for getting NATCA representatives involved in all NextGen-related issues. One particular change that would affect the relationship between controllers and FAA, as well as facilitate NextGen's implementation, would be to modify the incentives that influence how controllers apply FAA's aircraft separation standards. More specifically, a change that encouraged controllers to decrease the separation between aircraft during landing or takeoff would improve system capacity and efficiency and was one of the Task Force's overarching recommendations. Currently, according to NATCA, controllers are encouraged to increase the separation between aircraft, because they are penalized if separation thresholds are crossed. Moreover, according to MITRE, controllers often separate aircraft by more than the prescribed minimum distances to address any uncertainty about the actual positions of aircraft as well as to reduce the likelihood of violating the required separation distances. NextGen technologies and procedures can provide controllers with more precise information about the locations of aircraft and allow for aircraft to operate closer to one

[15]GAO-09-479T.

another. Recent changes to the Operational Error program[16] and the Air Traffic Safety Action Program (ATSAP)[17] program are aimed at establishing a nonpunitive safety reporting program and are a positive first step towards changing the culture and establishing a more collaborative relationship with controllers.

FAA Faces Challenges to Provide Incentives to Accelerate New Equipage as NextGen Progresses

The Task Force's focus was on making better use of the equipment that has already been installed or is available for installation. However, as NextGen progresses and as the Task Force's recommendations are implemented, operators will need to acquire additional equipment to take full advantage of the benefits of NextGen. In some cases the federal government may deem financial or other incentives desirable to speed the deployment of new equipment. Appropriate incentives will depend on the technology and the potential for an adequate and timely return on investment. A discussion of options to accelerate equipage discussed in our prior work and identified by the Task Force follows.[18]

Mandating Equipage

The first option is mandating the installation of equipment. Traditionally, FAA mandates the equipage of aircraft for safety improvements and provides several years for operators to comply. According to academic researchers, among these mandated safety improvements are ground proximity warning sensors, extended ground proximity warning sensors, and traffic collision and avoidance systems.[19] Mandates can be effective because they force operators to equip even when there may not be clear and timely benefits to operators that justify the cost of equipping. In the NextGen context, FAA has proposed a rule that mandates equipage with

[16]FAA's Operational Error program will no longer include the names of controllers in reports sent to FAA headquarters on operational errors, which occur when the proper distance between aircraft is not maintained.

[17]ATSAP allows controllers and other employees to report safety problems without fear of punishment unless the incident is deliberate or criminal in nature. ATSAP responded to our prior recommendation (GAO-08-29) that FAA establish a nonpunitive voluntary safety reporting program for air traffic controllers. As of July 2009, ATSAP was being demonstrated at 187 facilities throughout the country. Nationwide implementation of the program is expected by the end of the demonstration phase at the end of 2009.

[18]See GAO-09-718R.

[19]Karen Marais and Annalisa L. Weigel, Massachusetts Institute of Technology, *Encouraging and Ensuring Successful Technology Transition in Civil Aviation*, 2007.

ADS-B Out[20] for affected aircraft by 2020. However, operators may not equip until the deadline for compliance is near because the cost of early investment in new technologies is often high and the return on investment limited. This is particularly true for general aviation operators who typically do not fly enough to recoup a large investment in new aircraft equipment. According to a general aviation stakeholder, general aviation operators typically fly hundreds of flight hours a year, while scheduled airlines fly thousands a year. Our prior work has identified a variety of other disincentives to early investment.[21] These disincentives include the possibility that a technology may not work as intended, may not provide any operational benefits until a certain percentage of all aircraft are equipped, or may become obsolete because a better technology is available. Other risks to early investors include potential changes in the proposed standards or requirements for the technology, later reductions in the price of technologies and installations, or the risk that FAA may not implement the requisite ground infrastructure and procedures to provide operators with benefits that would justify their costs to equip. Moreover, because equipage mandates are designed to cover a broad range of users in a single action, they may lead to objections and lobbying from users, such as general aviation operators, on whom significant costs are imposed.

Making the Best Use of Equipment that Is Widely Deployed

A second option to accelerate equipage is to develop operational improvements that make use of equipment that is already widely deployed to produce benefits for operators to justify the costs of equipage. The Task Force's recommendations are geared toward this option. A large part of the fleet is equipped with technologies that operators cannot fully use until FAA has implemented operational improvements. If FAA can implement such improvements for operators that have this equipment, it could provide a return on investment for them and create a financial incentive for others to equip. But because FAA has not always taken the actions needed for operators to take full advantage of investments in equipage,

[20]ADS-B has two components. ADS-B Out continuously transmits an aircraft's position, altitude, and direction to controllers on the ground and to other aircraft. ADS-B In enables another aircraft to receive the transmitted data, giving pilots with ADS-B In a complete picture of their aircraft in relation to other ADS-B equipped traffic. FAA is deploying the nationwide ground infrastructure needed to receive ADS-B information and integrate it with controller displays. FAA expects this ground network to be fully deployed in 2013.

[21]GAO-09-718R.

such as for Controller Pilot Data Link Communications,[22] some industry stakeholders question whether FAA will now follow through with the tasks required to allow operators to achieve the full benefit of their investment in a timely manner. Early success in implementing some of the Task Force's near-term recommendations will help build trust between FAA and operators that FAA will provide operational improvements that allow operators to take advantage of the required equipment and realize benefits.

Providing Operational Incentives to Equip

A third option proposed by FAA and known as "best equipped, best served" requires that FAA ensure some form of operational benefit for operators that do equip, such as preferred airspace, routings, or runway access, which can save time or fuel. If early equippers get a clear competitive advantage, other operators may be encouraged to follow their example, providing further incentive for all operators to fully equip their fleets. An advantage of pursuing this option is that no federal financial incentives are required for equipage, so costs to the federal government are generally lower. However, designing such incentives and analyzing how they will work in practice is a major challenge and has only begun to move forward. For example, giving a better-equipped aircraft preference over lesser-equipped aircraft to land or depart may increase delays and holding patterns for the lesser-equipped aircraft, potentially increasing delays and fuel usage overall, and resulting in lower systemwide benefits. Furthermore, according to airline stakeholders, the best equipped, best served option will require controllers to accept procedures that they have expressed safety concerns about in the past. Mechanisms will also have to be created so that controllers know which aircraft are best equipped, and these mechanisms cannot adversely affect controller workload or safety. The Task Force's report does not address the practical implications of how a best equipped, best served option would work, but recommends that the option be explored in the context of specific operational capabilities and locations.

[22]Controller Pilot Data Link Communications was designed to allow pilots and controllers to transmit digital messages directly between an FAA ground automation system and suitably equipped aircraft. The system was meant to alleviate voice congestion problems and increase controller efficiency. While some operators installed the necessary equipment on their aircraft, FAA never fully implemented the program and those operators were unable to benefit fully from their investment.

Providing Financial Incentives

A fourth option is to provide financial incentives where operators do not have a clear and timely return on investment for equipping aircraft. Financial incentives can accelerate investment in equipment, which, in turn, can accelerate the operational and public benefits expected from implementing additional capabilities. According to the Commission on the Future of the United States Aerospace Industry,[23] one argument for some form of federal financial assistance is that the total cost to the federal government of fully financing the communication, navigation, and other airborne equipment required for more efficient operations would be less than the costs to the economy of system delays and inefficiencies that new equipment would help address. In previous work, we concluded that the federal government's sharing of costs is most justifiable when there are adequate aggregate net benefits to be realized through equipage, but those who need to make the investments in the equipment do not accrue enough benefits themselves to justify their individual investments.[24]

Financial assistance can come in a variety of forms including grants, cost-sharing arrangements, loans, and tax incentives. As we have previously reported, prudent use of taxpayer dollars is always important; therefore, financial incentives should be applied carefully and in accordance with key principles.[25] For example, mechanisms for financial assistance should be designed so as to effectively target parts of the fleet and geographical locations where benefits are deemed to be greatest, avoid unnecessarily equipping aircraft (e.g., those that are about to be retired), and not displace private investment that would otherwise occur. Furthermore, it is preferable that the mechanism used for federal financial assistance result in minimizing the use of government resources (e.g., some mechanisms may cost the government more to implement or place the government at greater risk than others). We also reported that, of the various forms of assistance available to the federal government, tax incentives have several disadvantages because (1) many scheduled airlines may not have any tax liability that tax credits could be used immediately to offset, (2) a tax credit would provide a more valuable subsidy for carriers that are currently profitable than for those that are not, and (3) using the tax

[23]In 2002, Congress mandated the Commission on the Future of the United States Aerospace Industry to produce a report that studied the health of the aerospace industry and identified actions that the United States needs to take to ensure its health in the future.

[24]GAO-09-718R.

[25]GAO-09-718R.

system to provide a financial incentive can impose an administrative burden on the Internal Revenue Service.

One financing option proposed by the Task Force to encourage the purchase of aircraft equipment is the use of equipage banks, which provide federal loans to operators to equip their aircraft. Recent legislation proposes that FAA establish a pilot program that would permit the agency to work with up to five states to establish ADS-B equipage banks for making loans to help facilitate aircraft equipage locally. The Task Force suggests that equipage banks could be used to provide funds for operators to equip with a NextGen technology when there may not be a benefit or return on investment for doing so. By providing for a variety of NextGen technologies, an equipage bank can avoid penalizing those who have already invested in a particular NextGen technology. The federal government has used a similar financing option in the past to fund other infrastructure projects including highway improvements.

Thank you Mr. Chairman. This concludes my prepared statement. I would be pleased to answer any questions that you or Members of the Subcommittee may have at this time.

GAO Contact and Staff Acknowledgments

For further information on this testimony, please contact Dr. Gerald L. Dillingham at (202) 512-2834 or dillinghamg@gao.gov. Individuals making key contributions to this testimony include Andrew Von Ah (Assistant Director), Amy Abramowitz, Kieran McCarthy, Kevin Egan, Bess Eisenstadt, and Bert Japikse.

U.S. House of Representatives
Committee on Transportation and Infrastructure
Washington, DC 20515

James L. Oberstar
Chairman

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November 10, 2009

Dr. Gerald Dillingham
Director, Physical Infrastructure Issues
U.S. Government Accountability Office
441 G Street, N.W.
Washington, D.C. 20548

Dear Dr. Dillingham:

On October 28, 2009, the Subcommittee on Aviation held a hearing on **"NextGen: A Review of the RTCA Mid-Term Implementation Task Force Report."**

Attached are questions that I would like you to answer for the hearing record. I would appreciate receiving your written response to these questions within 45 days so that they may be made a part of the hearing record.

Sincerely,

Jerry F. Costello
Chairman
Subcommittee on Aviation

JFC:gg/pk
Attachment

OCTOBER 28, 2009
SUBCOMMITTEE ON AVIATION
HEARING ON
"NEXTGEN: A REVIEW OF THE RTCA MID-TERM IMPLEMENTATION TASK FORCE REPORT"

QUESTIONS FOR THE RECORD
TO:
DR. GERALD DILLINGHAM
DIRECTOR, PHYSICAL INFRASTRUCTURE ISSUES
U.S. GOVERNMENT ACCOUNTABILITY OFFICE

Dr. Dillingham, in your testimony you point out that the RTCA Task Force recommendations were geared toward using equipment and technologies that are currently deployed, or soon to be available for deployment in aircraft and on the ground. Furthermore, you point out that in addition to equipment and technology deployment, standards, certifications, approvals, and procedures must be developed in order to implement new operational capabilities. You also discuss various options for providing operational or financial incentives to accelerate operators equipping with existing technologies or soon to be available technologies.

1) If financial incentives were to be used to accelerate equipage for selected technologies (Advanced RNAV/RNP, DataComm, and ADS-B), how quickly could operational improvements be implemented and operational benefits begin to be seen in the National Airspace System, and what are the key drivers of these timelines?

2) If financial incentives were to be used to accelerate equipage for selected technologies (Advanced RNAV/RNP, DataComm, and ADS-B), how quickly could these incentives benefit the economy, particularly in terms of job creation, and what are the key drivers of these timelines?

3) What, if any, are the key lessons learned from the implementation of the Recovery Act that maybe applicable to providing financial incentives to accelerate aircraft equipage?

4) What is the level of reliability and validity or what level of confidence can the committee have in the projections they have been presented with regard to the job creation and cost saving that could be generated from providing financial incentives to accelerate operator equipage?

United States Government Accountability Office
Washington, DC 20548

December 16, 2009

The Honorable Jerry Costello
Chairman
Subcommittee on Aviation
Committee on Transportation and Infrastructure
House of Representatives

Subject: *Responses to Questions for the Record: October 28, 2009, Hearing on NextGen: A Review of the RTCA Mid-Term Implementation Task Force Report*

This letter responds to your request that we address questions submitted for the record related to the October 28, 2009, hearing entitled *NextGen: A Review of the RTCA Mid-Term Implementation Task Force Report.*

The attached enclosure contains our responses to those questions.

If you have any questions or would like to discuss the responses, please contact me at (202) 512-2834 or dillinghamg@gao.gov.

Gerald L. Dillingham, Ph.D.
Director
Physical Infrastructure Issues

Enclosure

Responses to Post-Hearing Questions for the Record
"NextGen: A Review of the RTCA Mid-Term Implementation Task Force Report"
Committee on Transportation and Infrastructure, Subcommittee on Aviation
U.S. House of Representatives
Hearing held on October 28, 2009
Questions for Dr. Gerald L. Dillingham, Director
Physical Infrastructure Issues
U.S. Government Accountability Office

Questions for the Record Submitted by Chairman Costello:

Question #1:

If financial incentives were to be used to accelerate equipage for selected technologies (Advanced RNAV/RNP, DataComm, and ADS-B), how quickly could operational improvements be implemented and benefits begin to be seen in the NAS and what key drivers would affect implementation time frames?

Answer:

Realization of operational improvements and benefits from equipage depends as much on FAA's completion of key tasks such as standards development, procedure development, airspace redesign, and automation enhancements, as it does on the installation of the aircraft equipment itself. Completion of these tasks will better use existing and future technologies. While some technologies like Area Navigation (RNAV) and Required Navigation Performance (RNP)[1] are ready for immediate installation, even if the installation of current and future aircraft equipment were accelerated, only limited benefits will be realized until FAA completes the key tasks. Other technologies like Automatic Dependent Surveillance Broadcast (ADS-B) Out could begin to be produced in the first quarter of 2010 while some ADS-B In applications are expected to be mature by 2012. Advanced Data Communications technology is expected by 2013. Challenges affecting completion of key tasks and driving the implementation timeframes include completing procedure development in a timely manner given FAA's current procedure development capacity and overcoming local opposition to airspace redesign.

Performance-Based Navigation and Approach Capabilities

Performance-based navigation and approach capabilities—including RNAV/RNP capabilities, Vertical Navigation (VNAV), and Localizer Performance with Vertical

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[1] RNAV enables aircraft to fly on any path within coverage of ground- or space-based navigation aids, permitting more access and flexibility for point-to-point operations. RNP, like RNAV, enables aircraft to fly on any path within coverage of ground- or space-based navigation aids, but also includes an onboard performance monitoring capability. RNP also enables closer en route spacing without intervention by air traffic control and permits more precise and consistent arrivals and departures.

Guidance (LPV)[2]—are mature technologies and are already in use in some instances. For example, MITRE Corporation (MITRE)[3], which collects and retains data on equipage levels for the existing large commercial aircraft fleet[4], estimates that for large commercial operations in 2009, equipage rates are more than 90 percent for RNAV, more than 60 percent for RNP, and more than 40 percent for an advanced version of RNP. To get significant benefits out of advanced RNP, MITRE estimates that 70 percent of the fleet will need to be equipped. According to MITRE, this level of equipage will be required primarily because of the impact on controller workload that would result if there were significant mixed equipage within the fleet. Furthermore, RNAV, RNP, and VNAV can decrease flight costs and emissions and increase capacity if sufficient equipage exists, but FAA must implement enabling airspace redesigns and procedures. Stakeholders told us that RNAV/RNP has perhaps the greatest immediate potential (over the next 2 years) to accelerate the NextGen given the maturity of the technology. However, according to stakeholders, key challenges to realizing these benefits include the time it will take to redesign airspaces and develop procedures—which could be many years. One reason for the time required to redesign airspace and develop procedures is the time it will take to complete environmental reviews and address local noise concerns. Another current limitation on RNP use is the lack of a more demanding standard for advanced RNP procedures. This standard is not expected to be complete until the end of fiscal year 2010. In addition, according to an FAA program manager, as more procedures are developed, FAA resources to maintain existing procedures will compete with FAA resources necessary to develop new procedures and may impact the speed at which new procedures can be developed.

Surveillance and Information Display Capabilities

Key surveillance and information display capabilities include ADS-B Out, ADS-B In, and Electronic Flight Bag (EFB) integrated with ADS-B.[5] These capabilities are not fully mature because standards are under development, standards have just been finalized for them and the equipment is not yet widely available, or the capability is still under

[2] LPV vertically guided approach capability enables aircraft to conduct instrument approaches to decision heights as low as 200 feet at locations without ground-based instrument approach aids. Avionics that enable LPV capability are available for smaller commercial and general aviation aircraft. General aviation stakeholders want FAA to continue to develop and certify LPV procedures.

[3] The MITRE Corporation is a not-for-profit organization chartered to work in the public interest. MITRE manages four Federally Funded Research and Development Centers including one for FAA. MITRE has its own independent research and development program that explores new technologies and new uses of technologies to solve problems in the near-term and in the future.

[4] By large commercial aircraft, we mean those aircraft regulated under part 121 of title 14 of the Code of Federal Regulations. Part 121 applies to air carrier operations involving airplanes with a seating capacity of more than 30 passengers or a maximum payload capacity of more than 7,500 pounds.

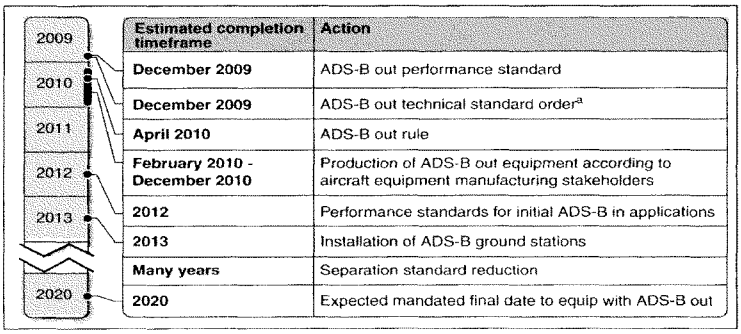
[5] ADS-B has two components. ADS-B Out continuously transmits an aircraft's position and direction to controllers on the ground and to other aircraft. ADS-B In enables another aircraft to receive the transmitted data, giving pilots with ADS-B In a complete picture of their aircraft in relation to other ADS-B equipped traffic. FAA is deploying the nationwide ground infrastructure needed to receive ADS-B information and integrate it with controller displays. FAA expects this ground network to be fully deployed in 2013. FAA is proposing a rule that would mandate ADS-B out equipage by 2020. Some stakeholders believe that this date for requiring equipage is too distant and that incentives should be provided to encourage aircraft operators to equip sooner.

development and demonstration. In addition, the applications that will be supported by the ADS-B technology have not been fully defined.

ADS-B Out Capabilities, Implementation Time Frame, and Benefits

ADS-B Out enables an aircraft to transmit its position, velocity, and other information to air traffic control systems for surveillance purposes. With ADS-B Out, controllers will see radarlike displays with highly accurate traffic data derived from Global Positioning System (GPS) satellites. RTCA[6] published a revised standard (DO-260B) with specifications for ADS-B Out and FAA published a revised Technical Standard Order (TSO)[7] that references this standard in December 2009. Manufacturers are now able to produce the ADS-B transceiver and any associated onboard equipment based on the new standard. According to one manufacturer, some manufacturers could begin to produce this equipment in a few months. In addition, FAA issued a Notice of Proposed Rulemaking in October 2007 and plans to issue the Final Rule in April 2010. This rule is expected to mandate that all affected aircraft be equipped with ADS-B Out by 2020 (see Table 1). The revised standard will be consistent with the requirements that FAA promulgates in this rule. Additionally, to fully implement ADS-B Out, FAA must continue to deploy ADS-B ground stations, which are scheduled for full deployment by 2013.

Table 1: Estimated Time Frames for Implementing Key Actions Needed to Enable Fuller Use of ADS-B Out and ADS-B In Equipment



Estimated completion timeframe	Action
December 2009	ADS-B out performance standard
December 2009	ADS-B out technical standard order[a]
April 2010	ADS-B out rule
February 2010 - December 2010	Production of ADS-B out equipment according to aircraft equipment manufacturing stakeholders
2012	Performance standards for initial ADS-B in applications
2013	Installation of ADS-B ground stations
Many years	Separation standard reduction
2020	Expected mandated final date to equip with ADS-B out

Source: FAA and aircraft equipment manufacturers

Immediate benefits to operators from ADS-B Out are limited, but ADS-B Out is a key enabler of future benefits to be derived from ADS-B In and other NextGen technologies.

[6] Organized in 1935 and once called the Radio Technical Commission for Aeronautics, RTCA is today known just by its acronym. RTCA is a private, not-for-profit corporation that develops consensus-based performance standards for air traffic control systems. RTCA's recommendations are the basis for a number of FAA's policy, program, and regulatory decisions.

[7] A Technical Standard Order is a minimum performance standard for specified materials, parts, and appliances for use on civil aircraft.

The limited benefits for operators include increased capacity and access over limited nonradar areas such as the Gulf of Mexico, large portions of Alaska, or in airport areas beneath radar coverage. However, few areas in the United States, other than the areas mentioned above, are without radar coverage. In addition, FAA cites other operator benefits, including some safety improvements, and benefits associated with more efficient, fuel-saving continuous descent approaches in its Notice of Proposed Rulemaking on ADS-B Out.

For areas with existing radar coverage, ADS-B technology provides more precision which can potentially allow for reduced separation standards in that airspace as well. For operators, deploying ADS-B infrastructure without tying it to reduced separation, merging, spacing, and other applications delivers little benefit, and thus there is very little incentive for aircraft operators to equip their fleets now. FAA has not committed to reducing aircraft separation standards—important to fully using the capabilities of ADS-B.

From a systemwide perspective and over the midterm and long term, equipping with ADS-B Out also provides benefits to FAA in the form of reduced costs from decommissioning a large number of the secondary surveillance radars, and from more efficiency and precision in air traffic control surveillance information. Accelerating aircraft equipage with ADS-B Out equipment can accelerate these cost-saving benefits.

ADS-B In Capabilities and Implementation Time Frame

ADS-B In gives pilots a complete picture of their aircraft in relation to other ADS-B-equipped traffic. Aircraft equipped with ADS-B In and an associated cockpit display will be able to "see" each other, which, among a number of capabilities, will allow for greater situational awareness in the cockpit and enable the self-spacing of aircraft, and also eventually allow for self-separation, which will increase capacity and decrease delays. RTCA has published standards for application related to situational awareness and spacing, but not for self-separation, which requires more stringent performance requirements. Several applications have been developed for ADS-B In, but only a few are certified. An FAA official knowledgeable of the ADS-B program said that given all the standard development and testing required for ADS-B In, ADS-B In capabilities are not likely until 2012 at the earliest. As for ADS-B Out, reduced separation standards will be necessary to fully use the capabilities of ADS-B In once they are developed.

Electronic Flight Bags (EFBs) That Use ADS-B

EFBs provide electronic charts, manuals, and other applications to aid flight crews. Higher-capability EFBs can incorporate information from ADS-B transceivers to show the location of other aircraft in the air or on the airport surface, and moving map displays, enabling some ADS-B In applications. Although some EFBs are ready for deployment on aircraft, stakeholders indicated that there is currently no clear benefit to operators for equipping with higher capability models, given the high cost to equip. EFBs integrated with ADS-B are not yet broadly available because standards have only recently been approved.

Data Communications Capabilities

Initial data communications capabilities are mature and ready for deployment while more-advanced data communications capabilities are maturing, but are not ready for immediate, widespread deployment. Data communications enable flight crews to receive and reply to air traffic control clearances via electronic messages instead of voice messages as is done today, enabling controllers to safely handle more traffic. This improves air traffic controllers' productivity, and enhances efficiency, capacity and safety. However, FAA's ground communications network and ground automation systems are not yet capable of data communications operations except at a couple of airports. Data communications for the en route environment will require updates to the En Route Automation Modernization system, the timing of which depends on how FAA sets priorities for the program.

According to MITRE and others, data communications will do the most to accelerate capacity benefits nationwide in the next 4 to 6 years. Data communications will help relieve congested or constrained en route airspace by increasing the effectiveness of air traffic control automation systems and increasing air traffic controllers' productivity. Besides enabling controllers to reroute multiple aircraft around weather and electronically link clearances to multiple aircraft, it offers the benefit of increasing schedule reliability and reducing miles flown and fuel used, which are important metrics for scheduled carriers. To realize these benefits, sufficient equipage (of at least 30 percent of the fleet), updates to automation systems, controller training, and new procedures will be required.

Key Challenges Driving Implementation Timeframes

FAA faces several challenges that will drive implementation timeframes for completing tasks needed to bring about operational benefits to NAS users.

Directing FAA Resources and Addressing Environmental Issues

Allocating resources for advanced navigational procedures and airspace redesign requires FAA to balance benefits to operators against resource limits and other challenges to the timely implementation of NextGen. Procedures that allow more direct flights—versus those that overlay existing routes—and redesigned airspace in congested metropolitan areas can save operators time, fuel, and costs, and reduce congestion, delays, and emissions. However, FAA does not have the capacity to expedite progress towards its current procedure development targets. While FAA has begun to explore collaboration with the private sector to help develop procedures, issues related to public use of these procedures and oversight of developers remain. In addition, required environmental reviews can be lengthy, especially when planned changes in noise patterns create community concerns during reviews. Furthermore, as more procedures are developed, the need for resources to maintain existing procedures will compete with the need for resources to develop new procedures and may affect the pace at which new

procedures can be developed. Other challenges to FAA include deciding whether to start in more or less complex metropolitan areas, and finding ways to expedite environmental reviews and proactively ameliorate community concerns.

Changing FAA's Culture and Business Practices

As we have previously reported, FAA faces cultural and organizational challenges in implementing NextGen capabilities. Whereas FAA's culture and organization formerly supported the acquisition of individual air traffic control systems, FAA will now have to integrate and coordinate activities across multiple lines of business, as well as set new priorities for some of its plans and programs, to implement near-term and midterm capabilities. FAA is currently analyzing what changes may be required to respond to the NextGen Midterm Implementation Task Force recommendations.[8] Streamlining FAA's certification, operational approval, and procedure design processes, as a prior task force recommended, will also be essential for timely implementation. And sustaining a high level of involvement and collaboration with stakeholders—including operators, air traffic controllers, and others—will also be necessary to ensure progress.

Developing and Implementing Options to Reach Threshold Equipage Levels

To realize significant benefits from equipping aircraft with new technology in the national airspace system, it is important for technologies like RNAV/RNP and ADS-B to reach a critical mass within the fleet. Achieving this critical mass is complicated by the fact that operators prefer to install new aircraft equipment during regular heavy maintenance checks that typically occur once every 7 years because the cost to airlines to taking an aircraft out of service to install new equipment is high. Sometimes this cost is higher than the cost of the equipage itself. So, if aircraft are to be equipped with new technology in a way that minimizes out-of-service costs to operators, it will likely take several years to reach required equipage levels to realize benefits, if financial or other incentives are not used to accelerate this equipage. We have previously reported that the best-equipped best-served concept holds promise for providing operators incentive to equip, but that challenges exist to defining how this concept will work and be implemented in practice. With regard to providing more direct financial incentives for equipage, a discussion of the challenges associated with that option are discussed in questions 2 and 3 below.

Question #2:

If financial incentives were to be used to accelerate equipage for selected technologies (Advanced RNAV/RNP, DataComm, and ADS-B), how quickly could

[8] Recognizing the importance of near-term and midterm solutions, FAA requested that RTCA create a NextGen Midterm Implementation Task Force to reach consensus within the aviation community on the operational improvements that can be implemented between now and 2018. The Task Force focused on maximizing benefits in the near term, and paid particular attention to aligning its recommendations with how aircraft operators decide to invest in aircraft equipment. On September 9, 2009, the Task Force issued its final report, which contained a list of recommendations to implement operational capabilities in five key areas.

these incentives benefit the economy in terms of job creation, and what are the key drivers of these timelines?

Answer:

According to industry stakeholders and FAA officials, effects on employment are likely to occur almost immediately and will continue over several years if financial incentives are used to accelerate equipage. If government financial incentives resulted in demand from airlines for ADS-B and other equipment, this would create some immediate effects on jobs related to development and manufacturing, because equipment manufacturing companies would need to ramp up their capacity to meet that demand as it materialized. Moreover, because FAA has just issued a new standard for ADS-B and will be completing a final rule in April, equipment manufacturers can begin to design and manufacture ADS-B transceivers that meet the new standards. According to stakeholders in the manufacturing sector, a limited amount of equipment could be available from certain manufacturers as early as the first quarter of 2010, but others estimated the third or fourth quarter of 2010. Equipment for RNAV/RNP and for initial DataComm capabilities currently exists and can be manufactured based on demand. According to FAA, because of the timelines associated with the availability of ADS-B equipment, in addition to the time it will take to set up an administrative structure to provide funding for equipment given the potential number of aircraft involved, it will be difficult to spend any funding available to accelerate NextGen in the 90-120 day timeframe that you asked us to examine.

Once equipment is available, aircraft operators must schedule time to take aircraft out of service to retrofit them. As mentioned previously, the most cost-effective strategy would be for operators to time the retrofit with regularly scheduled heavy aircraft maintenance, which for major airlines typically occurs for an aircraft once every 7 years. Thus, if this strategy were pursued, it would take 7 years for full equipage across the fleet. However, stakeholders indicated that, with government financial assistance, airlines would have an incentive to retrofit aircraft sooner. With equipment available by late 2010 and considering time for airlines to schedule installations, it is likely that demand for installations of equipment and subsequent effects on employment in that sector would follow at the end of 2010 or early in 2011, and continue over several years, depending on the extent to which operators accelerate their retrofitting of aircraft.

Key drivers of these timelines are the extent of the demand created by any financial incentives, the timing associated with airlines taking aircraft out of service, and the ability of the manufacturers and installers to adequately shift the existing workforce and augment it as needed. Equipment manufacturers we interviewed said that manufacturing was not likely to be a bottleneck in accelerating aircraft equipage, but that there may be difficulties associated with some constraints on installation capacity.

Question #3:

What, if any, are the key lessons learned from the implementation of the Recovery Act that may be applicable to providing financial incentives to accelerate aircraft equipage?

Answer:

Our work has highlighted several principles that are useful to consider with regard to providing government funding for job creation and fiscal stimulus. One key principle is that stimulus funding is just a single policy instrument that is often aimed at achieving multiple goals, but it may not be the most appropriate instrument to achieve a given goal. In the context of NextGen, arguments for providing funding to the airlines to purchase and install equipment on aircraft are justified by proponents using the potential for such funding to address multiple policy goals, including (1) accelerating the implementation of operational improvements that will provide additional capacity and improve the efficiency and performance of the air transportation system; (2) helping airlines that are in financial distress given slowing demand for air travel and rising costs associated with inefficiencies in the current system; and (3) increasing employment. It is unlikely that funding for equipage is the proper or most effective instrument for addressing all of these goals.

To determine whether the government should bear some portion of the financial burden of aircraft equipage to accelerate the implementation of operational improvements, it is appropriate to examine the distribution of the associated benefits and costs and compare the benefits and costs of this course of action with those of alternatives. It is also important to consider who will ultimately bear the cost of the government spending. Therefore, the question here is not only whether the government should provide incentives, but also whether the source of funds for such incentives should be the general fund rather than excise taxes paid by users. Under the current system of funding air traffic control, the government provides the service, but the money to pay for it is largely collected from users of the system through excise taxes. General fund money currently pays for only a portion of FAA's operations account. If general fund money is to be used for additional funding of the system, then it follows that such spending should be justified on the basis of the public benefits produced by the spending (e.g., emissions reductions, reduced operating costs for FAA, etc.).

If the public benefits resulting from equipage exceed the costs to government and are greater than those of alternative actions, then there is a case for considering financial incentives for equipment funded through the general fund. In this analysis, jobs are not considered a public benefit of the improvement, but are rather a cost associated with its implementation. If an analysis prepared by the Air Transport Association (ATA), which represents the airline industry, is considered in this light, the benefits resulting from a $10 billion government investment—minus $5 billion in job creation benefits estimated through 2012—would be less than $5 billion, suggesting that the economic benefits would not outweigh the costs over this period. However, benefits in excess of government costs are expected to accrue over a longer period, and equipping aircraft with ADS-B and other technologies sooner has the potential to accelerate benefits associated with the use of those technologies, as described in our answer to question 1

above. For example, the ADS-B program was approved by the Joint Resources Council within FAA with an estimate of a positive return on government investment through 2020; however, this estimate did not consider the costs to government of incentives for airlines to acquire ADS-B equipment. The question to consider here would be whether the additional costs associated with government incentives for ADS-B equipment for aircraft would sufficiently change the ratio of benefits and costs to the government to make the project no longer appear cost-beneficial.

Second, another argument for government incentives for aircraft equipage is that, given the financial condition of the airline industry, airlines are unlikely to invest in equipment without government assistance. In fact, some airlines have publicly stated that if they have to bear the full cost of the equipment they would prefer to not have NextGen. However, government incentives for equipment are not likely to help the overall financial condition of the airlines. If investment from the general fund is justified under the benefit-cost criteria discussed above, then there is a clear justification for public assistance, but if the public benefits are uncertain, then there is no further justification for government assistance arising out of the airlines' financial condition. If the government wishes to address the financial condition of the airlines, more direct means and policy instruments are available to it.

Third, the impact on employment resulting from federal investments in aircraft equipment should appropriately be evaluated against the impact on employment of spending those dollars in other parts of the economy. While our work on the Recovery Act does not clearly indicate where the "biggest bang for the buck" is with regard to impact on employment and to some extent, any spending will have some such impact, the logic that underlies fiscal stimulus suggests that there are likely other sectors in the economy where a larger impact would result from a commensurate amount of spending. One of the key factors affecting how much government spending stimulates the economy and raises aggregate demand is the extent to which those who receive the jobs from the federal spending save or spend their incomes. In general, jobs received by those who are in more financial distress are likely to have a greater stimulus effect because those individuals are likely to spend a greater share of their incomes, leading to a larger increase in aggregate demand. In contrast, those who receive jobs who are better off overall are more likely to save a greater portion of their income. In this case, the types of jobs that would be created – specialized, highly skilled positions related to research and development of advanced technologies, as well as manufacturing, installing and certifying aircraft equipment, developing procedures, and other specialized tasks— would be more likely to fall into the latter category, whereas there may be other sectors of the economy where spending could create jobs for those that are not as well off overall and are likely to spend a greater share of their income.

Last, as we have previously reported, financial assistance can come in a variety of forms including grants, cost sharing arrangements, loans and tax incentives. Prudent use of taxpayer dollars is always important, therefore, the form used to provide financial incentives should be designed carefully and in accordance with key principles. For example, mechanisms for financial assistance should be designed so as to effectively target parts of the fleet and geographic locations where benefits are deemed to be

greatest, avoid unnecessarily equipping aircraft (e.g., those that are about to be retired), and not displace private investment that would otherwise occur. Furthermore, it is preferable that the mechanism used for federal assistance result in minimizing the use of government resources (e.g., some mechanisms may cost the government more to implement or place the government at greater risk than others). With respect to whether a government spending program similar to the Recovery Act – where funds are to be spent within a short timeframe – would allow for these careful considerations, our work has shown that agencies implementing the Recovery Act have had mixed success with regard to allocating funds quickly and effectively.

Question #4:

What is the level of reliability and validity or what level of confidence can the committee have in the projections they have been presented with regard to the job creation and cost savings that could be generated from providing financial incentives to accelerate operator equipage?

Answer:

Both the overall and the state-by-state projections of job creation presented to the Committee by the ATA are highly uncertain, and there is some basis to conclude that the estimates presented are likely to be too high.

These projections of job creation presented to the committee are based on job multipliers obtained from and reviewed by FAA's Office of Aviation Policy and Plans. These multipliers estimate the number of jobs created with a given amount of spending in a particular sector. Three specific multipliers were used - "Aircraft Equipment," "Construction," and "Research and Development." Each of these multipliers was developed by the Bureau of Economic Analysis in the Department of Commerce. The multipliers include direct, indirect, and induced employment impacts of spending on employment in a particular area. According to an FAA official, ATA appears to have appropriately used the multipliers in this context and there are no clear errors or mistakes in how ATA used the multipliers.

The job creation estimates derived from these multipliers are highly uncertain for a number of reasons. First, the accuracy of these projections will depend, in part, on the extent to which the activities associated with NextGen are similar to those undertaken in the past, which is the experience on which the multiplier estimates are based. To the extent that jobs associated with spending on NextGen equipment do not comport well with the general categories the multipliers represent, the accuracy of the projections will be diminished. According to ATA and other stakeholders, the category of "Aircraft Equipment" is used to represent a wide variety of jobs expected to be affected by spending on NextGen, including software engineers, mechanical engineers, technicians, installers, and others. Absent multipliers based on more specific categories, it is difficult to know how variation within categories affects the accuracy of the projections.

Second, an important question relative to the impact of government spending on employment is how well firms can meet the demand created by the government spending without hiring additional workers. One stakeholder in the manufacturing sector told us that if the demand for ADS-B and other equipment increased, the manufacturing sector would most likely shift its existing workforce from other areas to meet the demand. Thus, the estimates of jobs created may be too high.

Third, the models used to develop the job multipliers assume that all of the direct (e.g., jobs developing, producing, or installing the equipment), and the indirect and induced jobs (e.g., jobs related to materials and component suppliers and supporting industries, and jobs created to support those workers) flowing from the government spending would be domestic jobs. However, unless Congress restricts where aircraft equipment is installed or purchased, aircraft operators could choose to have equipment installed abroad, or downstream suppliers to equipment manufacturers may be located abroad. According to an official in the Office of Aviation Policy and Plans, it is likely that there could be some leakage from the U.S. economy, particularly for indirect and induced jobs, though it is difficult to estimate how much.

Finally, ATA's approach in estimating state-by-state job creation has limitations. State-by-state estimates are important in evaluating the employment impact of government spending because money spent in certain states will have less or more impact than money spent in other states. The government may wish to target spending to states where there is a greater need for job creation, or where spending is likely to have the greatest impact. The distribution estimated by ATA shows states with both high and low unemployment rates receiving a large share of the jobs created. ATA assumes that the distribution of jobs created by this spending will mirror the distribution of where jobs in the aerospace industry are located today. While this assumption may be reasonable for the direct jobs, there is no reason to believe that the indirect and induced jobs – which may not be in the aerospace industry – would be distributed in this manner.

Types of cost savings and benefits resulting from government investment in NextGen equipment are discussed in our answer to question 1 above. Our answer also discusses when those benefits are likely to be seen.

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NextGen: A Review of the RTCA Mid-Term Implementation Task Force Report
Rayburn HOB Room 2167
October 28, 2009

Introduction

Chairman Costello, Ranking Member Petri, distinguished members of the Subcommittee; my name is Jens Hennig and I am the Vice President of Operations for the General Aviation Manufacturers Association (GAMA). GAMA represents over sixty companies who are the world's leading manufacturers of general aviation airplanes, engines, NextGen avionics, and components. Our member companies also operate airplane fleets, airport fixed-based operations, pilot training and maintenance facilities worldwide. On behalf of our members, I appreciate your convening this hearing to examine the RTCA Mid-term Implementation Task Force report ("Task Force"). This hearing, combined with other subcommittee hearings earlier this year, have contribute greatly to a better understanding of where NextGen stands and where it needs to go if we are to achieve its economic and environmental benefits.

State of the General Aviation Industry

As the committee knows, general aviation (GA) is an essential part of our transportation system that is especially critical for individuals and businesses that need to travel and move goods quickly and efficiently in today's just-in-time environment. General aviation is also an important contributor to the U.S. economy, supporting over 1.2 million jobs, providing $150 billion[1] in economic activity and, in 2008, generating over $5.9 billion[2] in exports of domestically manufactured airplanes. We are one of the few remaining manufacturing industries that still provide a significant trade surplus for the United States.

Our industry, like others, is struggling in today's difficult economic situation. GAMA member companies have experienced more than 19,000 layoffs since last September

[1] General Aviation Contribution to the US Economy, Merge Global 2006.
[2] 2008 General Aviation Statistical Databook and Industry Outlook, GAMA 2009.

which is almost 14% of the GAMA companies' work force. We are deeply saddened by this.

Despite these tough times, our member companies continue to look to the future by investing in new products to help stimulate future economic growth and employment in general aviation manufacturing. I just returned from the business aviation convention in Orlando last week where GAMA companies announced the availability of new capabilities on their aircraft like Required Navigation Performance (RNP), data link capability, and ADS-B Out for new airplanes and retrofit solutions for the legacy fleet. These announcements are consistent with the history of the general aviation industry pushing the boundaries of technology.

Overall Comments about RTCA Task Force

For GAMA, there are two overarching points to be made about the Task Force. The first is that the Task Force clearly echoes the sentiment of industry that we have reached a point where more focus must be placed on delivery than planning. As a guiding principle we worked under the framework that **"It's about implementation..."**

The focus on implementation makes sense because when we look to foundational capabilities for navigation such as performance based navigation (RNP and RNAV) the equipment is mature and training is being provided. The significant emphasis placed by the Task Force on how to broaden the use of RNP is appropriate. We need to enable the aviation industry to take better advantage of these capabilities and to make certain the broad spectrum of industry sees the benefits of equipage and invests accordingly. FAA must develop the needed procedures and guidance so the promise of these investments is realized.

We also believe this focus on implementation is beneficial as we move forward more fully into the NextGen future. As the RTCA Task Force report emphasizes, equipage will only take place when users are confident about the potential for benefits and that there is a high certainty that these benefits will be achieved. Success in implementation now will mean more user confidence as we implement NextGen.

Secondly, providing a forum, like the RTCA NextGen Mid-Term Implementation Task Force to enable industry's involvement in air traffic control modernization is imperative for its success in the short- and long-run. The Task Force was a positive activity that enabled industry and the FAA to provide focus on the specific capabilities that can be deployed with equipment currently onboard the air transport and general aviation fleet.

But just as important, as the Task Force Chairman, Mr. Steve Dickson noted in the report, it is essential that this spirit of cooperation continues. Mr. Dickson stated that:

> "User community stakeholders must be active participants in the planning, implementation and measurement of these recommendations. This should be

> accomplished through the ATMAC[3] and its standing working groups, using Task Force leadership and other resources as needed for consultation and as subject matter experts."

When we look beyond the horizon of the Task Force to the implementation of the full concept of operation for NextGen the role of industry in its planning, research, and development remains essential. Congress and the FAA must continue to provide mechanisms for industry participation if these RTCA recommendations are to be successfully implemented but also to ensure the achievement of the more ambitious NextGen activities.

I will now turn in the rest of my testimony to some of the key recommendations of the RTCA report from a GAMA perspective.

Streamlining Processes for Avionics Certification and Operational Approvals

As the RTCA report demonstrates the role of the FAA Aviation Safety Organization (AVS) in air traffic control modernization cannot be stressed enough. The traditional process of modernizing our airspace was centered on ground equipment infrastructure. For NextGen the term "aircraft centric" is often used and it attempts to communicate this paradigm shift of moving part of the air traffic control infrastructure onto the aircraft. This greater reliance on aircraft avionics and other onboard equipment makes an efficient process for avionics certification and FAA operational approvals even more important. AVS becomes essential and we are pleased that AVS Associate Administrator Gilligan has recognized the importance of process improvement in this area.

Streamlining avionics certification: Significant work has been done over the past several decades to streamline equipment certification, some of which were actions from a previous RTCA Task Force's recommendations. However, more needs to be done for these improvements to be fully realized due to differing approaches within the AVS organization.

One example involves the introduction of new equipment is Wide Area Augmentation System (WAAS) Global Positioning System (GPS) which provides improved instrument approach capability at airports that have no ground based infrastructure such as ILS, VOR or NDB transmitters. Even though the initial certification of WAAS GPS equipment installation on a particular type of aircraft has already been issued by FAA Aircraft Certification Service, FAA Flight Standards Offices have been approaching each additional WAAS equipment installation in similar types of aircraft as almost a new certification project. In essence, the new application for installation approval becomes grounds for recertifying the equipment again as FAA Flight Standards personnel overseeing the project asks for project specific issue papers and special conditions related to the initial equipment certification. If the goal is to enable new technologies, this

[3] FAA Air Traffic Management Advisory Committee (ATMAC)

burdensome and inefficient process for installations is counter to that goal. As the RTCA report stresses, better coordination, clearly defined roles, and accountability between AVS's different offices must be put in place.

Today the FAA is working to streamline WAAS equipment approvals by putting in place the appropriate policies and procedures. Going forward, FAA and industry cannot afford to revisit the WAAS GPS experience if we are to achieve efficient and timely NextGen certification.

Streamlining operational approvals: During the past five years GAMA, in partnership with the FAA and the National Business Aviation Association (NBAA), have cooperated to build momentum behind use of RNP-SAAAR[4] by the general aviation industry.

We have made progress over the past few years with procedures at some key business aviation airports identified by operators as a priority for RNP-SAAAR approaches like DeKalb-Peachtree Airport. In addition, manufacturers like Gulfstream Aerospace Corporation and Dassault Falcon Jet have worked with suppliers like Honeywell and FlightSafety International to develop the equipment and training; but one hurdle remains: the complexity of the approval process for RNP-SAAAR. So far, only four general aviation operators have obtained RNP-SAAAR capability with a handful in the process. We have made some progress in reducing the time to obtain the approval from 18-24 months to 4-6 months, but it remains a complex and involved process.

The Task Force takes an important step forward by identifying opportunities that focus FAA resources on essential safety functions and reduce unneeded red tape. These recommendations, if implemented, will encourage operators to adopt new technologies and capabilities as the certainty of benefits rise relative to the cost of adoption.

I cannot stress enough how important these changes are especially since there are multiple operational approvals needed. To obtain unrestricted access to airspace today an operator has to apply for at least seven different Letters of Authorization (LOA)[5] including those for RNP-SAAAR previously mentioned. In total, each aircraft submission contains approximately 360 pages of documentation for new delivery aircraft. One of our member companies has determined that it would take an FAA Flight Standards Districts Office (FSDO) approximately 38 man-hours per operator and aircraft to review and approve the submitted request.

This time does not account for the work on the industry side. Last year, GAMA members delivered over 1,300 business jets and about 500 turboprop powered airplanes each of which may be subject to some or all for these approvals. Avoiding proliferation of these

[4] Required Navigation Performance (RNP) Special Aircraft and Aircrew Authorization Required (SAAAR)
[5] LOA for Reduced Vertical Separation Minimum (RVSM), North Atlantic (NAT) Minimum Navigation Performance Specifications (MNPS), RNP-10/-4, B-RNAV (RNP-1), RNAV 1 / RNAV 2 (SIDs, STARs), Q and T routes, RNP-AR (-SAAAR approaches), ADS-C, and CPDLC.

LOA, while streamlining the surrounding process, will be essential to the practical implementation of these capabilities across both the new and legacy fleet. Our customers and member companies are concerned that as we continue to move toward NextGen with its cutting edge capabilities, the problem of LOAs will become more acute as additional specific approvals proliferate.

To avoid this, the Task Force report recommends that RNAV and RNP approval requests be combined into a single comprehensive application package with the widest applicability possible. The Task Force provides a proposed framework for this application package.[6]

The Task Force also recommends that a clear path be created for aircraft manufacturers to provide documentation for the aircraft portion of the approval.[7] This will enable a portion of the applications that already has been subject to FAA review through the manufacturer's approval to be "fast-tracked" during the operations approval process. This has the benefit of focusing FAA oversight appropriately on the operator's manuals and training.

I have gone into some detail on this because for manufacturers our ability to certify and put into operation new aeronautical products and capabilities more effectively, connects directly to our ability to sell products, create and maintain jobs, and remain competitive in the global marketplace.

FAA resources: As this committee knows, GAMA has long advocated for appropriate levels of FAA resources for aircraft, avionics, and product certification. GAMA has welcomed the attention of this committee in the past about this issue.

As we go forward with NextGen, we expect an increase of several orders of magnitude in applications for certification of new equipment design and installations on aircraft. Today, the FAA Aircraft Certification Service has instituted a sequencing policy where all industry applications for new certification projects are evaluated to determine which can start and which will be delayed until FAA resources are available. While the certification process utilizes expert designees and delegated organizations to the maximum extent possible, the FAA simply does not have enough staff to maintain the necessary oversight and process the amount of new certification work expected to implement NextGen. Ensuring that FAA has an adequate level of engineering staffing resources to support certification activity as well as streamlined FAA oversight and certification processes will be necessary for timely NextGen implementation.

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[6] Appendix L contains a proposed RNAV/RNP approval request application package.
[7] Advisory Circular 90-101 Appendix 2

Role of Government in Creating Equipment Incentives

During the past several years GAMA has discussed the important role of equipment incentives to stimulate early equipage within the operator community. We see equipment incentives as a mechanism through which capacity and efficiency system benefits can be achieved at earlier dates. These incentives become important when benefits reside not with the individual operator but with the overall system, another operator, or the U.S. government.

We also believe government support for equipage is appropriate as the radar surveillance infrastructure of the past is increasingly moved to the aircraft. We all must consider whether it matters in terms of government funding if the infrastructure funded is built on the ground or in the air.

We are pleased to see the RTCA Task Force endorsing incentives for equipage as one of its "overarching recommendations". The Task Force identifies various paths through which incentives can be provided including: providing financial incentives; providing a timely, unambiguous set of processes, and establishing areas in the NAS, when appropriate, where systems users who have aircraft with higher aircraft performance and capability get higher levels of service. I focus my remarks in this area on financial incentives.

Some technologies that are identified as "NextGen" have already quickly made their way onto air transport and general aviation aircraft. The story around performance based navigation is a positive one as the committee learned from its recent hearing.

WAAS has really been a success story in our joint efforts of modernizing the air traffic control system. As of September 2009, over 1,800 WAAS approaches have been deployed and our members have delivered over 40,000 receivers for aircraft. It is a successful program where operators are buying equipment because of the benefits achieved without the need for a regulatory mandate. WAAS is truly one of the key first steps in our transition to achieving a satellite based National Airspace System.

For some NextGen capabilities, the business case is not necessarily easy to identify for our customers. The Task Force was given specific direction to look at achieving "a positive business case to support the requisite and timely equipage"[8] for NextGen capabilities in the mid-term. Predictably, capabilities enabled by equipment already onboard a large portion of the fleet faired better in the analysis than equipment that will have to be purchased or where the benefit was on the system, at least initially, or where benefits would not accrue until everyone were equipped.

ASD-B Out is an often cited example. For ADS-B Out some benefits have been identified for air transport and general aviation operators including improved search and

[8] RTCA Task Force, Terms of Reference, Appendix D.

rescue and surveillance in airspace currently not covered by radar. However, our customers are not currently equipping because they cannot make the business case work at this time.

During the past several months, FAA Administrator Randy Babbitt has talked about "pockets of interest" within the Administration to explore equipment financing. The RTCA Task Force identifies various mechanisms for financial incentives for equipage including direct subsidies, no or low interest loans, and tax credits. The House Transportation-HUD bill makes NextGen equipage eligible for investment by an infrastructure bank subject to an authorization. GAMA stands ready to work with the Administration, Congress and other industry stakeholders to develop opportunities to further NextGen through financial incentives for equipage.

Other Parts of RTCA Task Force Important to General Aviation

GAMA is pleased to see enhanced access to the National Airspace System (NAS) at non-OEP airport as one of the priority recommendations of the Task Force.

> *"Improve access to and services provided at non-OEP airports and to low altitude, non-radar airspace by implementing more precision-based approaches and departures, along with the expansion of surveillance services to areas not currently under radar surveillance." (Recommendation 5)*

The technology that GAMA sees achieving this needed surveillance capability identified in the report is Automatic Dependent Surveillance – Broadcast ("ADS-B")[9] as well as the deployment of Wide-Area Multilateration.

The 794 ground stations being deployed around the United States as part of the ADS-B ground infrastructure will meet and exceed surveillance beyond the current coverage provided by radar. This is the case in both off shore operations like the Gulf of Mexico and off the east coast of the United States, but also in terrain challenged environments like Colorado.

It was exciting to see on September 22, FAA announcing initial operations of Wide-Area Multilateration (WAM) commencing over Colorado as a surveillance system. The FAA and the Colorado Department of Transportation shared the cost of the deployment of WAM which allows air traffic controllers to track aircraft not covered by radar in remote, mountainous regions. A similar program is underway in Juneau, Alaska. Additionally, the Senate Commerce Committee-passed FAA reauthorization bill encourages additional state programs.

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[9] To resolve access problems, the Task Force recommends that the following operational capabilities be implemented: Low Altitude Non-Radar: Extended radar-like services to low-altitude airspace without radar surveillance (28) as discussed in Executive Summary.

The new system is comprised of a network of sensors deployed in remote areas. The sensors send out signals that are received and sent back by aircraft transponders. No other aircraft equipment is required. System computers are able to determine the precise location of aircraft by triangulating the time and distance measurements of those signals.

The FAA noted in its press-release that WAM "is being used in the near term while the FAA rolls out Automatic Dependent Surveillance–Broadcast (ADS-B), the satellite-based surveillance system that will be fully deployed nationwide by 2013. *WAM will then serve as a backup to ADS-B in the event of a GPS outage and provide an additional source of traffic broadcast to properly equipped aircraft [emphasis added.]*"[10]

Recognition of Progress in International Harmonization

While the Task Force report does not address the work across the Atlantic in the SESAR[11] program, as manufacturers we believe it is essential that U.S., European and other international ATC modernization efforts move forward toward harmonized equipment requirements as best possible.

GAMA applauds EU Transport Ministers for their decision earlier this month to authorize the European Commission to formally open negotiations with the United States on a memorandum of cooperation in civil aviation research and development in the field of Air Traffic Management (ATM) modernization. These negotiations will help ensure interoperability between SESAR and NextGen.

The emphasis on interoperability is crucial to ensure the maximum effectiveness of ATM modernization on both sides of the Atlantic. We commend the Commission and the FAA in this important initiative.

Conclusion

The Task Force brought together industry and the FAA to identify what can be implemented today and GAMA is pleased to endorse its recommendations. As manufacturers who are working actively to promote the safety, capacity, economic, and environmental benefits resulting from NextGen, we are especially pleased to see the recommendations about the streamlining of operational approvals and certification as well as equipment certification making their way into the final report.

We also believe implementing these recommendations will have a positive impact on our path toward NextGen. We will continue to engage with FAA and other industry stakeholders to achieve success in the near-term but also to ensure deployment of a transformed Next Generational air transportation system.

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[10] FAA September 22, 2009 Press Release: New System Improves Safety in Remote Regions
[11] SESAR is the European Union's 'Single European Sky' ATM Research program which is aimed at eliminating the current fragmented approach to European ATM.

Success in this area is critical to manufacturers. As more products are certified and approved for operational use, our ability to compete is enhanced. This will have a direct, positive impact on economic growth and jobs.

Mr. Chairman, thank you for your leadership on this issue and for inviting me to testify before the subcommittee. As we continue to implement technologies that build capacity and efficiency in the NAS, there are challenges ahead for us on the modernization front. The RTCA Task Force identifies several solutions and provides near-term focus. We must also challenge ourselves to work together to implement the longer terms NextGen concept of operations.

Thank you and I would be glad to answer any question that you may have.

U.S. House of Representatives
Committee on Transportation and Infrastructure
Washington, DC 20515

James L. Oberstar
Chairman

David Heymsfeld, Chief of Staff
Ward W. McCarragher, Chief Counsel

John L. Mica
Ranking Republican Member

James W. Coon II, Republican Chief of Staff

October 30, 2009

Mr. Jens C. Hennig
Vice President of Operations
General Aviation Manufacturers Association
1400 K Street, NW, Suite 801
Washington, D.C. 20005

Dear Mr. Hennig:

On October 28, 2009, the Subcommittee on Aviation held a hearing on **"NextGen: A Review of the RTCA Mid-Term Implementation Task Force Report."**

Attached are questions that I would like you to answer for the hearing record. I would appreciate receiving your written response to these questions within 14 days so that they may be made a part of the hearing record.

Sincerely,

Jerry F. Costello
Chairman
Subcommittee on Aviation

JFC:gg/pk
Attachment

OCTOBER 28, 2009
SUBCOMMITTEE ON AVIATION
HEARING ON
"NEXTGEN: A REVIEW OF THE RTCA MID-TERM
IMPLEMENTATION TASK FORCE REPORT"

QUESTIONS FOR THE RECORD
TO:
MR. JENS C. HENNIG
VICE PRESIDENT OF OPERATIONS
GENERAL AVIATION MANUFACTURERS ASSOCIATION

1. Mr. Hennig, Section 314 of S. 1451 of the "FAA Air Transportation Modernization and Safety Improvement Act" requires the FAA to develop an implementation plan for the deployment of area navigation and required navigation performance procedures at Operational Evolution Partnership airports. Do you have an opinion or any concerns about this provision? If so, please provide a detailed response.

2. Mr. Hennig, Section 315 of S. 1451 the "FAA Air Transportation Modernization and Safety Improvement Act" requires FAA to mandate the use of Automatic Dependent Surveillance (ADS-B) "Out" technology, which allows the broadcast of ADS-B transmissions from aircraft to air traffic control, in all aircraft by 2015. Section 315 also requires the FAA to initiate a rulemaking that mandates the use of ADS-B "In" technology, which allows aircraft to receive ADS-B data on cockpit displays, on all aircraft by 2018. Do you have an opinion or any concerns about this provision? If so, please provide a detailed response.

Mr. Jens Hennig, General Aviation Manufacturers Association
Questions for the Record
RTCA hearing, October 28th, 2009

1. Mr. Hennig, Section 314 of S. 1451 if the "FAA Air Transportation Modernization and Safety Improvement Act" requires the FAA to develop an implementation plan for the deployment of area navigation and required navigation performance procedures at Operational Evolution Partnership airports. Do you have an opinion or any concerns about this provision? If so, please provide a detailed response.

HENNIG ANSWER: GAMA is supportive of further developing the area navigation and required navigation performance ("RNAV/RNP") infrastructure around our nation's busiest and most congested airports – the Operational Evolution Partnership airports ("OEP-35") – with approaches and departures that hold benefits and de-conflict operations. RNAV/RNP procedures should be put in place along with metrics that measure improvements in performance for reduced fuel consumption, improved capacity, and enhanced safety. General aviation only accounts for 5-6 percent of the operations at these airports, but we are aware of the ripple effect that congestion at the OEP-35 airports have on the system, including at GA airports within the same regions.

In addition to working to advance the RNAV/RNP navigation infrastructure at the OEP-35, the FAA also has a program to develop navigation infrastructure at other airports including those where GA aircraft are the primary operators. The FAA has published over 1,800 procedures for WAAS and our members have delivered over 40,000 receivers that enable general aviation to take advantage of satellite based navigation with vertical guidance. It is important that future LPV approaches are put in place at runway ends that currently do not have procedures to provide tangible improvements for access for the GA community.

2. Mr. Hennig, Section 315 of S. 1451 the "FAA Air Transportation Modernization and Safety Improvement Act" requires FAA to mandate the use of Automatic Dependent Surveillance (ADS-B) "Out" technology, which allows the broadcast of ADS-B transmissions from aircraft to air traffic control, in all aircraft by 2015. Section 315 also requires the FAA to initiate rulemaking that mandates the use of ADS-B "In" technology, which allows aircraft to receive ADS-B data on cockpit displays, on all aircraft by 2018. Do you have an opinion or any concerns about this provision? If so, please provide a detailed response.

HENNIG ANSWER: GAMA believes the ADS-B mandate should be built around equipage for access to certain airspace and not built on equipping "all aircraft" in the national airspace system (NAS). Some areas of the NAS, primarily remote, low density airspace, should not require ADS-B.

However, with that said, GAMA does support a mandate for ADS-B "Out" and we see benefits achieved by an accelerated timeline for the "Out" mandate prior to 2020 as

presented in Section 315 if there is some form of government financial incentives for equipage. An earlier mandate will allow system benefits to accrue sooner, and in-turn provide government savings on the ground infrastructure from the earlier decommissioning of classic surveillance infrastructure. Later this year the FAA will publish the Technical Standards Order (TSO) for ADS-B equipage which will be followed by the final rule in April 2010. We will then have the technical requirements that will enable manufacturers to build equipment and for it to be installed.

For ADS-B "In", GAMA supports the development of a comprehensive strategy by 2012 through cooperation between FAA and industry stakeholders. This strategy would address operational benefits that could motivate user investment in ADS-B "In" capabilities as well as the possible need and timing for a mandate on ADS-B "In" equipage. GAMA expects that, even with the promise of future operational benefits, some form of government financial incentives will be needed to accelerate aircraft equipage. As with ADS-B "Out", GAMA believes ADS-B "In" will be needed for some, but not all, aircraft for operations in some, but not all, airspace.

STATEMENT OF
MARGARET T. JENNY
PRESIDENT, RTCA, INC.
BEFORE THE SUBCOMMITTEE ON AVIATION
COMMITTEE ON TRANSPORATION AND INFRASTRUCURE
U. S. HOUSE OF REPRESENTATIVES
WASHINGTON, D.C.
OCTOBER 28, 2009
REGARDING NEXTGEN: A REVIEW OF THE RTCA MID-TERM IMPLEMENTATION TASK FORCE REPORT

Good morning, Chairman Costello, Ranking member Petri, and Members of the Subcommittee. Thank you for inviting me to participate in today's hearing on NextGen: A Review of the RTCA Mid-Term Implementation Task Force Report. My name is Margaret Jenny and I am the President of RTCA, Inc.

RTCA BACKGROUND

A few words about RTCA may be of value in setting the stage for my remarks. RTCA is private, not-for-profit Corporation that is utilized by the Federal Aviation Administration (FAA) as a Federal Advisory Committee to provide a venue for the aviation community to forge consensus on aviation issues. Our deliberations are open to the public and our products are recommendations, developed by aviation community volunteers functioning in a collaborative, peer reviewed type of environment. RTCA provides two categories of recommendations: (1) policy and investment priorities to facilitate implementation of National Airspace System improvements, and (2) performance standards, reports, and guidance documents used by the FAA as a partial basis for the certification of avionics.

TASK FORCE OVERVIEW

My testimony today will describe the RTCA NextGen Mid-Term Implementation Task Force initiative and the resulting Task Force recommendations. The Task Force was established by the RTCA Policy Board in response to a request from Hank Krakowski, FAA Air Traffic Organization Chief Operating Office, and Peggy Gilligan, FAA Associate Administrator for Aviation Safety.

Over 335 individuals from 141 different organizations participated in the Task Force. Members of the Task Force represented all segments of the aviation community, from large commercial air carriers to private pilots of single engine piston airplanes, as well as the pilots of business aviation aircraft and the organizations for which they fly. The Air Traffic Controllers union as well as a Pilot's union and dispatchers were part of the consensus as well. Airport operators, manufacturers of aircraft communication, navigation and surveillance avionics participated as did the major commercial airplane manufacturers. Participants brought technical, operational, and, for the first time on a Task Force, financial and strategic planning expertise. You might imagine that all this diversity and competing interests would have made this an impossible task,

and if you had said that to me three weeks prior to our deadline, I would have agreed with you. But at the end of the day, the shared desire to improve the nation's air transportation system prevailed, and on September 9, 2009, RTCA delivered a consensus-based set of recommendations to the FAA on the NextGen operational capabilities to be implemented between now and 2018.

A year ago, many were asking "What is NextGen?" With the delivery of the Task Force recommendations, we are now asking "How soon can we deliver the benefits of NextGen?"

ESSENCE OF THE TASK FORCE RECOMMENDATIONS

First, the Task Force stressed the importance of implementing ***operational capabilities*** verses technologies, and deriving benefits from ***existing equipage***. This approach will help relieve congestion and delays today. But, success will also increase the community's confidence in the FAA's ability to implement NextGen.

Second, the Task Force focused on implementing solutions where the problems are most acute. This resulted in an **airport-centric approach** to NextGen, delivering capabilities at the key airports and large metropolitan areas, the bottlenecks where the problems are the most acute and most likely to ripple through the country causing unnecessary flight delays, misconnections and cancellations. If New York sneezes, the nation's air transportation system gets a cold. If Chicago gets a cold, the air transportation system can get pneumonia. Rather than deploying infrastructure throughout the entire system first and then implementing operational capabilities that deliver user benefits, the Task Force recommends implementing targeted operational capabilities at specific locations aimed at keeping the entire system healthy. It should be noted that capabilities recommended will require deploying an ***integrated*** suite of technologies. ***This will require a new way of doing business***.

TASK FORCE OPERATIONAL CAPABILITY RECOMMENDATIONS

The Task Force made recommendations in seven (7) areas:

SURFACE: Improve airport surface traffic situational awareness and data sharing for enhanced safety and reduced delays. Establish a single point of accountability within the FAA for Airport Surface.

- Deploy ground infrastructure to capture surface activities
- Define consistent views of operational data for collaborative decision making
- Define interoperability standards for sharing surface data among stakeholders
- Implement surface traffic management decision support tools

RUNWAY: Increase throughput at airports with closely-spaced parallel, converging and intersecting runways. This will reduce delays, noise and emissions.

- Maximize use of converging or intersecting runways

- Allow use of RNP/LPV/GBAS or ILS for all existing simultaneous independent and dependent approaches
- Update 20-year blunder assumptions to enable operating simultaneous independent approaches to closer runways than currently allowed
- Use high-update radar, multi-lateration for closely spaced parallel operations at appropriate locations

METROPLEX: Increase metroplex capacity and efficiency by de-conflicting traffic to and from all airports within large metropolitan areas.

- Optimize RNAV operations (using Tiger Teams to focus on quality procedures at each specific location)
- Integrate procedures designed to deconflict airports and expand use of terminal separation rules (i.e. 3 mi separation)

CRUISE: Increase cruise efficiency through enhanced use of Special Activity Airspace (SAA), and increased availability, greater use of automation for aircraft metering, merging and spacing at bottlenecks, and use of flexible RNAV routing

- Institute more efficient use of SAA
- Expand use of time-based metering
- Develop area navigation-based en route system

ACCESS: Enhance access to low-altitude, non-radar airspace for general aviation traffic, and increase availability of GPS approaches to more general aviation airports

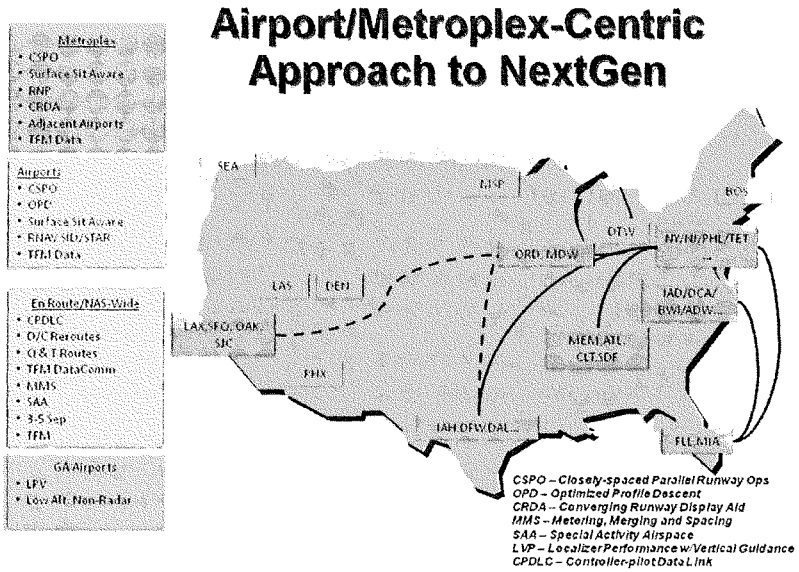
- Extend radar-like services to low altitude airspace without radar surveillance
- Implement LPV procedures for airports without precision approaches

DATACOMM: Deploy air-ground digital data communication applications to decrease gate departure delays, and enhance efficiency and safety of airborne traffic, especially when re-routing multiple aircraft around severe weather

- Implement Segment 1 of FAA's Data Comm program using existing standards (reroutes, revised pre-departure clearance, CPDLC, Tailored Arrivals)

INTEGRATED AIR TRAFFIC FLOW MANAGEMENT: Improve overall system efficiency through enhanced collaborative decision making between the FAA and users' flight operations centers.

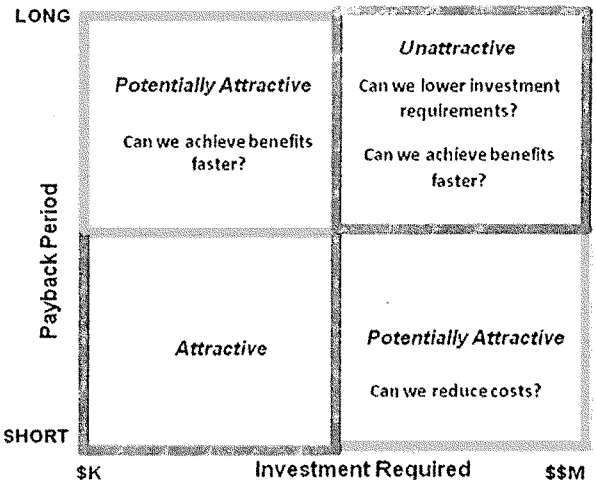
Mapped out, the recommendations deliver benefits at the major metropolitan areas and most congested airspace, as shown in the figure below. Each capability and location has at least one operator (in most cases multiple operators) committed to investing in the capability.



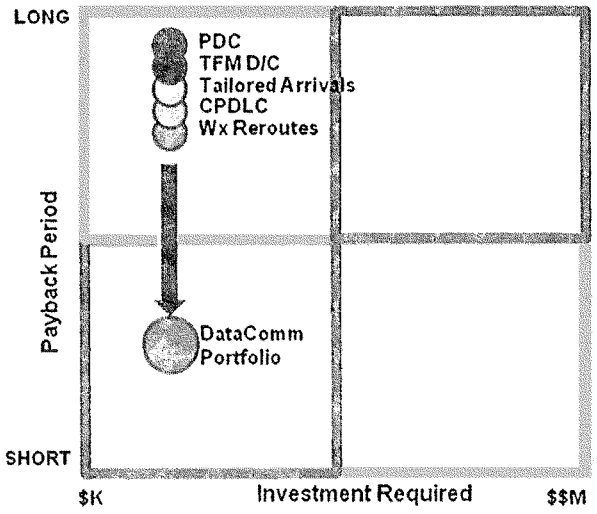
For each capability recommended, the Task Force defined the following: **WHAT** operational capabilities to implement, including the intended performance benefit, **WHERE** to implement each, **WHO** from the user community is committed to making the requisite investments, and **WHEN** the capability should be implemented and delivering benefits.

THE BUSINESS CASE

The report makes another critical point: closing the business case for those capabilities requiring substantial investments requires delivering benefits within a requisite payback period with a high degree of confidence that the payback will be achieved. Many of the NextGen investments fall into the category of high cost, long payback period and low confidence of payback (partly because the payback is dependent upon outside forces, e.g., the FAA. The Business Case Subgroup of the Task Force laid out a framework for analyzing the business case for investments as shown in the figure below. The aim of the recommendations is to move the capabilities into the lower left quadrant of the framework.



One way to close the business case for a capability with a long payback period is to find ways to achieve a return on that investment faster. The Task Force cost/benefit analysis showed that while no individual DataComm capability had a positive business case, but when five capabilities were bundled so that a single investment in technology delivered five new capabilities, the business case closed for the airlines.



ELEMENTS OF OPERATIONAL CAPABILITIES

To deliver the benefits of any operational capability, the FAA must accomplish a host of related initiatives. To assist the FAA and the community in incorporating these recommendations into a plan with a high probability of success, the Task Force documented all known challenges to delivering the benefits of the capability. Information captured included:

- Change in role of pilot, controller, dispatcher
- Technology or equipage required
- Technology or equipage available
- Decision support tools required
- Policy changes needed
- Implementation bandwidth issues to resolve
- Airspace changes required
- Standards required
- Operations approval required
- Certification required
- Political risk
- Training required

If the FAA can meet these challenges and deliver benefits for existing equipage, then the business case for installing the next generation of NextGen technologies becomes much more attractive because the probability of achieving the quick return on investment is substantially increased. Essentially, they will have already completed much of the work needed to deliver the benefits of technologies such as DataComm and ADS-B.

While the Task Force recognized that the FAA would continue to develop the baseline programs and technologies described in the NextGen Implementation Plan (NGIP), it assumed that as a result of incorporating these recommendations, the FAA will most likely find it necessary to adjust some element of these programs and reprioritize its investment portfolio. Since the FAA has received the recommendations, they have acknowledged that some such changes will indeed be necessary and forthcoming.

PRIORITIZATION PROCESS

At the outset, the Task Force created an initial list of nearly 120 candidate capabilities, and reduced it to the final 29 specific recommendations in the seven categories. This was accomplished by following a few key guidelines.

- Require data supporting the inclusion of a candidate operational capability

- Require that all capabilities being considered have at least one operator committed to invest in its implementation and all capabilities must identify the location and timeframe for delivery of benefit.
- Considered first those candidate operational capabilities that take advantage of existing equipage that could evolve to capabilities using more sophisticated technologies over time.
- Develop the evaluation criteria together and use it to prioritize the candidate list
- Consider expert opinion when no data is available but the case is solid, and reduce the "confidence level indicator" for such candidate

A robust assessment process was established and used to assess the value of all candidate operational capabilities. Known benefits, costs and risks were captured and enabled the Task Force to look at the relative value of all capabilities. An evaluation matrix was used to capture the benefits, costs, risks, readiness and other assessments of each candidate operational capability. The evaluation matrix was a key tool in the final prioritization and recommendations of this Task Force. All assessment information for the 29 recommendations as well as for an additional 28 capabilities that did not make the final cut, have been captured in the Task Force knowledge base that was delivered to the FAA along with the recommendations.

OVERARCHING RECOMMENDATIONS

In addition to the operational capabilities, the Task Force identified four overarching recommendations deemed so critical to the successful implementation of all capabilities that they were documented in the body of the report. These recommendations are:

1. Achieve existing 3- and 5-mile separation by eliminating the buffers now applied due in part to cultural issues
2. Streamline the Operations Approval process
3. Incentivize equipage. This can be achieved in one of three ways: (1) providing an operational incentive (better routes, reduced delays), (2) streamlining the processes required to get take full advantage of new equipage, or (3) providing financial incentives. While financial incentives to accelerate equipage would be welcome by the stakeholders, the failure to do all else necessary to provide operational benefits would yield NO improvements in NAS performance, and, hence, no return on the government's investment.
4. Importantly, to maintain the momentum created by the work of the Task Force and to facilitate holding the community consensus intact through the implementation of NextGen, the Task Force recommends that the FAA and industry utilize the RTCA mechanism as well as joint government/industry implementation teams to facilitate continued transparency and collaboration in the planning, implementation and tracking of future activities.

CONCLUSION

Some have asked whether the FAA can afford to implement the Task Force recommendations as well as the NextGen vision. The answer is that we cannot afford NOT to implement these recommendations. First, we do not yet have a crisp enough definition of the vision to implement

it. But more importantly, the Task Force recommendations solve very real and current problems while laying the necessary ground work for the longer-term NextGen. They are, in effect, the risk mitigation program for NextGen.

Thank you for the opportunity to testify on this important topic. I'd be pleased to address your questions.

STATEMENT OF HANK KRAKOWSKI, CHIEF OPERATING OFFICER, AIR TRAFFIC ORGANIZATION, AND MARGARET GILLIGAN, ASSOCIATE ADMINISTRATOR FOR AVIATION SAFETY, FEDERAL AVIATION ADMINISTRATION, ON NEXTGEN: A REVIEW OF THE RTCA MID-TERM IMPLEMENTATION TASK FORCE REPORT, BEFORE THE HOUSE COMMITTEE ON TRANSPORTATION AND INFRASTRUCTURE, SUBCOMMITTEE ON AVIATION, OCTOBER 28, 2009.

Chairman Costello, Congressman Petri, and Members of the Subcommittee:

Thank you for inviting us here today to review the RTCA's NextGen Mid-Term Implementation Task Force Final Report. As you know, on January 16, 2009, we asked the RTCA to establish a government-industry Task Force to forge community-wide consensus on the recommended Task Force operational improvements to be implemented in the near-term during the transition between now and 2018. We asked the Task Force to focus on maximizing benefits and facilitating the development of the business case for industry investment. We are grateful to the Task Force for all of the hard work that the members have put into this report and the corresponding data and analysis

The Task Force did not attempt to re-write the NextGen Implementation Plan and assumed that the baseline programs and technologies would continue to be developed by the FAA on target. The Task Force did look for opportunities to accelerate the transition where existing technologies could provide a "bridge" to NextGen programs that are still in development. Over 300 people from nearly every segment of the aviation community participated in over 150 meetings to work toward a consensus set of recommendations presented in this report. The Task Force also distinguished itself from other similarly chartered groups by limiting its set of recommendations, preferring to give greater detail to specific ways the recommendations might be implemented. They also explicitly

involved talented and seasoned financial decision-makers from the operator community, such as airline chief financial officers. Finally, they committed to transparency and supported their decisions with solid data.

Prioritization and Continued Collaboration:

The FAA strongly agrees with two principles that the Task Force has emphasized throughout their report: (a) the need to prioritize initiatives that can have a near-term effect on delays and efficiencies; and b) the need for continued cooperation and involvement of the industry in the execution and evolution of the plans. With the first of these in mind, we are currently examining all of these recommendations with an eye towards understanding how we might organize and implement them in light of the agency's various priorities, the most important of which is to implement any new measure safely.

More precisely, we are scrutinizing the Task Force's recommendations through the lens of our experience with the Operational Evolution Partnership (OEP), the agency's original plan for implementing NextGen. As the Members of this Committee are aware, the OEP provided the process through which FAA ensured successful implementation. The most senior executives in the agency were held personally accountable for meeting OEP commitments.

The OEP process has been key to the FAA's recent successes. On November 20, 2008, the FAA achieved a never before attained milestone – we commissioned three runways

on the same day. These new runways at Chicago O'Hare, Seattle-Tacoma, and Washington Dulles added much needed facilities to the nation's airport and aviation system on time and under budget. And, in January 2009, the Government Accountability Office (GAO) took the FAA's modernization program off of its High Risk List for the first time since 1995. The GAO cited the FAA's commitment to attack and fix some root causes of the air traffic control modernization problems, including cost overruns, schedule delays and performance shortfalls. Neither one of these would have been possible without the structure of the OEP and commitment of FAA executives to the OEP.

Since 2008, the OEP plan has evolved into the NextGen Implementation Plan, which details our plans for NextGen through 2018. The management process has grown into the NextGen Management Board and, under that, the NextGen Review Board, the governance structure that we put in place to assure successful deployment and implementation. The NextGen Management Board is chaired by the Deputy Administrator and composed of FAA Associate Administrators, the Air Traffic Organization (ATO) Chief Operating Officer, ATO Senior Vice Presidents, the Director of the Joint Planning and Development Office (JPDO), representatives of the National Air Traffic Controllers Association (NATCA), and other key stakeholders. This is the agency's senior governing body for NextGen, and consists of the highest level agency executives. Under the Management Board, resides the NextGen Review Board, composed of FAA staff and executives, which looks at more technical issues including approving and prioritizing NextGen activities and making funding recommendations.

The FAA has been reviewing the report, and the NextGen Management Board is scheduled to meet on Monday, October 26, to discuss the Task Force's recommendations within the greater context of the FAA's overall work. In doing so, we note that much of the technology and procedures that underlie the specific recommendations of the Task Force exist and are in use already. However, they are being used in limited areas, often in their demonstration phases. The Task Force recommends deploying these technologies and procedures more widely throughout the national airspace system (NAS) to achieve immediate, short-term relief from congestion and inefficiencies. But before we can do that, we need to make sure that these technologies and procedures can be safely deployed elsewhere and whether deploying them throughout the system is a wise strategic decision. The NextGen Management process is the way that the FAA is able to examine these recommendations within this context.

Our work on area navigation (RNAV) and required navigation performance (RNP) air traffic control routes is a perfect example of this. While RNAV/RNP has been highly beneficial in many areas, the FAA has previously approached it on an *ad hoc* basis, responding to requests from the external aviation community. Now that we have greater experience with the RNAV/RNP program, we are better able to use the knowledge we have gained over the past few years. We can step back and take a deeper, strategic look at how RNAV/RNP can benefit the national airspace system as a whole. With this strategic eye, we will be able to make better decisions as to where RNAV/RNP procedures can be implemented to maximize their effectiveness in reducing congestion and delays.

To address the second principle of the Task Force, that of the need for continued cooperation and involvement of the industry in the execution and evolution of the NextGen plans, we intend to conduct follow up work with our industry stakeholders through the Air Traffic Management Advisory Committee (ATMAC) and its workgroups. The ATMAC is a Federal Advisory Committee of the RTCA. Its purpose is to provide the FAA with consensus-based, recommended investment priorities that will improve the safety, capacity and/or efficiency of the NAS. One of the great advantages of pursuing the follow on work through the ATMAC is that it will give us the continued input from industry and other stakeholders that is so essential to successful NextGen implementation. The ATMAC's work will complement the work of the NextGen Management Board and Review Board and bring all of the relevant perspectives together to help us make the right strategic decisions.

Confirming Our Path:

Using this combination of the NextGen Management Board, the NextGen Review Board, and the ATMAC, the FAA will be addressing each of the Task Force's recommendations specifically and in detail in the coming months. In the meantime, we are pleased that the Task Force reconfirms the value of the FAA's current work. Using the NextGen Management Board and Review Board process described above, we have already begun work in a few areas that address the Task Force's recommendations, some of which are described below.

Airport Surface:

For example, the Task Force recommended that the FAA take steps to improve aircraft surface traffic management at airports. The intent would be to reduce tarmac delays and enhance safety, efficiency, and situational awareness by defining and standardizing requirements, and implementing the capture and dissemination of surface operations data to controllers, ramp towers, and user operations centers.

The FAA is in the process of addressing aircraft surface management as the Task Force recommends. We recently accelerated the ASDE-X schedule and now project that all systems will be deployed by the fall of 2010 – one year earlier than originally anticipated. ASDE-X enables air traffic controllers to detect potential runway conflicts by providing detailed coverage of movement on runways and taxiways. By collecting data from a variety of sources, ASDE-X is able to track aircraft ground support equipment, maintenance vehicles, and aircraft on the airport movement area and obtain identification information from aircraft transponders. As we accelerate this work, we are coordinating with the users to determine where and how to best use the technology to enhance the safety and efficiency of surface movements on an airport, as the Task Force recommends. The ATMAC will be invaluable to this work as we move forward.

Metroplex:

The Task Force also recommended that we focus on relieving congestion and tarmac delays at major metropolitan area airports. They propose accomplishing this by reducing inefficiencies at satellite airports and surrounding airspace by instituting teams that focus

on quality of implementation at each location and eliminating airspace conflicts with adjacent airports. The Task Force recommends using core capabilities of RNAV, with RNP where needed; optimized vertical profiles using vertical navigation; and use of 3 nautical mile and terminal separation rules in more airspace.

The FAA has been working towards addressing the complexities of the airspace of these metroplexes. For instance, in Atlanta, we added additional RNAV departure lanes in 2006, which increased the capacity to and from the en route airspace. The lanes also give users the benefit of repeatable and predictable paths. The benefits are measurable. Since the addition of the RNAV departure lanes, we have seen a 24% to 43% reduction in departure delays and an estimated $105 million cumulative savings in operator benefits (due to improved profiles and reduced distances). Moreover, these procedures have improved situational awareness; there has been an 18% to 34% reduction in routine pilot/controller voice communications as well as reduced errors in voice communications.

Access to the NAS:

The Task Force recommends improving access to, and services provided at, non-OEP airports and to low altitude, non-radar airspace. They recommend doing this by implementing more precision-based approaches and departures, along with the expansion of surveillance services to areas not currently under radar surveillance.

Along those lines, the FAA will expand the development of increased precision approaches that are intended to benefit business and general aviation users. Known as

Localizer Performance with Vertical Guidance (LPV) approach procedures, these approaches enable more aircraft to more safely fly low-visibility approaches to more airports throughout the NAS. As long as the aircraft is equipped with Wide Area Augmentation System, or WAAS, equipment (a technology that increases the accuracy and integrity of Global Positioning Satellite (GPS) for aircraft navigation) or equipment of equivalent performance, the operator can take advantage of these LPV approaches.

Incentivizing Equipage:

The Task Force also examined incentives to investments in NextGen capabilities. They briefly explored the following types of incentives: 1) providing financial incentives either in the form of low-interest loans, or direct subsidies of equipage; 2) providing a timely, unambiguous set of processes (regulations, avionics certifications, operational procedures and approvals, engineering support, etc.) to assure the realization and timelines by NAS users of a sufficient level of operational benefits that justify investments; and 3) establishing a NAS where system users who have aircraft with higher aircraft performance/capability levels get higher levels of service. This is referred to in the FAA's Next Generation Implementation Plan as the "Best-Equipped, Best-Served" concept.

While we need to examine various incentive options under the auspices of the NextGen management process and with the input of the ATMAC, we are particularly pleased with the "buy-in" that the Task Force has achieved from aviation operators. For each recommendation, the Task Force was able to gain a commitment from at least one

operator to invest in its implementation. This sets the stage for the necessary equipage saturation by the operators to take advantage of all the NextGen technologies. This helps give the airlines and other operators the framework to make choices that make sense for them under a "Best-Equipped, Best-Served" concept.

One point that we should make with regard to "Best-Equipped, Best-Served" is that this is an extension of how the FAA operates today. When an aircraft is equipped with the right technology, the operator can take advantage of different air traffic control procedures, depending on the level of that aircraft's equipment. For example, if an aircraft has the right type of equipment necessary to fly at certain high altitudes, the operator may obtain access to those higher altitudes. These higher altitudes provide an environment for optimum jet performance. With the NextGen "Best-Equipped, Best-Served" concept extending this paradigm to recognize different levels of equipage, operators will be able to have better access to the NAS by virtue of having the ability to fly in more sophisticated and efficient ways through the system.

Streamlining:

The Task Force also advocates identifying the operational approval and certification issues that may impede adoption and acceleration of NextGen capabilities and implementing timely solutions to these challenges.

To address these concerns, we note that the FAA is already in the process of standing up "NextGen Branches" in our Flight Standards Regional Offices across the country. The

purpose of these NextGen Branches is to facilitate the operational approvals and implementation of these initiatives, by bringing specialty expertise in these areas to assist local flight standards district offices.

The FAA is also working on streamlining the certification approval process. For example, we have begun to develop improvements to how we use data developed by an avionics manufacturer when those avionics are being installed. We would do this by using the data that the manufacturer has already submitted to obtain a Technical Standard Order authorization. This will reduce the amount of work required for the installation in the long run.

Post Task Force Follow-Up:

Finally, the Task Force recommends that to maintain the momentum created over the past seven months and to facilitate holding the community consensus intact through the implementation of the recommendations, the FAA should establish institutional mechanisms to facilitate continued transparency and collaboration.

As noted above, the FAA intends to conduct our follow up through the ATMAC, in order to ensure continued industry collaboration. Many of the same people who serve on the ATMAC were part of the Task Force, and we look forward to their continued contributions to implementation.

As we move forward with examining and implementing the Task Force's recommendations, we welcome Congress' continued interest in and oversight of our work. Both Secretary LaHood and Administrator Babbitt have committed to moving NextGen forward to heighten safety and maximize efficiency throughout our national airspace system, and we intend to see that commitment through.

Chairman Costello, Congressman Petri, Members of the Subcommittee, this concludes our prepared remarks. We look forward to answering any questions that you may have.

U.S. House of Representatives
Committee on Transportation and Infrastructure
Washington, DC 20515

James L. Oberstar
Chairman

David Heymsfeld, Chief of Staff
Ward W. McCarragher, Chief Counsel

November 5, 2009

John L. Mica
Ranking Republican Member

James W. Coon II, Republican Chief of Staff

Mr. Hank Krakowski
Chief Operating Officer
Air Traffic Organization
Federal Aviation Administration
800 Independence Avenue, SW
Washington, DC 20591

Ms. Margaret Gilligan
Associate Administrator for Aviation Safety
Federal Aviation Administration
800 Independence Avenue, SW
Washington, DC 20591

Dear Mr. Krakowski and Ms. Gilligan:

On October 28, 2009, the Subcommittee on Aviation held a hearing on **"NextGen: A Review of the RTCA Mid-Term Implementation Task Force Report."**

Attached are questions that I would like you to answer for the hearing record. I would appreciate receiving your written responses to these questions within 30 days so that they may be made a part of the hearing record.

Sincerely,

Jerry Costello

Jerry F. Costello
Chairman
Subcommittee on Aviation

JFC:gg/pk
Attachment

OCTOBER 28, 2009
SUBCOMMITTEE ON AVIATION
HEARING ON
"NEXTGEN: A REVIEW OF THE RTCA MID-TERM
IMPLEMENTATION TASK FORCE REPORT"

QUESTIONS FOR THE RECORD
TO:
MR. HANK KRAKOWSKI
CHIEF OPERATING OFFICER
AIR TRAFFIC ORGANIZATION
FEDERAL AVIATION ADMINISTRATION

MS. MARGARET GILLIGAN
ASSOCIATE ADMINISTRATOR FOR AVIATION SAFETY
FEDERAL AVIATION ADMINISTRATION

Mr. Krakowski, in your written testimony you state that "we are currently examining all of these recommendations with an eye toward understanding how we might organize and implement them in light of the Agency's priorities." Would you explain what efforts are underway to reorganize the FAA, and how do these efforts respond to the RTCA Task Force's recommendations? Would you explain how you intend to engage the Task Force members and aviation community in the process? How will you resolve situations where one or more FAA officials may disagree with Task Force recommendations?

Mr. Krakowski, the RTCA Task Force recommends that the FAA deploy FAA/industry "Tiger Teams" to specific Metroplex locations that focus on delivering quality, beneficial area navigation (RNAV) and required navigation performance (RNP) routes. Does the FAA support this approach, and is the Agency optimally set up to deliver this location-specific type of implementation? How does the FAA intend to implement this recommendation?

Mr. Krakowski, in your testimony you discuss the creation of the NextGen Management Board and NextGen Review Board, including the composition. Will you please provide me with answers to the following questions about the NextGen Review Board:

1) Is the Office of Aviation Safety (AVS) represented on the NextGen Review Board?

2) Who will have the ultimate responsibility, accountability and authority when the members of the NextGen Review Board do not agree?

Mr. Krakowski, Section 314 of S. 1451 of the "FAA Air Transportation Modernization and Safety Improvement Act" requires the FAA to develop an implementation plan for the deployment of RNAV and RNP procedures at Operational Evolution Partnership airports. Do you have an opinion or any concerns about this provision? If so, please provide a detailed response.

Mr. Krakowski, Section 315 of S. 1451 the "FAA Air Transportation Modernization and Safety Improvement Act" requires FAA to mandate the use of Automatic Dependent Surveillance (ADS-B) "Out" technology, which allows the broadcast of ADS-B transmissions from aircraft to air traffic control, in all aircraft by 2015. Section 315 also requires the FAA to initiate a rulemaking that mandates the use of ADS-B "In" technology, which allows aircraft to receive ADS-B data on cockpit displays, on all aircraft by 2018. Do you have an opinion or any concerns about this provision? If so, please provide a detailed response.

Mr. Krakowski, FAA Deputy Administrator Sturgell provided the following testimony to the House Aviation Subcommittee in May 2007:

> "Cost will be a vital factor: we cannot create a NextGen system that is not affordable. Requirements for the first ten years range from $8 billion to $10 billion. Preliminary estimates by FAA, JPDO and the Research, Engineering, and Development Advisory Committee (REDAC) suggest that the investments necessary to achieve the end state NextGen system range from $15 billion to $22 billion in FAA funding. We are working with our users to continuously refine these estimates.
>
> MITRE, working with FAA, has developed a preliminary estimate of the NextGen avionics costs. It concludes that a wide range of costs are possible, depending on the bundling of avionics and the alignment of equipage schedules. MITRE concluded that the most probable range of total avionics costs to system users is $14 billion to $20 billion. This range reflects uncertainty about equipage costs for individual aircraft, the number of very light jets that will operate in high-performance airspace, and the amount of time out of service required for equipage installation."

However, in response to a question from Mr. Coble, who asked whether 2025 was still the target window for the NextGen end-state, you stated:

> "We are not sure what we are going to end up with at 2025 at this point. I mean, it is an interesting target for some things to be in place, but the fact that the whole world is going to NextGen by 2025, I don't think we are there anymore."

With these statements in mind, would you please provide the Subcommittee with answers to the following questions:

1) Does the FAA still believe that the NextGen end-state will be completed by 2025?
2) What does the FAA estimate that the end-state of NextGen will cost the FAA?
3) What does the FAA estimate that the end-state of NextGen will cost system users?
4) What does the FAA estimate that developing and implementing NextGen in the Mid-Term (i.e., the 2018 timeframe) will cost the FAA? Also, please indicate whether this cost figure corresponds with the NextGen Implementation Plan, or some other plan or report (e.g., the RTCA Task Force Report).
5) What does the FAA believe developing and implementing NextGen in the Mid-Term will cost system users? Also, please indicate whether this cost figure corresponds with the NextGen Implementation Plan, or some other plan or report.

Mr. Krakowski, Inspector General Scovel states in his written testimony that the FAA must address longstanding concerns about terminal modernization, and that software enhancements will be needed to allow controllers to merge and space aircraft to maximize the benefits of RNAV and RNP. With these statements in mind, please provide me with answers to the following questions:

1) What plans does the FAA have for terminal modernization? Please describe the different options that the FAA is reviewing and the comparative advantages of each?

2) When can the Aviation Subcommittee expect to see the plan for terminal modernization, including a budget and schedule milestones?

Ms. Gilligan, the Department of Transportation Inspector General states that a key transition issue for NextGen is determining whether throughput at already congested

airports with closely spaced runways can be increased. More specifically, FAA rules limit aircraft access to closely-spaced converging, intersecting, and parallel runways during low visibility conditions due to a risk of blunders and wake encounters. However, the RTCA Task Force report states that these limitations are based on older technologies, on the ground and in the air, and that the FAA and industry have lacked data critically needed to review these limitations and the assumptions that drive them. Therefore, the RTCA Task Force recommended that FAA conduct a study that establishes the safety case for operating simultaneous independent approaches to allow closer runway spacing than currently allowed. With this in mind, what actions, if any, does the FAA intend to take with regard to increasing throughput at airports with closely spaced runways?

Ms. Gilligan, the RTCA Task Force report stated that there was a need to streamline the operational approval and certification processes for aircraft avionics. Would you please explain the operational approval and certification processes and how they pertain to NextGen (perhaps provide a few examples)? Also, do you agree with this RTCA Task Force recommendation, and if so, what steps might the FAA take to streamline the process? How would you engage, if at all, the Task Force and/or system operators in developing a streamlined process?

Ms. Gilligan, some proponents of expanded Unmanned Aerial Systems (UAS) usage in the national airspace system (NAS) have advocated for mandating low cost collision avoidance technology for smaller commercial aircraft and General Aviation, including gliders, balloons etc. These proponents argue that mandating all aircraft be equipped with collision avoidance technology would increase safety and address "see and avoid" issues associated with UAS usage. With this in mind, would you please provide me with answers to the following questions:

1) What steps, if any, is the FAA taking to facilitate the expanded usage of UASs in the NAS?

2) Does the FAA have an opinion about mandating collision avoidance technology for all aircraft in the NAS?

OCTOBER 28, 2009
SUBCOMMITTEE ON AVIATION
HEARING ON
"NEXTGEN: A REVIEW OF THE RTCA MID-TERM
IMPLEMENTATION TASK FORCE REPORT"

QUESTIONS FOR THE RECORD TO:

MR. HANK KRAKOWSKI
CHIEF OPERATING OFFICER
AIR TRAFFIC ORGANIZATION
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MS. MARGARET GILLIGAN
ASSOCIATE ADMINISTRATOR FOR AVIATION SAFETY
FEDERAL AVIATION ADMINISTRATION

Question 1: Mr. Krakowski, in your written testimony you state that "we are currently examining all of these recommendations with an eye toward understanding how we might organize and implement them in light of the Agency's priorities." Would you explain what efforts are underway to reorganize the FAA, and how do these efforts respond to the RTCA Task Force's recommendations? Would you explain how you intend to engage the Task Force members and aviation community in the process? How will you resolve situations where one or more FAA officials may disagree with Task Force recommendations?

Response: The FAA is organizing its efforts to respond to the RTCA Task Force recommendations with the technical support of the NextGen Review Board and the governance of the NextGen Management Board. The NextGen Review Board is chaired by the Director for NextGen Integration and Implementation, who reports to the Senior Vice President for NextGen and Operations Planning. The NextGen Management Board is chaired by the FAA Deputy Administrator. After the change in Administration, the then-Acting Administrator delegated this role to the Chief Operating Officer. Upon the confirmation of a Deputy Administrator, that individual will become the chair of the NextGen Management Board.

Under the Review Board we have established teams in each of the categories addressed in the Task Force recommendations. These teams are developing detailed plans for delivery of capabilities identified by the Task Force. The work of these teams includes looking at planned investments and making recommended budgetary adjustments to accommodate Task Force priorities.

The FAA has also asked the RTCA to establish a Workgroup under the Air Traffic Management Advisory Committee (ATMAC) to follow up the Task Force work by assisting in the execution and evolution of NextGen. The Workgroup, which is comprised of the Task Force chair and co-

chairs, the Task Force sub-group chairs, the current ATMAC Requirements and Planning Workgroup co-chairs and the RTCA President, is currently assisting the Review Board teams.

Issues surrounding the FAA's response to the Task Force recommendations will be addressed by the NextGen Management Board. It is the responsibility of the NextGen Management Board chair to resolve any issues on which the Management Board cannot agree.

Question 2: Mr. Krakowski, the RTCA Task Force recommends that the FAA deploy FAA/industry "Tiger Teams" to specific Metroplex locations that focus on delivering quality, beneficial area navigation (RNAV) and required navigation performance (RNP) routes. Does the FAA support this approach, and is the Agency optimally set up to deliver this location-specific type of implementation? How does the FAA intend to implement this recommendation?

Response: The FAA has already been working towards addressing the complexities of the airspace of metroplexes. For instance, in Atlanta, we added additional RNAV departure lanes in 2006, which increased the capacity to and from the en route airspace. The lanes also give users the benefit of repeatable and predictable paths. We have seen a reduction in departure delays, cost savings in operator benefits and improved situational awareness measured by the reduction in routine pilot/controller voice communications as well as reduced errors in voice communications; all a result of the implementation of RNAV technology.

The FAA expects to continue deploying capabilities in high priority areas initially to maximize benefits and further mature the implementation process. Since deployment in these high priority areas will require both industry and FAA actions, the FAA believes it is appropriate to have shared teams focused on the local implementations in a manner consistent with the national strategy. Progress of these teams will be tracked and managed by the NextGen Review Board and NextGen Management Board.

Question 3: Mr. Krakowski, in your testimony you discuss the creation of the NextGen Management Board and NextGen Review Board, including the composition. Will you please provide me with answers to the following questions about the NextGen Review Board:

1) Is the Office of Aviation Safety (AVS) represented on the NextGen Review Board?

   Response: Yes. The Office of Aviation Safety has 3 members on the NextGen Review Board representing the Flight Standards Service (AFS), Aircraft Certification Service (AIR) and Air Traffic Safety Oversight (AOV).

2) Who will have the ultimate responsibility, accountability and authority when the members of the NextGen Review Board do not agree?

   Response: Ultimate decision authority rests with the NextGen Management Board chaired by the Deputy Administrator; it is the responsibility of the Deputy to resolve any issues on which the Management Board cannot agree.

Question 4: Mr. Krakowski, Section 314 of S. 1451 of the "FAA Air Transportation Modernization and Safety Improvement Act" requires the FAA to develop an implementation plan for the deployment of RNAV and RNP procedures at Operational Evolution Partnership airports. Do you have an opinion or any concerns about this provision? If so, please provide a detailed response.

Response: The Obama Administration has not taken a position on either the House passed FAA Reauthorization bill or the pending Senate version and looks forward to working with Congress as we move toward a final bill. That said, we are committed to implementing new RNAV/RNP procedures throughout the National Airspace System (NAS). We have implemented 726 routes and procedures, including 210 RNAV routes, 319 RNAV arrival and departure procedures, and 192 RNP approach procedures to date. Each airport and airspace has unique characteristics and can create interesting challenges which need to be taken into account when developing an implementation plan. In the months to come, the Administration looks forward to working with this Committee and the Senate on expediting NextGen implementation.

Question 5: Mr. Krakowski, Section 315 of S. 1451 the "FAA Air Transportation Modernization and Safety Improvement Act" requires FAA to mandate the use of Automatic Dependent Surveillance (ADS-B) "Out" technology, which allows the broadcast of ADS-B transmissions from aircraft to air traffic control, in all aircraft by 2015. Section 315 also requires the FAA to initiate a rulemaking that mandates the use of ADS-B "In" technology, which allows aircraft to receive ADS-B data on cockpit displays, on all aircraft by 2018. Do you have an opinion or any concerns about this provision? If so, please provide a detailed response.

Response: As stated above, the Obama Administration has not taken a position on either the House passed FAA Reauthorization bill or the pending Senate version and looks forward to working with Congress as we move toward a final bill. The Administration has stated that it would like to expedite implementation of NextGen and continues to review timeframes to see how best to meet that goal.

Question 6: Mr. Krakowski, FAA Deputy Administrator Sturgell provided the following testimony to the House Aviation Subcommittee in May 2007:

> "Cost will be a vital factor: we cannot create a NextGen system that is not affordable. Requirements for the first ten years range from $8 billion to $10 billion. Preliminary estimates by FAA, JPDO and the Research, Engineering, and Development Advisory Committee (REDAC) suggest that the investments necessary to achieve the end state NextGen system range from $15 billion to $22 billion in FAA funding. We are working with our users to continuously refine these estimates.

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However, in response to a question from Mr. Coble, who asked whether 2025 was still the target window for the NextGen end-state, you stated:

> "We are not sure what we are going to end up with at 2025 at this point. I mean, it is an interesting target for some things to be in place, but the fact that the whole world is going to NextGen by 2025, I don't think we are there anymore."

With these statements in mind, would you please provide the Subcommittee with answers to the following questions:

1) Does the FAA still believe that the NextGen end-state will be completed by 2025?

Response: NextGen is managed as a portfolio of programs, technologies, procedures and policies which incrementally lead to a transformation of the National Airspace System, making that system safe, more capable and more environmentally responsive. It is not a "turnkey" 2025 capability. Once elements of NextGen have been fully researched and developed, the FAA expects to implement those which prove operationally, technically and economically viable. While the broad vision for NextGen is far-reaching, the specific program steps, resources or implementation elements such as facility rollout, training or decommissioning are defined in detailed planning and set forth in the annual NextGen Implementation Plan.

Additionally, NextGen was never intended to require that all aircraft be equipped the same or that the highest performance procedures and technology be implemented in all locations. Rather, ground stations and equipage would be selected to achieve the performance requirements to meet capacity and complexity issues in each airspace or geographic area.

The NextGen operational architecture must continue to build on research and development and performance requirements that are guided by aviation trends. All of the investments for 2025 will meet NextGen goals of safety, capacity, homeland security, national defense, environmental performance and global leadership. As new trends emerge and new opportunities arise, the National Airspace System will continue to evolve beyond 2025.

2) What does the FAA estimate that the end-state of NextGen will cost the FAA?

Response: Transformation of the NAS to meet most of the NextGen core objectives by 2025 is still expected to cost between $15 billion to $22 billion. The NextGen concept encompasses a number of options which move us toward the NextGen goals. The estimate range includes aspects of the NextGen portfolio that are still undergoing research and includes risk adjustments that are part of the investment analysis process. As NextGen matures, the FAA, working with its stakeholders, will determine which set of options offers the best mix of value and risk avoidance.

3) What does the FAA estimate that the end-state of NextGen will cost system users?

Response: The FAA anticipates that aircraft operators will undertake investments in NextGen capabilities where doing so will satisfy their business objectives. There is no expectation that all operators will be required to implement advanced NextGen capabilities in their fleets by 2025, with the exception of ADS-B "Out" which we have proposed to require mandatory equipage for all aircraft flying in the nation's busiest airspace by 2020. Given this, the most probable range of total avionics costs to system users continues to be $14 billion to $20 billion. As with ground system investments, the FAA will work with aircraft operators and other stakeholders to identify those investments best positioned to deliver the best mix of value and risk avoidance.

4) What does the FAA estimate that developing and implementing NextGen in the Mid-Term (i.e., the 2018 timeframe) will cost the FAA? Also, please indicate whether this cost figure corresponds with the NextGen Implementation Plan, or some other plan or report (e.g., the RTCA Task Force Report).

Response: Consistent with previous testimony, FAA costs for the mid-term are expected to range from $8 billion to $10 billion. These costs reflect commitments in the NextGen Implementation Plan augmented with guidance from the RTCA Task Force Report.

5) What does the FAA believe developing and implementing NextGen in the Mid-Term will cost system users? Also, please indicate whether this cost figure corresponds with the NextGen Implementation Plan, or some other plan or report.

Response: The FAA has estimated that a cost of $7 billion dollars for equipage will provide the user community an optimal benefit from the mid-term capabilities. These costs reflect the projections in the NAS Enterprise Architecture and include the commitments in the Next Gen Implementation Plan. These costs are expected to encompass guidance from the RTCA Task Force Report

Question 7: Mr. Krakowski, Inspector General Scovel states in his written testimony that the FAA must address longstanding concerns about terminal modernization, and that software enhancements will be needed to allow controllers to merge and space aircraft to maximize the benefits of RNAV and RNP. With these statements in mind, please provide me with answers to the following questions:

1) What plans does the FAA have for terminal modernization? Please describe the different options that the FAA is reviewing and the comparative advantages of each?

Response: The FAA is undertaking an investment analysis for Terminal Automation and Modernization (TAMR) Phase 3. The TAMR Phase 3 analysis of the Terminal Automation platforms, in conjunction with NextGen initiatives, and systems has led us to look at all existing platforms and sites to establish a common hardware and software platform for the terminal environment. Clearly the cost of maintaining multiple automation platforms is not in the best interest of the agency and the end users.

Our TAMR Phase 3 analysis includes those sites that were upgraded previously, totaling approximately 158 operational sites and associated towers. We are working to determine what upgrades would be required in the interim for existing platforms to support critical functions such as ADS-B, while incorporating RNAV and RNP. Our current TAMR Phase 3 planning assumption envisions the initial delivery of TAMR Phase 3 system to require minimal software development and will form the foundation to incorporate future NextGen requirements as they are defined. As part of this analysis, three (3) alternatives have been identified: one for one replacement, taking advantage of the processing capabilities presented by newer technologies, and modifying EnRoute automation for use in the terminal environment. FAA will conduct economic analysis of these alternatives to determine the best and most financially prudent path forward. We will be glad to provide the benefits of the various alternatives once we complete our economic analysis by the fourth quarter of calendar year 2010.

2) When can the Aviation Subcommittee expect to see the plan for terminal modernization, including a budget and schedule milestones?

Response: We expect that the TAMR Phase 3 plan with all budgetary requirements, schedules, and milestones to be available immediately following our anticipated Final Investment Decision sometime in the fourth quarter of calendar year 2010.

Question 8: Ms. Gilligan, the Department of Transportation Inspector General states that a key transition issue for NextGen is determining whether throughput at already congested airports with closely spaced runways can be increased. More specifically, FAA rules limit aircraft access to closely-spaced converging, intersecting, and parallel runways during low visibility conditions due to a risk of blunders and wake encounters. However, the RTCA Task Force report states that these limitations are based on older technologies, on the ground and in the air, and that the FAA and industry have lacked data critically needed to review these limitations and the assumptions that drive them. Therefore, the RTCA Task Force recommended that FAA conduct a study that establishes the safety case for operating simultaneous independent approaches to allow closer runway spacing than currently allowed. With this in mind, what actions, if any, does the FAA intend to take with regard to increasing throughput at airports with closely spaced runways?

Response: The FAA is currently conducting a study on Closely Spaced Parallel Operations (CSPO) on simultaneous independent approaches to parallel runways with centerlines separated by less than 4300 feet, to investigate reductions to present runway separation standards.

Initial risk analysis studies have shown that Area Navigation (RNAV) and Required Navigation Performance (RNP) approach procedures can be safely operated in concert with legacy Instrument Landing System (ILS) approach procedures during simultaneous independent parallel operations. Further risk analysis will result in criteria to implement these operations with the Local Area Augmentation System (LAAS), Wide Area Augmentation System (WAAS) and Localizer Performance with Vertical Guidance (LPV) procedures at airports presently conducting simultaneous parallel ILS operations.

The FAA intends to leverage future CSPO safety analysis with the benefits of Performance Based Navigation (PBN), new surveillance technologies and controller tools, to further enhance capacity at our major airports.

Question 9: Ms. Gilligan, the RTCA Task Force report stated that there was a need to streamline the operational approval and certification processes for aircraft avionics. Would you please explain the operational approval and certification processes and how they pertain to NextGen (perhaps provide a few examples)? Also, do you agree with this RTCA Task Force recommendation, and if so, what steps might the FAA take to streamline the process? How would you engage, if at all, the Task Force and/or system operators in developing a streamlined process?

Response: NextGen involves implementation of new complex systems and flight crew procedures. The FAA must ensure that these systems and procedures are reliable and safe, and that they remain safe even if failures occur.

Aircraft certification processes address modifications to aircraft, including installation or upgrades to aircraft avionics. Operational approval considers the operational aspects of these systems through the development of crew procedures, training, and continuous safety monitoring. Operational approval is typically required for air carriers and air taxi operators to use specific navigation equipment for a particular operation. Operational approval may also be required for general aviation if there are unique training or qualification requirements that warrant additional FAA oversight.

Aircraft Certification
Aircraft certification includes:

- approval of the design of an aircraft, including installation and integration of avionics;
- approval of the manufacturer to consistently produce aircraft to the approved design; and
- approval of design and production of avionics, or other appliances.

With respect to NextGen, the aircraft certification evaluation process considers the design of the system, potential failure conditions and crew interface issues, to ensure that the equipment can support its intended function and fail in a safe manner.

The approval of installed equipment is reflected on the aircraft type certificate (TC) or supplemental type certificate (STC). The approval of avionics as an individual, stand-alone equipment item (prior to installation in an aircraft) is reflected on a Technical Standard Order (TSO) authorization. Both of these design approvals are in accordance with procedures defined in 14 CFR Part 21.

Examples of NextGen related certification programs include: 1) approval of a Boeing 737 aircraft with Required Navigation Performance (RNP) capability, and 2) approval for Garmin to produce Wide Area Augmentation System (WAAS) navigation equipment for subsequent installation on aircraft.

Operational Approval

The operational approval for a commercial operator includes:

- approval of flight crew procedures;
- approval of maintenance procedures; and
- approval of the operator's training program.

With respect to NextGen, the operational approval focuses on all of the above areas. Particular emphasis is placed on the flight crew training and procedures due to the unique technologies and the new operations involved. The operational approval also considers the ability of the aircraft to support the operation.

The operational approval is reflected in an air carrier's operations specifications, in management specifications for fractional ownership operations, and in letters of authorization for other part 91 operations which identify what operations are covered, for which aircraft, and any requirements or limitations. For example, the FAA requires an air carrier to have an operations specification to conduct RNAV operations.

Task Force Recommendation on Streamlining

The FAA agrees with the RTCA Task Force recommendation concerning streamlining the approval process, without compromising safety or oversight. In response to the report, we are evaluating our organization, resource requirements, procedures and guidance. A preliminary action plan addressing the Task Force recommendations will be included in the FAA's overarching NextGen Implementation Plan which is scheduled to be released in January. A detailed plan addressing the Task Force recommendations, including milestones, is scheduled for completion by March.

We have recently created NextGen field offices in each Flight Standards regional office to provide local technical expertise and create a direct link to our national experts. These new positions will be dedicated to NextGen-related projects and will greatly improve our standardization and certification efficiency, while maintaining adequate oversight.

In accordance with the Task Force recommendation for follow-up coordination, the FAA will continue to work with the ATM Advisory Committee (ATMAC) to track progress and adjust plans as appropriate. In addition, specific initiatives will be coordinated with appropriate forums

such as the Performance-Based Aviation Rulemaking Committee (PARC), which worked with the FAA to develop requirements and guidance for the implementation of RNAV and RNP.

Question 10: Ms. Gilligan, some proponents of expanded Unmanned Aerial Systems (UAS) usage in the national airspace system (NAS) have advocated for mandating low cost collision avoidance technology for smaller commercial aircraft and General Aviation, including gliders, balloons etc. These proponents argue that mandating all aircraft be equipped with collision avoidance technology would increase safety and address "see and avoid" issues associated with UAS usage. With this in mind, would you please provide me with answers to the following questions:

1) What steps, if any, is the FAA taking to facilitate the expanded usage of UASs in the NAS?

   Response: The FAA has taken a number of steps to facilitate expanded usage of UAS in the NAS with respect to the "see and avoid" issue.

   In early 2008, the FAA recognized the need to develop a robust foundation to define the replacement of a pilot's ability to "see and avoid". The FAA organized a team of government, industry, and collision avoidance experts to analyze and document the issues of "see and avoid" for unmanned aircraft. The team was chartered to develop a set of capabilities envisioned for a Sense and Avoid (SAA) system for UAS. The Final Report from this effort was completed in October 2009 and distributed to RTCA and other standards development bodies responsible for developing requirements for a SAA system.

2) Does the FAA have an opinion about mandating collision avoidance technology for all aircraft in the NAS?

   Response: Collision avoidance technology in aircraft is considered a back up and redundant system to the pilot's ability to "see and avoid". The use of collision avoidance technology cannot replace the function of the pilot. For any system to be considered in place of a pilot's ability to "see and avoid", it must be able to demonstrate that it can safely comply with current operational requirements, and this is currently beyond the capability of the systems.

U.S. House of Representatives
Committee on Transportation and Infrastructure
Washington, DC 20515

James L. Oberstar
Chairman

David Heymsfeld, Chief of Staff
Ward W. McCarragher, Chief Counsel

John L. Mica
Ranking Republican Member

James W. Coon II, Republican Chief of Staff

November 24, 2009

Mr. Hank Krakowski
Chief Operating Officer
Air Traffic Organization
Federal Aviation Administration
800 Independence Avenue, SW
Washington, D.C. 20591

Dear Mr. Krakowski:

On October 28, 2009, the Subcommittee on Aviation held a hearing on **"NextGen: A Review of the RTCA Mid-Term Implementation Task Force Report."**

Attached are questions to answer for the record submitted by Rep. Michael E. McMahon. I would appreciate receiving your written response to these questions within 14 days so that they may be made a part of the hearing record.

Sincerely,

Jerry Costello

Jerry F. Costello
Chairman
Subcommittee on Aviation

JFC:pk
Attachment

OCTOBER 28, 2009
SUBCOMMITTEE ON AVIATION
HEARING ON
"NEXTGEN: A REVIEW OF THE RTCA MID-TERM
IMPLEMENTATION TASK FORCE REPORT"

QUESTIONS FOR THE RECORD
TO:
MR. HANK KRAKOWSKI
CHIEF OPERATING OFFICER
AIR TRAFFIC ORGANIZATION
FEDERAL AVIATION ADMINISTRATION

1. As part of the redesign proposals for the NY/NJ/Phil airspace, I understand that the FAA is considering the elimination of the JFK departure heading towards Robbinsville, NJ. The reason given for this change is to reduce the interference of JFK departures with the series of North-South headings to and from Newark Liberty International Airport. However, this change will actually increase the number of points of conflict for air traffic rather than reduce them – and push these additional points of traffic conflict closer to the New York area airports and major population centers. I urge the FAA to reconsider this change and I ask you to provide your assessment of how the elimination of the Robbinsville departure will affect air traffic in the NY/NJ/Phil airspace?

2. What is the status of moving the three sectors and twenty-four controllers from New York en route Center to the New York TRACON? With FAA efforts to realign or consolidate air traffic control facilities on hold, is this personnel transfer to the New York TRACON on hold as well? Has the FAA reviewed the effect such a transfer will have both on the retention of experienced professionals, and if so, could you detail your assessments and conclusions about this matter? Has the FAA reviewed how the consolidation of all FAA

controller activities under one roof in the New York TRACON will affect the air system in the event of a natural or manmade disaster that could disrupt communications or electrical power to the New York TRACON, and if so, please provide an explanation of your findings?

3. Please explain the involvement of air traffic controllers and the National Air Traffic Controllers Association appointed representatives in the design and implementation of the current and future phases of the NY/NJ/Phil airspace redesign? Have NATCA appointed controllers been allowed to participate in the airspace redesign implementation efforts to a greater extent now that the FAA and NATCA have reached a new contract agreement?

OCTOBER 28, 2009
SUBCOMMITTEE ON AVIATION
HEARING ON
"NEXTGEN: A REVIEW OF THE RTCA MID-TERM IMPLEMENTATION TASK FORCE REPORT"

QUESTIONS FOR THE RECORD TO:

MR. HANK KRAKOWSKI
CHIEF OPERATING OFFICER
AIR TRAFFIC ORGANIZATION
FEDERAL AVIATION ADMINISTRATION

Question 1: As part of the redesign proposals for the NY/NJ/Phil airspace, I understand that the FAA is considering the elimination of the JFK departure heading towards Robbinsville, NJ. The reason given for this change is to reduce the interference of JFK departures with the series of North-South headings to and from Newark Liberty International Airport. However, this change will actually increase the number of points of conflict for air traffic rather than reduce them – and push these additional points of traffic conflict closer to the New York area airports and major population centers. I urge the FAA to reconsider this change and I ask you to provide your assessment of how the elimination of the Robbinsville departure will affect air traffic in the NY/NJ/Phil airspace.

Response: The decision to reroute the Robbinsville traffic was made in September 2007. In the existing operation at John F. Kennedy International Airport (JFK), the departures via Robbinsville conflict with departures from all the other New York City airports. We expect the Robbinsville airspace adjustment to reduce the number of departure conflicts. With these new adjustments, JFK traffic can merge with traffic from other airports and aircraft can reach higher altitudes faster (e.g., JFK departures can climb to cruising altitude four minutes faster) and eliminate the crossing of LaGuardia Airport, Newark Liberty International Airport, and other jet route traffic west of New York City. The Robbinsville flow will not be completely eliminated, but when weather conditions force rerouting of traffic out of New York, JFK departures bound for the least-complex airways will continue to use Robbinsville. This is consistent with the assumptions in the Environmental Impact Statement.

Question 2: What is the status of moving the three sectors and twenty-four controllers from New York en route Center to the New York TRACON? With the FAA efforts to realign or consolidate air traffic control facilities on hold, is this personnel transfer to the New York TRACON on hold as well? Has the FAA reviewed the effect such a transfer will have both on the retention of experienced professionals, and if so, could you detail your assessments and conclusions about this matter? Has the FAA reviewed how the consolidation of all FAA controller activities under one roof in the New York TRACON will affect the air system in the event of a natural or manmade disaster that could disrupt communications or electrical power to the New York TRACON, and if so, please provide an explanation of your findings?

Response: Consolidation of three en route and two terminal sectors and 24 controllers to "put them all under one roof" in the New York area is a key component of the Agency's Record of Decision. A total of five sectors will be reconfigured. The physical location of these sectors is currently under review by the Agency. This decision review will include a reassessment of personnel impacts, including the experience level of controllers, and recent technological

changes created by this implementation. The consolidation gives us the opportunity to integrate new technology into the existing air traffic control structure in the most efficient means possible. It also provides an additional opportunity to improve the relationship with our employees. In the event of a natural disaster, both the New York TRACON and the New York ARTCC have Business Continuity Plans in place according to Agency Standard Operating Procedures. Those will be adjusted accordingly when positions are actually moved from one facility to another.

Question 3: Please explain the involvement of air traffic controllers and the National Air Traffic Controllers Association appointed representatives in the design and implementation of the current and future phases of the NY/JN/Phil airspace redesign? Have NATCA appointed controllers been allowed to participate in the airspace redesign implementation efforts to a greater extent now that the FAA and NATCA have reached a new contract agreement?

Response: National Air Traffic Controllers Association (NATCA) controllers were involved in all stages of development under the National Airspace Redesign Program (NAR). NAR was a formal collaborative effort between FAA and labor/management. NATCA appointees spent over 60,000 hours in designing all of the alternatives used in our project. This direct labor involvement changed in the spring of 2005 as a result of the end of the design and the initiation of the environmental stages. We are currently planning the implementation of Stage 2b of the project. We are exploring the opportunity to gain increased air traffic control specialist involvement under provisions of the new NATCA labor agreement dated October 1, 2009.

ATA TESTIMONY

NextGen: A Review of the RTCA Mid-Term Implementation Task Force Report

Statement of James C. May
President and CEO
Air Transport Association of America, Inc. (ATA)
before the
Subcommittee on Aviation
of the
House Transportation and Infrastructure Committee

October 28, 2009

AIR TRANSPORT ASSOCIATION

The NextGen Task Force, admirably led by Captain Dickson, did an outstanding job of setting a course to transition to NextGen. As important as that accomplishment is, there is a larger lesson to be learned from the Task Force's success in laying out what can be achieved. It is the urgency of benefiting from NextGen as soon as possible.

Saying this doesn't mean that we don't deeply appreciate the Task Force's efforts. On the contrary: The case for modernization is so compelling and so widely accepted, and the need is so great, that the introduction of what all agree is readily available technology and the procedures to fully leverage it must be a national priority. To make that priority a reality, the federal government – at the highest levels – must provide decisive leadership and a substantial financial commitment.

Summing things up: We know what NextGen can do; the technology is proven. We know that we need NextGen; stakeholders uniformly want its benefits. We know what has to be done operationally and financially. What we now need is the federal government to make NextGen an early reality.

The federal role is indispensable if we are to have an airport and airway system that can responsibly meet the air transportation needs of our nation. The system does not do that today, as we all too often realize. The burden of this failure on our economy is staggering. Congress' Joint Economic Committee estimated that flight delays in 2007 cost the economy $41 billion. Airlines, their customers and the communities that they serve cannot afford to continue to pay the price of an obsolete air traffic control (ATC) system.

Modernization of the ATC system, however, must be based on a positive business case. Without that justification, we will not see the level and pace of investment that will produce the operational and environmental benefits that are so achievable from NextGen. Such forgone opportunities are intolerable. We have already witnessed that, for instance, in the failure to have an RNP/RNAV procedure available when SeaTac's $1 billion third runway opened last November.

The federal government holds the keys to making NextGen a reality sooner rather than later. This must be a national priority, to which all necessary resources must be devoted. Government leadership and full funding can make it happen in several years, not in the third decade of this century as is assumed today. Accepting anything less ambitious will needlessly shortchange our country.

Leadership, I want to point out, includes exhibiting the wherewithal to overcome the political differences that an undertaking of this magnitude will inevitably create. We need to be candid and acknowledge this state of affairs. For example, this means that we cannot dither over implementing the FAA's New York airspace redesign plan. NextGen won't work in New York or anywhere else if individual interests frustrate the airspace improvements that will indisputably benefit us all.

Leadership also includes accountability. Clear metrics must be established to measure the progress of the government as it quickly introduces NextGen. Without such measurable responsibility, we put at grave risk the necessary speed and effectiveness in bringing NextGen on line within the next few years.

Finally, leadership means a very serious commitment to infrastructure investment. That is something we're all familiar with on the ground; now it needs to be applied to equipping aircraft to take advantage of NextGen technology. Given the cost of equipage and the length of time it could take for an individual user to see a payback in such an investment, such funding is crucial. This is infrastructure investment that can pay off in the next few years; that payoff is within our reach. To place this in perspective, were Congress to provide a level of funding comparable to its funding for high-speed rail projects in this year's stimulus legislation, NextGen would be an early reality.

Without this leadership and funding, implementation of NextGen will drag on, and our nation will suffer even more from airport and airway congestion.

The Task Force has ably prepared our flight plan. We need to speed up our arrival at our final destination.

U.S. House of Representatives
Committee on Transportation and Infrastructure

James L. Oberstar
Chairman

David Heymsfeld, Chief of Staff
Ward W. McCarragher, Chief Counsel

Washington, DC 20515

John L. Mica
Ranking Republican Member

James W. Coon II, Republican Chief of Staff

October 30, 2009

Mr. James C. May
President and CEO
Air Transport Association
1301 Pennsylvania Avenue, NW
Suite 1100
Washington, D.C. 20004

Dear Mr. May:

On October 28, 2009, the Subcommittee on Aviation held a hearing on **"NextGen: A Review of the RTCA Mid-Term Implementation Task Force Report."**

Attached are questions that I would like you to answer for the hearing record. I would appreciate receiving your written response to these questions within 14 days so that they may be made a part of the hearing record.

Sincerely,

Jerry F. Costello
Chairman
Subcommittee on Aviation

JFC:gg/pk
Attachment

OCTOBER 28, 2009
SUBCOMMITTEE ON AVIATION
HEARING ON
"NEXTGEN: A REVIEW OF THE RTCA MID-TERM
IMPLEMENTATION TASK FORCE REPORT"

QUESTIONS FOR THE RECORD
TO:
MR. JAMES C. MAY
PRESIDENT AND CEO
AIR TRANSPORT ASSOCIATION

1. Mr. May, Section 314 of S. 1451 of the "FAA Air Transportation Modernization and Safety Improvement Act" requires the FAA to develop an implementation plan for the deployment of area navigation and required navigation performance procedures at Operational Evolution Partnership airports. Do you have an opinion or any concerns about this provision? If so, please provide a detailed response.

2. Mr. May, Section 315 of S. 1451 the "FAA Air Transportation Modernization and Safety Improvement Act" requires FAA to mandate the use of Automatic Dependent Surveillance (ADS-B) "Out" technology, which allows the broadcast of ADS-B transmissions from aircraft to air traffic control, in all aircraft by 2015. Section 315 also requires the FAA to initiate a rulemaking that mandates the use of ADS-B "In" technology, which allows aircraft to receive ADS-B data on cockpit displays, on all aircraft by 2018. Do you have an opinion or any concerns about this provision? If so, please provide a detailed response.

Response from Air Transport Association
House Aviation Subcommittee QFRs

In response to the Questions for the Record (QFRs) dated October 30, 2009, the Air Transportation Association provides the following response:

1) **Mr. May, Section 314 of S. 1451 of the "FAA Air Transportation Modernization and Safety Improvement Act" requires the FAA to develop an implementation plan for the deployment of area navigation and required navigation performance procedures at Operational Evolution Partnership airports. Do you have an opinion or any concerns about this provision? If so, please provide a detailed response.**

ATA supports the bill's timeline to ensure the FAA completes Required Navigation procedures at all major airports. FAA's track record in this area has lacked focus on designing and approving procedures at airports where the procedures will provide material benefit to the carriers and the flying public. FAA should focus on delivering operational benefits rather than the simple delivery of infrastructure. This procedure development should also integrate procedure design to deconflict airports in complex metro areas. Optimizing RNAV/RNP operations can produce time, distance, and fuel savings while also providing environmental benefits.

2) **Mr. May, Section 315 of S. 1451 the "FAA Air Transportation Modernization and Safety Improvement Act" requires FAA to mandate the use of Automatic Dependent Surveillance (ADS-B) "Out" technology, which allows the broadcast of ADS-B transmissions from aircraft to air traffic control, in all aircraft by 2015. Section 315 also requires the FAA to initiate a rulemaking that mandates the use of ADS-B "In" technology, which allows aircraft to receive ADS-B data on cockpit displays, on all aircraft by 2018. Do you have an opinion or any concerns about this provision? If so, please provide a detailed response.**

ATA recognizes ADS-B as a foundational NextGen technology that will enable new air traffic management and navigation capabilities. As detailed in our comments to the FAA's proposed rule on ADS-B "Out", we criticized the FAA for requiring operators to install equipment without simultaneously committing to updating operational policies and procedures. Imposing an early unfunded mandate to equip planes with ADS-B technology would result in carriers being forced to spend money that they don't have on equipment that the Federal Aviation Administration (FAA) has been unable to demonstrate will provide any benefit to consumers or the environment. The estimated cost of equipping for an ADS-B "Out" mandate is $721 million; and the estimates run over $4 billion for ADS-B "In," based on a ten-year retrofit period. Accelerating the retrofit requirement will require unscheduled aircraft downtime and increase cost the cost significantly. ATA has been at the forefront of advocating for acceleration of Next Generation (NextGen) technology, but has also repeatedly stated that FAA must first demonstrate that passengers will actually benefit from these technologies as a result of more efficient routings, closer spacing and changed procedures, and second, be willing to fully fund ADS-B equipage as an integral component of NextGen infrastructure.

BEFORE THE UNITED STATES HOUSE OF REPRESENTATIVES

COMMITTEE ON TRANSPORTATION AND INFRASTRUCTURE

SUBCOMMITTEE ON AVIATION

TESTIMONY OF
NEIL PLANZER
VICE PRESIDENT – STRATEGY
BOEING AIR TRAFFIC MANAGEMENT

ON BEHALF OF THE
AEROSPACE INDUSTRIES ASSOCIATION

"NEXTGEN: A Review of the RTCA Mid-Term Implementation Task Force Report"

OCTOBER 28, 2009

2167 RAYBURN HOUSE OFFICE BUILDING

WASHINGTON, DC

BEFORE THE HOUSE OF REPRESENTATIVES

COMMITTEE ON TRANSPORTATION AND INFRASTRUCTURE

SUBCOMMITTEE ON AVIATION

Testimony of

Neil Planzer

Vice President - Strategy, Boeing Air Traffic Management

On Behalf of the Aerospace Industries Association

NEXTGEN: A Review of the RTCA Mid-Term Implementation Task Force Report

October 28, 2:00PM

My name is Neil Planzer and I am speaking here on behalf of the Aerospace Industries Association (AIA). AIA represents nearly 300 aerospace manufacturing companies with over 657,000 high-wage, highly skilled employees. AIA operates as the largest aerospace trade association in the United States across three sectors, civil aviation, space systems, and national defense. Member companies export 42 percent of their total output and routinely post the nation's largest manufacturing trade surplus, a level exceeding $57 billion in 2008. I am the Vice President of Strategy for Air Traffic Management at the Boeing Company, which is one of AIA's largest members. I have had the pleasure of working in the ATM community for 37 years in multiple roles. I have been a controller, I have been a senior executive in the FAA, I have been the lead for ATC in the DOD and most recently I have worked at Boeing helping to move NextGen along. Seeing things from these various vantage points I know that transforming our air transportation system is a daunting task. My experience has made me recognize that our industry can accomplish some amazing feats when we want.

RTCA Report

The recent report published by the RTCA Task Force documents the industry consensus that NextGen is critically important, acceleration of implementation is needed, and solutions with near term user benefits must be prioritized. While the recommendations in this report will not address everything needed for NextGen, it does lay out specific technologies and operational changes that we can focus on today. And while FAA does not control all the requirements for success, FAA needs to immediately accelerate the recommendations of the RTCA document, integrating them with the other important elements of the NextGen Implementation Plan (NGIP).

NextGen is Critically Important

Any way you look at it, safety-wise, security-wise, economically, and environmentally we need to move forward with NextGen. Every day we delay we pay the costs and push off the benefits.

- Our system today is safe, but it is our responsibility to always strive to increase safety.
- Our security was significantly threatened on September 11th, 2001 and we are still looking for ways to increase security and prepare for future threats. NextGen should dramatically improve information sharing amongst the FAA, DOD and DHS and the resulting network enabled operations will significantly improve our nation's security.
- Our economy is fueled by a robust and reliable air transportation system. In the U.S. alone, commercial aviation accounted for $1.2 trillion in national output in 2004, $380 billion in earnings and 11.4 million jobs. On the other hand, the economic health of commercial airline companies has been suffering over the last 8 or so years. As airlines look for ways to

save money, NextGen can provide efficiencies that will truly impact their bottom line.

- Our impact on the environment can be reduced by improving the efficiency of flights through the system. NextGen should allow more direct routes, enable optimal flight profiles, and reduce delays; all of which will support achievement of the goal for 2 percent annual emission reductions set by the International Civil Aviation Organization (ICAO) earlier this month.

Immediate Implementation

While the FAA's planning effort has resulted in a good future concept of operations, it has lacked many of the implementation actions necessary to deliver real operational improvements. As the years have rolled by, political leaders citing growth and ever-deteriorating system performance have pointed to the NextGen program as the path forward. Despite agreement and support from virtually all the stakeholders and users, the program has been smaller than the words and few near term benefits have been realized. The RTCA report highlights some of the steps that need to be taken today to move forward. I suggest that the FAA needs to immediately begin implementation of the recommendations in the RTCA report and integrate these actions into the NextGen Implementation Plan including the following five components:

- ***Clear Performance Metrics*** –Are the NextGen activities really improving safety efficiency and capacity? System-Performance-based metrics hold us all accountable.

- ***Specific Milestones for 6/12/18/24/36 months*** – The entire industry wants and needs to realize NextGen benefits as soon as possible. Therefore we need to be specific about what steps will be taken and what is needed to achieve operational capabilities and user benefits.

- ***Policy and Procedure Modernization*** - In many ways technology has outpaced the policies and procedures needed to actually make operational changes happen. To realize the benefits of a technical capability implementation must encompass policies, procedures, operational approval processes, certification, regulatory guidance, training, criteria and standards. It will be absolutely critical to streamline or reform the process for updating these policies and procedures. A key aspect of this is the need to keep global interoperability in mind relative to other programs such as Europe's SESAR program.

- ***Incentivize Equipage*** – NextGen modernization needs to cover both equipment on the ground, as well as in the aircraft.

- ***Accommodations for future Industry Developments*** –FAA needs to fold into the implementation plan other issues that were not covered by the RTCA recommendations.

Clear Performance Metrics A key message in the RTCA report is the need for accountability for achieving progress. First, FAA needs to establish and empower a NextGen organization that clearly defines the budget, schedule, project organization, leadership and the specific transition/implementation steps needed to make NextGen a reality. Second, the FAA must establish a set of progress metrics so that the NextGen organization, the Administration, the Congress, industry stakeholders and the public can measure and track the operational improvement that is actually being achieved by the program. These metrics need to measure performance outcomes, not just activity. By that, I mean, are our efforts actually improving safety, capacity, efficiency, etc. For example, when implementing new Required Navigation Performance (RNP) and Area Navigation (RNAV) approaches and departures, quantity – total number of new procedures – means nothing if the quality of the procedures do not bring measurable benefits to the system. Specific performance metrics should include but not be limited to the following:

Is the aviation accident rate improving?

Aviation safety has been steadily improving over the past years. NextGen precision operations should allow safety to continue to improve while simultaneously adding capacity and increasing efficiency. A reasonable goal is for average accident rates to decrease by 1 percent per year.

Are average gate-to-gate travel times for city-pair routes decreasing?

The fact that travel times have been steadily *increasing* over the years (despite faster and more efficient aircraft) is a sure sign of an increasingly inadequate ATM system. Increasing delays are only half the issue. Airlines also continuously add to their *scheduled* flight times to account for system delays. The result is more expense and lost productivity. A reasonable yearly goal is for scheduled and actual flight times to be reduced 1 percent per year and at least a 20 percent reduction by 2025.

Is individual runway utilization capacity increasing?

Current "maximum" capacity limits on major airport runways are based on surveillance, navigation, and flight path control assumptions from the 1960's that are no longer valid with modern technologies and aircraft. A NextGen goal should be to increase safely allowable individual runway capacity at a rate of 1 added operation per hour per runway per year from today's 40 and 45 operations per hour per runway, and achieve at least 60 operations per hour per runway by 2025.

Are new runways being introduced where added capacity is needed?

NextGen capacity goals will be reached by added runway utilization productivity (above item) and some new runway construction at major airports. NextGen precision operations should allow very closely spaced runways to be feasible, thus reducing airport and noise boundaries. A good objective is for construction of 20 new runways at major airports by 2025.

Specific Milestones for 6/12/18/24/36 months There has been a lot of excellent work within the FAA and industry testing new operational procedures that leverage the advanced equipment on today's modern aircraft. The challenge has been moving beyond tests and trials to operational implementation. The RTCA report highlights many of these solutions that have been tested for years, have strong user support, and could dramatically improve efficiency of the system – (i.e. RNP, Tailored Arrivals). We need to lay out a plan with specific milestones for the capabilities completed in 6 months, a year, 18 months, etc.

A key recommendation in the RTCA report is that new procedures must be prioritized to provide benefits for the users. It's easy to see the improved performance NextGen will provide when it is fully implemented. The challenge is defining the discrete operational steps to be taken and providing performance improvements during the transition. It is critical that the first phases of NextGen provide benefits to the users in order to gain trust and confidence as we move to later phases that will require more investments by everyone. FAA has received input from the industry through RTCA. FAA must take the information and turn it into detailed, measurable, specific actions and begin implementation now.

Policy and Procedure Modernization The implementation of technology is only one piece of the puzzle for improved safety and capacity. To realize the benefits of a technical capability, the FAA must update the encompassing policies, procedures, operational approval processes, certification, regulatory guidance, training, criteria and standards. For instance, if technology provides information and surveillance improvements that enable aircraft to safely operate in closer proximity, the safety and capacity benefit will only occur if the policies and procedures are also adjusted to allow decreased aircraft separation. FAA must prioritize the policy and procedures for modernization that go hand-in-hand with the programs identified for acceleration and immediate benefits. Industry needs to see a commitment by the FAA to address and fund the resolution of the enabling policies and procedures. Without this commitment, we won't see the benefits of the capabilities and users will not invest in upgrades to their

aircraft. At the same time, global interoperability must not be forgotten, not only for the benefit of operational consistency but for safety as well. Lastly, the aviation community can ill afford these modernization steps without a significant streamlining of organizational decision processes to enable change and achieve desired implementation timetables.

Incentivize Equipage At one time the equipment used to separate aircraft was located only on the ground. Now, information and systems on the aircraft are an integral part of the air traffic control system. Many of FAA's NextGen systems will have little to no benefits without the complementary equipment in the aircraft. In the past, the equipment in the aircraft was solely the responsibility of the airlines. It is now clear that with the sophistication of on-board aircraft systems, the lines of responsibility in the air traffic system are increasingly shared. In addition, the benefits of many NextGen systems will increase exponentially with the full exploitation of the aircraft systems. Operators have been given equipment mandates in the past – TCAS, transponders, even radios. But, not since the advent of air traffic control itself has the civil fleet been put on notice that it will need to fundamentally upgrade aircraft avionics to fly in U.S. airspace. Unfortunately, the fragile nature of airline economics, along with past failures to implement new systems have kept the industry from proactively installing on board equipment. The RTCA report gave three suggestions of how to incentivize equipage:

1) Provide financial incentives (low interest loans, direct subsidies, or other innovative mechanisms)

2) Provide a timely, unambiguous set of processes to assure the realization of a sufficient level of operational benefits by NAS users to make the business case for new investments.

3) Replace the current "first come, first served" ATC prioritization with a "best-equipped, best-served" policy to increase value to early adopters.

All three of these are good ideas and need to be pursued. The first and third are likely to require new regulations and/or legislative action, but the second suggestion - increasing

operator trust by delivering benefits - can be done today. We just need the commitment to do it.

With every project the FAA needs to be able to show what the benefits are to the users and when they can start realizing those benefits. Oftentimes that means showing the clear plan to complete regulations, certification, operational procedures and approvals, etc.

Accommodations for future Industry Developments

While we cannot accurately predict all the challenges the aviation system will face, we do know there will be new systems or improvements introduced by industry that will need to be accommodated. Because of this, we recognize the need for flexibility and are not suggesting that the RTCA report replaces the current NextGen Implementation Plan. For example, one known challenge that needs to be addressed is the safe integration of Unmanned Aircraft Systems (UAS). The RTCA report did not address the UAS challenge in much detail. As it adopts the RTCA Task Force recommendations, the FAA will need to make sure that important NextGen requirements are accounted for in addition to the midterm recommendations in the report.

Conclusion

The wonderful news is that we are not fighting about whether or not NextGen is necessary, or cost effective, or a priority -- we all agree on the importance of NextGen. In fact, I think we all agree we need to see benefits now. I would guess, that we all agree that it is time for FAA to take the RTCA report and turn it into specific actions we can all support. FAA wants it, Congress wants it, the public demands it, and the industry cannot survive without it.

U.S. House of Representatives
Committee on Transportation and Infrastructure

James L. Oberstar
Chairman

David Heymsfeld, Chief of Staff
Ward W. McCarragher, Chief Counsel

Washington, DC 20515

John L. Mica
Ranking Republican Member

James W. Coon II, Republican Chief of Staff

October 30, 2009

Mr. Neil Planzer
Vice President – Strategy
Boeing Air Traffic Management
1200 Wilson Blvd., Suite 914
Arlington, Virginia 22209

Dear Mr. Planzer:

On October 28, 2009, the Subcommittee on Aviation held a hearing on **"NextGen: A Review of the RTCA Mid-Term Implementation Task Force Report."**

Attached are questions that I would like you to answer for the hearing record. I would appreciate receiving your written response to these questions within 14 days so that they may be made a part of the hearing record.

Sincerely,

Jerry F. Costello
Chairman
Subcommittee on Aviation

JFC:gg/pk
Attachment

OCTOBER 28, 2009
SUBCOMMITTEE ON AVIATION
HEARING ON
"NEXTGEN: A REVIEW OF THE RTCA MID-TERM IMPLEMENTATION TASK FORCE REPORT"

QUESTIONS FOR THE RECORD
TO:
MR. NEIL PLANZER
VICE PRESIDENT – STRATEGY
BOEING AIR TRAFFIC MANAGEMENT

1. Mr. Planzer, Section 314 of S. 1451 of the "FAA Air Transportation Modernization and Safety Improvement Act" requires the FAA to develop an implementation plan for the deployment of area navigation and required navigation performance procedures at Operational Evolution Partnership airports. Do you have an opinion or any concerns about this provision? If so, please provide a detailed response.

2. Mr. Planzer, Section 315 of S. 1451 the "FAA Air Transportation Modernization and Safety Improvement Act" requires FAA to mandate the use of Automatic Dependent Surveillance (ADS-B) "Out" technology, which allows the broadcast of ADS-B transmissions from aircraft to air traffic control, in all aircraft by 2015. Section 315 also requires the FAA to initiate a rulemaking that mandates the use of ADS-B "In" technology, which allows aircraft to receive ADS-B data on cockpit displays, on all aircraft by 2018. Do you have an opinion or any concerns about this provision? If so, please provide a detailed response.

Before the United States House of Representatives
Committee on Transportation and Infrastructure
Subcommittee on Aviation

RESPONSE TO QUESTIONS FOR RECORD

FROM THE HEARING ENTITLED
"NEXTGEN: A REVIEW OF THE RTCA MID-TERM IMPLEMENTATION TASK FORCE REPORT"

SUBMITTED BY
NEIL PLANZER
THE BOEING COMPANY

TESTIFYING ON BEHALF OF THE AEROSPACE INDUSTRIES ASSOCIATION

November 23, 2009

1. Mr. Planzer, Section 314 of S. 1451 of the "FAA Air Transportation Modernization and Safety Improvement Act" requires the FAA to develop an implementation plan for the deployment of area navigation and required navigation performance procedures at Operational Evolution Partnership airports. Do you have an opinion or any concerns about this provision? If so, please provide a detailed response.

Section 314 puts the necessary attention on achieving efficiency and capacity benefits from RNP. For years the FAA has expressed their commitment to RNP, yet the use of RNP has been very limited outside of a few terrain-challenged airports or as overlays to current routes. To date, the benefits of RNP have fallen far short of expectations. This plan will help the FAA, Congress and the industry know exactly what needs to be done to increase the use of RNP (and the benefits) throughout the NAS, laying out not only the procedures, but the operational changes and approvals required.

An important part of Section 314 is the requirement for the FAA to publish performance metrics that measure the actual use of RNP throughout the system. The FAA often speaks of the large number of RNP approaches that have been published every year. While hundreds of new RNP procedures published sounds impressive, most of these new procedures are actually simply overlays that repeat existing Instrument Landing System (ILS) paths. These overlay procedures provide no particular fuel savings or efficiently savings to system users and do not achieve the real potential of RNP. RNP performance should not be measured by how many new procedures are put in place. The correct metric would assess whether significant noise exposure is reduced, arrival/departure fuel efficiency improves, and/or airport capacity is increased with an RNP implementation.

2. Mr. Planzer, Section 315 of S. 1451 the "FAA Air Transportation Modernization and Safety Improvement Act" requires FAA to mandate the use of Automatic Dependent Surveillance (ADS-B) "Out" technology, which allows the broadcast of ADS-B transmissions from aircraft to air traffic control, in all aircraft by 2015. Section 315 also requires the FAA to initiate a rulemaking that mandates the use of ADS-B "In" technology, which allows aircraft to receive ADS-B data on cockpit displays, on all aircraft by 2018. Do you have an opinion or any concerns about this provision? If so, please provide a detailed response.

From a manufacturing standpoint, we are on a path toward being able to meet a 2015 deadline for ADS-B "out" since Europe has already set similar dates. As long as the FAA's final rule for ADS-B "out" does not vary significantly from the recently approved ADS-B "out" standards (DO-260B) the date should be achievable. Setting a firm date for ADS-B "out" will enable the best return on the investment being made in the ground infrastructure and supporting service. However, the cost-benefit case for ADS-B "out" aircraft equipage by 2015 is unlikely to be made without some government investment or other form of incentive. This investment should be justifiable based on government cost savings from earlier retirements of classic surveillance

infrastructure and the overall benefit the general public derives from aviation infrastructure investment.

ADS-B "in" is a little more complicated. The big issues for ADS-B "in" revolve more around the operational applications than the equipage. The realization of the benefits of ADS-B "in" operations should adequately incentivize operators to equip their aircraft. However, much of the work to define the ADS-B "in" applications (particularly the high value applications involving self separation) has not occurred. In addition, development of the resulting equipment standards and requirements for aircraft avionics (particularly for cockpit displays) is needed. This work needs to begin immediately.

Before the Committee on Transportation and Infrastructure
Subcommittee on Aviation
United States House of Representatives

For Release on Delivery
Expected at
2:00 p.m. EDT
Wednesday
October 28, 2009
CC-2010-001

Actions Needed to Meet Expectations for the Next Generation Air Transportation System in the Mid-Term

Statement of
The Honorable Calvin L. Scovel III
Inspector General
U.S. Department of Transportation

Chairman Costello, Ranking Member Petri, and Members of the Subcommittee:

We appreciate the opportunity to testify today on the Federal Aviation Administration's (FAA) Next Generation Air Transportation System (NextGen). As you know, NextGen represents a transition from a ground-based air traffic control system to a satellite-based air traffic management system. When fully implemented, NextGen is expected to significantly enhance capacity, reduce delays, and provide economic and environmental benefits through reductions in carbon emissions, fuel consumption, and noise.

NextGen is a high-risk effort involving multi-billion dollar investments by both FAA and industry. The problems we have reported on with NextGen prompted us to identify NextGen as one of the Department's top challenges. Last month, an RTCA[1] task force reported its findings on NextGen and made a number of recommendations on what FAA needs to achieve in the near- and mid-term—actions that FAA endorsed and are consistent with our work.

Today, I will discuss three areas: (1) challenges FAA faces in transitioning to NextGen in the near- and mid-term, (2) observations on the findings in the task force's report, and (3) actions needed now for the advancement of NextGen goals.

In summary, the cost, schedule, and benefits for NextGen are uncertain. Our work shows that a number of operational and management issues must be addressed to successfully transition to NextGen and implement task force recommendations. The findings of the task force are not only consistent with our work but also identify several new areas that will require FAA's attention, including adjustments to current Agency plans and budgets. It is essential that FAA go beyond endorsing the task force's recommendations and develop plans to initiate action, make corresponding

[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.

changes to budgets and plans, and develop metrics for assessing progress and measuring benefits.

I will discuss these issues in further detail.

OPERATIONAL AND MANAGEMENT CHALLENGES MUST BE ADDRESSED TO SUCCESSFULLY TRANSITION TO NEXTGEN

Over the past year, we have identified a number of operational and management challenges FAA faces in implementing NextGen. A top priority will require making fundamental changes in how FAA implements new navigation procedures—Area Navigation (RNAV) and Required Navigation Performance (RNP)—which are key to achieving NextGen's benefits.[2] We also identified major management issues that need to be addressed, such as establishing firm requirements that can translate into cost and schedule baselines for NextGen capabilities and revamping the agency's Acquisition Management System. Until these challenges are addressed, FAA will be unable to effectively manage NextGen or implement task force recommendations.

Maximizing RNAV and RNP Benefits

As we noted in July 2009, several areas require sustained management attention to get RNAV and RNP navigation procedures on track and ultimately achieve the expected economic and environmental benefits of NextGen.

First, we reported that air carriers have not widely used the new RNP procedures, which rely heavily on laying RNP routes over existing routes. While this approach has allowed the agency to meet its annual RNP production goals, they do not

[2] 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; thus, allowing aircraft to fly more precise flight paths.

maximize the benefits that can be achieved through RNP procedures. Further, FAA does not track data that would allow it to determine which RNP procedures are being used and why. In addition, we found that out-of-date air traffic policies on how to use the new procedures at airports with parallel runways have precluded their use. For example, absent updated policies, controllers at the Hartsfield-Jackson Atlanta International Airport have yet to clear an aircraft for landing using the 10 RNP procedures FAA implemented in May 2007.

We also reported that continuing operational concerns and insufficient training for controllers and pilots have limited the use of RNAV/RNP procedures at some airports. For example, at the Dallas/Fort Worth International Airport, pilots have used incorrect RNAV departure waypoints and flown off the correct flight path. To mitigate this problem, FAA developed a process for pilots to read back the runway assignment and first waypoint before taking off. While the process was implemented at Dallas Fort Worth on June 1, 2009, NAS-wide implementation is pending completion of a further safety study.

In addition, we noted that FAA has not clearly defined the role non-government third parties will play in developing RNAV/RNP procedures,[3] and FAA program officials and airlines disagree on the extent to which third parties should be used. FAA does not plan to use third parties to help speed the adoption of RNP procedures for NextGen. However, industry representatives are skeptical of FAA's ability to deliver the more complex procedures in a timely manner and continue to believe third parties could help speed up the adoption of quality RNP procedures.

Moreover, FAA's use of third parties to develop public procedures may not present a sound business case. Third parties have not developed these in the past, and the extent to which air carriers will hire them to do so is still unknown. It will depend on

[3] In 2007, FAA entered into agreements with two third parties to design, integrate, test, and validate public RNP procedures.

whether air carriers believe it is cost beneficial to pay third parties to develop public procedures, which could potentially benefit their competitors. Third-party development of special procedures, which are tailored to the requesting airline's specific needs, also presents challenges. Historically, FAA has approved special procedures on a limited, case-by-case basis. RNAV/RNP program officials are concerned that air carriers will increasingly request third parties to develop special procedures—rather than rely on FAA's public procedures—further increasing the complexity of airspace management and the workload of air traffic controllers.

Making Business and Management Decisions to Move from Planning to Implementation in the Mid-Term

FAA's transition from planning to implementation of NextGen will be difficult. Based on our reviews of FAA plans and discussions with agency officials and stakeholders, we have identified five business and management issues that must be addressed to reduce implementation risks.

First, FAA must continue to refine the NextGen mid-term architecture, establish requirements, and make decisions about new and existing systems. In response to a recommendation we made last year, FAA is developing a general blueprint for the 2018 time frame, which highlights more than 340 key decisions that must be made to reach this mid-point milestone. A number of these decisions involve existing programs that will serve as "platforms" for NextGen and, as such, must be made in the next 2 years. Modifications to existing systems, including the $2.1 billion Enroute Automation Modernization (ERAM)[4] effort, are expected to cost billions of dollars. It is less certain today than it was when we testified in March 2009 how FAA will realize NextGen's capabilities. For example:

[4] ERAM a $2.1 billion program that provides new hardware and software for facilities that manage high-altitude traffic, and is a linchpin for the NextGen system. ERAM is expected to serve as a foundation for NextGen, so any schedule delays will affect the pace of introducing new capabilities.

- FAA has been slow to make decisions outlined in its NextGen Mid-term Enterprise Architecture. Of the 51 decision points targeted for fiscal year 2009, FAA only made 11 decisions, including 6 of 13 considered as high priority. For example, FAA made decisions for proceeding with a satellite-based precision landing system and navigation aids to support RNAV/RNP. However, FAA did not make decisions for enhancing an existing traffic flow management system or a new program for metering air traffic to increase arrivals and departures at high-density airports.

- FAA is still working on a "gap analysis" of the current system and the vastly different NextGen. FAA's analysis thus far shows that major gaps exist with respect to automation—new capabilities that will allow controllers to better manage traffic. According to FAA, it may take an additional 1½ to 2 years from now to develop requirements for the mid-term.

- An analysis[5] sponsored by FAA's Joint Planning and Development Office indicates that NextGen capabilities originally planned for 2025 could cost the Government and airspace users several times the current projected cost estimate of $40 billion. Further, it is likely that some of NextGen's advanced automated air and ground capabilities will not be implemented until 2035 or later.

Second, FAA needs to assess the safety of new systems and procedures. A key transition issue for NextGen is determining whether throughput at already congested airports can be increased. This is particularly important for airports with complex runway configurations, including closely spaced parallel or converging/intersecting runways. Updated safety assessments are also needed to ensure unanticipated hazards are not introduced, particularly during periods of low visibility. Another safety

[5] The analysis—is referred to as the NextGen portfolio or "trade space" analysis. The analysis began in October 2008, and interim results were available in May 2009. FAA is continuing to update and revise the analysis.

concern involves the impact of "mixed equipage" where controllers will be expected to manage aircraft with different capabilities and procedures. Assessing and addressing the impacts of mixed equipage are important for several mid-term efforts, including RNAV/RNP, data link communications for controllers and pilots, and Automatic Dependent Surveillance-Broadcast (ADS-B).[6] As such, FAA needs to develop plans to mitigate differences with aircraft equipage, including developing effective training for controllers and pilots and adjusting existing air traffic control systems. FAA may also have to segregate specific airspace for properly equipped aircraft.

Third, FAA must manage NextGen capabilities as portfolios. This is important because several systems, new procedures, and airspace changes funded through different accounts will be required to work together to deliver benefits. For example, to increase airport arrival rates, new procedures, changes to controller systems (in facilities that manage high-altitude flights and airspace in the vicinity of airports), and adjustments to airspace will be required. However, our work as well as an FAA study[7] point out, FAA's Acquisition Management System[8] was not designed for managing NextGen investments as portfolios. Rather, FAA's acquisition system focuses on baselines and specific capital programs—not a collection of investments. To effectively manage multiple NextGen efforts, FAA must follow through on its plans to modify its system and clearly assign responsibility, authority, and accountability for mid-term initiatives in its NextGen Implementation Plan.

Fourth, FAA must assess its ability to implement multiple capabilities in a given time period and identify and address critical interdependencies. NextGen's new systems and procedures create extraordinary integration challenges. While FAA has taken

[6] ADS-B is a surveillance system that uses information from satellite-based systems to identify and track aircraft positions.

[7] "Independent Assessment of FAA Acquisition Management System," April 22, 2008.

[8] FAA's Acquisition Management System is the policies and procedures the Agency relies on to make major investments.

some action to avoid complex integration issues, FAA and stakeholders need a firm understanding of the interdependencies between systems, procedures, and training programs needed to deliver NextGen capabilities. This is important given the fact that approximately one-third of the controller workforce is composed of controllers in training. Since 2004, we have issued a series of reports focusing on FAA's programs for developing the next generation air traffic controller workforce.[9] FAA is taking steps to address our concerns, such as appointing a national director for training; however, FAA lacks up-to-date programs to train controllers on new capabilities, such as how to manage RNP equipped aircraft. FAA and the industry need to establish realistic transition benchmarks that point to when new training (for controllers and pilots), equipment (new avionics and ground systems), and procedures need to be in place at specific locations.

Finally, FAA needs to secure the necessary skill sets and expertise to execute NextGen. In response to a recommendation we made in February 2007, FAA commissioned the National Academy of Public Administration (NAPA) to assess the skill sets needed for NextGen implementation. In its September 2008 report, NAPA identified 26 competencies where FAA lacks both the skills and capabilities to execute NextGen.[10] These include program management, software development, contract administration, and systems engineering with an understanding of human factors considerations. FAA has identified an additional 175 staff positions that it plans to fill in 2009 and another 162 positions for 2010 to address identified skill requirements to support NextGen.

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[9] Over the next decade, FAA plans to hire and train nearly 15,000 new controllers to replace those who are retiring.

[10] Report by a panel of the National Academy of Public Administration, "Identifying the Workforce to Respond to a National Imperative - The Next Generation Air Transportation System (NextGen)." September 2008.

RTCA TASK FORCE FINDINGS UNDERSCORE OUR WORK

To help chart a course for NextGen, FAA tasked RTCA to forge a consensus on NextGen's top priorities in the mid-term. In September, the task force reported its findings, which emphasized what can be achieved in the next 3 to 5 years. Overall, RTCA's findings and recommendations are consistent with our work and identify additional areas that need attention. RTCA also raises policy questions that decisionmakers will need to address in further detail.

Our Findings and Recommendations Cut Across Most RTCA Areas of Concern

The task force made 28 recommendations to FAA aimed at leveraging equipment already on aircraft and new procedures, enhancing information sharing among FAA and airspace users, and reducing delays in the air and on the ground. The report reflects the industry's perspective and focuses on achieving a rapid return on FAA and industry investments. The task force's report represents the first time stakeholders have committed to near- or mid-term efforts. Table 1 summarizes the task force's recommendations for the mid-term that parallel our work and those that highlight additional areas of concern.

Table 1. Key RTCA Task Force Recommendations for NextGen Mid-Term

Recommended Capability	Description
Recommendations consistent with OIG conclusions	
Runway Access	Improve the use of converging or closely spaced runways during low visibility conditions. Candidate airports include JFK, Las Vegas, and Newark.
Metroplex Airspace	Improve the capacity of airspace that affects multiple airports near large metropolitan areas, including Chicago, New York/New Jersey, and Southern California.
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.
Access to the National Airspace System	Improve service at smaller airports by implementing more precision approaches and departures as well as expansion of ways to track aircraft in non-radar airspace. Full range of candidate locations is still under development.
Additional recommendation made by task force	
Airport Surface Operations	Improve the management of airport taxiways, gates and parking areas by revamping systems for sharing information between FAA, airlines operations centers and airports. Candidate locations include all major airports beginning with the New York area airports.

Source: OIG Analysis of Task Force Report

Our findings and recommendations cut across four of the five areas RTCA has targeted: runway access, metroplex airspace, high altitude cruise, and access to the national airspace system. For example, the task force places considerable emphasis on the need to shift from the quantity of RNAV/RNP to the quality of the routes that are not overlays of existing procedures. The task force parallels our work on the need to address exactly how various technologies and procedures can unlock congested airports and improve arrival rates under all weather conditions. In addition, the task force emphasized the need to manage NextGen capabilities as portfolios and establish clear lines of authority, responsibility, and accountability. While we recognize the need for an integrated approach, the task force takes it a step further and advocates

such an approach for specific locations. For example, the task force recommends establishing joint FAA/industry "tiger teams" with expertise on controller, pilot, airspace redesign, and safety issues that focus on the quality of procedures at specific airports.

The RTCA findings and recommendations identify a number of new areas for FAA's attention. For example, the task force calls for a major re-evaluation of airport surface operations to enhance use of taxiways, gates, and airport parking areas. FAA's major modernization efforts for airports have historically focused on improving safety, not efficiency. Moreover, the task force calls for the deployment of capabilities at major metropolitan areas or at a regional level rather than just a nationwide deployment of systems.

Implementing RTCA's recommendations will require FAA to adjust budgets and plans, as well as establish milestones for initiatives. In addition, FAA will face other challenges—or barriers—in implementing RTCA's recommendations for NextGen.

- The task force's recommendations focus on first steps—not the full range of technologies in FAA's NextGen plans. As a result, there is still no consensus on major NextGen initiatives—most notably "ADS-B In"[11] and how to achieve the air-to-air benefits of the technology and new cockpit displays. The task force viewed "ADS-B In" as a high cost investment with a very long payback period. As we noted in March 2009, airspace users have raised legitimate concerns about costs and a lack of clearly defined benefits with this new satellite-based technology.

- To implement task force recommendations aimed at better using existing runways, FAA will need to conduct updated safety assessments for using

[11] "ADS-B In" refers to the receipt and display of traffic information in the cockpit allowing pilots to "see and avoid" other aircraft operating in their proximity. This is where the most benefits from ADS-B are expected, particularly with respect to enhancing capacity at congested airports. However, to use it, it requires a cockpit display. This display would also allow pilots to make better use of runways in bad weather.

complex runway configurations including, closely spaced and parallel runways at Dallas/Love, JFK, and Minneapolis St. Paul airports.

- FAA also needs to address longstanding concerns about terminal modernization—the equipment controllers rely on to manage aircraft in the vicinity of airports. For example, software enhancements will be needed to allow controllers to merge and space aircraft to maximize the benefits of RNAV/RNP. However, FAA has only begun planning and developing requirements and therefore, these improvements have not been baselined. Without making adjustments to terminal systems, FAA will not be able to maximize benefits for RNAV/RNP and ease capacity constraints in airspace surrounding major metropolitan areas.

RTCA Recommendations Focus Attention on NextGen Policy Questions

To implement its recommendations for the near-term, RTCA assumed that government sources of funding would not be forthcoming. However, the task force report noted that incentives would be needed to advance NextGen, and discussed several alternatives, such as providing financial incentives possibly in the form of low-interest loans, direct subsidies for equipment, or income tax credits. The concept of a "NextGen Equipage Bank" was also discussed along with technologies that could be considered for financial assistance. However, the task force did not answer how much money would be needed or when.

Whether incentives should be used is a policy decision for Congress. However, there needs to be a clear understanding of exactly how the incentives would be used, especially since FAA has not finalized the requirements for key capabilities, such as the satellite-based systems for surveillance and new cockpit displays. A full consideration of the strengths and weaknesses of various incentives as well as their timing and potential impact is critical. Cost sharing arrangements have merit because

risks are shared between Government and industry. If incentives are used, they must be properly designed to achieve their objectives at a minimal cost to taxpayers.

A related policy concern focuses on a proposed "best-equipped, best-served" concept as a way to advance NextGen. The concept, first mentioned in FAA's January 2009 NextGen Implementation Plan, gives preferential treatment to airspace users equipped with new systems. Historically, however, FAA's policy for providing air traffic control services has been "first come, first served." A best-equipped, best-served policy would, therefore, represent a significant change to how traffic is managed. The details of such a policy would need to be developed to ensure equity among users and implementation at specific locations.

ACTIONS NEEDED TO SET REALISTIC EXPECTATIONS FOR NEXTGEN

NextGen is an important initiative to enhance capacity, reduce delays, and fundamentally change the way air traffic is managed in the United States. Yet, the costs, benefits, and milestones for the mid-term remain uncertain. Our work shows that FAA has not fully laid the groundwork for key capabilities, such as RNAV/RNP, or established firm requirements for existing or new acquisitions that can translate into reliable cost and schedule baselines.

A considerable level of oversight is needed for NextGen. At the request of the Chairman and Ranking Member, we will monitor FAA's progress in responding to the task force's recommendations and corresponding impacts on Agency budgets and plans. There are several actions needed now to set realistic expectations for NextGen. Specifically, FAA must

- develop plans to initiate action and establish a 5-year funding profile for the NextGen mid-term;

- develop metrics for assessing progress, measuring benefits, and identifying problems to put timely corrective actions in place;
- refine how a "best equipped, best served" policy could be implemented; and
- develop and implement a strategy for linking near- and mid-term efforts with NextGen long-term plans for its major transformational programs, such as ADS-B.

That concludes my statement, Mr. Chairman. I would be happy to address any questions you or other members of the Subcommittee may have.

STATEMENT OF DR. AGAM N. SINHA
BEFORE THE HOUSE COMMITTEE ON TRANSPORTATION AND INFRASTRUCTURE, SUBCOMMITTEE ON AVIATION HEARING ON NEXTGEN: A REVIEW OF THE RTCA MID-TERM IMPLEMENTATION TASK FORCE REPORT

OCTOBER 28, 2009

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OCTOBER 28, 2009

Good morning, Chairman Costello, Ranking Member Petri, and Members of the Subcommittee. Thank you for inviting me to participate in today's hearing on NextGen: A Review of the RTCA Mid-Term Implementation Task Force Report. My name is Agam Sinha and I am a Senior Vice President at The MITRE Corporation. I am also the General Manager of MITRE's Center for Advanced Aviation System Development (CAASD), which is the Federal Aviation Administration's (FAA's) Federally Funded Research and Development Center (FFRDC).

My testimony today will address the RTCA Task Force 5 recommendations, their feasibility and challenges, and post task force priorities. It is important to begin by acknowledging that the way this Task Force was conducted constitutes a transformational process for how government and industry should forge consensus. I would like to highlight three unique aspects that led to the success of this activity and that should be viewed as "best practices" for future collaborative efforts.

- First, the recommendations and conclusions of Task Force 5 are rooted in data and analysis that was collected and made available to all participants. This transparent, data-driven approach provides traceability for the decision-making process and allows new information to be incorporated as it becomes available.

- Second, participation by stakeholder finance representatives is unprecedented and was a key success factor for this Task Force. In the past, representation from stakeholder operational and technical personnel left out key considerations that are required to successfully drive the users' investment decision-making.

- Finally, commitments by operators were focused on implementation at specific locations based on expected benefits. In the context of the Task Force report, operators are those entities who have responsibility for aircraft operating in the NAS. Capabilities were identified that provide benefits for each operator group including General Aviation, Business Aviation, Commercial and Military.

Background

The Task Force developed its recommendations using a disciplined approach and built upon the principle of transparency and data-informed decision-making. There were several subgroups formed to do the intensive disciplined discussions to provide the basis of the consensus-building process.

The "Present Equipage" and "Who What Where" subgroups identified the major problems in the NAS and proposed capabilities to change current operations and improve performance based on available avionics and mature standards. The "Evaluation Factors" subgroup defined a rigorous methodology and a set of criteria to assess benefits, risks, and implementation readiness of each proposed capability. The "Elements" subgroup provided a detailed definition for each capability along with any associated changes in automation, avionics, roles, responsibilities and policies. The "Business Case" subgroup estimated overall costs for commercial carriers (not including general aviation) to implement proposed capabilities, along with expected investment payback and return on investment.

Fifty-plus operational changes were evaluated using the pre-defined methodology and assessment factors. An interactive "Dashboard" tool developed by MITRE captured all of the assessment data and was made available to the entire Task Force to support the consensus and prioritization process. The Task Force then assembled a well-documented set of operational changes along with the rationale behind each that included specifics on key implementation elements; the characterization of benefits, implementation readiness and risks; and an initial financial assessment.

Impact of Initial Financial/Business Case Analysis

For the first time, financial decision-makers were able to bring airline and business aviation investment realism to the deliberations on relative costs, benefits and payback profiles for each technology and capability. These considerations were captured in the initial business case assessment framework shown in Figure 1.

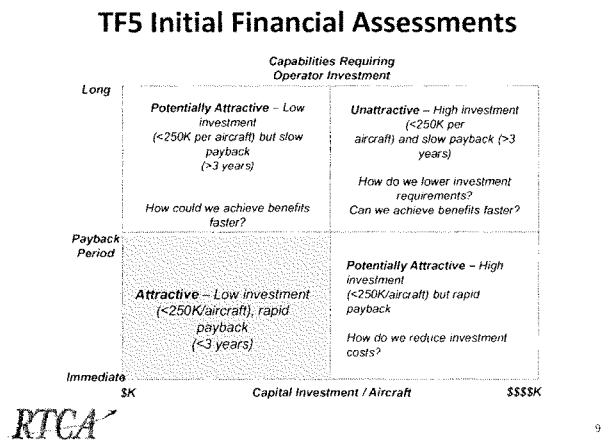

Figure 1: Initial Business Case Framework

Source: RTCA TF5 Report
Note: Individual dollar values will need to be tailored for each operator

One of the challenges of NextGen is that decisions to equip are based on individual users' (specific airlines, or general aviation) business case. How operators will equip their fleets in the future significantly impacts the estimated benefits that will accrue. For the operators in the NAS, there is no single business case for NextGen. Each business case is unique to an operator since it is based on their individual operating model, including what aircraft they fly, where they fly, when they fly, and how they fly; and much of this information is deemed proprietary by the operators. This poses a significant challenge for consensus building.

The inclusion of financial decision-makers brought new thinking about different types of constraints and risks associated with potential investments. For example, aircraft equipage retrofit and forward fit investments must be financed differently by airlines. Forward-fit aircraft, including their avionics are financed based on the aircraft acquisition arrangement, at a comparatively low cost of capital. Whereas avionics retrofits must typically compete with other capital investments for the company's cash resources at a comparatively higher cost of capital. Competition and market share are other considerations for commercial operators that are not business case factors for the government or for individual operators. A capability that benefits all operators fairly equitably has a very different investment risk profile than one that favors certain operators over others. For example, individual business cases may not be positive for operators in certain markets or those with older fleets.

In order to have a common baseline on which to make their cost assessments, MITRE's avionics cost estimates were used as input for the initial business case analyses. Only those technologies that had available offerings by manufacturers, or those with announced delivery dates were considered as viable for near to mid-term investment. Capabilities still under development were assessed by the financial decision-makers as high risk. In general, timing was a critical factor in making the operator business case. Investing too early may result in a number of zero-payback years for investments, or may take aircraft out of service multiple times for installations and upgrades, multiple revisions (and re-certification) to key aircraft elements, and require re-training on incremental changes in procedures. An additional risk factor considered by the business case group was the level of institutional risk. Most NextGen investments assessed by the Task Force are not totally within any individual institution's control, therefore financial participants were concerned about the degree of dependence they had on others.

Opportunities to improve the overall business case for proposed investments were also analyzed. For example, whenever equipping with a specific technology made several operational capabilities possible, those capabilities were "bundled" to improve the cost/benefit and risk profile, and thereby improving the investment view for an aggregate set of benefits.

A summary of the technology portfolios that were assessed by the Business Case subgroup is shown in Figure 2. The Task Force deliberations did not get to the level of creating individual business cases for operators. Rather, a generalized assessment of cost, payback profile, and risk was used to prioritize the potential capabilities. The assessments also did not assume any incentives for equipage, however, financial participants discussed a number of mechanisms that would reduce investment risk, improve the business case, and accelerate equipage. These included direct subsidies, low or no interest loans, reduced user fees or fuel taxes, and tax credits. The participants emphasized, however, that financial incentives would only be viable if investment also resulted in the accrual of operational benefits within their target payback period.

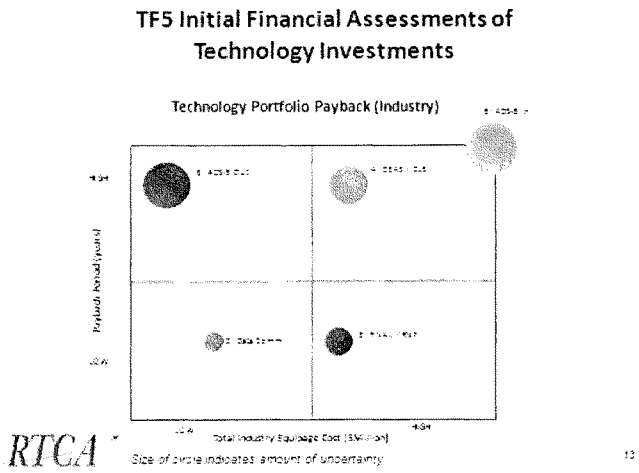

Figure 2: Initial Business Case Assessment Summary

Source: RTCA TF5 Report

Overall Assessment of Recommendations

The Task Force did a commendable job in reaching consensus amongst the diverse set of participants. The RTCA Task Force 5 report is a significant step forward toward achieving the mid-term NextGen capabilities. However, there is much work yet to be done to successfully achieve the operational improvements and related benefits. MITRE supports the consensus recommendations as depicted in Figure 3. The Task Force recommendations contain near-term achievable goals, while also ensuring a path to meeting the aviation needs in the 2015-2018 timeframe. MITRE's assessment is that the operational capabilities selected as priority Tier 1 recommendations are technically and operationally feasible and appear to be in reasonable alignment with FAA's NextGen plans. In addition, the capabilities are defined in an evolutionary manner with operational improvements occurring every 3 to 5 years.

Tier 1 recommendations for the near-term are based on mature technologies and/or procedures already under development and are targeted to benefit all operator groups, commercial, general aviation, and state/military. One example is optimizing RNAV and RNP. The benefits over existing procedures are well known and include reduced operating costs, additional access, and improved routing options. The operational capability description also includes selected high-benefit locations, and recommends instituting joint government/industry "tiger teams" to focus on quality of the RNAV procedures as they are implemented, and to identify and resolve issues early in the implementation process. An example of a recommendation specifically targeted for

general aviation is providing further access to small communities in poor weather by implementing LPV (localizer performance with vertical navigation) approaches for airports without precision approaches. A recommendation that recognizes the criticality of DOD mission needs while providing benefits for all airspace users (including other military operators) calls for the improved delivery of real-time status and increased scheduling predictability for Special Activity Airspace.

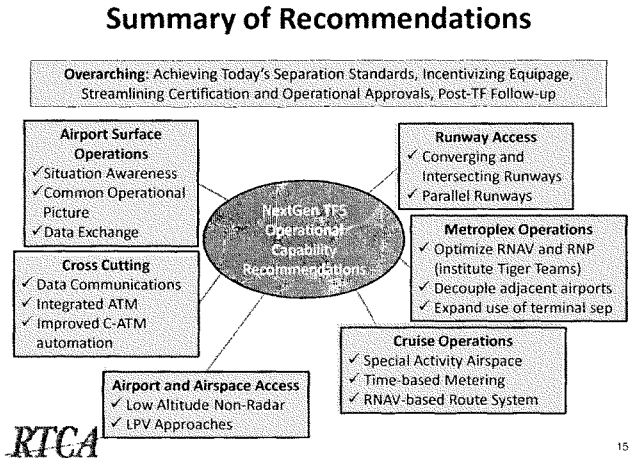

Figure 3: RTCA Task Force Summary Recommendations

Source: RTCA

In addition to undertaking a prioritization activity to select locations that maximize operator benefits, some capabilities will require FAA to accelerate or redefine their current plans. One example is expediting implementation of Data Communications. The recommendation calls for deployment of the initial data link capability that makes use of avionics options suitable to all operators to deliver revised departure clearances and enroute clearances to the pilot, thereby providing early benefits. Another example is extending "radar-like" services to low-altitude airspace without radar surveillance, which is not currently part of the FAA's ADS-B contract.

Some Tier 1 near-and-mid-term capabilities, though well defined, still require further work in areas including safety, certification, human factors, and policy/institutional changes. For example, expanded parallel runway operations need additional human-in-the-loop simulations and blunder analysis to support enhancements to closely spaced parallel runway operations. Another example is decoupling adjacent airports. New environmental policies, as well as integrated airspace and RNAV or RNP procedure designs will be required to most effectively decouple arrival and departure interactions for adjacent airports. Recent experience in airspace

design has shown that significantly longer lead time is needed to implement non-overlay routes, in particular to address the environmental requirements that exist today. Efforts should continue to streamline and accelerate the environmental review process in order to reduce the timeline for implementation.

A key challenge that was identified across many of the proposed operational changes was the need to accelerate processes related to avionics certification and operational approval for use of new avionics. To provide actionable recommendations to the FAA, the Task Force looked at this area in depth, focusing on problems associated with RNAV and RNP to gain insights and to provide specific suggestions for process improvement. For example, the Task Force recommended that two separate operational approval paths be established. Those aircraft that have provided detailed documentation and have received an aircraft approval should have a "priority, fast-track" path to official operational approval, with a separate path for those without.

The Tier 2 and 3 recommendations identified by the Task Force were deemed to have lower benefits and/or higher risks. The community should continue its R&D activities to better define and integrate evolutionary capabilities to build on those in Tier 1, increase their benefit certainty, and lower costs and risks. However, there should be a focus on better overall coordination and collaboration to ensure that the operational concepts are fully integrated across technologies, procedures, and domains. An example of such a capability is the further development of a concept of operations to integrate airport surface information with tools for traffic flow management and the real-time management of arrival and departure flows.

Integrated human-in-the-loop laboratory experiments, fast-time modeling and simulation, data analysis capabilities, and operational demonstrations and evaluations at selected sites will provide necessary verification and validation of concepts (or modifications), technologies, and procedures. Availability and use of these resources will be a critical factor to support further refinement of the recommendations in all Tiers, and to ensure their successful implementation.

Post Task Force Engagement

Now that the Task Force has delivered its report, the FAA is assessing the feasibility and the tradeoffs of implementing the suite of improvements proposed. As mentioned previously, some recommendations may require adjusting priorities, accelerating implementation schedules, and/or addressing policy issues. The complexity and challenges of moving forward will require continued collaboration and joint decision-making among all members of the aviation community to ensure successful implementation and delivery of measurable benefits. Specific metrics should be agreed upon to measure pre-and-post-implementation operational performance and determine if expected benefits are materializing. Common definitions of metrics, metric calculation techniques, expanded data collection, and consistent and high quality operator and FAA data are important for credible performance assessments. Data used for benefits assessments should also become part of the database of information already captured by the Task Force. The capabilities dashboard should continue to be maintained and updated as capabilities mature and research continues. This will allow all stakeholders to share a common understanding of benefits, implementation maturity, risks, and costs.

The FAA and the aviation community will need to work jointly to address issues and key challenges. In particular, the ongoing engagement of the financial participants will provide a unique and critical perspective as progress is tracked and the decision-making process continues. Stakeholders will need to collaborate to address complex policy issues related to airspace design, congested airspace access, data security, and environmental considerations. Further definition of "Best Equipped, Best Served" policies and procedures in a mixed equipage environment will need to be addressed as each operational capability is agreed to and corresponding locations are prioritized.

The Task Force report calls out Responsibility, Accountability, and Authority (RAA) and funding stability as necessary components of the stakeholders' commitment. The FAA should capitalize and build on past examples of successful stakeholder engagement and project execution. For example, both the Free Flight Program and Operational Evolution Plan demonstrated the ability to deliver on promised benefits. These programs deployed new automation and decision support tools (e.g., URET, TMA), implemented airspace changes and RNAV procedures, opened new runways (e.g., Atlanta, Chicago), and measured post-implementation benefits (e.g. increased throughput, reduced delays). As the Task Force recommendations are incorporated into NextGen implementation plans, all the needed elements (FAA systems, standards, certifications and ops-approvals) must be synchronized with the operators who have made commitments. Both FAA and the operators should engage their workforces to develop procedures and training for pilots, controllers, system implementers and maintainers. This will ensure that they will be ready at the same time and place and so that available avionics can be used as intended to deliver improved operations and benefits. Finally, although key NextGen foundational programs such as ERAM and ADS-B out are not included in the Task Force recommendations, progress and assessments of these programs must proceed and also be transparent to all the stakeholders.

Conclusion

The Task Force recommendations contain near-term achievable goals, while also ensuring a path to meeting the aviation needs in the 2015-2018 timeframe.

Throughout the development of the consensus recommendations, the Task Force maintained a focus on transparency and data-informed decision-making. Each priority recommendation is substantiated with detailed rationale and has at least one operator advocate.

There is additional work to be done to create a joint plan and to fill in the necessary details needed for implementing the recommendations. Many of the recommendations require investments by multiple stakeholders. Success will depend on synchronized execution, joint decision-making, full accountability and achieving measurable benefits.

Mr. Chairman, this concludes my testimony. I would be happy to answer any questions the committee may have.

Testimony of

Dale Wright, Director of Safety and Technology
National Air Traffic Controllers Association

Before the House Transportation and Infrastructure Committee
Subcommittee on Aviation
Wednesday, October 28, 2009

NextGen: A Review of the RTCA Mid-Term Implementation Task Force Report

comprehensive air traffic controller and pilot training must be a key component of the transition in order to ensure safety and uninterrupted services. The high ratio of trainees in the air traffic controller workforce resulting from the 2006-2008 attrition wave will make this a particular challenge.

Collaboration

RTCA's NextGen Task Force is truly a collaborative environment. RTCA members from all aspects of the aviation community – from aircraft manufacturers to pilots, from airlines to air traffic controllers – are given an opportunity to meaningfully contribute and share their unique perspectives and expertise.

NATCA has been deeply involved in the RTCA NextGen Task Force. We participated on the Special Committee (SC)-214 for Air Traffic Operations, the SC-203 for unmanned aerial systems, SC-186 for ADSB, the Research and Planning (R&P) workgroup, ADSB workgroup, the RTCA leadership group, and the RTCA Task Force 5. NATCA representatives were also involved in 49 out of the 53 elements, more than any other RTCA member organization. In each of these settings, the RTCA recognized the value of NATCA's knowledge of day-to-day air traffic control operation, the needs of the system, and the real-world implications of the proposals being considered.

While NATCA is grateful for the opportunity to participate in the RTCA Task Force, it must be understood that RTCA participation is purchased and is not based on FAA invitation. The FAA has shut NATCA out of direct and meaningful collaboration in modernization projects, but we continue to believe that our input is vital to the safety of the NAS and the success of any FAA program. Therefore, NATCA purchased membership in RTCA in order to enable the Union to participate in forums such as this and have our input considered by the aviation industry if not by the FAA. RTCA membership is not a substitute for direct collaboration with the Agency, and it must not be regarded as such. It is NATCA's members who are responsible for the functionality of the air traffic control system and our subject matter experts have considerable insight into the technological and procedural improvements needed to deal with many and varied air traffic situations as well as the human interface needs of the system. The FAA must work meaningfully and directly with NATCA throughout the inception, development, and implementation of NextGen.

Formal collaboration with Union representatives has proven effective in successful modernization projects in years past. During the late 1990s and into the early part of this decade, NATCA had representatives on more than 70 modernization and procedure development teams[1] through the Controller Liaison Program. Together the FAA and NATCA completed more than 7,100 projects to install and integrate new facilities, systems and equipment into the NAS, as well as more than 10,000 hardware and software upgrades. The Controller Liaison Program allowed controllers to provide crucial insight and guidance for the development and implementation of some of the most effective technological and procedural advancements including: Advanced Technologies and Oceanic Procedures (ATOP), Display System Replacement (DSR), User Request Evaluation Tool (URET), Voice Switching Control System (VSCS), Domestic Reduced Vertical Separation Minimum (DRVSM), and Standard Terminal Automation Replacement System (STARS). Despite its success, the Liaison Program was

[1] National Air Traffic Controllers Association, *2002 Air Traffic Modernization Tools.*

This Subcommittee and the FAA must understand, however, that the recommendations are not intended as blueprints, but merely as guiding principals for the FAA. The technological and procedural details, as well as the precise implementation details, still remain to be determined by the Agency. What follows is an examination of some of the Task Force's recommendations and an identification of the operational and implementation challenges that must be addressed in order for each recommendation to be successful.

RTCA Recommendation: Best Equipped, Best Served

Threaded throughout the RTCA Task Force report is the concept of incentivizing equipage by offering preferential treatment in the operational environment as a reward – a best-equipped, best-served policy. The RTCA supports such an initiative as a relatively cost-neutral way of incentivizing equipage without imposing mandatory equipment standards on aircraft owners.

As with all of the RTCA's recommendations, the details for implementation were left to the discretion of the Agency. There are many ways of implementing such a policy, including dedicated runways for NextGen-equipped aircraft and time-of-day restrictions for under-equipped aircraft. It is important that the FAA collaborate with NATCA when developing the details of this program, as any plan for such a policy will significantly affect a controller's job duties.

First and foremost among the details that the FAA must consider is the way in which equipage information is provided to the controller. Currently, equipment suffixes appear at the end of the aircraft identifier on flight progress strips, but they do not appear on radar scope displays. Although en route controllers have access to flight progress strips or their electronic equivalents on URET displays, most terminal controllers do not. If policy dictates that operational decisions should be influenced by equipage, then that information must be visible to the controller on his scope in order to enable him to make these decisions quickly and safely.

Secondly, when determining the nature and extent of the best-equipped, best-served policy, the FAA must examine the effect the changes would have on controller workload. If, for example, a runway is reserved for NextGen-equipped aircraft, it may mean additional holding for unequipped aircraft or additional runway crossings, as unequipped aircraft will likely need to use runways that are farther from the gate. This may have a profound increase in controller workload, particularly at busy terminal facilities. The FAA must take these effects into consideration prior to making decisions about how to implement a best-equipped, best-served policy.

The FAA must also work closely with NATCA to determine how to deal with under-equipped aircraft. Particularly in areas in which heavy congestion makes holding impractical or impossible, this represents a significant challenge. John F. Kennedy International Airport (JFK), for example, handles air traffic for over sixty scheduled international passenger carriers from six continents, most of which are unlikely to be equipped with NextGen technology. New York airspace is highly congested and control of the surrounding airspace is divided among as many as five different air traffic control facilities. It would be problematic if these under-equipped European airliners were consistently forced into holding patterns due to limitations placed on them by the policy. At best, the best-equipped, best-served policy would exacerbate the already

technological infrastructure sufficient to support simultaneous approaches, but also that the human infrastructure is sufficient.

Simultaneous ILS approaches at JFK, for example, could be beneficial. However, the human infrastructure and equipment limitations are unable to support the safe and efficient use of this operation. There is currently only one air traffic control position responsible for simultaneous approaches into JFK. If such a procedure were to be implemented, the necessary increase in situational awareness, workload, and controller-pilot communication would make safe operation nearly impossible for one controller to manage. The position would need to be split into two final approach positions and both positions must be opened and staffed at any time when simultaneous ILS approaches would be conducted. It is also therefore of great importance that JFK Tower, New York TRACON and any other facility facing a similar situation be staffed with a sufficient number of fully certified controllers to ensure the safety of the system and the value of NextGen changes.

Expanded use of existing technology could also help improve both the safety and the efficiency of runway usage. Precision runway monitoring systems are highly sophisticated radar systems capable of refreshing data every second. Recent improvements allow this technology to utilize multilateral feeds, a method which is just as effective and less expensive. NATCA is in full agreement with the RTCA that this is very useful and we hope to have the opportunity to work meaningfully with the FAA to see this technology installed at more airports. Converging Runway Display Aids (CRDA) are also effective. A CRDA displays a ghost target on a controller's scope to simulate the location of an aircraft approaching on an intersecting runway, assisting a controller in ensuing safe spacing. Effective use of CRDA will not only improve the safety of intersecting runways, but also allow controllers to more efficiently utilize those runways.

As NATCA has previously testified, however, the most effective way to reduce delays is to build more runways[3]. Prior to the construction of the new runway, Atlanta Hartsfield-Jackson International Airport (ATL), for example, had a departure rate of 96 aircraft per hour under visual flight rules (VFR) conditions. Atlanta's fifth runway was opened on May 27, 2006. Since that time, the departure rate increased to 114 aircraft per hour VFR and 104-106 under instrument flight rules (IFR). A comparison of operations and delays was run from May 27 to September 30, 2006 against the same time period in 2005. ATL had an increase 3,097 total operations and had 13,927 fewer delays in 2006.

RTCA Recommendation: Digital Communications

A digital communication system that would enable a controller to issue routine clearances and other instructions to pilots via data transfer could be very effective in reducing frequency congestion and minimizing communication errors. Clear, unambiguous printouts or visual displays in the cockpit would reduce the problem of pilots misunderstanding controller instructions and controllers misunderstanding pilot read-backs. At busy facilities, frequencies are often congested with multiple aircraft operators attempting to communicate with a single

[3] "Air Traffic Delays" John Carr before the Aviation Safety Subcommittee of the Senate Commerce, Science, and Transportation Committee. May 10, 2001; and "Airline Delays and Consumer Issues" Patrick Forrey before the Aviation Subcommittee of the House Transportation and infrastructure committee. September 26, 2007.

traffic managers were making spacing decisions based on situational need and maintaining safety.

NATCA agrees with the RTCA that the FAA should take measures which give controllers the flexibility to run aircraft as closely as possible without sacrificing safety. ATSAP and the removal of the punitive repercussions of minor losses of separation help in this regard, but controllers are already working hard to ensure aircraft are efficiently and safely separated.

Staffing and Experience at Air Traffic Control Facilities

NATCA has previously testified to the wave of attrition in the air traffic controller workforce that resulted from the FAA's imposed work rules[4]. We are pleased to report that, due large part to the work of this Subcommittee and the Obama Administration, we have recently entered into a new collective bargaining agreement with the FAA. Attrition seems to have begun to return to normal levels in anticipation of this change, but the effects of high attrition rates from 2006-2008 continue to be felt throughout the system.

As of the end of Fiscal Year 2009, there were 11,728 fully certified controllers, 25-percent below the number of controllers standard jointly authorized by the FAA and NATCA in 1998 based on scientific studies[5]. As a result, shifts often operated with less than the optimal number of controllers, necessitating the combining of positions. According to an April 2009 report by the DOT Inspector General, the "FAA faces an increasing risk of not having enough fully certified controllers in its workforce."

In 2000, NATCA and the FAA worked on a project designed to improve the efficiency of the NAS. A key element in this project was the alleviation of choke points by breaking congested air traffic control positions into multiple positions in order to enable more efficient handling of traffic. Understaffing effectively reverses this process, creating choke points by combining positions. It places one controller responsible for vectoring a larger volume of aircraft, monitoring a larger number of confliction points, and communicating with a greater number of pilots.

Additionally, the attrition wave caused the FAA to lose more than 50,000 years of air traffic control experience. The trainees that were hired to fill the vacancies left by the attrition wave have potential to develop into excellent controllers, but they are still new and inexperienced. Unlike those who came before them, they have less opportunity to learn from or work with experienced coworkers, as many of these experienced controllers have chosen to leave the FAA.

For air traffic controllers, experience means that everyday operations can easily be conducted safely, and efficiency can become a priority. It means having seen and worked through a wide variety of unusual circumstances and having developed enhanced quick thinking and problem solving skills. Quick thinking and problem-solving skills are particularly important when attempting to integrate new technology and procedures. Glitches in implementation are

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[4] "Air Traffic Control Facility Staffing," Patrick Forrey before the House Transportation and Infrastructure Committee Subcommittee on Aviation. June 11, 2008.

[5] Although the staffing levels authorized in 1998 do not exclude developmentals, at the time the contract was signed, developmentals in the system accounted for less than 10 percent of the authorized levels.[5] No one at that time predicted that the number of trainees in the system would come to make up a significant portion of the workforce or that uncertified controllers would be relied upon to work large amounts of air traffic.

training on this change in procedure, but were instead instructed to read and initial a memo stating the rules. Similarly pilots were not informed of the changes and were not prepared to be issued these headings. This lack of training for both pilots and controllers created an environment conducive to confusion and miscommunication.

The issue of training is complicated by the air traffic controller staffing situation described earlier. The FAA hired large numbers of trainees to make up for the controllers lost during the attrition wave, most of which have not yet been certified. Nearly one-quarter of the workforce has not yet achieved certification at any facility and an additional estimated five-percent are in training following a transfer. The current burden of training and shortage of certified controllers makes supplementary training difficult. Some facilities may simply not have enough certified controllers to ensure uninterrupted safe operations during the necessary training exercises. The FAA must take this into account when planning when and where to deploy NextGen systems. Bypassing or reducing training is not an acceptable option.

Conclusion

NATCA supports the RTCA's recommendations and applaud their policy of collaboration. We also recognize that the technological, procedural, and implementation details remain at the discretion of the FAA. In order for the transition to NextGen to be smooth, safe and effective, the FAA must work closely with NATCA as they develop and implement these. The FAA must meaningfully include NATCA in all air traffic control modernization projects, from inception through implementation, in all regions and at all levels. Together NATCA and the FAA cannot only develop the most effective changes to technology and procedures, but we can also work to mitigate the workload implications, determine proper staffing levels, and develop effective training programs.

U.S. House of Representatives
Committee on Transportation and Infrastructure

James L. Oberstar
Chairman

David Heymsfeld, Chief of Staff
Ward W. McCarragher, Chief Counsel

Washington, DC 20515

John L. Mica
Ranking Republican Member

James W. Coon II, Republican Chief of Staff

October 30, 2009

Mr. Dale Wright
Director, Safety and Technology
National Air Traffic Controllers Association
1325 Massachusetts Avenue, N.W.
Washington, D.C. 20005

Dear Mr. Wright:

On October 28, 2009, the Subcommittee on Aviation held a hearing on **"NextGen: A Review of the RTCA Mid-Term Implementation Task Force Report."**

Attached are questions that I would like you to answer for the hearing record. I would appreciate receiving your written response to these questions within 14 days so that they may be made a part of the hearing record.

Sincerely,

Jerry F. Costello
Chairman
Subcommittee on Aviation

JFC:gg/pk
Attachment

OCTOBER 28, 2009
SUBCOMMITTEE ON AVIATION
HEARING ON
"NEXTGEN: A REVIEW OF THE RTCA MID-TERM
IMPLEMENTATION TASK FORCE REPORT"

QUESTIONS FOR THE RECORD
TO:
MR. DALE WRIGHT
DIRECTOR OF SAFETY AND TECHNOLOGY
NATIONAL AIR TRAFFIC CONTROLLERS ASSOCIATION

1. Mr. Wright, Section 314 of S. 1451 of the "FAA Air Transportation Modernization and Safety Improvement Act" requires the FAA to develop an implementation plan for the deployment of area navigation and required navigation performance procedures at Operational Evolution Partnership airports. Do you have an opinion or any concerns about this provision? If so, please provide a detailed response.

2. Mr. Wright, Section 315 of S. 1451 the "FAA Air Transportation Modernization and Safety Improvement Act" requires FAA to mandate the use of Automatic Dependent Surveillance (ADS-B) "Out" technology, which allows the broadcast of ADS-B transmissions from aircraft to air traffic control, in all aircraft by 2015. Section 315 also requires the FAA to initiate a rulemaking that mandates the use of ADS-B "In" technology, which allows aircraft to receive ADS-B data on cockpit displays, on all aircraft by 2018. Do you have an opinion or any concerns about this provision? If so, please provide a detailed response.

October 28, 2009
SUBCOMMITTEE ON AVIATION
HEARING ON
"NEXTGEN: A REVIEW OF THE RTCA MID-TERM
IMPLEMENTATION TASK FORCE REPORT"

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TO:
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   NATCA is concerned that many area navigation (RNAV) and required navigation performance (RNP) procedures have been developed but are not being used. This is a waste of taxpayer money and duplicate efforts on the part of staff workers at the local level. Pilots are not given the opportunity to fly many of the RNAV and RNP procedures due to controller workload. The FAA should develop RNAV and RNP procedures for locations where they will be used and eventually become the primary procedures.

2. Mr. Wright, Section 315 of S. 1451 the "FAA Air Transportation Modernization and Safety Improvement Act" requires FAA to mandate the use of Automatic Dependent Surveillance (ADS-B) "Out" technology, which allows the broadcast of ADS-B transmissions from aircraft to air traffic control in all aircraft by 2015. Section 315 also requires the FAA to initiate a rulemaking that mandates the use of ADS-B "In" technology, which allows aircraft to receive ADS-B data on cockpit displays, on all aircraft by 2018. Do you have an opinion or any concerns about this provision? If so, please provide a detailed response.

   The equipage of aircraft is a major concern for air traffic controllers. A mixed fleet whether it be airliners or general aviation aircraft increases controller workload and leads to confusion unless the controller is able to observe the aircraft's equipment without looking away from their display. The timelines for the FAA's mandates may also be affected by approximately 100 radar facilities in the United States which are not able to display ADS-B targets to the controllers (ARTS IIE).

U.S. House of Representatives
Committee on Transportation and Infrastructure
Washington, DC 20515

James L. Oberstar
Chairman

David Heymsfeld, Chief of Staff
Ward W. McCarragher, Chief Counsel

John L. Mica
Ranking Republican Member

James W. Coon II, Republican Chief of Staff

November 24, 2009

Mr. Dale Wright
Director of Safety and Technology
National Air Traffic Controllers Association
1325 Massachusetts Avenue, N.W.
Washington, D.C. 20005

Dear Mr. Wright:

On October 28, 2009, the Subcommittee on Aviation held a hearing on **"NextGen: A Review of the RTCA Mid-Term Implementation Task Force Report."**

Attached are questions to answer for the record submitted by Rep. Michael E. McMahon. I would appreciate receiving your written response to these questions within 14 days so that they may be made a part of the hearing record.

Sincerely,

Jerry Costello

Jerry F. Costello
Chairman
Subcommittee on Aviation

JFC:pk
Attachment

OCTOBER 28, 2009
SUBCOMMITTEE ON AVIATION
HEARING ON
"NEXTGEN: A REVIEW OF THE RTCA MID-TERM
IMPLEMENTATION TASK FORCE REPORT"

QUESTIONS FOR THE RECORD
TO:
MR. DALE WRIGHT
DIRECTOR OF SAFETY AND TECHNOLOGY
NATIONAL AIR TRAFFIC CONTROLLERS ASSOCIATION

The Government Accountability Office and the DOT Inspector General have both testified that having air traffic controllers involved in the development and implementation of new technology saves money. Can you cite specific examples of how the inclusion of experienced controllers in a project has saved money or led the FAA to reach a better policy?

QUESTION: The Government Accountability Office and the DOT Inspector General have both testified that having air traffic controllers involved in the development and implementation of new technology saves money. Can you cite specific examples of how the inclusion of experienced controllers in a project has saved money or led the FAA to reach a better policy?

ANSWER: The inclusion of experienced air traffic controllers who represent the union has led to several projects being improved and deployed on time. Examples are:

- **ASDE-X**: This ground surveillance system was designed as a replacement for the ASDE-3. From the beginning NATCA had an experienced controller from Milwaukee Billy Mitchell Airport (KMKE) working with the team. This controller worked with the FAA on a daily basis and kept controllers in the field facilities in mind which led to the successful deployment of the ASDE-X. NATCA continues to be a strong supporter of this technology.
- **AMASS**: The Airport Movement Area Safety System (AMASS) had several experienced controllers who rotated through the position of NATCA representative. This system was an add-on to the ASDE-3 surface radar. Through coordination with the representative and working with controllers in the field this equipment was deployed with several initiatives that were previously thought to have no chance of acceptance by the air traffic controllers. The mandatory go-around procedure was a major change for air traffic controllers but having their representative on this team gave the controllers confidence in the parameters set on the alarm.
- **DRVSM**: NATCA had an experienced controller from Cleveland Center on this team. This initiative was implemented with very few issues and it was a major improvement to the National Airspace System (NAS). Domestic Reduced Vertical Separation Minima (DRVSM) doubled the number of available altitudes between 29,000' and 41,000'. Controller workload was reduced by making these additional altitudes available.
- **DSR**: The Display System Replacement (DSR) was an initiative that modernized the displays at the Enroute centers in the late 1990's through 2000. NATCA representatives from Washington Center service on the team and it was deployed with few issues.
- **URET:** The User Request Evaluation Tool (URET) was not only deployed with controller involvement but controllers from Indianapolis Center were very instrumental in the development of the tool. This product gives the air traffic controller the ability to search for conflictions between aircraft prior to issuing a route change. The product has also saved the FAA money by eliminating flight progress strips in the center environment.
- **STARS:** The Standard Terminal Automation Replacement System (STARS) was a very troubled initiative. Changes were made to the program and NATCA brought in two representatives (one from Atlanta and one from the New York TRACON) to assist in getting the project back on schedule. Even though this product's deployment was delayed, controller input made the transition from the previous automation platform very smooth with few issues.

These are a few of the projects. I can provide names of these representatives and their agency counterparts if needed.

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www.aopa.org

November 3, 2009

The Honorable Jerry Costello
Chairman, Subcommittee on Aviation
Committee on Transportation and Infrastructure
United States House of Representatives
2251 Rayburn House Office Building
Washington, DC 20515

Dear Mr. Chairman,

Thank you for holding the October 28, 2009 hearing on the RTCA Mid- Term Implementation Task Force Report.

As you know, the Aircraft Owners and Pilots Association has been a strong supporter of air traffic control modernization. On behalf of our members, I request the attached statement from Craig Fuller, President of the Aircraft Owners and Pilots Association be included in the official hearing record.

Sincerely,

Lorraine Howerton
Vice President of Legislative Affairs

AIRCRAFT OWNERS AND PILOTS ASSOCIATION
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Statement of Craig L. Fuller, President
Aircraft Owners and Pilots Association

Submitted to the

Committee on Transportation and Infrastructure's
Aviation Subcommittee
U.S. House of Representatives

Concerning

A Review of the RTCA Mid-Term Implementation Task Force Report

October 28, 2009

Mr. Chairman and Members of the Subcommittee,

Thank you for holding the hearing dedicated to analyzing the RTCA Mid-Term Implementation Task Force Report. The report is focused on moving forward with the Next Generation Air Transportation System with a spotlight on the near to mid-term achievable goals.

I am President and Chief Executive Officer of the Aircraft Owners and Pilots Association (AOPA), a not-for-profit individual membership organization representing more than 415,000 members, nearly three-quarters of the nation's pilots. AOPA's mission is to effectively represent the interests of its members as aircraft owners and pilots concerning the economy, safety, utility, and popularity of flight in general aviation (GA) aircraft. Our members have a vested interest in and will be affected by the Federal Aviation Administration (FAA) actions on air traffic control modernization, whether it is the ground system or equipment installed in our members' aircraft.

Although GA is typically characterized by recreational flying, it encompasses much more. In addition to providing personal, business, and freight transportation, general aviation supports such diverse activities as law enforcement, fire fighting, air ambulance, logging, fish and wildlife management, news gathering, and other vital services.

Each year, 170 million passengers fly using personal aviation, the equivalent of one of the nation's major airlines, contributing more than $150 billion to U.S. economic output, directly or indirectly, and employing nearly 1.3 million people whose collective annual earnings exceed $53 billion. General aviation serves 5,200 public-use airports as well as more than 13,000 privately owned landing facilities. In a poll conducted on election night last November, more than 60 percent of American voters said they understood that general aviation (all flying other than military or commercial airlines) is a vital part of America's transportation system.

Mr. Chairman, it is against this backdrop that we want to make the following major points. First, the RTCA Task Force report is on target in its explicit recommendations for taking near- and mid-term actions that emphasize improving system efficiency and effectiveness by more fully taking advantage of existing technologies and capabilities. We also believe the Task Force used an exemplary model for its deliberations--one that included all stakeholders, and AOPA commends FAA for setting this in motion. Second, FAA needs to develop a near- to mid-term plan of the actions necessary to implement the Task Force recommendations. This plan should include a budget and milestones. Time is of the essence. If needed actions are delayed until the economy is back in full swing and aviation is booming, it will be most difficult to implement changes --analogous to changing a tire on a moving bicycle. Third, FAA needs to ensure that it has in place the necessary ATC upgrades, ground infrastructure, updated policies and procedures, and equipment certification standards in order to realize the benefits of proposed modernization efforts.

Working Together on Air Traffic Control Modernization

While the aviation industry is currently experiencing an economic downturn that mirrors the overall state of the national economy, this is an important time to prepare for anticipated improvement and subsequent demand for air travel. AOPA has been a strong supporter of air traffic control modernization and the RTCA's efforts to bring users together to help the FAA develop plans for the next five to eight years. Together, we can help implement existing modernization efforts and lay the groundwork for others under development.

NextGen is the cornerstone of the future of our air transportation system. No other initiative will have such far reaching implications for safety, efficiency, access, and the overall health of our national transportation system for decades to come. Therefore, it is vitally important that the broadest possible range of perspectives goes into developing what NextGen will look like and how it will be implemented. AOPA believes that the RTCA task force on NextGen, with its diverse participation, is a great model of how different elements of the aviation community can work together to address the needs and concerns of all stakeholders at the earliest stages of project development. We commend the FAA on taking this cooperative approach.

Embracing New Technology Through a Building-Block Approach

From the point of view of AOPA members, who fly for business and pleasure, a few of the key provisions of the report stand out. First is the consensus that a satellite-based system will provide new benefits that improve safety and efficiency for all system users. This may seem obvious today, but when we started down this road nearly two decades ago, there were many skeptics. AOPA actually began advocating for a satellite-based ATC system as far back as 1990, and we received a lot of criticism for our point of view. In the intervening years our organization and our members have played an important role in refining and testing ADS-B technology.

In order to work, NextGen will require the implementation of new technology, both in terms of cockpit equipage and infrastructure. General aviation pilots have always been quick to adopt new technology, particularly when the safety and utility of that technology is evident. Perhaps the best example of the GA community's willingness to embrace new technology solutions is the way GA pilots adopted GPS navigation systems long before other segments of the aviation community. They did it quickly and voluntarily, and I believe we can expect a similar willingness to adopt NextGen technology as long as the price is reasonable and the benefits are clear. The recommendations in the task force report are a good start toward ensuring that is the case.

As the report reflects, appropriate incentives will help speed adoption. The task force is asking the FAA to work with the user community to streamline the operational approvals and certification issues surrounding this technology. Technology is moving faster than FAA's existing policies and procedures can adapt, so some changes are needed if we are going to maximize the benefits from the technology that is already available. In fact, today's cockpit already contains technology that is not being fully leveraged. Therefore, it makes sense that we take a building-block approach to developing NextGen capabilities that are compatible with existing equipment--a point that is noted in the task force report. The FAA is going to have to

develop and commit to a plan that provides the tools air traffic controllers need to provide the recommended capabilities, including: an automation system that is NextGen capable, controller training, and updated policies and procedures that allow the maximum efficiency and safety gains from existing cockpit technology. We cannot afford to equip aircraft if the proper tools are not in place to realize the benefits of our investments.

Expanding Surveillance Services

Another area that the task force focused on that will be particularly important for GA operators is "access." Today, the limited availability of precision approach capabilities can make it difficult for GA pilots to plan and execute flights to their preferred destination. High weather minimums for non-precision approaches, lack of radar services for outlying airports, and lack of efficient routings for GA have lead to the one-in-one-out operating standard at many GA destinations, including AOPA's home airport in Frederick, Maryland. By expanding surveillance services into airports that don't currently have radar, and by implementing LPV approaches at airports that don't currently offer precision approaches, NextGen has the potential to create enormous efficiencies throughout the National Airspace System.

This task force has been about finding the best ways to improve our transportation system for all users. I think we've made good progress in doing so, but modernizing the ATC system is an extremely complex proposition, and it is going to take a continued commitment by the FAA and stakeholders to work collaboratively as we move closer to making NextGen a reality.

Conclusion

On behalf of the members of AOPA, thank you for your leadership in examining the need for action on FAA Air Traffic Control Modernization. In the near term, there are many opportunities for maximizing the value of existing technologies and investing in capabilities that will position the FAA and the aviation community to take full advantage of future developments. Fully pursuing these air traffic control system upgrades in combination with a continued focus on implementing needed infrastructure enhancements are vital to ensuring that NextGen implementation is successful and positions the national air transportation system for the future.

○