

RTCA Paper No. 277-16/NAC-045

October 19, 2016

Meeting Summary, October 5, 2016

NextGen Advisory Committee (NAC)

The nineteenth meeting of the NextGen Advisory Committee (NAC) was held on October 5, 2016 at JetBlue University, Orlando, FL. The meeting discussions are summarized below.

List of attachments:

- Attachment 1 – Attendees
- Attachment 2 – Presentations for the Committee meeting - (containing much of the detail on the content covered during the meeting)
- Attachment 3 – Approved June 17, 2016 Meeting Summary
- Attachment 4 – Approved Terms of Reference (effective October 2016)
- Attachment 5 – Approved Terms of Reference (effective November 2016)
- Attachment 6 – NAC Chairman’s Report
- Attachment 7 – FAA Report from The Honorable Michael Huerta, FAA Administrator and Victoria Wassmer, Acting FAA Deputy Administrator
- Attachment 8 – PBN Time, Speed, Spacing Task Group – Final Report
- Attachment 9 – Joint Analysis Team – Final Report: Performance Based Navigation Procedures: North Texas Metroplex, Denver Established on RNP

Welcome and Introductions

Chairman Anderson opened the meeting at 8:33 a.m. by thanking JetBlue for hosting the meeting and welcoming the NAC members and others in attendance and introduced one new Committee member:

- Angie Heise, President of Civil, Leidos (formerly Lockheed Martin)

All other NAC members and attendees from the public are identified in Attachment 1.

Designated Federal Official Statement

The DFO, Victoria Wassmer (Acting FAA Deputy Administrator) read the Federal Advisory Committee Act notice, governing the public meeting.

Approval of June 17, 2016 Meeting Summary and Revised Terms of Reference

Chairman Anderson asked for consideration of the written Summary of the June 17, 2016 meeting. By motion, the Committee approved the Summary (Attachment 3). By motion, the Committee also approved two versions of the revised Terms of Reference for the Committee – one effective for October 2016 that revises the FAA’s DFO to Ms. Wassmer (Attachment 4) and the other effective November 2016 that establishes Dave Bronczek, President, FedEx Express, as the Chair of the Committee (Attachment 5).

Chairman's Remarks

The following is a summary of the remarks made by Chairman Anderson (Attachment 6):

He thanked the FAA and Administrator Michael Huerta for the foresight to establish the NAC in 2010. Since its inception, the NAC has provided numerous recommendations that have and can lead to demonstrable improvements in the efficiency and capacity of the aviation system.

Collaboration and Commitments – there is a need to continue to build on the strong foundation of collaboration with the FAA - 8 years (Task Force 5 and NAC); it is important for FAA and industry to commit to specific dates and locations.

Goal – the NAC has set an overarching goal of NextGen to achieve VMC performance in IMC conditions, leading to increased predictability along with reduced delays and flying time.

Keep it simple – a simple, quick, transparent measurement system for NextGen implementation must be in place for all undertakings, and this must be focused on the system delivering operational benefits and not simply tracking program milestones.

Risk Management, Safety Assessments – the NAC needs to do a better job of managing risk associated with the introduction of new operational capabilities into the NAS.

Next Big Thing – for NextGen to succeed, we need to solve New York - nothing will move the needle on performance like fixing New York; if we don’t have northeast regional undertaking, we are not deploying NextGen.

Going Forward – we need to follow through on current taskings, setting priorities and continuing with some stretch goals and evaluating implementations – Joint Analysis Team. Crucial to communicate the successes, reporting results and communicating builds support for work that should be funded, proof of success will be required to garner confidence.

Concluding his remarks, Chairman Anderson emphasized the need to continue close, consensus based, transparent collaboration between the FAA and the aviation industry, with investment priorities being driven by the operators. “Stay at the NAC table, make change

happen. RTCA's collaborative, consensus-building process is the best approach to modernizing the Air Transportation System."

FAA Report – Michael Huerta, Administrator; Victoria Wassmer, Acting Deputy Administrator; Lynn Ray, Vice President Mission Support, Air Traffic Organization

The following captures points from Mr. Huerta and Ms. Wassmer's remarks. The details are contained in the FAA report (Attachment 7).

Administrator Huerta introduced Victoria Wassmer as the Acting Deputy Administrator/Chief NextGen Officer and thanked Chairman Anderson for his leadership as his two-year term concludes. Ms. Wassmer emphasized the business of NextGen – delivering benefits from technology and capabilities and the importance of industry-FAA collaboration in this effort.

Lynn Ray, Vice President Mission Support, Air Traffic Organization, presented the Agency's response to the Community Outreach recommendation stating that overall, the FAA concurred with the NAC recommendation approved during the June 2016 NAC meeting. She emphasized the focus on cultural change, including how the FAA and the aviation community engage the broader community and partner differently inside and outside the aviation industry. The bottom line is that communication will occur earlier in the process and more frequently. There is also a concentration on communicating with the public in a manner that is understandable and relevant to their interests and concerns. Community workshops is part of the strategy that the FAA is implementing to address this area. This includes the use of visuals that translate technical issues and explanations of why aircraft operate in a specific manner.

Ms. Wassmer commented that it is important for the industry to be involved, "it is not just about the FAA" for PBN to be successfully implemented.

The Administrator introduced Dave Bronczek, President, FedEx Express, who will assume the chair role in November 2016 for the 2017/2018 term. Mr. Bronczek commented that he is looking forward to working with the professionals at the FAA and the industry in continuing to move forward with implementing NextGen capabilities and the work of the NAC.

Value of NextGen Capabilities Ad Hoc

Ed Bolen, President and CEO, National Business Aviation Association, explained that the purpose of the Ad Hoc is to develop high-level messaging that conveys the value of NextGen

capabilities being deployed. A part of this is to determine why current messaging is not resonating as we would like.

The Committee discussed the draft working definition:

“NextGen is the Aviation community working together to modernize technologies, policies and procedures in the national airspace system in order to increase capacity, reduce delays and cancellations, reduce our environmental footprint, and enhance safety, for all segments of aviation with bad weather performance equal to good weather performance”

Committee members commented that there is a need to cover the bigger picture, the “higher calling,” the macro goals of NextGen so that those outside the industry, including Congress, can understand. The discussion also covered the challenges associated with a long-term program. One suggestion was to link statements of progress with the value achieved and the potential for the future.

Members of the Committee stressed the need for this topic to be a reoccurring agenda item and agreed that Unmanned Aircraft Systems (UAS) should be a part of this initiative representing a new user and perspective.

The Ad Hoc will report back to the Committee at the next meeting.

Airline C/N/S Fleet Plans—United, American, SkyWest

Tracy Lee, Vice President Network Operations, United Airlines; Tim Campbell, Senior Vice President Air Operations, American Airlines; and Chip Childs, President & CEO, SkyWest, presented a briefing on their respective C/N/S fleet plans--ADS-B, PBN and DataComm. These briefings are an on-going agenda item for the Committee to better understand aircraft operator equipage. Alaska Airlines and UPS are being requested to present at the next meeting.

United Airlines overall principle for equipage:

United Airlines NextGen Vision

Our focus is to modernize our fleet using technologies which will safely and efficiently improve schedule integrity and reliability

- **Equipage should benefit our customers with a goal of delivering ceiling and visibility performance approaching that of clear weather days**
- **CNS projects and programs must deliver financial value and effectively utilize United's capital resources while complying with mandates**
- **United actively leverages manufacturers, suppliers, and industry partners to accelerate the demonstration of technology and reduce time to market and adoption**

Goal: Turn bad days into good days

35



American Airlines overall principle for equipage:

Guiding Principles for NextGen Equipage for AA

1. Ensure our fleet is ready to capture the safety and efficiency benefits of NG capabilities that are cost justified
2. Continue to demonstrate willingness to partner with FAA and suppliers on proof-of-concept proposals
 - A330 ADS-B IN demo with with CAVS FAA and ITP
 - 737 FANS program with Harris Corp
3. Advocate for leveraging existing avionics and infrastructure to its fullest before considering fleet changes
4. Encourage FAA to expand, wherever possible, use of performance based standards to meet requirements vs. hardware-specific mandates, e.g. Equip 2020 (2025)
5. Ensure impacts to regional partners are fully included in all equipage impact analyses
6. Promote new and creative uses of EFB's or related portable, certified devices to minimize the cost and time associated with fleet modifications

NAC Briefing 2016-10-05 FINAL

SkyWest's overall principle for equipage:

SkyWest Philosophy on NextGen SKYWEST INCORPORATED

- SkyWest is fully engaged and committed to NextGen, and has developed a comprehensive solution and timeline to have our current fleet equipped with ADS-B-Out no later than Q3 2019.
- SkyWest is among the first regionals to develop and plan implementation of LPV and RNP-AR.
- SkyWest remains an active participant and supports both industry and the FAA's Equip 2020 working groups in pursuit of this critical NextGen initiative.
- Beyond ADS-B-Out, additional NextGen components may be driven by RJ manufacturer capability for specific fleet types, economics, major partners and fluid flying contracts.

SkyWest, Inc. Operating Fleet	# in Fleet	Est. Equip (ADS-B)
E175	63	Equipped
CRJ900	64	5/2019
CRJ700	131	7/2019
CRJ200	224	9/2019
ERJ145/135	168	9/2019
Total	650	

Following the presentation, in response to Chairman Anderson's question, Mr. Merritt affirmed that United should be able to meet its internal deadline to have its fleet fully equipped with ADS-B by the 3rd qtr. of 2019. An FAA representative expressed a broader concern about the availability of repair station capacity to perform ADS-B installation as the 2020 deadline for equipping approaches. Currently there is not an issue, but this could change as the date becomes closer. It was also requested by the Committee that the status of repair station capability be included in future NAC ADS-B Equip 2020 reports. While most large air carriers have internal capabilities to perform installations, repair station availability is crucial for regionals, other air carriers and the business/general aviation community.

Regarding the regional operators, Mr. Childs stated that 75% of RAA member airlines have submitted equipage plans to MITRE accounting for 89% of the total regional fleet. He explained the broader equipage outlook for their industry is complicated to project because of the variables of partnerships with major carriers, availability of pilots, fixed revenue structures that require additional planning for economic feasibility and the need for larger carrier partner collaboration.

ADS-B Update

Bruce DeCleene, Manager, Flight Technologies and Procedures Division, FAA, gave a status update about the latest equipage statistics and reinforced (along with Administrator Huerta) that the 2020 deadline is firm. The focus of the Equip 2020 activity is to obtain information from the regional operators and other air carriers that have not yet provided compliance plans.

A Committee Member noted that there is a need to determine ADS-B requirements and an equipage path for Unmanned Aircraft Systems (UAS). It was suggested that this be an initial request of the new Drone Advisory Committee (DAC) because ADS-B equipage is crucial for integrating UAS into the NAS. It was noted that the Drone Advisory Committee (DAC) will not be able to address this for some time. The Committee requested that UAS ADS-B equipage for the 2020 mandate be evaluated, tracked and reported back to the NAC.

Mr. DeCleene stated there may have been some initial miscommunication or mixed messaging regarding the FAA ADS-B equipping incentive program; the intent was to incentivize repair stations to increase capacity and throughput. In response to a question from a committee member, Mr. DeCleene stated that there would not be an extension of the 60-day window for general aviation aircraft equipage approval, explaining how the reservation system for repair stations was expected to work.

There was a discussion related to repair stations and the need to ensure the entire supply chain could provide the needed equipment and associated support necessary to make the 2020 goal. The Committee requested that Embraer, Bombardier, Honeywell, Rockwell Collins, Thales and other OEMs make presentations from the manufacturer and supply chain perspectives. The briefings should address the standards, technologies and pathways for the retrofit of existing aircraft.

NextGen Integration Working Group (NIWG) 2017-2019 Rolling Plan

The NIWG Executive Team Members Teri Bristol, FAA Air Traffic Organization, Steve Dickson, Delta Air Lines, Jim Eck, FAA NextGen, and Melissa Rudinger, AOPA, opened the NIWG discussion noting that the NextGen Priorities Joint Implementation Plan was developed in response to the NAC's June 2016 recommendations.

The Industry-FAA Teams developed recommendations for implementing NextGen capabilities at specific sites in the 2017-2019-time frame for:

- DataComm
- Multiple Runway Operations – Wake ReCat
- PBN
- Surface

The FAA plan contains additional details on implementing the joint FAA-Industry recommendations approved in June. Both Ms. Bristol and Mr. Dickson acknowledged the hard work and collaboration of the NIWG teams to reach agreement on the commitments for the next three years. Mr. Dickson noted that initial NIWG plans (in 2014) were program milestones, but now they are more focused on stretch goals and implementation of capabilities. Industry has been forced to become more cohesive and continues to want to help the FAA prioritize implementations, leveraging existing equipment while encouraging continued equipage. NIWG teams will focus on where they need the NAC's help for setting priorities, getting resources, making decisions, and providing guidance.

The Industry Leads and the FAA Subject Matter Experts (SMEs) for each of the four focus areas presented reports on the existing commitments (the names of the presenters are highlighted):

DataComm

FAA SMEs: Paul Fontaine (ANG), **Jessie Wijntjes (ATO)**

Industry Leads: John O'Sullivan (Harris Corporation), **Chuck Stewart (United Airlines)**

Mr. Wijntjes reported that the Departure Clearance Services are operational at nearly 50 towers and the program is 24 months ahead of schedule. The Full Services baseline was achieved with a reduced number of services. The DataComm Team is now pivoting to focus on En Route Services. Mr. Stewart shared that as of 9/7/16, 1,792 DataComm aircraft were operating in the National Airspace System.

The FAA and industry provided a sample of weather events resulting in time savings benefits for DataComm flights. Time saved per flight is determined by comparing DataComm flights that received revisions to Non-DataComm flights that received revisions.

Day	Site	Length (hrs.)	Time Savings per Flight: Data Comm vs. Non Data Comm	Total Time Saved
2/16/2016	KEWR	7.5	Average 23.7 min less gate delay and 5 min less taxi delay	195 minutes
4/1/2016	KJFK	24	Average 9 min less gate delay and 7.8 min less taxi delay	299 minutes
4/3/2016	KEWR	24	Average 16.3 min less gate delay and 11 min less taxi delay	274 minutes
6/28/2016	KEWR	9.5	Average 21.5 min less gate delay and 5.3 min less taxi delay	208 minutes
6/29/2016	KEWR	9	Average 8.2 min less taxi delay	63 minutes
7/28/2016	KJFK	24	Average 6 min less taxi delay	60 minutes
8/13/2016	KBWI	9	Average 26.5 min less gate delay and 9.1 min less taxi delay	398 minutes
9/10/2016	KIAH	7	Average 2.3 min less gate delay and 1.5 min less taxi delay	38 minutes
9/19/2016	KLAX	31	Average 2.8 min less gate delay and 10.7 min less taxi delay	105 minutes

Multiple Runway Operations (MRO)

FAA SMEs: Jack Allen (ATO), Paul Strande (ANG)

Industry Leads: Glenn Morse (United Air Lines), Jon Tree (The Boeing Company)

Mr. Allen and Mr. Morse reviewed the status and the plan commitments including:

- Amend Dependent Runway Separation Order 7110.308A (SFO)
- Amend Dependent Runway Separations for Runways Greater than 4,300 Feet (CVG, MEM, PHX, SDF)
- Amend Standards for Simultaneous Independent Approaches, Triples (ATL, IAD)

They noted that the FAA is working to amend the national standards for vertical navigation (VNAV) for simultaneous independent parallel approaches as quickly as possible to allow operators to achieve even more benefits in capacity and arrival/departure rates. A Committee Member asked if the FAA's noise model is being updated for NextGen improvements and separation improvements made under Wake ReCat and the concentrated tracks for PBN. In response, Ms. Ray commented that the thresholds for measuring noise remain the same. Administrator Huerta requested that NIWG teams receive a noise briefing from FAA aviation noise measurement Subject Matter Experts.

Surface

FAA SMEs: Mike Huffman (ATO) and Susan Pfingstler (ATO)

Industry Leads: Rob Goldman (Delta Air Lines), Steve Vail (Mosaic ATM, Inc.)

Ms. Pfingstler and Mr. Goldman provided an update on Terminal Flight Data Manager (TFDM) which is the surface management solution for NextGen that will provide an integrated tower flight data automation system to improve controllers' common situational awareness. The FAA awarded the contract to Lockheed Martin (Leidos) with Saab Sensis as a

sub-contractor on June 29th. The FAA has also accepted the NAC recommendation for ongoing industry engagement throughout the various stages of the TFDM deployment which will be a combination of the Surface Collaborative Decision Making (S-CDM).

In response to a question, Mr. Goldman explained that data sharing is crucial to achieve benefits. The FAA and American, as the lead operator, will provide the lessons learned from data sharing under the Airspace Technology Demonstration 2 (ATD-2) project demonstration in Charlotte, NC. Ms. Pflingstler stated that there must be a critical mass of operator participants for a predictive tool to be effective.

A Committee Member shared that in Europe better databases of surface information is helping Euro control more effectively manage traffic flows and balance capacity.

Other members agreed that in the US, it is critical to ensure that regional partners participate in the exchange of data, pointing out that in some airports the regional operators represent a majority of the operations. Chairman Anderson requested that American, Delta and United support their regional partners need to be accounted for and participate in data exchange to achieve the benefits of surface departure management.

A discussion ensued about the importance of keeping this simple and avoiding attempts to gather too much data that is not being used. Operator representatives emphasized the use of existing data that would result in benefits in the near-term and lay the foundation for future expansion as more participate and the FAA's ability to use the information expands. It was also noted that expanding airport participation in CDM and their providing data is a critical step.

The Surface Team was asked to include metrics and lessons learned in early data exchange via the Traffic Flow Management System at the next NAC Subcommittee meeting (December 2016) to inform predictability performance analyses.

Performance Based Navigation (PBN)

FAA SMEs: Donna Creasap (ANG), Josh Gustin (ATO)

Industry Leads: Steve Fulton (Sandel Avionics), Brian Townsend (American Airlines)

Mr. Fulton described the work of the PBN Team since the approval of the recommendation by the NAC in June as "spirited but useful" conversations that led the PBN Team to agreement on the new milestones in the NextGen priorities plan. The Team worked to identify specific time frames that were TBD in the June document. The next two years have a heavy emphasis on pre-implementation commitments and implementation of Established on

Required Navigation Performance (EoR). During a discussion about the engagement of the industry in the PBN implementation process, a NAC member noted that the maintenance community has used lead operators in studies and demonstration projects for some time and that the operators might benefit from the lessons learned from this community as they worked on their NextGen commitments. Ms. Creasap committed to follow-up with the FAA's Aviation Safety organization to better understand FAA-Industry collaboration used for development of minimum equipment lists (MELs).

PBN Time, Speed, Spacing Task Group

The Task Group Co-Chairs Dan Allen, FedEx Express, and Steve Fulton, Sandel Avionics, presented the final report based on the following Key Policy Statements:

- A transition to a time-based system is necessary to enable higher percentages of PBN operations with the goal of keeping aircraft on an optimal path.
- VMC in IMC conditions
- Large cultural change for controllers, pilots, dispatchers and others involved in the operation of aircraft
- Decision support tools for air traffic controllers are critical
- Implementation must be integrated

The specific recommendations are that the FAA:

- Create an agency-wide vision for changing to a time-based system and develop and implement a plan to communicate the vision.
- Incorporate the roadmap outlined throughout this document for 2016-2020; 2021-2025; and 2026-2030 for decision support tools and aircraft capabilities.
- Adopt change management principles as part of their implementation process to gain the acceptance and culture change to realize the benefits of time-based enhancements.

Mr. Allen presented the following overview of the three times frames requested to be covered by the FAA:

- Near-Term (2020)
 - Policy, procedures and training to enable initial PBN capabilities and using existing tools and systems for a better integrated system

- Infusing time-based metering into the culture; deploying traffic flow management decision support tools for controllers
- Mid-Term (2021-2025)
 - Focuses on continued deployment of available NextGen capabilities consistent with meeting the goal of PBN TSS in an integrated manner
 - Begins the process of integrating aircraft trajectory data with ground systems
- Far-Term (2026-2030)
 - Further enhances, increasing resilience of ground-based tools
 - Integrates the stand-alone capabilities described in the mid-term
 - Leverages FIM demonstration for potential full NAS implementation
 - Based on experiences from Near- and Mid-Term, begins implementing advanced DataComm capabilities defined by Special Committee (SC)-214, Standards for Air Traffic Data Communication Services

Following the presentation of the final report, a Committee Member emphasized the criticality of industry commitment to successfully transition to a time-based system. Chairman Anderson expressed the need for a coordinated, integrated plan for Time, Speed, Spacing, and the other components of NextGen – including the NIWG priority areas to answer what NextGen means. Several members stated that there will be challenges to replace the current system with a time-based system, but it is essential for the industry.

This was followed by a discussion of the need for analyzing the safety issues associated with a transition to a time-based system. Others stated that this will be done in phased manner and several operators explained that this will require changes for pilots. Modeling and human in the loop analysis are an important part of this process. It was also noted that this transition should help to optimize the ATC system.

A Committee Member emphasized that in Europe, simulation and flight trials are underway to evaluate impacts. The goal under SESAR is to intensify sharing of trajectory by the aircraft with the ground.

During the discussion, it was noted this plan doesn't have to be completed tomorrow; "walk before you run". Benefits can be realized along the way but the real benefits are farther out.

Chairman Anderson asked for a motion to consider the PBN Time, Speed, Spacing Task Group – Final Report that was subsequently approved by the NAC (Attachment 8). The Committee also requested that the FAA's NextGen office provide a presentation of the larger Integrated

Plan for NextGen as a follow-up to the discussion that will improve the understanding of the more comprehensive implementation plan and provide context for each piece.

Enhanced Surveillance Task Group

The Task Group Co-Chaired by Steve Brown, NBAA and Captain Bart Roberts, JetBlue Airways, was established to evaluate the need and benefit of enhanced surveillance capabilities for oceanic airspace controlled by the FAA.

Mr. Brown reviewed the work to date and discussed the following emerging issues that must be addressed to develop the final report by June 2017:

- Three Unique Geographic Areas
 - North Atlantic
 - WATRS
 - Pacific
- Operator Equipage
- Clearly Defining Benefits
- Costs and Who Pays

Chairman Anderson encouraged Mr. Brown to request any additional resources or other assistance from the NAC necessary for the Task Group to complete its work.

PBN Implementation-Feature location: Denver, CO

Gary McMullin, Southwest Airlines, and Ron Renk, United Airlines, discussed the history of Denver approaches and usage rates that are being derived from the use of Established on Required Navigation Performance approaches. The overall Benefits of RNP reviewed are:

- Operator Benefits:
 - Fuel Reduction in IMC
 - Time Reduction in IMC
 - Schedule Reliability: The schedule is not affected when operations change from VMC to IMC because the same path is flown.
 - Safety

- Pilot workload relocation (move work to EnRoute).
- Increased pilot situational awareness.
- Stabilized instrument approaches vs visual approaches.
- ATC Benefits:
 - Reduction in pilot-controller communications (cleared for approach on downwind)
 - Repeatable, reliable ground tracks in both VMC and IMC
 - No excursions through final approach course (FAC)
 - No need to get on 30-degree intercept
 - Safety
 - Controller workload – Monitor vs Active Commands
 - Stabilized instrument approaches vs visual approaches.

According to information presented by Mr. McMullin, participating airlines are saving two minutes and approximately 100 pounds of fuel at Denver through the user of Established on RNP in visual conditions. The additional benefits that can be derived using the procedures in IMC was evaluated by the Joint Analysis Team and was discussed following this briefing.

A Committee Member emphasized the importance of publicizing the availability of RNP approaches using the Automatic Terminal Information Services (ATIS) to enhance greater utilization of these high-value procedures. This is a recommendation made previously by the NAC. Mr. McMullin agreed that the ATIS message has had a big impact on pilots utilizing RNP.

Joint Analysis Team (JAT) – Final Report: Performance Based Navigation Procedures: North Texas Metroplex, Denver Established on RNP

The Co-Chairs, Ilhan Ince, American Airlines, and Dave Knorr, FAA, reviewed the findings of the analysis of PBN in Denver and the Metroplex in North Texas.

Established on RNP (EoR) in Denver

- EoR increased utilization of RNP AR approaches from 5.8% of arrivals to 6.6% of arrivals to Denver, an increase of 12%
 - Time saved from efficient approaches increased from 211 to 282 hours annually

- If an additional waiver is granted, EoR is expected to enable an increase up to 7.1% of arrivals executing RNP AR approaches.
 - Time saved expected to increase to 360 hours annually
- EoR is an important enabler to future growth of utilization of efficient PBN approaches.

North Texas (NT) Metroplex

- Many external factors challenged pre-vs post Metroplex analysis
 - DFW/AAL re-banking, CRO, over-the-top elimination, Wright amendment at DAL, use of flow metering, change in wind patterns, and WN Cost Index change (speed increase)
- Changes in city pair block times driven by winds, not by the implementation of procedures due to Metroplex
- The Team recognized the importance of system impacts of the Metroplex and, after analysis, determined to focus on flight trajectory changes within 300 nm as it best approximates effects of the North Texas Metroplex and allows for better isolating external factors pre/post implementation
- Metroplex has...
 - Segregated arrival routes between DFW and DAL
 - Added route structure where flights previously vectored off-route
 - Enabler for increased TBFM forecasting accuracy, infrastructure for new tools and improved safety per SMEs
 - Slightly increased flight distance within 300nm but slightly reduced time
 - Clearly reduced level segments and increased continuous descents, particularly for DFW

The lessons learned based on the analysis are:

EoR

- EoR, in conjunction with terminal sequencing tools and growing aircraft equipage, should further grow the percent of arrivals executing efficient PBN approaches

Metroplex

- Developed a robust Metroplex methodology that effectively accommodates for variety of pre/post implementation changes and may be used in future
- Additional work required: need to document the Metroplex analysis process and determine a joint approach to measure fuel impacts/changes

- Metroplex efforts should continue to ensure they are cognizant of impacts on flight time and distance

Chairman Anderson asked for a motion to approve the Joint Analysis Team – Final Report: Performance Based Navigation Procedures: North Texas Metroplex, Denver Established on RNP that was subsequently approved by the NAC (Attachment 9). The JAT will complete its fuel analysis.

Based on a request made by Ms. Bristol, the NAC also requested the JAT to perform additional analysis as requested in the original tasking of the following areas:

- Fuel Analysis for North Texas
- PBN
 - EOR DEN IMC
 - Optimized Profile Descents - Boston, MA and Gary, IN
- Wake ReCat 2.0
 - Los Angeles, CA
 - Indianapolis, IN
- DataComm Benefits Review

The time frames and priority will be developed in conjunction with the NACSC.

Summary of the Meeting and Next Steps

The NAC Secretary summarized the following actions from the meeting and follow-up items:

Action Item	Responsible Entity	Completion Date
Enhanced Surveillance – tasking to examine its application in US-controlled oceanic airspace from spaced-based ADS-B.	RTCA	Interim February 2017 Final June 2017
Present a report from an operator of a local PBN implementation to highlight benefits of implementation and what occurred – “what worked, what didn’t and what can we do going forward?” Set up a plan going forward to have PBN briefings at subsequent NAC meetings.	FAA/RTCA TBD	February 2017 and future NAC meetings
Equipage <ul style="list-style-type: none"> • ADS-B avionics supply chain being ready for 2020 mandate – • Manufacturer(s) briefing on NextGen equipage plans – standards, technologies and 	RTCA Avionics- Honeywell, Rockwell Collins, Thales, etc. Manufacturers-	February 2017 and future NAC meetings

pathways for the retrofit of existing aircraft	Embraer, Bombardier	
Equip 2020 updates – Standing agenda item for update on operator equipage For February include: <ul style="list-style-type: none"> • UAS applicability and compliance path • Installation facility capacity 	FAA AVS	February 2017 and future NAC meetings
Ad Hoc tasked with developing a unified, crystalized message – demonstrating the value of NextGen capabilities being deployed as a result of the government-industry collaboration on the NAC. <ul style="list-style-type: none"> • Add Ryan Hartman, Insitu, representing UAS perspective 	RTCA	Final February 2017
Presentation of the Integrated Plan for NextGen – follow-up discussion and approval of the Time, Speed, Spacing Task Group recommendation	FAA ANG & NACSC	February 2017
Briefing for the Committee on Airline C/N/S fleet plans—ADS-B, PBN, DataComm Using standard template for equipage.	RTCA Alaska, UPS	February 2017 and future NAC meetings
Joint Analysis Team requested to perform additional analysis as requested in the original tasking	PBN - EOR DEN IMC, OPD – BOS and Gary, IN Wake ReCat 2.0 – LAX/ IND DataComm Benefits Review	February 2017 and future NAC meetings based on program plan
Surface Data Exchange – regionals, other non-CDM members (i.e. airports and other operators) as well as examining benefits from the provision of data by operators	RTCA/ANG-1 Surface NIWG	February 2017

DFO and Chairman Closing Comments

Ms. Wassmer and Chairman Anderson both thanked the members for their participation in the meeting. Ms. Wassmer also thanked Chairman Anderson for his leadership of the Committee.

Other Business

No items were requested or discussed.

Adjourn

By motion, Chairman Anderson concluded the meeting of the Committee at 1:58 p.m.

Next Meeting

The next meeting of the NAC is February 22, 2017 location TBD.

DRAFT