The fourteenth meeting of the Tactical Operations Committee (TOC), held on June 23, 2016, convened at 9:00 a.m Eastern Daylight Time. The meeting discussions are summarized below. The following attachments are referenced:

Attachment 1 – List of Attendees
Attachment 2 – Presentations for the Committee (containing detailed content of the meeting)
Attachment 3 – Summary of the April 4, 2016 TOC Meeting
Attachment 4 – FAA Response to Class B Recommendations

Welcome and Introductions

Committee Co-Chairs, Mr. Bryan Quigley, United Airlines, and Mr. Dale Wright, National Air Traffic Controllers Association (NATCA), called the meeting to order and welcomed the TOC members and others in attendance. All TOC members and attendees from the public were asked to introduce themselves (TOC members and General Public Attendees are identified in Attachment 1).

Mr. Quigley and Mr. Wright then reviewed the agenda and began the proceedings of the meeting. (The briefing charts from the meeting are included as Attachment 2.)

Designated Federal Official Statement

Ms. Elizabeth “Lynn” Ray, Vice President of Mission Support for the Air Traffic Organization (ATO), and the Designated Federal Official of the TOC, read the Federal Advisory Committee Act notice governing the open meeting.

Approval of April 4, 2016 Meeting Summary

The Chairs asked for and received approval of the written summary for the April 4, 2016 meeting (Attachment 3).
FAA Report

Ms. Ray provided an FAA report to the TOC. She began by addressing hiring of new air traffic controllers. The goal is to hire 1,619 new controllers in Fiscal Year 2016. Currently the FAA remains on track to meet its hiring goals. The FAA continues to pursue two hiring tracks – one for new hires and another for individuals with air traffic control experience. Ms. Ray also noted that the FAA had reached an agreement with NATCA for a new contract with air traffic controllers which the air traffic controllers recently ratified.

Ms. Ray next commented on the FAA’s efforts to improve community outreach engagement as new air traffic procedures are implemented. The FAA is working on roles and responsibilities for organizations involved in outreach. She noted that much of this planning is based on the recommendations of the PBN Blueprint report provided to the FAA through the NextGen Advisory Committee (NAC).

A Committee member inquired about what impact increased outreach will have on the timelines associated with implementation of new procedures. Ms. Ray noted that project timelines would indeed become longer at the beginning of a project due to outreach. However, such projects often deal with negative community backlash once a project is implemented. Community outreach should reduce the extent of negative community backlash, so the overall time for a project may not necessarily change.

Another Committee member expressed concern from operators about bandwidth for staff to participate in community outreach. Ms. Ray said that the FAA will likely have similar challenges on the bandwidth of key staff. Whether driven by FAA or industry, all acknowledged there may risk of delay for projects due to bandwidth challenges.

Briefing on Commercial Space Operations

Ron Schneider, Deputy Director ATO Commercial Space Integration Office, next briefed the TOC on Commercial Space operations in the NAS. (Mr. Schneider’s briefing materials are included in Attachment 2.) Mr. Schneider explained to the TOC that the term commercial space describes a highly variable set of interests that have a many different impacts on airspace. For example, one commercial space operation may be a balloon that climbs to 100,000 feet, is the size of a football field and is released into the winds aloft. Some operators conduct horizontal takeoff and landing while others conduct circular climbs. Still others do vertical takeoffs with glider returns. Each of these approaches has different impacts on airspace though all are considered commercial space operations. Mr. Schneider also informed the TOC that current counts of commercial space operations remain relatively small though projections suggest they will grow in the future.

Mr. Schneider explained additional areas of variability with commercial space operations. There are different missions for such operations, from resupplying the space station to space tourism. While there are no formal definitions of priorities, different missions likely have different national priority. Additionally, there is variability in the operational parameters for different missions. Some missions may have a very finite window to launch to get into orbit, as low as a window of 10 seconds or less.
Other missions have greater operational flexibility. Responding to a Committee member question, Mr. Schneider clarified that most commercial space missions are dependent upon operating during daylight.

Mr. Schneider discussed the FAA’s Office of Commercial Space Transportation (AST) as well as his office in the Air Traffic Organization (ATO) that is working with AST. AST is focused on only commercial space and does not get involved in military space operations. Licensing and permitting falls under AST while operations is the focus of the ATO. Licensing and permitting includes two different licenses: one to operate a spaceport and one to launch and operate a space vehicle.

A Committee member inquired about how sites are selected for spaceports and whether there is a process for evaluating proposed sites, also known as Launch and Reentry sites. Industry participants expressed particular concern about a new spaceport that is being built in Tuscon, Arizona, near both commercial and military airfields. The FAA clarified that this site is not in a formal process for a license but the entity is building anyway. The builder continues to build at risk.

Mr. Schneider informed the TOC about activity underway in the Commercial Space office in the ATO. A Commercial Space Integration Team (CSIT) in the ATO is working to identify all of the key issues that impact operations and targeting to identify how to address each of these issues by November 2016.

Mr. Schneider also spoke to the TOC about some of the challenges with integrating this new entrant. Commercial space operators are governed by the Learning Period Act that gives the industry greater flexibility since it is a new industry. Another challenge is that while the industry has a trade association, there is high competitiveness within this industry. Some operators are more mature and less willing to collaborate with other industry players and either be held back or share critical information. As a result, it is challenging to have a reliable flow of good information about intentions of industry participants.

A Committee member raised a concern that no NATCA representative was present in the Office of Commercial space and this should be rectified.

Finally, Mr. Schneider and Mr. Bill Davis discussed the potential of a new tasking to the TOC related to Commercial Space. The focus of a task may be around access and prioritization of airspace as it relates to commercial space launches in the NAS. The underlying question would include how to balance prioritization of airspace between aviation and commercial space operators. Alternatively, a task might focus on evaluating the Concept of Operations for commercial space operations.

**Update on the Drone Advisory Committee (DAC)**

Mr. Al Secen, RTCA, next provided an update on the Drone Advisory Committee (DAC). (Mr. Secen’s briefing materials are included in Attachment 2.) He noted that RTCA provided recommendations to the FAA Administrator on DAC membership across approximately twelve different domains. The Administrator would be making the final decision on DAC membership.
Mr. Secen also explained that RTCA was awaiting the Terms of Reference (TORs) for the Committee. RTCA is anticipating the DAC will provide guidance on tasking and establish ad hoc and some standing working groups to conduct the work. He did mention that the DAC was likely to be tasked to prioritize what issues industry believes are most important to integrate drones into the NAS.

**Update on Graphical TFR Task**

Mr. Rune Duke, Aircraft Owners and Pilots Association (AOPA), and Mr. Jon Reisinger, Jeppesen, Co-Chairs of the Graphical TFR Task Group, next provided an update on the efforts of this task group. (This update is included in Attachment 2.) Messrs. Duke and Reisinger explained that the Task Group had its kickoff meeting the prior week and had broad participation from operators, vendors and multiple units in the FAA. They presented the TOC with a series of examples of Graphical TFR issues, including incorrect graphics, confusing graphics, permanent restrictions being presented as TFRs and others. Mr. Duke and Mr. Reisinger also told the TOC that the Task Group would meet monthly for the rest of this year and planned to offer recommendations to the TOC in first quarter of 2017.

**FAA Response to Previous Recommendations**

The FAA provided responses to multiple previous recommendations from the TOC:

**National Procedure Assessment (NPA) Initiative**

Ms. Ray informed the TOC that the FAA was in process of evaluating the NPA recommendations and that most were accepted with no comment. (Ms. Ray’s briefing materials are included in Attachment 2.) However, dialogue was warranted for a few and she stated that the FAA would reach out through RTCA to engage with the Task Group Co-Chairs as required. She also noted that the recommendations had raised follow-on questions and conversation about the inter-relationships between the NPA effort, the VOR MON Program and the NAS Navigation Strategy.

**VOR Minimum Operating Network (MON)**

Ms. Leonixa Salcedo, VOR MON Program Manager, next briefed the TOC on the VOR MON program. (Ms. Salcedo’s briefing materials are included in Attachment 2.) She stated that a final policy Federal Register Notice (FRN) was being prepared for publication in July 2016. Responding to a question from a Committee member, Ms. Salcedo clarified that the FRN would include the full list of VORs intended for decommissioning between 2016 and 2025. This was based directly on recommendations from the TOC’s VOR MON tasking. Finally, she noted that beyond the initial FRN publication, each individual VOR would go through its own circularization process.

**Airport Construction**

Ms. Ray noted that the airport construction tasking was a large body of work and fairly complicated. The FAA is in process of identifying a “portfolio manager” for the more complex taskings because they are so widespread. A cross lines of business (LOB) group had begun to evaluate the recommendations and work was underway but the FAA did not yet have a response to the recommendations. She also
noted that some recommendations may be more appropriately lead by industry and that such conversation between FAA and industry would begin later in the summer.

**NorCal Noise Initiative**

Ms. Ray informed the TOC that the FAA’s feasibility study had been made public, and the TOC’s response was included as an Appendix to the feasibility report. Mr. Glen Martin, Regional Administrator for the region, was in the lead role to work with the community on the feasibility study. A community Select Committee of leaders in the NorCal region was now in process of having public meetings on the subject. The Select Committee was established locally and is not an FAA structure, and this Committee is expected to come back to the FAA with a response to the feasibility study.

**Eastern Regional Task Group Caribbean Recommendations**

Mr. Jim Linney, Director Air Traffic Systems, briefed the TOC on status of the ERTG Caribbean recommendations. (Mr. Linney’s briefing materials are included in Attachment 2.) Mr. Linney reiterated the FAA’s intent to identify ways to utilize existing Programs and budgets to implement the recommendations. Additionally, he stated that the FAA was seeking partnerships across the US government to invest in implementation of the Caribbean recommendations given the importance of the region to the US in general. Responding to a question from a Committee member, Mr. Linney explained there are safety-oriented precedents for a cross government investment and collaboration, including working with US AID in Africa and China. He also noted that some recommendations are moving forward, including establishing shout lines between SJU CERAP and neighboring foreign facilities as well as adding SJU Tower to the Datacomm waterfall.

**Recommendations on Class B Airspace**

Mr. Gary Norek, Mr. Leslie Swann and Mr. Ken Ready, next briefed the TOC on an update of its effort to rework guidance around establishing and removing Class B airspace. (Mr. Norek’s response document on Class B recommendations is included as Attachment 4.) Mr. Norek commented that one of the greatest challenges is to identify and understand complexity criteria and they were working closely with MITRE on this. The effort was intended to identify specific factors that could be considered for a complexity index. Mr. Ready also informed the TOC that AJV-113 was in process of a Document Change Proposal (DCP) rewrite of 7400.2, *Procedures for Handling Airspace Matters*. He noted that this DCP is a large effort as the FAA is working on adjusting 15 chapters of this document.

**Update on the NextGen Advisory Committee (NAC)**

Mr. Andy Cebula, RTCA, briefed the TOC on status of the NextGen Advisory Committee (NAC). (Mr. Cebula’s briefing materials are included in Attachment 2.) He discussed recommendations the NAC provided to the FAA on NIWG integrated plans, the Joint Analysis Team (JAT) review of Wake Recategorization and Community Outreach to support PBN implementations.

Mr. Cebula advised the TOC that the FAA confirmed it made a final investment decision (FID) on Terminal Flight Data Manager (TFDM) and would be awarding a contract winner within a month. One
Committee member commented that the FID for TFDM was important as many elements of TFDM were designed to connect the surface to the entire system.

Mr. Cebula also informed the TOC that a new ad hoc task group had been established in the NAC to evaluate enhanced surveillance, i.e., space based ADS-B. Finally, he also noted that the NAC identified a need to improve broader communication of all of the work and recommendations offered by the Committee. An ad hoc was formed to develop unified communications messages on what the NAC has produced.

**Performance Based Navigation (PBN) Route Structure Concept of Operations Task**

Mr. Mark Hopkins, Delta Airlines, and Mr. David Surridge, American Airlines, briefed the TOC on the status of the PBN Route Structure Task Group. Mr. Hopkins and Mr. Surridge are the Co-Chairs of this Task Group. They reviewed the tasking elements, the members and the schedule for the task. (Their briefing materials are available in Attachment 2.)

Messrs. Hopkins and Surridge reviewed data on the use of Jet and Victor routes in the NAS today. Both types of routes indicated a minimal amount of route usage beyond the initial 20-30% of routes. For example, the 100th most utilized Victor route (out of 700 V routes in the NAS) is only used four times each day. TOC members suspected that General Aviation pilots are generally well equipped and flying more point-to-point.

Mr. Rune Duke, AOPA, was introduced as the Chair for two sub groups of this task – one focused on Low Altitude route structure in the Continental United States (CONUS) and one focused on Low Altitude route structure in Alaska. Mr. Duke informed the TOC that these two groups had been formed and would be working on a similar timeframe to the high altitude group that Mr. Hopkins and Mr. Surridge were leading.

Finally, Mr. Hopkins and Mr. Surridge informed the TOC that in its October meeting, the Task Group would provide initial draft recommendations for feedback and discussion.

**Adjourn**

Chairmen Quigley and Wright ended the meeting of the Committee at 3:00 p.m.

**Next Meeting**

The next meeting of the TOC is October 27, 2016.
### Attendees: June 23, 2016 Meeting of the Tactical Operations Committee

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<td>Kast, Christian</td>
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1Committee member names appear in italics.
RTCA Tactical Operations Committee

Fourteenth Meeting
June 23, 2016
RTCA Headquarters

Welcome and Introductions

Co-Chairs:
Bryan Quigley, United Airlines
Dale Wright, NATCA
Topical Agenda

- FAA Report

- Discuss New Entrants
  - Commercial Space briefing
  - Update on the Drone Advisory Committee (DAC)

- FAA Response to Numerous Recommendations
  - Caribbean, Class B, NPA, VOR MON, Airport Construction, NorCal Noise Initiative

- Review progress of ongoing tasks
  - PBN Route Structure
  - Graphical TFRs

PUBLIC MEETING ANNOUNCEMENT
Read by: Designated Federal Official Elizabeth Ray
Tactical Operations Committee (TOC)
June 23, 2016

In accordance with the Federal Advisory Committee Act, this Advisory Committee meeting is OPEN TO THE PUBLIC.

Notice of the meeting was published in the Federal Register on:

May 24, 2016

Members of the public may address the committee with PRIOR APPROVAL of the chairman. This should be arranged in advance.

Only appointed members of the Advisory Committee may vote on any matter brought to a vote by the Chairman.

The public may present written material to the Advisory Committee at any time.
Review and Approval of:

April 4, 2016
Meeting Summary

FAA Report

Elizabeth “Lynn” Ray
Vice President, Mission Support Services
Air Traffic Organization
Briefing and Discussion on Commercial Space

Ron Schneider, FAA
ATO Commercial Space Integration

Presented to: Tactical Operations Committee
By: Ron Schneider, Deputy Director, ATO Commercial Space Integration
Date: June 23, 2016

Agenda

• Background-AST
• ATO Commercial Space Overview
• Industry Outreach
• Next Steps
BACKGROUND

Space Rocket Launch Sites Around the World

1. Vandenberg
2. Edwards
3. Wallops Island
4. Cape Canaveral
5. Kourou
6. Alcantara
7. Hammaguir
8. Torrejon
9. Andoya
10. Plesetsk
11. Kapustin
12. Palmachim
13. San Marco
14. Baikonur
15. Srihankota
16. Juquan
17. Xichang
18. Taiyuan
19. Svobodny
20. Kagoshima
21. Tanegashima
22. Woomera
Attachment 2 – Presentations for the Committee

Worldwide Orbital Launches

- United States
- Russia
- China
- Other

India, Japan, Israel, French Guyana, Iran, North Korea, South Korea, Kwajalein RMI, Pacific Ocean

U.S. Orbital / Suborbital Launch Numbers

- Kodiak, AK
- West Texas (Blue Origin)
- Wallops Flight Facility, VA
- Vandenberg AFB, CA
- Cape Canaveral, FL

www.spacelaunchreport.com
Air Traffic Depicted with ARTCC’s
5,864 visible flights
### Commercial Space Companies

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<th>Company</th>
<th>Spaceship Name</th>
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<td>Bigelow Aerospace</td>
<td>CST-100 Starliner crew capsule</td>
<td>Robert Bigelow</td>
<td>Advisor of the Budget Suites of America hotel chain.</td>
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<td>Blue Origin</td>
<td>New Shepard</td>
<td>Jeff Bezos</td>
<td>Advisor as founder of Amazon.com</td>
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<td>Orbital-ATK</td>
<td>Minotaur rocket, Pegasus (horiz.</td>
<td>David W. Thompson, Bruce W. Ferguson,</td>
<td>Advisor of the company (FY 2013)</td>
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<td>Sierra Nevada Corporation’s</td>
<td>Dream Chaser</td>
<td>Jim Benson (deceased), Faith Ozmen</td>
<td>Advisor of the company (FY 2013)</td>
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<td>Space Exploration Technologies (SpaceX)</td>
<td>Dragon spacecraft and Falcon 9R rocket</td>
<td>Elon Musk, co-founder of PayPal</td>
<td>Advisor of the company (FY 2013)</td>
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<td>Virgin Galactic</td>
<td>SpaceShipTwo</td>
<td>British Billionaire Sir Richard Branson</td>
<td>Advisor of the company (FY 2013)</td>
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ORGANIZATION STRUCTURE
AST History and Responsibilities

The Office of Commercial Space Transportation (AST) was established in 1984 as part of the Office of the Secretary of Transportation within the Department of Transportation (DOT). In November 1995, AST was transferred to the Federal Aviation Administration (FAA) as the FAA’s only space-related line of business. AST was established to:

- Regulate the U.S. commercial space transportation industry, to ensure compliance with international obligations of the United States, and to protect the public health and safety, safety of property, and national security and foreign policy interests of the United States;
- Encourage, facilitate, and promote commercial space launches and reentries by the private sector;
- Recommend appropriate changes in Federal statutes, treaties, regulations, policies, plans, and procedures; and
- Facilitate the strengthening and expansion of the United States space transportation infrastructure.

AST Organization

- Associate Administrator
  AST-1
- Chief of Staff
  AST-3
- Deputy Associate Administrator
  AST-2
- Chief Engineer
  AST-4
- Space Transportation Development Division
  AST-100
- Licensing & Evaluation Division
  AST-200
- Regulations and Analysis Division
  AST-300
- Safety Inspection Division
  AST-400
- Operations Integration Division
  AST-500

- Resource Management
- International Outreach
- Industrial Viability
- Business Planning
- Policy & Communications
- Training
- Administrative Support
- Research
- Center of Excellence
- Technical Oversight
- Trends
- Safety Management System

* Core Functions

ATO Commercial Space Integration
ATO COMMERCIAL SPACE OVERVIEW

ATO Commercial Space Integration Office established April 1, 2015:
• Coordinate/align ATO efforts pertaining to commercial space integration.
• Ensure effective collaboration with Office of Commercial Space (AST) and other FAA entities to align policy and services with FAA Strategic Initiatives
• Provide objective, independent assessments and recommendations.
• Ultimately, the successful integration of commercial space operations in the NAS.

FAA Strategic Initiatives:
• FAA Strategic Priorities: Deliver benefits through technology and infrastructure
• Administrator Priority Initiatives: National Airspace System (NAS) Initiative: Lay the foundation for the NAS of the future by achieving prioritized NextGen benefits, integrating new user entrants, and delivering more efficient, streamlined services
• Related Sub-Initiatives: Integrate new user entrants (unmanned aircraft and commercial space)
Air Traffic Organization (ATO) Commercial Space Integration Office

Mission Statement: To safely and efficiently integrate commercial space operations into the National Airspace System
ATO Commercial Space Integration

Mission:
To safely and efficiently integrate commercial space operations into the National Airspace System (NAS)

- Airspace changes to accommodate space operations and minimize NAS impacts
- Procedures and Standards for space vehicle operations
- ATO Space Vehicle Operations service delivery
- ATO Space Vehicle Planning service delivery
- ATC Training for space operations
- Policy and Regulation for ATO NAS airspace access
- Systems and Capabilities including the research and planning needed to accomplish them
- Safety assessments for space operations
- International Coordination and Space/Airports

ATO/FAA Road Map

- Work has begun
- Lead: ATO Commercial Space Integration Office
- Comprehensive
- All ATO Inclusive
- Coordinated Effort through the CSIT
- Estimated completion Nov 2016

Administrator Priority Initiatives

National Airspace System (NAS) Initiative: Lay the foundation for the NAS of the future by achieving prioritized NextGen benefits, integrating new user entrants, and delivering more efficient, streamlined services

ATO Commercial Space Integration

FAA Air Traffic Organization

28
Labor participation will be in compliance with bargaining unit agreements.

Letter of Agreement (LOA)
OUTREACH

Stakeholders

Air Traffic Organization (ATO)

Next Gen
(ANG)

U.S. Federal Launch Sites:
- Vandenberg AFB
- Cape Canaveral
- Wallops Flight Facility
- White Sands Missile Range
- Edwards AFB

Commercial Space Industry:
- Space-X
- Orbital-ATK
- Virgin Galactic
- Blue Origin
- Bigelow Aerospace
- SpaceDev/Sierra Nevada Corp
- XCOR
- CSF

NASA

Commercial Space Transportation (AST)

DoD

Airports/Space Ports
Preliminary Findings

- Strategic Planning
- Oversight accountability
- Clearly defined roles and responsibility
- Standardized repeatable processes
- Surveillance capabilities
- National Special Use Airspace scheduling capabilities
- ATO Safety (SMS)
- Communication
- National policy (ATO)
- SIRES Advisories NOTAMs

END
ATO
Commercial Space Integration

Briefing on the Drone Advisory Committee (DAC)

Al Secen, RTCA
Drone Advisory Committee (DAC)

- **Description**
  - Drone Advisory Committee (DAC) announced May 4 by the administrator
    - Chaired by Brian Krzanich of Intel; DFO will be the FAA Deputy Administrator
    - NAC-like; 30 ± members, C-Suite decision-makers
    - Likely will require a sub-committee of staffers and additional task groups, working groups or other data-gathering groups (not all RTCA administered)

- **Status**
  - Application process ran May 4 to May 19
    - Gathered data from interested parties (390+ applied)
      - Initial cut to 200: removed federal employees; foreign owned organizations without US offices; non-executive-level candidate
    - Loaded data into the mathematically-based AHP tool for analysis
    - Complete analysis including sort ordered 200; Top 40; Top 10 per domain; and complete set of statistics provided to the FAA on June 8 with final version June 17
  - Next steps are
    - FAA must make final decision on members/Notify the members
    - Training
    - Plan for first meeting
  - First meeting is tentatively planned for the Washington DC area the 1st week of August
    - Notional first topic: help the FAA prioritize the UAS Integration tasks in the FAA reauthorization bill

Update on the Graphical TFR Task Group

Rune Duke, AOPA
Jon Reisinger, Jeppesен
Key Elements of Tasking

The FAA requests that the TOC perform the following tasks and respond to the FAA with recommendations within 6 months:

**Task 1** - Use broader expertise and data to clarify and validate issues associated with TFRs and recommend solutions.

**Task 2** - Recommend policy regarding an online authoritative source for TFR content and use of TFR information for flight planning purposes.

**Task 3** - Develop an associated set of business rules around what can be disseminated; to whom the data should be disseminated; standardization of the format; graphical depiction; and means of dissemination.

Increasing Number of NOTAMs: 2012 Pilot’s Bill of Rights

Increasing number of NOTAMs being issued
- Regulatory requirement for pilots to review

Established **NOTAM Improvement Panel** – Recognized pilots were getting NOTAM overload
- RTCA TOC tasked to provide recommendations
- Work focused on reducing quantity of NOTAMs displayed – Result was **NOTAM Search**

TFRs are viewed by pilots as one of the most significant NOTAM
- Serious consequences for not complying
- Can result in aircraft being intercepted and/or “deadly force” taken
- TFRs can be issued for hazards

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<td>US created International: 559,896</td>
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<td>Military: 132,858</td>
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<th>Number of TFR NOTAMs Issued in 2015</th>
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System Operations Security (AJR-2)
TFRs Issued Since 2013

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<th>Year</th>
<th>91.141 VIP</th>
<th>99.7 Special Security</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>CY2013</td>
<td>195</td>
<td>1439</td>
<td>1634</td>
</tr>
<tr>
<td>CY2014</td>
<td>305</td>
<td>1663</td>
<td>1968</td>
</tr>
<tr>
<td>CY2015</td>
<td>270</td>
<td>996</td>
<td>1266</td>
</tr>
<tr>
<td>CY2016*</td>
<td>116</td>
<td>397</td>
<td>513</td>
</tr>
</tbody>
</table>

*Through May 2016
Subtracted reissues

Graphics Critical to Awareness

Pilots are Embracing Technology – Greater access to graphics

- 2016 survey of random sample of AOPA active pilots:
  - 82% use an EFB frequently/always in the cockpit
  - How pilots access a preflight briefing:
    - 60.7% brief use 3rd party vendor (e.g., ForeFlight)
    - 38.7% call 1-800-WX-BRIEF
    - 28.6% use DUATS (online web portal)
  - TFRs mentioned by callers as barrier to not solely going online
  - Many high intenders to call (not go online) highlighted “legality” of FAA/DUATS websites:

“Depicted TFR data may not be a complete listing. Pilots should not use the information on this website for flight planning purposes. For the latest information, call your local Flight Service Station at 1-800-WX-BRIEF.”
Pilots Fly Relying on Graphics

Reality is pilots avoid TFRs laterally by looking at a graphic

- “Advisory use” of graphic fails to meet pilots’ need in modern cockpit
  - Lateral dimensions can be accurately provided to a pilot, just like Class B airspace can be defined and depicted
  - NOTAM overload – graphic is key mechanism to alert pilot

- Legal/liability considerations:
  - An FAA generated graphic should be considered different/better than a pilot self-plotted TFR on a chart (lat/long or FRD)
  - Continued emphasis on pilot reviewing all available information, including NOTAM text
  - Inaccurate or incomplete TFR graphics by FAA or DUATS should be viewed by the FAA as mitigating factor for any incursion

Need for Tasking

- **August 2015** – South Carolina VIP VPOTUS TFR, Lockheed Martin did not show graphic – Pilots notified of violating airspace
- **Fall 2015** – New York VIP Pope TFR, graphics inverse or incorrect by all vendors
- **February 2016** – Los Angeles VIP POTUS TFR, Lockheed Martin incorrect graphic

- **Future Flight Service contract** – Data on why pilots call show disclaimers on websites to be a high concern and possible barrier to increased number of online users
  - FAA TFR shapefile, data, and text all have disclaimer

- **Vendors** – Every vendor AOPA talked with had technical and practical concerns with FAA’s TFR data stream
- **Authoritative source** – Lack of single source creates additional complexity

We want to reduce TFR incursions – Graphics are key to pilot situational awareness – Tracking TFR graphics showed variety of discrepancies
FDC 6/1305 – TFR Issued for Controlled Firing Area (CFA)

+ TFR issued erroneously for CFA
+ AOPA requested originator cancel NOTAM, while still active, which was not possible
+ AJV-11 investigated and determined local facility error
+ New local procedures in place
+ Example of lack of oversight and lack of ability to modify once submitted

FDC 6/1305 ZID IN. AIRSPACE TERRE HAUTE, IN. TEMPORARY FLIGHT RESTRICTIONS CONTROLLED FIRING AREA WI AREA DEFINED AS 1 NM RADIUS OF 385143N864840W (1 NM RADIUS OF OOM 211 DEGREE RADIAL AT 19 NM.) SFC-16500FT. PURSUANT TO 14 CFR SECTION 91.137(A)(1) TEMPORARY FLIGHT RESTRICTIONS ARE IN EFFECT FOR AN AIRBORNE HAZARD AT BLUE SKIES CONTROLLED FIRING AREA(CFA) IN R3404, ELECTROMAGNETIC EMISSIONS REMAIN. AVOIDANCE ADVISED. NAVAL SURFACE WARFARE CENTER IS IN CHARGE OF ON SCENE EMERGENCY RESPONSE ACTIVITY 812-854-5259. INDIANAPOLIS ARTCC /ZID/ TELEPHONE 317-247-2243 IS THE FAA COORDINATION FACILITY. 1601082300-1601090700

FDC 6/5678 & 6/8302 – Kennedy Space Operations

- “If the originator of a TFR does not utilize the TFR Builder application to submit the TFR NOTAM, no graphical depiction will be displayed on the TFR.faa.gov website, unless it’s a HAZARD TFR”
- Many lat/long points – Complexity of plotting TFR manually
**FDC 6/6697 – DC Nuclear Summit**

- NOTAM text is similar to SFRA/FRZ NOTAM – dimensions and language match
- Language is nuanced and no graphic increases chance it is overlooked
- Human factors issue: over 1,400 words – 8 parts

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**User-Friendliness**

**Presentation is Critical for Human Factors**

- Capital letters
- Lacks consistent organization
- Main details difficult to find
- Lat/long and FRD are all pilots have if no graphic
- Block of text

**The TFR issuer and the user (pilot, FSS, ATC) would benefit from greater standardization and clarity**
**Current Task Group Membership**

- Rune Duke, Aircraft Owners and Pilots Association (Chair)
- Dave Bear, Federal Aviation Administration
- Trish Gay, Federal Aviation Administration
- Talwyn Haley, Federal Aviation Administration
- Michael Helwig, Federal Aviation Administration
- Chris Henne, Federal Aviation Administration
- Brian Hint, Federal Aviation Administration
- Lynette Jamison, Federal Aviation Administration
- Scott Jordan, Federal Aviation Administration
- Scott Leis, Federal Aviation Administration
- Bob McMullen, Federal Aviation Administration
- Tiffany Narowski, Federal Aviation Administration
- Jim Perkins, Federal Aviation Administration
- Jerry Torres, Federal Aviation Administration
- John Collins, Foreflight LLC
- Nick Downing, Foreflight LLC
- Tyson Weihs, Foreflight LLC
- Jeremy Holman, Garmin Ltd.
- Jon Reisinger, Jeppesen (Chair)
- Joe Daniele, Lockheed Martin Corporation
- Heather Rittiner, Lockheed Martin Corporation
- William L Geoghan, National Air Traffic Controllers Association
- Jim McClay, National Business Aviation Association
- Trin Mitra, RTCA, Inc.
- Jim Mills, U.S. Air Force
- David von Rinteln, U.S. Air Force
- Divya Chandra, Volpe National Transportation Systems Center

**Task Group Schedule**

- Thu Jun 16 [Jun 23 TOC]
- Phone call on Thu Jul 7
- Thu Jul 21
- Thu Aug 25
- Thu Sep 29
- Thu Oct 20 [Oct 27 TOC]
- Thu Dec 8
- Deliver final recommendation at Feb 2017 TOC meeting
FAA Response to Previous Recommendations

National Procedure Assessment
VOR MON
Airport Construction
NorCal Noise Initiative

Cancellation of Instrument Flight Procedures Recommendations

Presented to: Tactical Operations Committee
By: Elizabeth Ray
Date: June 23, 2016
Fully Accepted Recommendations

1. Procedures not evaluated for cancellation at this time
   - Accept recommendations a, b, c, d, e, and f without comment

   The VOR / DME RNAV Procedures are scheduled for cancellation

4. Remove Microwave Landing System (MLS) and Transponder Landing System (TLS) Procedure categories
   - Accept recommendation without comment

5. Consider remaining Simplified Directional Facility (SDF) procedures for cancellation
   - Accept recommendation without comment

Fully Accepted Recommendations (cont.)

6. PAR and ASR Procedures
   a) Accept with no comment
   b) Accept with no comment
   c) Accept with no comment
       Facility should be following this process

7. PBN Instrument Approach Procedures
   a) Accept with no comment
   b) Accept with no comment

9. PAR and ASR Procedures
   a) Accept with no comment
Recommendations with Comment

2. Circling Procedures
   a) Would require vetting through Federal Register
   b) Would require a network of training centers and simulator operator
      points of contact for coordination

3. Ground-Based Instrument Approach Procedures
   a) “Extensive” would require further definition to delineate criteria.
      Accept adding word civil to criteria
   b) Requires further evaluation due to potential conflict with future
      cancellation initiatives
   c) Accept with no comment

8. Identify candidate SIDs/STARs for cancellation according to
   the criteria in the figure below
   Change to “Review candidate SIDs/STARs for cancellation and
   consider criteria in the figure below during the review process”

Recommendations with Comment (cont.)

10. Recommendation on the Outreach for Procedure Cancellations
    a) Accept with no comment
    b) We should accept recommendation but place the guidance in
       8260.19 instead of the RAPT Order
    c) Accept as best practice resources permitting

11. Additional recommendations
    a) Accept with no comment
    b) Current national policy “Performance Based Navigation (PBN)
       Change to develop additional strategies to motivate procedure
       cancellation
    c) FAA’s capacity for procedure maintenance and development is being
       addressed through automation tools and process improvements
    d) Accept with no comment
Very High Frequency Omni-directional Range (VOR) Minimum Operational Network (MON) Implementation Program

Program Update

Presented to: RTCA Tactical Operations Committee (TOC)
By: Leonixa Salcedo, AJM-324
VOR MON Program Manager
Date: June 23, 2016

Agenda

- Program Status
- VOR MON Program Timeline
- RTCA Tactical Operations Committee (TOC) Recommendations
- Federal Register Notice (FRN) Background
- VOR MON Program Final Policy FRN
- Criteria Discussion
Program Status

- Achieved Investment Analysis Readiness Decision (IARD) – March 2014
- DoD/DHS Retention Coordination Received – January 2015
- RTCA TOC Task Responses Completed – April 2015
- Program Achieved Final Investment Decision (FID) Phase 1 – September 2015
- Began VOR MON Program Implementation – October 2015
- RTCA TOC Briefed – November 2015
- Program Kick-off Meeting – FAA Internal – December 2015

VOR MON Program Timeline

The VOR MON Program will be completed in 2 phases:

<table>
<thead>
<tr>
<th>Phase 1: FY16 – FY20</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Publish Final Policy FRN: “Provision of Navigation Services for the Next Generation Air Transportation System (NextGen) Transition to Performance Based Navigation (PBN)”</td>
</tr>
<tr>
<td>- Remove, Replace, Amend affected Instrument Flight Procedures (IFPs)</td>
</tr>
<tr>
<td>- Discontinue Phase 1 VORs (74)</td>
</tr>
<tr>
<td>- Plan for Phase 2 Final Investment Decision (FID)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Phase 2: FY21 – FY25</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Continue IFR work</td>
</tr>
<tr>
<td>- Discontinue Phase 2 VORs (234)</td>
</tr>
</tbody>
</table>
RTCA TOC Task Recommendations

The following were the four (4) task areas in which the VOR MON TG provided recommendations to the FAA:

• Task 1: Review and validate the VOR MON selection criteria and assumptions.
  – In FAA’s response to the task group, all the task group’s recommendations were considered and subsequently incorporated into the VOR MON selection criteria as appropriate. Completed November 2013

• Task 2: Review and validate the draft candidate VOR MON list.
  – The FAA used the task group’s suggested methodology to develop a final list of VORs to be included as part of the MON. Completed February 2014

• Task 3: Review implementation planning to date and make recommendations to the preliminary waterfall schedule developed by the FAA.
  – The FAA reviewed the recommendations and incorporated the feedback into the VOR MON Program waterfall schedule as appropriate. Completed February 2015

• Task 4: Provide recommendations to the FAA on outreach and education that should be accomplished to prepare stakeholders for the VOR MON reduction.
  – “The Task Group strongly recommends that the FAA publish a list of all VORs planned for decommissioning at the beginning of the notification process. It is paramount to publish the full list upfront so there are no surprises to the public later in the process about which VORs are being shut down.”
  – The FAA concurred with the recommendation and plans to publish a final policy FRN upon the completion of its Final Investment Decision (FID).

Federal Register Notice (FRN) Background

• The FAA published an initial proposed policy Federal Register Notice (FRN), “Proposed Provision of Navigation Services for the Next Generation Air Transportation System (NextGen) Transition to Performance-Based Navigation (PBN)”, (76 FR 77939), for comment on December 15, 2011, which discussed retaining an optimized network of VORs as a component of this transition strategy.

• The disposition of all received comments on the notice of proposed policy was published (77 FR 50420) on August 21, 2012.
VOR MON Program Final Policy FRN

- The VOR MON Program Final Policy FRN addresses the recommendations outlined by the RTCA TOC in Task 4:
  - Defines the retention criteria and other supplemental information that was used to assess VORs for discontinuance.
  - Discusses the working group collaboration process used to solidify the candidate discontinuance list.
  - Outlines the established policies and processes that the FAA follow when discontinuing VORs.
  - Provides the full VOR candidate discontinuance list sorted by Phase 1 (FY16-FY20) and Phase 2 (FY21-FY25) of the program.
- Target publishing the VOR MON Program Final Policy FRN by July 31, 2016.

Criteria Discussion

- On June 27, 2014 the FAA published a policy establishing criteria for cancelling certain ground-based Standard Instrument Approach Procedures (SIAPs) (79 FR 36576) as an integral part of right-sizing the quantity and type of procedures in the National Airspace System (NAS).
- On April 13, 2015 the FAA published (80 FR 19577) a list of 736 SIAPs proposed for cancellation in accordance with that criteria.
  - The FAA received public comments for some of those SIAPs, which expressed concern about instrument flight training/proficiency.
  - A metric of “a like-type SIAP at an airport within 20NM of the airport containing the SIAP proposed for cancellation” was established to adjudicate those specific comments. If there is no other airport within 20 NM with a similar type SIAP, the proposed SIAP would be retained.
- The VOR MON Implementation Program’s criteria states that the MON will support landings by either a VOR, ILS, or LOC approach to an airport no more than 100 nautical miles from any location in the CONUS, where the capability exists today.
- Although the IFP cancellation criteria used under the NPA Program’s FRN addressed specific comments received, as we transition to PBN the VOR MON Implementation Program criteria will supersede.
Questions

Lunch Until 1pm
FAA Response to Caribbean Operations Recommendations

Jim Linney, FAA

Strategy for Enhancing Air Traffic in the Caribbean

ATO Status Update to the RTCA’s Eastern Regional Task Group (ERTG) Recommendations

Presented to: Tactical Operations Committee
By: Jim Linney, ATS Director
Date: June 23, 2016
Background

- In July 2015, in response to the FAA’s request, the Eastern Regional Task Group (ERTG) of the Radio Technical Commission for Aeronautics (RTCA), Tactical Operations Committee (TOC) responded with a report outlining 20 “Operational Needs To Address Caribbean Operations”
- On November 11th 2016, the FAA briefed the TOC, providing initial feedback regarding the 20 recommendations.
- On January 26th 2016, the FAA Administrator was briefed on the evaluation approach to the 20 recommendations. A commitment was made to draft a timeline for all recommendations.

Approach

- A cross-organizational FAA team including: FAA International plus Air Traffic Organization (ATO), ATO International, Safety and Training (AJI), representation from the Program Management Office (PMO), Tech Ops, Air Traffic Services, Airspace and Requirements evaluated each of the TOC’s recommendations
  - Team Represents: two lines of business, six service units and over 20 people
- Evaluation criteria were developed and applied to each recommendation for implementation consideration, to include: Rough Schedule, Rough Cost, Technical/Operational Risks, and Interdependencies with other recommendations and other FAA Investment Decisions
RTCA TOC Recommendations Updates

- On March 3rd 2016, the FAA Administrator was briefed on the evaluation approach of the 20 recommendations, and the forward plan.
- Resources have been added to the team to support a cross-functional FAA Working Group.
- One of the recommendations, “Install Dedicated Shout Lines with Certain Adjacent or Underlying International Facilities” is a targeted FY17 goal.

Overview

- Passenger growth is expected to increase 4.5% annually over the next 20 years in the Caribbean region.
- Given that there is a non-linear relationship between increased traffic and delays it is projected that the delays in that region will increase by ~22% over the next 20 years.
- Additional research is needed to determine the actual avoidance amount projected for the individual RTCA TOC recommendations and ATFM initiative in resolving the expected delay issue.
- There has been progress on the initiatives:
  - Deployment of Data Comm at SJU planned for September 2016.
  - Implementation of Shout Lines is a targeted FY17 Goal.
  - The Airspace Study kicked off April 2016, with planned completion date of October, 2016.
  - ATFM Technical Exchange meeting in Trinidad occurred June 14th and 15th, 2016 in support of TFM Data Exchange.
**RTCA TOC Recommendations Updates**

- An updated ROM and draft schedule for the activity has been created:
  - Currently showing a ~$22M cost estimate for all recommendations to be implemented.
  - With implementation dates ranging from 2016 to 2023.
- In the short term a Working Group session is being planned with all the LOBs impacted to review the cost, schedule, and implementation risks from the ongoing data call activities.

**ZMA / ZSU Offshore Airspace Study**

- AJV conducting an airspace study of the ZMA/ZSU Offshore Airspace.
- Study is focused on problem identification and will:
  - Catalog current and emerging airspace issues.
  - Characterize frequency of issues and impact.
  - Identify relationship of ongoing initiatives to identified issues.
- Study to be completed in October, 2016.
Caribbean Traffic Volume Growing Rapidly

- Miami Center (ZMA) Oceanic and San Juan (ZSU) CERAP have experienced substantial traffic increases.

- 17.2% of all US international travel is to destinations in the Caribbean

Average annual traffic growth (2012 to 2015) in the region has increased at a higher rate than the US national average

Source: FAA System Operations - Data Management (Data Services: AJR-O, OPSNET

Initial Issues Definition

- Highlights from facility input
  - Increasing traffic levels and sector complexity, most notably in ZMA sectors 40, 58, 62, and 63 as well as ZSU sectors 2 and 6
  - Traffic Management Initiatives utilized to manage demand in ZMA Offshore airspace and ZSU
  - Numerous traffic flow interactions identified
    - Resulting in either departure delays or safety concern
  - Airspace sectorization is not built to accommodate current traffic levels/flows
  - Current airspace design may not optimally support future improvements to PBN-based route design
Areas of focus within Study Area

- **Traffic Management Initiatives** - measure impact of TMIs used to manage demand due to airspace limitations

- **Sector Volume and Complexity** - measure traffic volume and complexity in sectors
  - Periods of high workload activity (combination of high aircraft counts and adjacent coordination activities)
  - Interaction of flows

- **Evaluating Potential Safety Concerns** – identify Traffic Collision Avoidance System (TCAS) hotspots. Motivation comes from RTCA’s report mentioning safety concerns and the National Transportation Safety Board’s observations of complexity in ZMA sector 40. As a result, the study will examine the entire airspace for these potential hotspot issues.

Example: Initial TCAS simulation results identifying a hotspot with predominant interactions between arrivals on CURSO STAR and departures on MNATE SID

Evaluation Criteria

Each recommendation was evaluated against the four categories outlined below:

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>FAA concurs with recommendation. No additional research is required. International agreement and interdependencies are required</td>
</tr>
<tr>
<td>2</td>
<td>FAA concurs with recommendation. Additional research regarding operations and/or technical interdependencies are required</td>
</tr>
<tr>
<td>3</td>
<td>FAA concurs with recommendation. Additional research regarding operations and/or technical interdependencies are required. Investment decision not yet made (requires JRC-level approval or disapproval)</td>
</tr>
<tr>
<td>4</td>
<td>FAA does not concur with moving forward with this recommendation, not pursuing at this time</td>
</tr>
</tbody>
</table>
Evaluation Results: Category 1

FAA concurs with recommendation. No additional research is required. International agreement and interdependencies are required.

<table>
<thead>
<tr>
<th>Recommendation Description</th>
<th>International Agreement</th>
<th>Technical and/or Airspace Dependency</th>
<th>ROM Cost and Timing</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1. Implement a New Communication Frequency at St. Maarten/Marten</td>
<td>In Progress. Draft international agreements are several years old, as well as very rough draft of 2nd-annex air-to-ground radio info. - Require updating after requirements are validated and funded.</td>
<td></td>
<td>$350K 1-2 years once funding is in place.</td>
</tr>
<tr>
<td>#3. Install Shout Lines between facilities for a Controller to &quot;communicate/coordinate&quot; with another facility without dialing</td>
<td>In Progress. Agreement with foreign facility that an additional shout line is required and the costs will be shared by the FAA facility that added the shout line. Venezuela (SVMI) recommended removing as '17 goal due to political issues, may not be resolved in a timely manner.</td>
<td>- All locations will require site surveys and FTI approvals.</td>
<td>$138K Piarco – FY17 3Q Tortola – FY17 2Q Curacao – FY17 2Q</td>
</tr>
</tbody>
</table>

Evaluation Results: Category 1 (cont.)

FAA concurs with recommendation. No additional research is required. International agreement and interdependencies are required.

<table>
<thead>
<tr>
<th>Recommendation Description</th>
<th>International Agreement</th>
<th>Technical and/or Airspace Dependency</th>
<th>ROM Cost and Timing</th>
</tr>
</thead>
</table>
| #4. Regional Implementation of Automation  
  a. Continue ADE with Santo Domingo  
  b. Develop software translation for neighboring facilities with AIDC protocol  
  c. Ensure ENR software upgrades associated with ADE stay on schedule | Class 1 (transfer FP information) is implemented in Cuba awaiting Cuba SW changes for Class 2 timeframe TBD. Prototype developed at the Tech Center and reviewed by ZMA controllers for Class 1 and Class 2 with Dominican Republic; still awaiting for SW development from Dominican Republic. Discussions with Cuba and Dominican Republic need to occur before any progress can be made with class 3 (automated handoff). Currently, ADE Class 3 is in process with Canada and once that is complete the discussions will start with OR and Cuba. Realistic timing is 3.5 years once funding is realized. Class 3 is not slated for completion until 2022-23. | Software upgrades from Cuba and the Dominican Republic are needed to move forward with class 1 and class 2. | $400K estimated for the effort of supporting class 1 and class 2 implementation. TBD cost estimate for class 3 until Sector Enhancements go to JRC this July; estimated to be greater than $2M. |
Evaluation Results: Category 1 (cont.)

FAA concurs with recommendation. No additional research is required. International agreement and interdependencies are required.

<table>
<thead>
<tr>
<th>Recommendation Description</th>
<th>International Agreements</th>
<th>Technical and/or Airspace Dependency</th>
<th>ROM Cost and Timing</th>
</tr>
</thead>
<tbody>
<tr>
<td>#7. Fuse / Input Slt.</td>
<td>In Progress. Umbrella agreement is in process and awaiting approval by Princess Julianna Airport Authority. May be an issue with U.S. mandatory liability language which could delay approval.</td>
<td>Needs additional research on how to provide connectivity between ZSU and SXM radar.</td>
<td>$650K</td>
</tr>
</tbody>
</table>

Category 1 Total Estimated Cost $1.53M (only including $400K from #4)

Evaluation Results: Category 2

FAA concurs with recommendation. Additional research regarding operations and/or technical interdependencies are required.

<table>
<thead>
<tr>
<th>Recommendation Description</th>
<th>International Agreement</th>
<th>Technical and/or Airspace Dependency</th>
<th>ROM Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>#9. Investigate Option to Access Weather Information from Long Range DOD/DHA</td>
<td>None Identified</td>
<td>- Uncertain. It was determined in 2012 that this would not be an option due to performance restrictions. Currently waiting for a response as to what group could best answer this question.</td>
<td>TBD</td>
</tr>
<tr>
<td>#10. If the Offshore Precipitation Capability shows promise, expedite Caribbean access</td>
<td>None Identified</td>
<td>- In Progress. Initial prototype delivered June 2015, QA on Algorithm December 2015. Refinements based on QA April 2016, Planned safety assessment December 2016, then final requirements/transition to operations FY 2017.</td>
<td>TBD</td>
</tr>
</tbody>
</table>
Evaluation Results: Category 2 (cont.)

<table>
<thead>
<tr>
<th>Recommendation Description</th>
<th>International Agreement</th>
<th>Technical and/or Airspace Dependency</th>
<th>ROM Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>#13. Explore Options to Reduce Separation between ZNY and ZSU/ZMA</td>
<td>None Identified</td>
<td>In Progress, part of the airspace study. ZSU is continuing to research what is required to achieve reduced separation. Present exists between ZSU and ZNC. ZSU/ZMA can apply reduced longitudinal separation and ZSU can apply domestic separation IAW AFR Title 14 Part 71 (b)(4). FAA AFR 7409.91 Sub. A Sec 2, using 2NM RNAV or 20 DME IAW FAA AFR 7110.65 6-4-2d.</td>
<td>Believed to be within normal operating costs. Travel and OT</td>
</tr>
<tr>
<td>#14. Implement a Shortcut Route between CANPX and RENAH</td>
<td>None Identified</td>
<td>In Progress, part of the airspace study. Involves boundary changes for ZMA, ZJX &amp; ZWY. ZMA &amp; ZWY are in process of implementing this initiative.</td>
<td></td>
</tr>
<tr>
<td>#15. Conduct an Integrated Redesign of ZMA and ZSU Airspace</td>
<td>TBO</td>
<td>In Progress. AJV currently conducting Airspace study with MITRE. Expected completion Oct. 2016.</td>
<td>$1M</td>
</tr>
<tr>
<td>#16. Improve Short Term Cuba Access in Giron Corridor</td>
<td>In Progress. Discussions have occurred and are being worked through ZMA and Metroplex</td>
<td>In Progress. Although slow process, 2 dedicated RNAV routes have been developed with DoD concurrence and public comments were due 5/2016.</td>
<td>Believed to be within normal operating costs</td>
</tr>
</tbody>
</table>

**Total Cost**: $1,800M

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Evaluation Results: Category 3

FAA concurs with recommendation. Additional research regarding operations and/or technical interdependencies are required. Investment decision not yet made (requires JRC-level approval or disapproval)

<table>
<thead>
<tr>
<th>Recommendation Description</th>
<th>International Agreement</th>
<th>Technical and/or Airspace Dependency</th>
<th>ROM Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>#2. Implement a New Communication Frequency at Abaco Island</td>
<td>There are no existing agreements in place for the installation of new FAA-owned equipment in the Bahamas. Previous agreement negotiations with the Bahamas have been protracted.</td>
<td>Timing and cost is dependent on funding line and establishing a new location. Estimate is 24-30 months once funds are received and a smooth process.</td>
<td>TBD, ROM in process, estimate $750K</td>
</tr>
<tr>
<td>#5. Implement Independent Flight Data Processing in ZSU</td>
<td>None Identified</td>
<td>Existing use of ZMA Flight Data will be addressed after FAA Offshore Automation investment and upgrades of MEARTS at ZSU – No work beyond initial discussion with tech. experts.</td>
<td>$3M-$4M</td>
</tr>
<tr>
<td>#6. Implement ADS-B in the Caribbean</td>
<td>Multiple interdental agreements are needed for each site.</td>
<td>Would require business case – $13-14M capital investment and JRC approval. Some benefits of increased ADS-B coverage will only be realized with additional VHF coverage (Air-to-Ground in Abaco Island, see recommendation #2)</td>
<td>$7M</td>
</tr>
</tbody>
</table>
Evaluation Results: Category 3 (cont.)

FAA concurs with recommendation. Additional research regarding operations and/or technical interdependencies are required. Investment decision not yet made (requires JRC-level approval or disapproval).

<table>
<thead>
<tr>
<th>Recommendation Description</th>
<th>International Agreement</th>
<th>Technical and/or Airspace Dependency</th>
<th>ROM Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>#11. Enable ZSU to Participate in Data Comm.</td>
<td>None Identified</td>
<td>SJU added to the Datacomm waterfall for 2016</td>
<td>N/A for SJU</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ACTION: Does the inclusion of SJU into the Datacomm waterfall satisfy the TOC recommendation?</td>
<td></td>
</tr>
<tr>
<td>#12. Make FAA Caribbean Radars available to ZNY</td>
<td>If radar data is from a foreign facility, an international agreement is required</td>
<td>Depends on ATOP Tech Refresh; Tech Ops to investigate scope of project</td>
<td>TBD</td>
</tr>
</tbody>
</table>

Total Cost $10.75M - $11.75M
Total Known ROM Cost (excluding ADS-B CIP costs) $14.08M - $15.08M

***NOTE: ROM Costs do not include all estimates, reflects capital costs only, and do not reflect yearly recurring or operational costs.

Next Steps

- Receive information on the Airspace Study.
  - Results may affect other recommendations.
- Continue international coordination to support the research and implementation of the recommendations.
- The FAA will continue to communicate with the TOC regarding progress in the assessments and implementation efforts.
FAA Response to Recommendations on Class B Airspace

Gary Norek & Ken Ready, FAA

Update from the NextGen Advisory Committee (NAC)

Andy Cebula, RTCA
NextGen Advisory Committee Meeting June 17th - Hosted By Boeing – Crystal City

Mike Whitaker’s Final Meeting as DFO

Boeing Briefing on Equipage – ADS-B

Recommendations Approved:
- NextGen Integration Working Group Four Priority Areas
- Wake ReCat Analysis
- Community Outreach

More NAC Highlights

Seattle Greener Skies – Next Steps to Improve Usage

JetBlue Equipage
Implementation of PBN Capabilities

- Established on Required Navigation Performance (EoR)
  - EoR w/ Radius-to-fix (RF): DEN, PDX, BNA, IAH
  - EoR w/ Track-to-fix (TF): CLT, PHL, ATL, SDF
  - Assessment of TF/RF Concurrent Operations

- Metroplex
  - ATL/CLT Mature implementations
  - Las Vegas Metroplex (LAS) milestones

- Established on Departure Operations (EDO)
  - Assessing information & developing a plan
  - Possible implementation: ATL, DFW

- RF to xLS (RF/TF)
  - Assessment/identification of pre-implementation milestones
  - Possible implementation: RNO, SEA

Implementation (cont.)

- Optimized Profile Descents (OPD) - Area Navigation (RNAV) Standard Terminal Arrivals (STARs)
  - LUCIT1 (GYY), JFUND1 (BOS), PINCH 1 (AUS)

- Enhanced Flight Vision Systems (EFVS)
  - Final rule publication
  - Possible implementation IND

- Advanced RNP (A-RNP)
  - Demonstration sites: SNA, EGE

- New Vertical Guidance
  - Potential sites: SMO

- Departures
  - RNP – SNA
  - RNAV - HND

- TBD – Actions related to Seattle Greener Skies
Decision Support Tools

- Leveraging opportunities
- DSTs – identified milestones
  - Maximize existing tools during transition to additional TBFM capabilities
  - TBFM Terminal Sequencing and Spacing (TSAS)
  - TBFM Ground-Based Interval Management-Spacing (GIM-S)
  - TBFM Integrated Departure Arrival Capability (IDAC)

Community Outreach Recommendations: FAA Should

- Establish Specialized Community Outreach Team(s)
- Develop a Standard Community Outreach Toolkit
- Develop specific Local Community Outreach Toolkits
- Establish Ongoing and scalable Community Outreach Programs in collaboration with local airports
Community Outreach (cont.)

- Disseminate both this document & original Blueprint for Success to Implementing PBN to airport operators, and airlines
- Incorporate the best practices outlined throughout this document
  - Preparation
  - Education
  - Engagement
  - Advocacy
  - Post-implementation steps in PBN-related community engagement

Time Speed Spacing Tasking Deliverables

- Review the plans for time, speed, spacing and related capabilities
- Develop a 15 year plan for deployment:
  - 5 - year increments 2016-2020, mid – 2021-2025, far term – 2026-2030
  - Identify and prioritize tools and technologies ground vs. aircraft
  - Appropriate in various operating conditions
  - Preliminary Report to NAC in June
  - Final Report in Oct
Capabilities Being Examined

- Ground-based Interval Management – Spacing (GIM-S)
- Terminal Sequencing and Spacing (TSAS)
- Path Stretch (with and without Data Communications)
- Controlled Time of Arrival (CTA) Via Time of Arrival Control (TOAC) Guidance and Automation
- TBFM including Integrated Departure and Arrival Capability (IDAC)
- Flight Deck Interval Management (IM): IM En Route and Terminal Operations

Preliminary Findings – Interim Report

- Cultural challenges part of the solution for transition to PBN NAS
- Ground based metering is essential to successful implementation of PBN
- FAA investing heavily in Ground Based systems for first two time frames – industry supports
- Aircraft based system standards developed, capabilities & use in R&D and trials
- Longer term horizon area of Task Group analysis
DISCUSSION

Update from PBN Route Structure Task Group

Mark Hopkins, Delta Airlines
David Surridge, American Airlines
Rune Duke, AOPA
Key Guiding Principle

Structure where it is needed and no structure where it is not needed ...

But the devil is in the details!

PBN Route Structure Task Elements

- Task 1 - Use broader expertise and data to refine or validate CONOPS problem statement.
- Task 2 - Recommend refinement to the criteria-based methodology for establishing low and high altitude PBN route structure.
- Task 3 - Recommend a NAS-wide point to point navigation strategy.
- Task 4 - Recommend alternatives to the proposed approach for design and implementation.
Members of Task Group

- Darrell Pennington, Air Line Pilots Association
- Rune Duke, Aircraft Owners and Pilots Association
- Michael Creff, Airlines for America
- Desmond Kearney, American Airlines, Inc.
- Michael O'Brien, American Airlines, Inc.
- Dave Surridge, American Airlines, Inc. (Chair)
- Rico Short, Beacon Management Group
- Mark Hopkins, Delta Air Lines, Inc. (Chair)
- Ed Olsen, Delta Air Lines, Inc.
- Denise Fountain, DoD Policy Board on Federal Aviation
- Steve Anderson, Federal Aviation Administration
- John Dutton, Federal Aviation Administration
- Cliff Keirce, Federal Aviation Administration
- Jeff Kerr, Federal Aviation Administration
- Robert Novia, Federal Aviation Administration
- Gary Petty, Federal Aviation Administration
- Jeff Richards, Federal Aviation Administration
- Leonixa Salcedo, Federal Aviation Administration
- Lori Zuest, Federal Aviation Administration
- Phil Santos, FedEx Express
- Bill Murphy, International Air Transport Association
- Joe Bertapelle, JetBlue Airways
- Lee Brown, Landrum-Brown
- Bennie Hutto, National Air Traffic Controllers Association
- Jim McAllister, National Air Traffic Controllers Association
- Eric Owens, National Air Traffic Controllers Association
- John Vogelsang, National Air Traffic Controllers Association
- Bill Wise, National Air Traffic Controllers Association
- Jeff Woods, National Air Traffic Controllers Association
- Nat Iyengar, National Business Aviation Association
- Bob Lamond Jr, National Business Aviation Association
- Ralph Tamburro, Port Authority of New York & New Jersey
- Trin Mitra, RTCA, Inc.
- Perry Clausen, Southwest Airlines
- Rick Dalton, Southwest Airlines
- John Brandt, The MITRE Corporation
- Shweta Mulcare, The MITRE Corporation
- Jeff Shepley, The MITRE Corporation
- Bill Cranor, United Airlines, Inc.
- Glenn Morse, United Airlines, Inc.
- Allan Twigg, United Airlines, Inc.
- Jonathan Bonds, United Parcel Service

Schedule of Meetings

- Thu May 12
- Thu Jun 9 [Jun 23 TOC]
- Thu Jul 14
- Thu Aug 11
- Thu Sep 15
- Thu Oct 13 [Oct 27 TOC]
- Thu Nov 10
- Thu Dec 15
- Recommendation in February 2017
Activity to Date

- FAA review of PBN Route Structure CONOPs and route usage data
- Industry presentations on challenges in current route structure
  - Briefings from NBAA, NATCA, AA, UA, WN, DoD, AOPA, IATA
- Ongoing documentation of initial findings
  - Guiding principles, Assumptions, Challenges, Additions to Concept, Criteria for Structure, Implementation Approaches
- Determination to spin out CONUS Low Altitude and Alaska Low Altitude Sub Groups

Usage of Jet Airways

Usage of Jet Airways

Top 20 Most Used Jet Airways

Utilization of Jet Route means
- Flight filing/amended flight plan includes airway
- Requested final altitude at or above FL180
- 80% conformance to portion of airway aircraft intended to fly

The 100th most used Jet Route (out of 300) is used only 24 times a day
Utilization vs Filing of Jet Routes

<table>
<thead>
<tr>
<th>Airway</th>
<th>CY 2015 Util.</th>
<th>CY 2015 Filings</th>
</tr>
</thead>
<tbody>
<tr>
<td>J75</td>
<td>121,321</td>
<td>244,715</td>
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<tr>
<td>J42</td>
<td>90,740</td>
<td>192,935</td>
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<tr>
<td>J121</td>
<td>74,258</td>
<td>255,281</td>
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<tr>
<td>J14</td>
<td>68,814</td>
<td>134,672</td>
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<tr>
<td>J60</td>
<td>66,686</td>
<td>210,786</td>
</tr>
<tr>
<td>J6</td>
<td>66,294</td>
<td>204,862</td>
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<tr>
<td>J70</td>
<td>60,151</td>
<td>155,906</td>
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<tr>
<td>J51</td>
<td>59,139</td>
<td>225,144</td>
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<td>J146</td>
<td>47,557</td>
<td>156,399</td>
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<td>J209</td>
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<td>144,283</td>
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<td>J91</td>
<td>42,939</td>
<td>93,272</td>
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<tr>
<td>J79</td>
<td>39,860</td>
<td>209,853</td>
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<tr>
<td>J110</td>
<td>39,613</td>
<td>106,119</td>
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<td>J61</td>
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<tr>
<td>J80</td>
<td>32,609</td>
<td>104,866</td>
</tr>
<tr>
<td>J584</td>
<td>30,338</td>
<td>74,094</td>
</tr>
</tbody>
</table>

In many cases, utilization of Jet Routes is a fraction of filing of those routes in the flight plan.

Segment Level Usage Varies

- A flight plan may include only a portion of an ATS route, so segment level usage may be useful.
Victor Route Usage

- Most used Victor route used 61 times a day
- 20th most used 13 times a day
- 100th most used 4 times a day
- There are ~700 Victor routes

Need for PBN Route Structure

Task Group validates need for a NAS PBN Route Structure:

- VORs anchor Jet Routes and VOR MON Program will decommission 30% of VORs by 2025
- The current route structure lacks flexibility and many routes have low usage
- Operators utilizing PBN
- Emerging PBN route structure being done at local level

However... there are many challenges
Some of the Challenges

- Interdependencies
  - VOR MON, Data Comm, PBN Sequencing and spacing, NSAAP, LOA/SOP, ERAM functionality
- What do we mean by routes?
  - Full routes or route segments?
  - Dynamic routes based on Wx/demand?
- How do flight planners understand constraints and options for routing each day?
- Need for facility changes for benefits of route structure
- Alignment of new technology and capability on flight deck, flight planning systems and ATC
- FMS database capacity

High Altitude Point to Point

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>December 2000</td>
<td>RTCA produces High Altitude Concept</td>
</tr>
<tr>
<td>2000 – 2007</td>
<td>High Altitude Redesign Program</td>
</tr>
<tr>
<td>September 2009</td>
<td>Task Force 5 recommendations on High Altitude</td>
</tr>
<tr>
<td>2012 – present</td>
<td>Q-routes under PBN Program Office</td>
</tr>
<tr>
<td>2014 – 2015</td>
<td>PBN National Route Structure Con Ops development</td>
</tr>
</tbody>
</table>
HAR Vision – November 2002
Source: Brief to ATCSCC on Phase 1 Implementation

High Altitude Redesign Vision

Balance flexibility and structure to obtain maximum system efficiency

Performance Objectives
- Improve system efficiency
- Reduce route structure
- Eliminate miles-in-trail restrictions
- Increase flexibility for controllers and aviation system users

Design Objectives
- Point-to-point navigation with pilot navigation in lieu of radar vectors
- Non-restrictive routing wherever efficient
- RNAV/parallel RNAV routes in high density corridors
- Efficient routing around active SUA/ATCAA
- Improved knowledge of SUA/ATCAA status

Current Example of NRS Usage

- AAL179: Pref Route: 2354 nm / NRS 2226 nm
- 550+ flights JFK-SFO per sampled month
PBN Route Structure Tasking – Low Altitude Sub Groups

Rune Duke, AOPA
Chair, PBN Route Structure Low Alt Sub Groups

Approach for Low Altitude

- Spun out two Low Altitude sub groups – for CONUS and Alaska
  - CONUS discussion includes: the MON’s impact, helicopter routes, and need to provide minimum altitude information
  - Alaska has unique route considerations due to unusual operating conditions
- Address compatibility with high altitude group
- Diverse participation
  - Helicopter Association International
  - United Parcel Service
  - Southwest Airlines
  - Alaska Airmen’s Association
Schedule for Low Altitude Groups

- CONUS Low Altitude group
  - Meetings planned for June 29th and July 13th
  - Balance of year will conduct Low Alt group meetings on Friday after High Alt group meets

- Alaska Low Altitude group
  - Aligning PBN RS Sub Group activity with Western Service Center Alaska Enroute Navigation Team (AKENT)
  - Kickoff telecom on July 20th and planning two two-day meetings in SEA during rest of the year

Closing Comments

Designated Federal Official:
Lynn Ray, Federal Aviation Administration

Co-Chairs:
Bryan Quigley, United Airlines
Dale Wright, NATCA
Next Meetings:
October 27, 2016
February of 2017

Washington, DC

Adjournment
Meeting Summary, April 4, 2016
Tactical Operations Committee (TOC)

The thirteenth meeting of the Tactical Operations Committee (TOC), held on April 4, 2016, convened at 2:00 p.m Eastern Standard Time. The meeting discussions are summarized below. The following attachments are referenced:

Attachment 1 – List of Attendees
Attachment 2 – Presentations for the Committee (containing detailed content of the meeting)
Attachment 3 – Summary of the March 3, 2016 TOC Meeting
Attachment 4 – WRTG – Operator Input to Northern California Noise Initiative Plan
Attachment 5 – Graphical TFR Tasking Letter

Welcome and Introductions

Committee Co-Chairs, Mr. Bryan Quigley, United Airlines, and Mr. Dale Wright, National Air Traffic Controllers Association (NATCA), called the meeting to order and welcomed the TOC members and others in attendance. All TOC members and attendees from the public were asked to introduce themselves (TOC members and General Public Attendees are identified in Attachment 1).

Mr. Quigley and Mr. Wright then reviewed the agenda and began the proceedings of the meeting. (The briefing charts from the meeting are included as Attachment 2.)

Designated Federal Official Statement

Ms. Elizabeth “Lynn” Ray, Vice President of Mission Support for the Air Traffic Organization (ATO), and the Designated Federal Official of the TOC, read the Federal Advisory Committee Act notice governing the open meeting.

Approval of March 3, 2016 Meeting Summary

The Chairs asked for and received approval of the written summary for the March 3, 2016 meeting (Attachment 3).
Western Regional Task Group / Operator Input to Northern California Noise Initiative Plan

Mr. Dan Allen, Chair of the Western Regional Task Group, briefed the TOC on draft recommendations titled, “Operator Input to Northern California Noise Initiative Plan.” The recommendations were in response to FAA tasking to the Western Regional Task Group (WRTG) under the TOC. The task requested the TOC and WRTG to provide operational perspective on six specific suggestions offered by the community in NorCal to improve noise.

Mr. Allen reviewed the WRTG’s response to six suggestions in the NorCal Initiative Plan, which included use of speed brakes, runway choices, Instrument Flight Procedure (IFP) choices, nighttime offloads/routes, early turns and international air carrier execution of Optimized Profile Descents (OPDs). The TOC had no concerns with these six responses.

Mr. Allen explained that this task was conducted on a very short timeline, and as a result, the WRTG had no response to Task 3, which requested any additional ideas/recommendations which might better help address community noise concerns. Mr. Glenn Morse, United Airlines, submitted a proposed response to Task 3 which read as follows:

“Items 2, 3, and 4 of the 6 suggestions in the Initiatives the TOC was tasked to address relate to existing SFO Noise Abatement Procedures, which are available at http://www.flysfo.com/community-environment/noise-abatement. The current FAR Part 150 process is the appropriate vehicle to develop, assess and implement noise abatement procedures as components of the Noise Compatibility Plan.”

One TOC member noted that interaction between the FAA and flight operators and the community on noise issues can be tense. The member expressed concern that the wording used in the draft report did not convey appropriate recognition from operators for the level of concern about noise in the community. The TOC decided that additional editing of the text of the report was necessary.

- **Committee Action:** The Committee agreed by consensus to provisionally accept the WRTG draft response to the NorCal Noise Initiative subject to an additional iteration to improve the wording in the report. Attachment 4 to this report is the final and approved report, completed after the April 4 TOC meeting, that the TOC transmitted to the FAA.

Performance Based Navigation (PBN) Route Structure Concept of Operations Task

Mr. Mark Hopkins, Delta Airlines, and Mr. David Surridge, American Airlines, briefed the TOC on the new PBN Route Structure Task Group. Mr. Hopkins and Mr. Surridge are the Co-Chairs of this Task Group. They reviewed the tasking elements, the members and the schedule for the task.

Ms. Ray noted that the PBN Route Structure CONOPs has been available to industry for the last two years but that the FAA has been interested to receive industry feedback and perspective on the concept.

One TOC member noted that his airline were regular users of the National Route System (NRS) and utilized its flexibility. He commented that operators are seeking flexibility in routing where feasible.
Another TOC member commented that this task group will need to remain closely aligned with other PBN related taskings in the NextGen Advisory Committee (NAC). The NAC has a PBN NextGen Integration Working Group (NIWG) as well as a task examining tools for PBN Time, Speed and Spacing.

**FAA Report**

Ms. Ray spoke next about organizational changes within the Air Traffic Organization’s Mission Support Services. Ms. Ray noted that Mr. Bill Davis, who had previously acted as Deputy VP in Mission Support, would move to a new executive role focused on new entrants (unmanned vehicles and commercial space) as well as the National Airspace System (NAS) Navigation Strategy. Ms. Jodi McCarthy would replace Mr. Davis as DVP of Mission Support and Mr. Gary Norek would serve as Acting Director of Airspace Services, replacing Ms. McCarthy.

**NATCA Agreement on Facility Release Policy and Placement of New Hires**

Mr. Dale Wright, NATCA, next provided the NATCA perspective on placement and movement of controllers. Mr. Wright noted that the NAS cannot afford gaps on hiring, particularly with many facilities having 40% of controllers eligible to retire.

Mr. Gene Burdick, FAA, spoke as well, informing the TOC of the FAA’s collaborative effort with NATCA to balance the controller workforce across the needs of the NAS. The FAA has centralized decision making around staffing around the NAS, moving away from a previous process which was decentralized across the nation’s 300+ facilities. The FAA developed a national prioritization tool to monitor the “staffing health” of facilities and “triage” the needs. The tool examines staffing, pipeline of new hires, retirements, attrition, etc. to determine priorities. The FAA reprioritizes NAS staffing needs each month.

The prioritization tool was accompanied by a new national release policy. Facilities that had appropriate staffing could release controllers within 3 to 6 months, and this accounted for 90% of facilities. For the remaining 10% of facilities, where staffing challenges remained, the policy permitted release within 12 months.

Additionally, the FAA is hiring new controllers based on a national vacancy announcement. This gives the FAA flexibility to place new controllers where they are needed. The FAA is hiring on two tracks – one track for those with no previous experience and a second track for those with experience. The last round of hiring was in December 2015 for the second track, and a new round of hiring is anticipated for Fall 2016.
**Introduction to TFR Tasking**

Ms. Ray next introduced a new task for the TOC on Graphical TFRs. The tasking letter is included as Attachment 5. The task was brought to the TOC in large part based on the interest and request of the Aircraft Owners and Pilots Association (AOPA). The three components of the task are:

- **Task 1** – Use broader expertise and data to clarify and validate issues associated with TFRs and recommend solutions
- **Task 2** – Recommend policy regarding an online authoritative source for TFR content and use of TFR information for flight planning purposes
- **Task 3** – Develop an associated set of business rules around what can be disseminated; to whom the data should be disseminated; standardization of the format; graphical depictions; and means of dissemination.

One TOC member expressed concern that the tasking includes a six month time frame to develop recommendations. Ms. Ray commented that once leadership was identified for the group, those individuals would need to determine the amount of time required to accomplish the effort. She noted that if more than six months were required, the FAA would be open to that.

**Adjourn**

Chairmen Quigley and Wright ended the meeting of the Committee at 3:30 p.m.

**Next Meeting**

The next meeting of the TOC is June 23, 2016 in Washington, DC.
The FAA will conduct research, with support from MITRE CAASD, to allow initial definition of the goal including:

- Those specific factors that could be considered if a change is made to a complexity index. A complexity index determines compensation to the ATC for the complexity of the airspace and volume of aircraft in the airspace.
- Use of available safety data to assess airspace issues and mitigations.
- Development of criteria and a process for reclassifying Class B airspace.

AJV-113 is updating the 7400.2, Procedures for Handling Airspace Matters, in our current Document Change Proposal (DCP) rewrite.

Recommendations Coordination with the DCP

Recommendation 8
Remove existing guidance indicating design should be centered on a NAVAID [Navigational Aid] and amend guidance to ensure designers leverage the flexibility to configure airspace that maintains Class B safety standards.

Recommendation 9
Require a review of Class B airspace and instrument procedures whenever new runways are built, existing runway changes occur (e.g. decommissioned, lengthened, or shortened) or when procedures are developed or old ones canceled.

Recommendation 10
Encourage designers to make maximum use of existing tools to accommodate VFR flights through or around Class B airspace.

Recommendation 14
Update FAA Order 7400.2 with additional guidance on data sources relevant for the biennial review.