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TOC-038

February 12, 2018

Meeting Summary, December 5, 2017

Tactical Operations Committee (TOC)

The eighteenth meeting of the Tactical Operations Committee (TOC), held on December 5, 2017, convened at 09:00 a.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 August 22, 2017 TOC Meeting
Attachment 4 – Recommendations for Focus in the CSS-FD Program
Attachment 5 – Letter from TOC Member Inquiring about OEI/Obstacles Task for the TOC
Attachment 6 - Briefing on the Drone Advisory Committee
Attachment 7 - Briefing on Awareness and Operational Impact (AOI) Tool
Attachment 8 - Briefing on NOTAM Task Force
Attachment 9 - Draft Industry Perspective on AIS

Welcome and Introductions

Committee Co-Chairs, Capt. Bart Roberts, JetBlue, and Mr. Jeff Woods, 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).

Capt. Roberts and Mr. Woods 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. Jodi McCarthy, 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 August 22, 2017 Meeting Summary

The Chairs asked for and received approval of the written summary for the August 22, 2017 meeting (Attachment 3).

FAA Update

Ms. McCarthy provided the FAA update. Ms. McCarthy began by informing the TOC of key personnel changes. She noted that FAA Administrator Michael Huerta's 5 year term would be ending on January 5, 2018. Additionally, she mentioned that Mr. Mike Romanowski would be leaving his position in the Office of Commercial Space to become the Director of Policy and Innovation in the Aircraft Certification directorate.

Regarding controller and technician hiring, Ms. McCarthy told the TOC that the FAA had exceeded its goal of hiring controllers by 6% and 1,880 new hires were added in FY2017. She also noted that the FAA exceeded its goal on the technician side by 7.5%.

Ms. McCarthy spoke about fire and hurricane relief and recovery efforts, particularly in California, the Southern US and the Caribbean. The FAA had received $70 million to assist in disaster relief. She informed the TOC that in Puerto Rico, the Tower and CERAP had returned to full capacity within 6 days of Hurricane Maria. A team across the Air Traffic Organization had been deployed to San Juan to assist in the recovery, with operators providing multiple flights between the mainland and Puerto Rico. Given the devastation on the islands, all efforts related to the Caribbean initiative were on hold. The FAA's focus in this region has been on restoral of infrastructure and ensuring the safety and well being of its people. A member of the TOC commended the FAA and its employees in Puerto Rico for their speed and commitment to restoral of operations in the Caribbean after the hurricanes. The member offered thanks from the industry to all of the controllers, technicians and other personnel for their contributions.

Finally, Ms. McCarthy provided updates about a variety of topics:

- A wrong surface landing alert system has been developed to alert if an aircraft was at risk of inadvertently landing on a taxiway
- A commercial space Aviation Rulemaking Committee (ARC) was established regarding spaceport categorization with Mr. Mike Cirillo (A4A) and Mr. Carl Burleson (FAA) leading
- There is ongoing litigation related to implementation of the SoCal Metroplex. Formal mediation was in process and a settlement was possible.
- A working group was developing 9 new RNAV westbound Standard Instrument Departures (SIDs) for Phoenix

Consideration of Recommendations for Common Support Service – Flight Data Task Group (CSS-FD)

Ms. Tammy Bowe, Jeppesen, and Mr. Tim Stull, American Airlines, Co-Chairs of the CSS FD Task Group provided a high level overview of the recommendations for CSS-FD. The briefing slides used by Ms. Bowe and Mr. Stull may be found on page 7 to 19 of Attachment 2.

The work of the Task Group focused on ensuring alignment of investment decision-making between the FAA and industry as the underlying driver of success for CSS-FD. In support of this objective, the report provided recommendations on the value of the following:

- Specific flight plan feedback data elements
- A flight plan monitoring service including push notifications of changes to a flight plan
- Capability for operators to communicate more information about their intended flight plan
- Improved capability to update flight plans after current lockout time

Additionally, the Task Group provided perspective on the key risks associated with successful implementation of the CSS-FD concept.

A Committee member inquired if the approach to operations management and coordination would change as a result of CSS-FD. The Chairs responded that yes, operations and coordination would indeed evolve with CSS-FD. However, the CSS-FD concept had not yet matured from a concept of operations to a concept of use, so determination of how operations would evolve remained as future work for CSS-FD.

Another Committee member commented that the work of CSS FD was relevant to all operators – passenger airlines, cargo airlines, business aviation and general aviation. However, the member noted the concept was relevant for different reasons and the concept needed to remain sensitive to the different business objectives of different types of operators. For example, cargo operators have one opportunity per day to move their packages, hence completion of a flight on a timely basis could be a higher priority for such operators than others.

A Committee member raised a concern that some operators are highly engaged with working with the FAA on collaborative planning while other operators are not as engaged. One operator commented that for operators to invest in automation to collaborate as per the CSS-FD concept, operational personnel would have to secure significant funding from their finance departments. The individual noted that industry and the FAA should continue to work collaboratively to develop business cases for CSS FD that inform both FAA as well as operator investment. Additionally, a representative of a flight planning third party vendor commented that such vendors would be able to cater to smaller operators who would not develop their own automation.

Another member reinforced that acquiring funding for investment is a significant challenge for operators. It will be challenging for operators to specifically quantify exactly what costs are saved by participation in CSS-FD. Hence, industry and FAA collaborating to identify and quantify the operational impact will be valuable for operators. Additionally, the effort should not lose focus on the highest priority information elements that will drive the greatest benefits early on in the process.

- **Committee Action**: The Committee agreed by consensus to accept the “Recommendations for Focus in the CSS-FD Program”. Attachment 4 to this report is the final and approved report that the TOC transmitted to the FAA. With this report, the work of this Task Group was complete and the group was sun set.

Update on Intentional GPS Interference Task

Ms. Rune Duke, AOPA, and Co-Chair of the Intentional GPS Interference Task Group provided an update on the work of this group. Mr. Duke's briefing slides may be found from page 20 to 28 of Attachment 2. One Committee member noted that the education component of the group's recommendations needed to include education for Dispatchers as they were key participants in the flight planning and routing process.

Areas of Future TOC Interest

Ms. McCarthy next provided an update to the TOC on topics of interest. For PIREPs, she noted that the FAA was not planning a tasking for the TOC but recognized the need to work with stakeholders on the issue. An industry member requested an update on the status of the FAA's work on PIREPs and Ms. McCarthy stated that she would provide an update on this.

Ms. McCarthy next informed the TOC that the FAA was not planning a task for the TOC Alaska Terminal operations.

Finally, she commented that she had received a letter from industry members inquiring about a possible TOC task to address One Engine Inoperative operations and obstacle clearance. This letter is included as Attachment 5. Ms. McCarthy said that she had not yet had an opportunity to review the letter and would plan to do so prior in preparation for the March 2018 TOC meeting.

Updates on the NextGen Advisory Committee (NAC) and Drone Advisory Committee (DAC)

Mr. Andy Cebula and Mr. Al Secen, both of RTCA, provided updates to the TOC on the work of the NAC and the DAC. Mr. Cebula's briefing slides may be found on pages 33 to 40 of Attachment 2. Mr. Secen's slides may be found as Attachment 6.

Overview of Awareness and Operations Impact (AOI)

Mr. Ron Stroup, FAA, next provided an overview and demonstration of the FAA's AOI tool. Mr. Stroup's briefing slides may be found in Attachment 7.

FAA Response to Previous Recommendations

The FAA next provided a series of briefings responding to previous recommendations.

<u>PBN Route System</u>

Ms. Chris Chesak, FAA, provided an update on the PBN Route System recommendations which were delivered to the FAA in August 2017. Ms. Chesak's briefing slides may be found on pages 43 to 47 of Attachment 2. Ms. Chesak noted that the FAA had much work to do to fully assess the 92 recommendations provided in the PBN RS report. She estimated that the FAA would have a full

response by September 30, 2018 given the level of coordination that would be required across lines of business in the FAA.

Graphical TFRs

Mr. Scott Jerdan, FAA, next provided an update on recommendations on Graphical Temporary Flight Restrictions (TFRs). Mr. Jerdan also noted that he was conducting coordination across multiple lines of business in the FAA to evaluate the TFR recommendations. He estimated the full assessment would be completed by December 2018. As of December 2017, the FAA concurred with 26 recommendations and 26 recommendations were open. One recommendation was a non-concur and one was partially concur.

For the recommendation that was non-concurred (recommendation #50), one TOC member raised concern about identifying a specific solution as the only answer (i.e., contacting flight service). The member noted that there may be multiple methods to address the underlying need.

National Procedure Assessment

Mr. Mark Adams and Mr. Lonnie Everhart, FAA, provided an update on the National Procedure Assessment initiative. Briefing materials for this discussion may be found on pages 70 to 76 of Attachment 2.

During this discussion, a TOC member discussed concerns about canceling procedures given recent glitches in Flight Management System software. The glitch had removed approximately 10,000 procedures in the National Airspace System and the member was concerned about removing any procedure given the scale of missing procedures.

Another Committee member inquired about what the collaborative process was for operators to weigh in on candidates for cancellation. The FAA requested further clarity on who would need to be involved in the assessment process when a candidate procedure was planned for cancellation. While the FAA appreciates that outreach to the operator community is appropriate, they lacked clarity on how to accomplish this and whom to notify. Currently procedures subject to cancellation appear for cancellation based on their date for periodic review. Hence, there is no current process that periodically identifies a batch of procedures due for cancellation. Operators identified a desire to receive periodic notification of a consolidated list of procedures set for cancellation. Some member organizations expressed an interest to receive such notices. These included AOPA, ALPA, NBAA and A4A.

Briefing on NOTAMs

Mr. Jerry Torres, FAA, next briefed the TOC on NOTAMs. Mr. Torres's briefing materials may be found in Attachment 8. Mr. Torres provided an update on both the NOTAM Task Force activity as well as the FAA's approach and plans to improve NOTAMs more generally.

One TOC member cautioned Mr. Torres and the Task Force from applying a 'one size fits all' policy for mitigations on NOTAMs. The member noted that particularly for small to medium sized airports, solutions to improve NOTAMs may have different requirements than for larger airports.

Additionally, Mr. Torres commented that Airspace Information Services (AIS) had multiple issues that were of concern to operators. Mr. Torres informed the TOC that he had received a draft white paper from operators documenting some of the concerns about AIS. This white paper is included as Attachment 9.

Adjourn

Chairmen Roberts and Woods ended the meeting of the Committee at 2:00 p.m.

Next Meeting

The next meeting of the TOC is planned for March 1, 2018.

Attendees: December 5, 2017 Meeting of the Tactical Operations Committee

(Note: Committee member names appear in italics)

Name	Company
Adams, Mark	Federal Aviation Administration (FAA)
Ahlberg, Ray	Federal Aviation Administration (FAA)
Bertapelle, Joe	JetBlue Airways
Boll, Rich	National Business Aviation Association
Bowe, Tammy	Jeppesen
Cebula, Andy	RTCA, Inc.
Chen, Linda	Federal Aviation Administration (FAA)
Chesak, Christine	Federal Aviation Administration (FAA)
Cirillo, Michael	Airlines for America
Decker, Bob	Federal Aviation Administration (FAA)
Duke, Rune	Aircraft Owners and Pilots Association
Everhart, Lonnie	Federal Aviation Administration (FAA)
Ford, JoAnn	Federal Aviation Administration (FAA)
Jerdan, Scott	Federal Aviation Administration (FAA)
Kast, Christian	*United Parcel Service (UPS)*
Lyons, Jeff	Federal Aviation Administration (FAA)
McCarthy, Jodi	*Federal Aviation Administration (FAA)*
Mitra, Trin	RTCA, Inc.
Morse, Glenn	United Airlines, Inc.
Narowski, Tiffany	Federal Aviation Administration (FAA)
Nguyen, Tuan	Federal Aviation Administration (FAA)
Nicholson, Tommy	The MITRE Corporation
Prestrude, Mark	National Air Traffic Controllers Association
Price, Wade	Federal Aviation Administration (FAA)
Roberts, Bart	*JetBlue Airways*
Secen, Al	RTCA, Inc.
Short, Rico	Beacon Management Group
Solley, Edwin	*Southwest Airlines*
Steinbicker, Mark	*Federal Aviation Administration (FAA)*
Stellings, Ernie	National Business Aviation Association
Stroup, Ron	Federal Aviation Administration (FAA)
Stull, Tim	American Airlines
Szukala, Steve	Federal Aviation Administration (FAA)
Tennille, Greg	*The MITRE Corporation*
Toney, Crystal	Federal Aviation Administration (FAA)
Williams, Heidi	*National Business Aviation Association*
Woods, Jeff	*National Air Traffic Controllers Association*
Zabriskie, Laura	Federal Aviation Administration (FAA)
Zeller, Joey	Evans Incorporated

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Eighteenth Meeting of the RTCA Tactical Operations Committee

December 5, 2017

Hosted by NBAA

Washington, DC

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Welcome and Introductions

Co-Chairs:

Bart Roberts, JetBlue

Jeff Woods, NATCA

PUBLIC MEETING ANNOUNCEMENT
Read by: Designated Federal Officer Jodi McCarthy
Tactical Operations Committee (TOC)
December 5, 2017

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:

October 31, 2017

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.

Topical Agenda

- Consideration of recommendations from Common Support Services – Flight Data tasking
- Update from ongoing Intentional GPS Interference task
- Discussion of TOC areas of future interest
  - PIREPs, Alaska Terminal, OEI/obstacles
- FAA response to previous recommendations
  - PBN Route System, Graphical TFRs, National Procedure Assessment
- Informational briefings on key topics
  - Awareness and Operational Impact (AOI)
  - NOTAMs

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Review and Approval of:

August 22, 2017 Meeting Summary

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FAA Report

Jodi McCarthy

Vice President, Mission Support Services

Air Traffic Organization

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Consideration of Recommendations for CSS-FD Tasking

Tammy Bowe, Jeppesen

Tim Stull, American Airlines

Co-Chairs, CSS-FD Task Group

What is Common Support Services – Flight Data?

- ICAO concept for Flight and Flow Information for a Collaborative Environment (FF-ICE)
  - Component of transition to Trajectory Based Operations (TBO)
  - Flight planning with standardized information exchange models and modern service oriented interfaces
  - Information sharing amongst stakeholders
- CSS-FD planning to provide standards-based flight planning environment consistent with FF-ICE concept
  - CSS-FD Investment Analysis Readiness Decision (IARD) in Q1 CY2018

TOC Tasking

- Task 1: Assist the CSS-FD team in establishing areas of focus for the investment, by identifying the features of the concept that will provide the most operational benefit
  a. Knowing which ATM constraints will affect a flight
  b. Being able to provide additional details on the expected flight trajectory that will allow more accurate FAA assessment of the constraints
  c. Being able to create an operator-optimized plan in response to a TMI rather than simply fly a TFM-assigned reroute
  d. Being able to electronically coordinate changes to a flight plan after the normal lock-out time

- Task 2: Assist the CSS-FD team in identifying areas of risk and operator constraints that could impact successful implementation of the early collaborative planning envisioned in the concept.

Task Group Participation

- Darrell Pennington, Air Line Pilots Association (ALPA)
- Rune Duke, Aircraft Owners and Pilots Association
- **Tim Stull, American Airlines, Inc. (Co-Chair)**
- Russ Richmond, Delta Air Lines, Inc.
- Denise Fountain, DoD Policy Board on Federal Aviation
- Ray Ahlberg, Federal Aviation Administration (FAA)
- Steve Anderson, Federal Aviation Administration (FAA)
- Linda Chen, Federal Aviation Administration (FAA)
- Maureen Keegan, Federal Aviation Administration (FAA)
- Denise Wellspeak, Flight Plan
- Ken Wilson, Flight Plan
- Kim Lantz, Foreflight LLC
- **Tammy Bowe, Jeppesen (Co-Chair)**
- Joe Bertapelle, JetBlue Airways
- Marcus Hantschke, Lufthansa Systems
- Mark Prestrude, National Air Traffic Controllers Association (NATCA)
- Ernie Stellings, National Business Aviation Association
- Trin Mitra, RTCA, Inc.
- Stephane Mondoloni, The MITRE Corporation
- Tejal Topiwala, The MITRE Corporation
- Perry Lewis, United Airlines, Inc.
- Allan Twigg, United Airlines, Inc.

The FAA/Industry Investment Challenge

- Finding 1: Alignment of investment decision-making between FAA and industry is the underlying driver of success for CSS-FD.

CSS-FD Capabilities Considered

- Flight plan feedback
  - On applicable Air Traffic Management constraints for trial, preliminary and filed flight plans
- Monitoring service
  - For changes to constraints after initial submission
- Capability for operators to communicate more information about their intended flight
  - Likely enhancing trajectory prediction and negotiation
- Improved capability to update flight plans after current lockout time
  - Up to “wheels up” or when flight is activated in the NAS System.

Highest Value Flight Plan Feedback Data

- Recommendation 1: initial focus for flight plan feedback on airspace constraints, ATC constraints and routes, certain Traffic Management Initiatives (AFPs, MITs) and runway status information

Constraint Category	Priority	Constraint Detail
Airspace Constraints	H	Temporary Flight Restrictions
	H	Active SUA/ATCAA *Inclusive of scheduled to be active, actual activation/deactivation, NOTAM activated SUA and any other dynamic information relative to when a flight is projected to reach the airspace. This is dynamic information and operators are interested to know if airspace will be hot or cold when aircraft reaches a SUA boundary.*
	H	Closed and impacted routes *Examples are routes unavailable due to interference, ATC zero, airway NOTAM'd out of service, change in MEA, unavailable transition, etc.*
	H	Prohibited Areas
ATC Constraints and Routes	H	ATC assigned route (automated or manual) ERAM auto-route or ATC Preferred Route
	H	TFM assigned route (Route Advisory-Required)
	H	Altitude or speed crossing restriction from ATC SOP/LOA
Traffic Management Initiatives	M/H	Airspace Flow Program *Larger operators handle at network level; smaller operators may derive greater value from this. Feedback enables operators to confirm that a route-out removes a flight from an AFP as intended.*
	M/H	Miles-in-Trail or Minutes-in-Trail Restrictions *Operators interested in impact of MIT (delay, miles, etc.); knowing MIT impact(s) to a route may adjust routing*
Runway Status	M/H	Closed Runway *Runway changes can have an impact on SID/STAR and impact route*
	M/H	Runway configuration at departure/destination *May impact SID/STAR and impact route*

Flight Plan Feedback Data (Cont.)

- Recommendation 2: CSS-FD should also deliver feedback on the full constraint set.
  - Additional constraint information includes more Traffic Management Constraints, NAS Resource Constraints – Outages and Resource Constraints due to Meteorological Conditions – Airport / Route

- Recommendation 3: FAA and industry should conduct collaborative analysis on the impacts of flight plan feedback to further inform future investment decisions.

Providing Additional Operator Data to the FAA

- Recommendation 4: The FAA should identify which operator data elements provide the greatest operational benefits by improving trajectory modeling and engage the vendor/operator community to evaluate feasibility to submit such information.

Additional Findings

Value of Operator Optimized Routes

- Finding 2: CSS-FD constraint feedback is valuable to operators to optimize individual flight plans, as well as make flight planning decisions that optimize an operator's network.

Route Adjustment After Lockout Time

- Finding 3: The ability for operators to submit a route adjustment after lockout time has high operational value, in terms of safety and efficiency.

Key Risks

- Cost of investment (automation, data, workflow)
- Linkage to multiple other systems/concepts
- Additional automation required for amendments to flight plan after lockout
- Accuracy of constraint information
- Accuracy of trajectory models
- Program funding
- Collaboration
- Use of operator provided data
- Release of operator provided data

DISCUSSION

TOC Action

Consider Report:

Recommendations for CSS-FD

and Transmit to FAA

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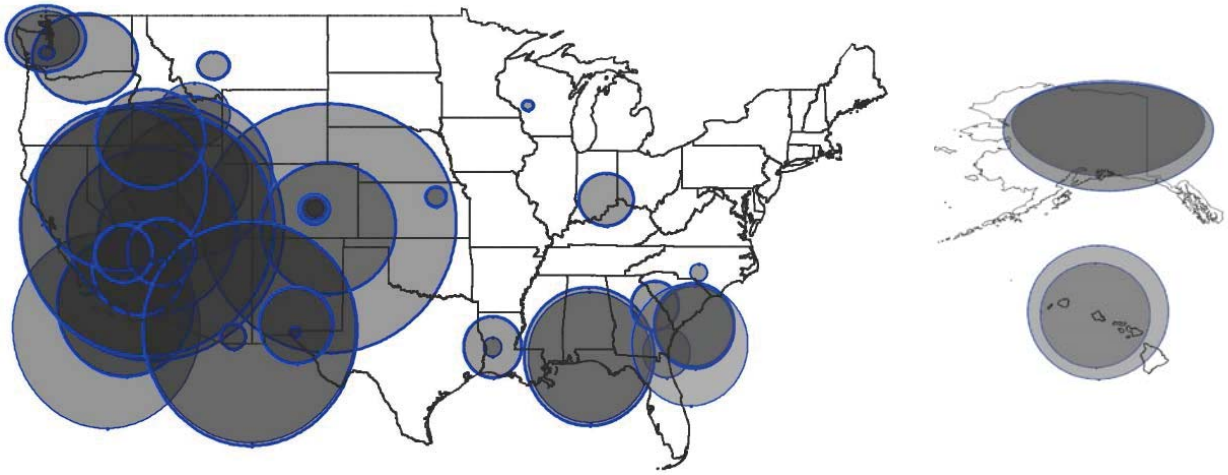
Update on Intentional GPS Interference Tasking

Rune Duke, AOPA

Co-Chair, Intentional GPS Interference Task Group

Intentional GPS Interference

- Number of events and locations growing
- Potential impact region identified in NOTAM is significant

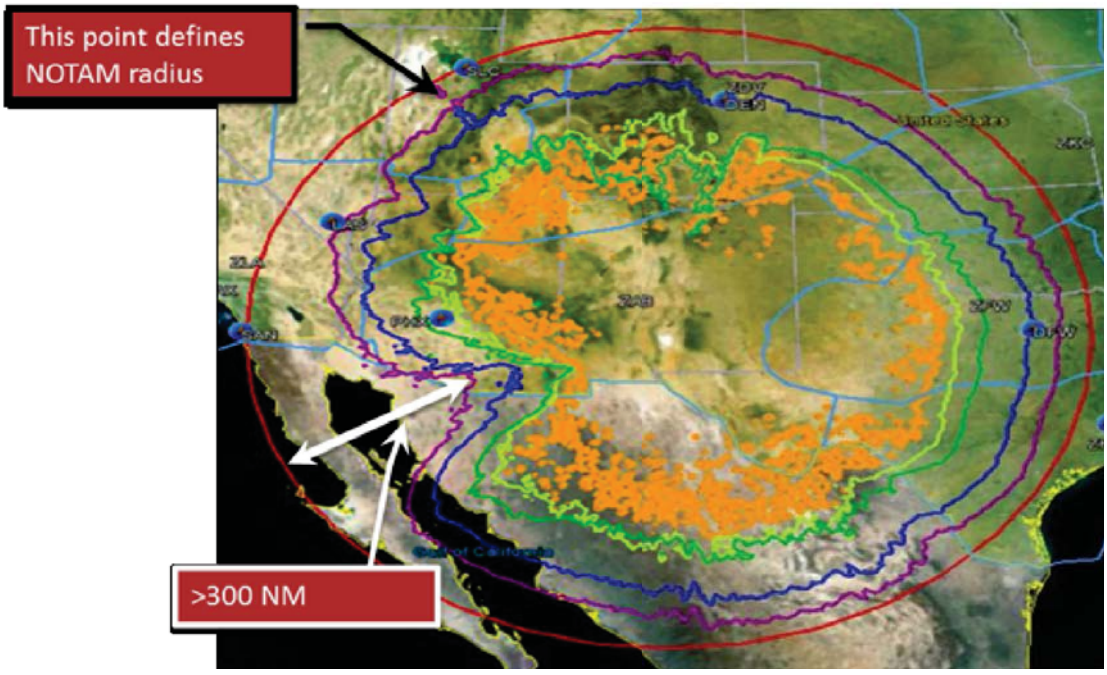


Interference events in 2017 (not all shown) with the 4,000 feet AGL contour depicted (Alaska, Hawaii and CONUS not shown at the same scale).

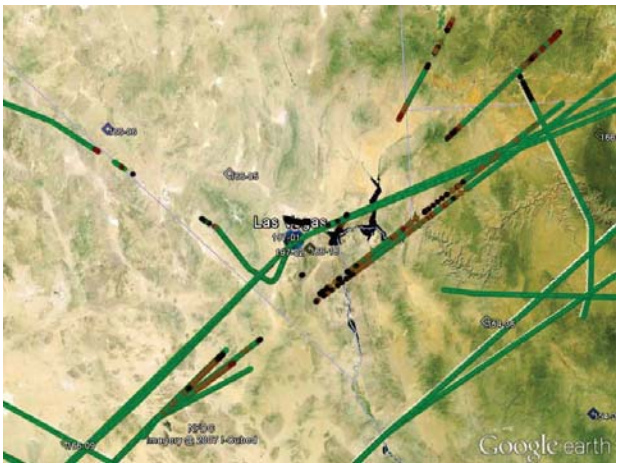
Intentional GPS Interference Tasking

1. Evaluate GNSS interference events and quantify the NAS impact
2. Recommend effective tracking and metrics to assess the impact of GNSS interference events with NAS impact, including the economic impact on airports during the event
3. Evaluate and recommend an effective way for interference events to be defined and depicted based on the likelihood of interference and the level of impact
4. For interference events, recommend standard minimum weather requirement/criteria for airfields that have only GNSS approach procedures and/or no cooperative terminal surveillance radar/Wide Area Multilateration (WAM) coverage
5. Evaluate the effectiveness of the alerting processes, including issuance of Notices to Airmen (NOTAM), used by air traffic and the notification process for pilots and make recommendations for improvements as needed
6. Recommend guidance/training material needed for controllers and pilots to increase understanding and awareness for current and proposed mitigations

Methodology for NOTAM Increases Impact Area



Some Loss of GPS Signal due to Interference Events Validated



The ADS-B track data from an event, UTTR 17-01– May 3, 2017, shows multiple aircraft losing GPS reception while others are not affected. (*Non-green colors represented degraded NIC/NAC values and missing track means the signal completely dropped out*)

Critical question is how widely is such signal loss experienced, by what aircraft and what is the operational impact?

Pilot Issues

- Updates to pilot guidance
- GPS Interference NOTAM and CFR 91.227
- Reporting for loss of GPS
  - Need to improve and centralize data collection on loss of GPS; current impacts are anecdotal
  - Need to identify standard information and metrics
  - Built-in limitations to capturing information about interference impacts: no ASRS category, NOTAM says only report ATC if assistance needed

Controller Issues

- Need greater awareness of mitigations and procedures for controllers
  - Collect ATC best practices – standardize
  - Regular/annual training – explain how impacts aircraft
  - How to confirm loss of GPS signal – currently ask next aircraft but next a/c may or may not have the same issue
  - Usability of underlying SIDs/STARs?
  - Guidance on when you can restart RNAV
  - ATC on position have little heads up
  - Etc…

Long Term Concerns

- Collaboration with industry to validate the APNT CONOPs and implementation of a navigation system that will meet the APNT program objectives

Future Schedule

- Task group meetings in December, January, February
- Deliver recommendations at March 1st TOC meeting

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Update on TOC Areas of Interest

- PIREPs
- Alaska Terminal
- OEI/Obstacles

Jodi McCarthy, FAA

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BREAK

Other Business – Awareness and Operational Impact (AOI) Overview

Ron Stroup & Wade Price, FAA

LUNCH

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Update on the NextGen Advisory Committee (NAC)

Andy Cebula, RTCA

October 4th meeting
Record NAC Attendance >135

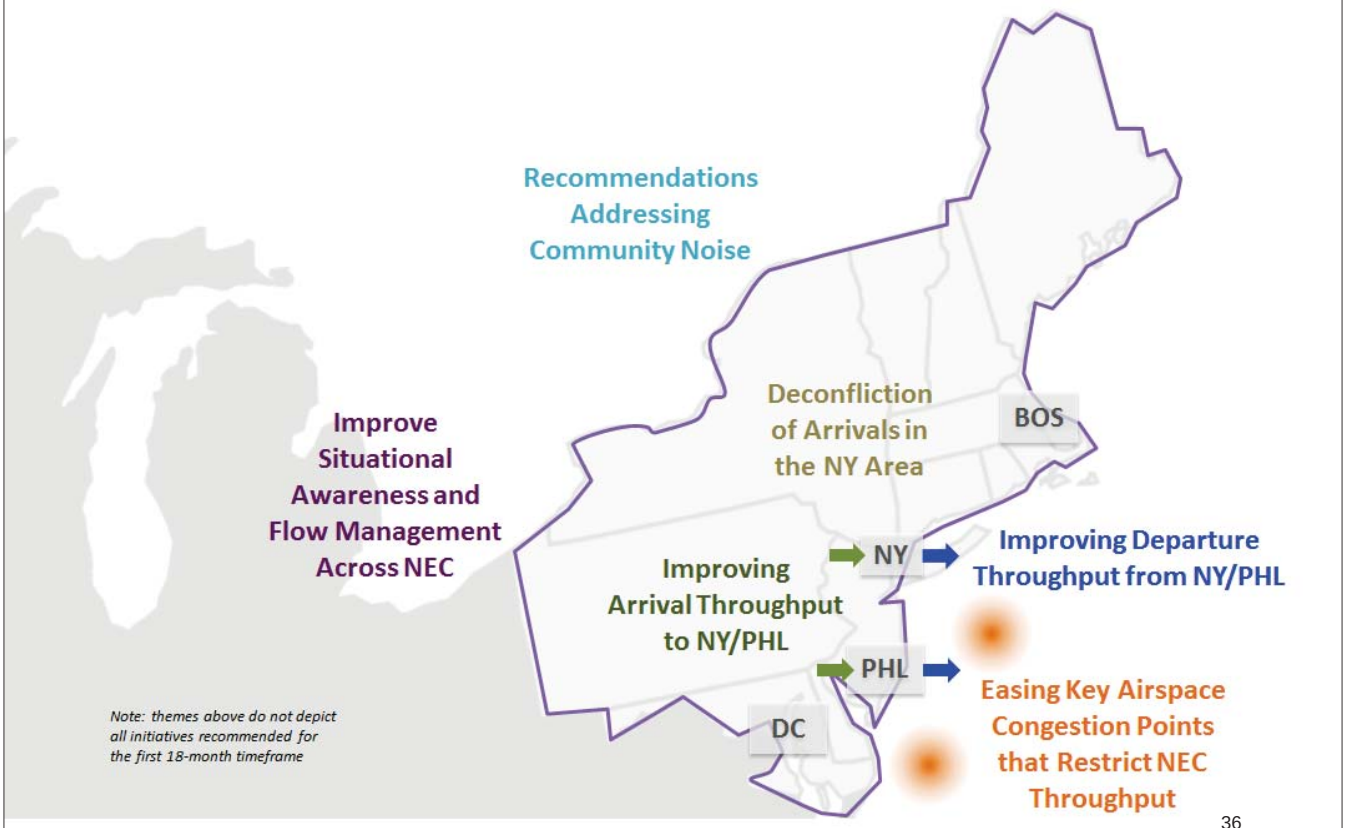
Dave Bronczek (NAC Chair) Dan Elwell, DFO)

Michael's last NAC meeting

NextGen Advisory Committee

- Agenda:
  - Northeast Corridor – Implementations
    - <18mths, 18-36mths, +3yrs
    - Benefits & Measurement
  - Analysis of Optimized Profile Descent – Boston & DataComm Benefits Assessment
  - Regional Equipage – impacts on PBN implementation
  - NextGen Integration Working Group – implementation DataComm, Multiple Runaway Operations, PBN, Surface & Data Sharing

Key Themes of NEC NIWG Initiatives



Key Risks & Pacing Items

- Controller, support and operator staffing and resources
- Facility-level feedback, constraints and nuances that may impact individual initiatives
- Funding and budget priorities
- Environmental – community issues and concerns
- Cultural issues – i.e. controller, pilots, dispatcher acceptance and implementation
- Mixed equipage of aircraft/differing capabilities

Prioritization

- Initial constraint of 'what can be done' significant determinant
- T+18-36 months, opportunity to reset and ensure next phase of priorities determined based on target operational 'end state'
  - Address Phase 1 operational goals and capability objectives
  - Seek to remain consistent with and even propel TBO vision

Phase 1 Near Term Operational Goals

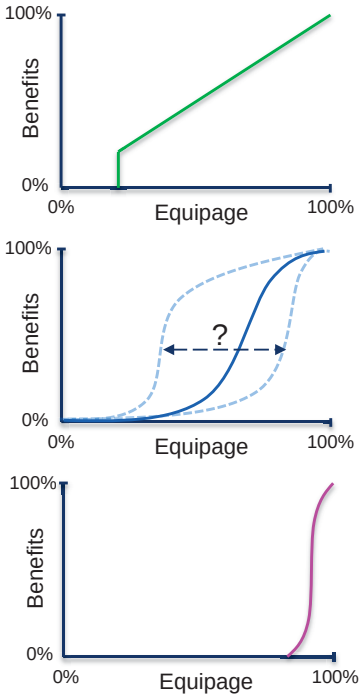
- **Goal: Improve traveler experience through better execution of today's operation**
  - Applicable to any end customer of the air traffic system (traveling public, packages and business travelers)
  - Applicable to all weather conditions but exacerbated when weather deteriorates
- Specific components of this goal include the following:
  - Operate the full intended operation
  - Operate on time
  - Operate predictably

Phase 1 Capability Objective Priorities

Capability	Average Rank	Percent of Responses with Capability Ranked in Top 3
Deconflict Airports	5.2	73%
Improve Individual Airport Throughput	4.8	58%
Improve and Integrate Existing Flow Management Capabilities	4.5	42%
Improve Airspace Throughput	4.1	47%
Implement New Flow Management Decision Support Tools	3.9	38%
Improve NAS Information, Common SA	3.5	27%
Create New Noise Abatement Procedures	2.0	15%

Equipage – Benefit Relationship

- Individual Aircraft
  - Enhanced route efficiency
  - More flexible airspace use
- Clustered Aircraft
  - Increased Departures
  - Advantages of a common path
- Whole Fleet
  - Trajectory predictability
  - De-conflicted throughput



2018 NAC Meetings

- March 14th – Harris Corp-Melbourne, FL
- June 27th – DC/NYC?
- October 10th – DC/NYC?

Update on the Drone Advisory Committee (DAC)

Al Secen, RTCA

FAA Response on Previous Recommendations

- PBN Route System – Chris Chesak, FAA
- Graphical TFRs – Scott Jerdan, FAA
- National Procedure Assessment – Steve Szukala, Lonnie Everhart & Mark Adams, FAA

Performance Based Navigation Route Structure

FAA Response to RTCA Recommendations

Presented to: RTCA TOC

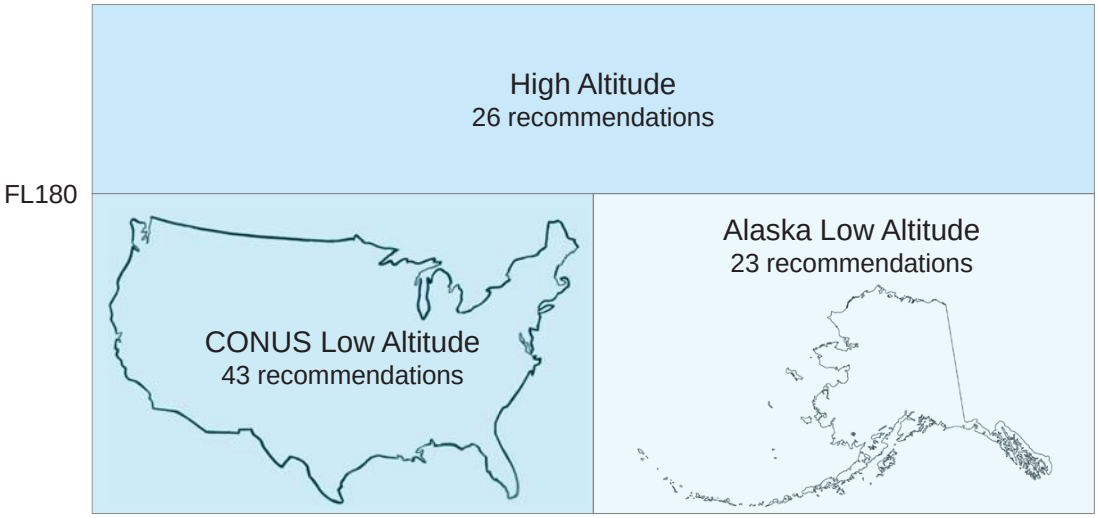
By: Christine Chesak

Date: December 5, 2017

RTCA Tasks from the TOC

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

PBN RS RTCA Task Groups



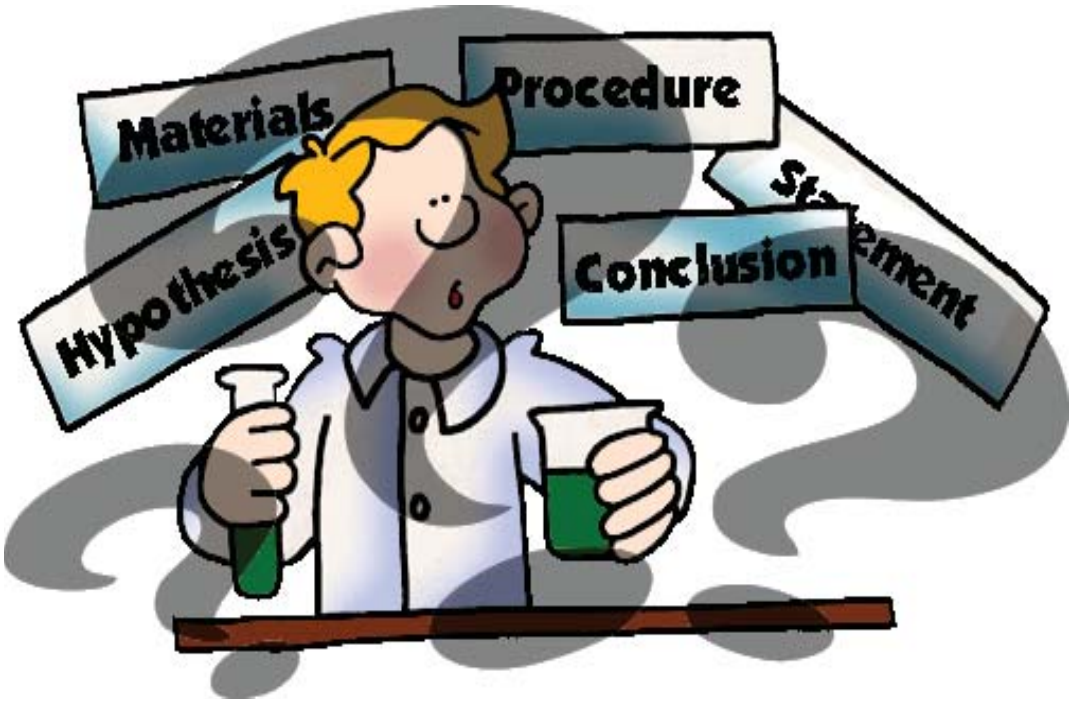
92 recommendations, some of which will require additional analysis and cross-LOB coordination

Recommendation Response Strategy

92 Recommendations

In CONOPS Already	Agree but not in CONOPS	Vetting thru a few Lines of Business	Vetting thru multiple Lines of Business	Analysis Required then Vetting thru Lines of Business
• Agree with recommendation and identify location in ConOps • Respond	• Agree with recommendation • Respond and incorporate in CONOPS as needed	• Prepare recommendation for vetting with relevant information and proposed response • Respond and incorporate in CONOPS as needed	• Prepare recommendation for vetting with relevant information and proposed response • Respond and incorporate in CONOPS as needed	• Identify and begin necessary analysis • Prepare recommendation for vetting with relevant information and proposed response • Respond and incorporate in CONOPS as needed

Estimated response to all recommendations: **Sep 30, 2018**



TFR NOTAMs

Improving Graphical Temporary Flight Restrictions in the National Airspace System

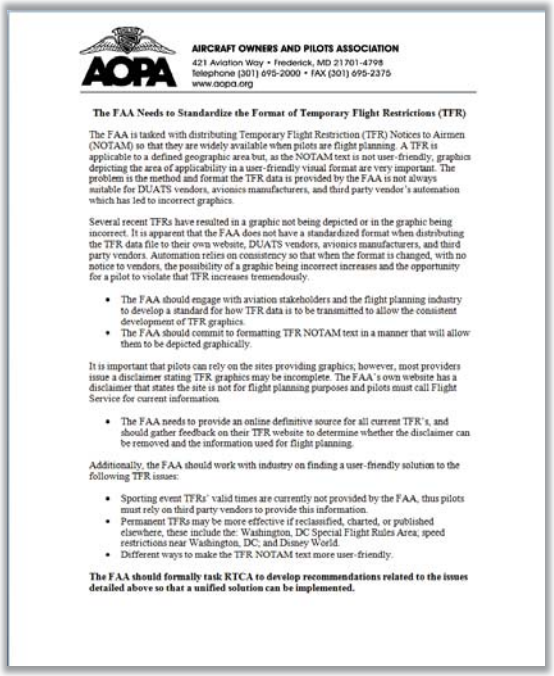
Presented To: RTCA Tactical Operations Committee

By: Scott Jerdan, Manager
National Aeronautical Data, FAA

Date: December 5, 2017

Genesis and Issues

- **AOPA letter to FAA**
  - FAA should provide certified graphics
  - FAA should remove disclaimer restricting use of graphics
  - FAA should make TFR NOTAM text more User friendly
  - FAA should chart permanent TFRs
  - FAA should formally task RTCA to develop recommendations to TFR issues



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The FAA Needs to Standardize the Format of Temporary Flight Restrictions (TFR)

The FAA is tasked with distributing Temporary Flight Restriction (TFR) Notices to Airmen (NOTAM) so that they are widely available when pilots are flight planning. A TFR is applicable to a defined geographic area but, as the NOTAM text is not user-friendly, graphics depicting the area of applicability in a user-friendly visual format are very important. The problem is the method and format the TFR data is provided by the FAA is not always suitable for DUATS vendors, avionics manufacturers, and third party vendor's automation which has led to incorrect graphics.

Several recent TFRs have resulted in a graphic not being depicted or in the graphic being incorrect. It is apparent that the FAA does not have a standardized format when distributing the TFR data file to their own website, DUATS vendors, avionics manufacturers, and third party vendors. Automation relies on consistency so that when the format is changed, with no notice to vendors, the possibility of a graphic being incorrect increases and the opportunity for a pilot to violate that TFR increases tremendously.

- The FAA should engage with aviation stakeholders and the flight planning industry to develop a standard for how TFR data is to be transmitted to allow the consistent development of TFR graphics.
- The FAA should commit to formatting TFR NOTAM text in a manner that will allow them to be depicted graphically.

It is important that pilots can rely on the sites providing graphics; however, most providers issue a disclaimer stating TFR graphics may be incomplete. The FAA's own website has a disclaimer that states the site is not for flight planning purposes and pilots must call Flight Service for current information.

- The FAA needs to provide an online definitive source for all current TFR's, and should gather feedback on their TFR website to determine whether the disclaimer can be removed and the information used for flight planning.

Additionally, the FAA should work with industry on finding a user-friendly solution to the following TFR issues:

- Sporting event TFRs' valid times are currently not provided by the FAA, thus pilots must rely on third party vendors to provide this information.
- Permanent TFRs may be more effective if reclassified, charted, or published elsewhere, these include the: Washington, DC Special Flight Rules Area; speed restrictions near Washington, DC; and Disney World.
- Different ways to make the TFR NOTAM text more user-friendly.

The FAA should formally task RTCA to develop recommendations related to the issues detailed above so that a unified solution can be implemented.

Genesis and Issues

- **March 2016 FAA tasking letter to RTCA TOC:**
  - Assist "in clarifying the issues associated with TFR issuance and in developing solutions to improve the content and delivery of TFR information to aviation stakeholders"
  - Key issues
    - Inconsistent TFR graphics and a lack of graphical depiction
    - Lack of an online definitive source for all TFRs
    - The disclaimer published on the FAA's own TFR website which limits the use of TFR graphics

Types of TFR NOTAMs

- 91.137(a)(1): Surface Hazard
- 91.137(a)(2): Disaster Relief
- 91.137(a)(3): Air Congestion (Special Event)
- 91.138: National Disaster Areas in Hawaii
- 91.139: Emergency Air Traffic Rules
- 91.141: Proximity of the President and Other Parties (referred to as VIP)
- 91.143: Space Flight Operations
- 91.144: High Barometric Pressure Conditions
- 91.145: Special Events
- 99.7: National Security

Recommendations by Category

Charting	Graphics Availability and Electronic Presentation	FIS-B Uplink
Origination	FSS + ATC	Education
Transmission to Industry	Textual Format	Additional TFR Considerations

FAA Strategy

- **Define high level system/automation requirements and develop cost and time estimates**
  - PMO & Sys Ops Estimates
    - System Origination Estimates (complete)
    - Sporting Event Venue Times of Use (awaiting estimate)
  - ATC display issues in discussion
  - NOTAM Policy issues in discussion

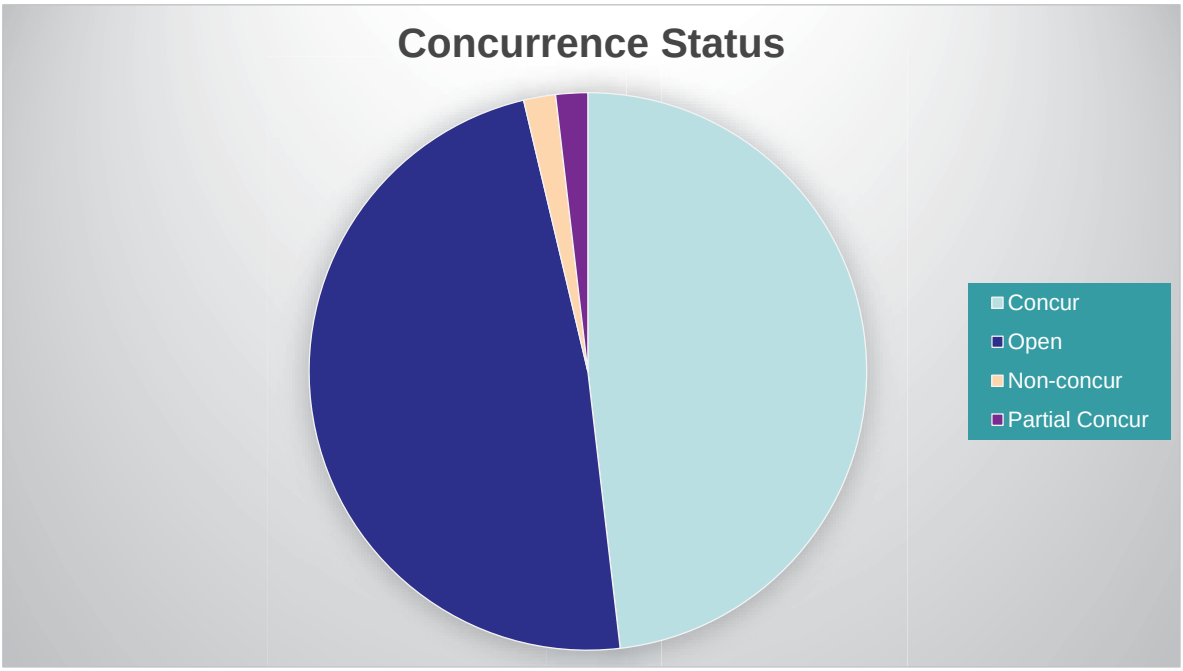
FAA Strategy

- **Define and engage FAA lead organization(s) and working group(s) by recommendation**
  - Policy (AJR-B11)
  - Training (AJI)
  - Air Traffic (AJT)
  - PMO (AJM)
  - Legal (AGC)
  - Systems Operations Security (AJR-2)
  - Flight Standards (AFS)
  - Mission Support Services (AJV)
  - Others yet to be defined
- **Engage FAA Parallel Working Group(s)**
  - ATO Top 5 (NOTAMs)
  - Aeronautical Information Community of Interest
  - Aeronautical Charting Forum

FAA Strategy

- **Assess each recommendation for:**
  - Concurrence
  - Resource impacts
  - Feasibility
  - Support
- **Estimated FAA responses complete**
  - December 2018

54 RTCA Recommendations



54 RTCA Recommendations

- **26 RTCA Recommendations were concur**
  - VFR Charting
  - TFR Origination
  - Transmission to Industry
  - Graphics Availability and Electronic Presentation
  - Education
- **26 RTCA Recommendations are open**
  - Long-term TFRs Charting
  - FSS-ATC Availability
  - FIS-B Uplink Technology
  - Policy Changes
- **Working with NATCA on ATC availability**

54 RTCA Recommendations

- **1 RTCA Recommendation was Non-Concurred**
  - Recommendation: #50. The FAA should work to publicize how pilots can meet the requirements of FAR 91.103 using graphics and how pilots need not call Flight Service to feel they have met their preflight obligations concerning TFR awareness.
  - FAA Response: Currently TFR NOTAM graphics do not meet the requirements of 91.103. Pilots need to contact Flight Service or review FAA originated textual TFR NOTAMs. This will remain in effect until the TFR NOTAM graphics can be automated in the future.

54 RTCA Recommendations

- **1 RTCA Recommendation was Partial Concur at this time**
  - Recommendation: #24. Dissemination of the Notices to Airmen Publication (NTAP) should include the previously available HTML option to make it easier for operators to access this information, and all information in the NTAP should be available in NOTAM Search.
  - FAA Response: FAA is working to provide NTAP in HTML format. We are investigating enhancing NOTAM search (linking NTAP notices, advisories, and other information to an airport) as well as creating a new tab for NTAP type information (cold temperature restricted airport procedures, etc.)

Questions

RTCA TOC Recommendations

Category	Sub Category	TOC TFR Recommendations	Lead Organization(s)	Agency Position	Status
FAA Charting (VFR Sectional/TAC)	Long Term TFRs	1. Long-term TFRs should be charted on Sectional and Terminal Area Charts.	AJV-5	Open	AJV-5 to form working group to review request
		2. Long-term TFRs should be identified using standardized criteria.	AJV-5	Open	AJV-5 to form working group to review request
		3. The FAA should retain the issuance process for long-term TFR NOTAMs, regardless of part-time or full-time activation, even after that TFR NOTAM has been charted.	AJR-B11 (USNOF Operations and Policy Group)	Concur with recommendation	Supported by AJR-B11
	Sporting Event TFRs	4. The FAA depiction is adequate and the FAA should sustain their sporting venue charting effort.	AJV-5	Currently implemented by AJV-5.	Implemented
	Charting Specifications	5. The FAA should standardize the charting requirement documents for TFRs to ensure consistency and to reduce pilot confusion.	AJV-5	Open	AJV-5 to form working group to review request
		6. The FAA should modernize the Sectional and Terminal Area Chart production process to achieve a 56 day charting cycle.	AJV-5	Concur with recommendation and will implement upon completion of the VFR chart automation project	

RTCA TOC Recommendations

Category	Sub Category	TOC TFR Recommendations	Lead Organization(s)	Agency Position	Status
TFR Origination	Standardized Entry Method	7. Any tools the FAA utilizes to generate TFR NOTAMs should produce a standard output.	PMO and AJR	Concur with recommendation and will implement pending funding	
		8. Any new or existing TFR NOTAM entry tool should, in general, tightly constrain the use of freeform text and not allow its use for the geographic definition. The use of dropdown menus should be maximized to ensure consistent output.	PMO and AJR	Concur with recommendation and will implement pending funding	
		9. TFR NOTAM templates should be centrally managed electronically for all users.	AJR and PMO	Concur with recommendation and will implement pending funding	
		10. The TFR submission tool should render its output in a format recommended by industry - AIXM 5.X with GML	AJR and PMO	Concur with recommendation and will implement pending funding	
		11. The TFR submission tool should provide a graphical depiction of the impacted area to all affected ATC agencies.	AJR and PMO	Concur with recommendation and will implement pending funding	
	TFR NOTAM Oversight (text and graphic)	12. The FAA should designate a 24x7 operational office with the authority to review, reissue, or cancel any TFR in real-time, prior to its broadcast, to ensure: (a) accurate graphical depiction and (b) conformance with NOTAM policy and FAA orders.	AJR	Concur with recommendation and will implement pending funding	ATO Top 5
		13. The automation tool utilized for TFR NOTAM submission should produce and display an electronic graphical depiction for each TFR containing a clearly defined geographical area and include a required user verification step where the affected geographical area is verified to be accurate/correct.	PMO, AJR, AJT, and AJV-11	Concur with recommendation and will implement pending funding	

RTCA TOC Recommendations

Category	Sub Category	TOC TFR Recommendations	Lead Organization(s)	Agency Position	Status
Transmission to Industry	Digital with AIXM/GML	14. The FAA should provide TFR NOTAMs in AIXM/GML digital format.	PMO	Concur with recommendation and will implement pending funding	
	Standard and Authoritative Method of Machine to Machine TFR	15. Authoritative TFR NOTAM data should be provided in AIXM 5.X with GML over multiple nodes in SWIM.	PMO	Concur with recommendation and will implement pending funding	
		16. The FAA must ensure that the SWIM onboarding process is efficient/timely for all approved "partners".	PMO	Concur	
		17. Legacy Esri shapefiles of each TFR should remain available.	PMO	Concur	
	Format of GML Portrayal Script	18. Prototype testing of GML Portrayals Scripts by the FAA and multiple vendors should be done and circulated to investigate 1) the range of graphical interpretations of AIXM data and 2) the interoperability of SLD/SE portrayal scripts for AIXM.	PMO	Open	
	Notification Process for Changes	19. The FAA should communicate changes to TFR NOTAM policy to industry.	AJR-B11, PMO	Concur	ATO Top 5

RTCA TOC Recommendations

Category	Sub Category	TOC TFR Recommendations	Lead Organization(s)	Agency Position	Status
Graphics Availability and Electronic Presentation	FAA TFR Graphical Website-Human to Machine	20. The FAA should sunset their graphical TFR website. The electronic depictions (graphics) for all TFRs and Special Use Airspace (SUA) should be provided simultaneously with the text for public consumption via the FAA's NOTAM Search website (https://notams.aim.faa.gov/notamSearch/).	PMO	Concur with recommendation and will implement pending funding	
		21. Changes should be made in NOTAM Search to improve consumption of TFR information.	PMO	Concur with recommendation and will implement pending funding	
		22. Each TFR should have a stand-alone graphic (a static image with the option of either a Sectional or Low Altitude Enroute chart background), with textual comments on the graphic.	PMO	Concur with recommendation and will implement pending funding	
		23. The FAA should have a standard for displaying TFR overlay graphics on its website.	PMO	Concur with recommendation and will implement pending funding	
		24. Dissemination of the Notices to Airmen Publication (NTAP) should include the previously available HTML option to make it easier for operators to access this information, and all information in the NTAP should be available in NOTAM Search.	AJV-8 and PMO	Partially Concur/AJV-8 is working to provide NTAP in HTML format	NOTAM Policy and Operations owns the other parts of the request
	Disclaimer for FAA Produced Online Graphic	25. After adding TFR graphics to NOTAM Search, the disclaimer should explicitly state that TFR graphics can be relied upon for navigation.	PMO, AGC, AJR, and AJT	Concur with recommendation and will implement pending funding	
		26. The FAA should explicitly state that the TFR graphic is equal to the NOTAM's geographical textual description.	PMO, AGC, AJR, and AJT	Concur with recommendation and will implement pending funding	
	Sporting Event Blanket TFR	27. For each sporting event venue, the FAA should graphically display on NOTAM Search the lateral and vertical dimensions, along with valid times. The locations for projected sporting event TFRs should also be displayed.	PMO, AJV-5	Concur with recommendation and will implement pending funding	
	Accuracy of FAA TFR Depictions Provided Online	28. All TFR graphics being displayed should have a correctly oriented chart.	PMO	Concur with recommendation and will implement pending funding	
	Industry Standard for Electronic Depiction	29. The FAA should establish industry standards for electronic depiction of TFRs by tasking the appropriate groups, contractors and/or committees.	PMO, AJR, and AJV-5	Open	

RTCA TOC Recommendations

Category	Sub Category	TOC TFR Recommendations	Lead Organization(s)	Agency Position	Status
FSS and ATC	Availability for FSS and ATC	30. The FAA should ensure controller automation (ERAM, STARS) can visually display TFRs on the controller scope.	PMO, AJT	Open	Coordinating response
		31. The FAA should implement ERAM/STARS enhancement that allows the drawing of a TFR on one scope and pushing it to another.	PMO, AJT	Open	Coordinating response
		32. Controller guidance regarding coordination with a TFR proponent, such as firefighting agencies and pilots, should be clarified to better detail responsibilities and how "by ATC authorization" should be employed.	AJI, AJR	Open	
		33. Interpretation of TFR restrictions and what ATC can authorize should be standardized among facilities.	AJI, AJR	Open	
		34. The FAA should depict sporting event venues with over 30,000 seats on ATC radar maps.	AJV-5, AJT	Open	Coordinating response
		35. The FAA should depict long-term TFRs on ATC radar maps.	AJV-5, AJT	Open	Coordinating response
	Briefing NOTAM Order Changes	36. There should be a clear communication process to brief changes of NOTAM policy to ATC positions that create TFR NOTAMs prior to implementation, and there should be sufficient time to allow technical requirements for parsing to be updated.	AJT, AJI	Open	ATO Top 5
	Standard Manner of Providing Graphic to Specialists	37. The FAA should make sporting event venues and their 3 NM radius lateral rings available on controller charts.	AJV-5, AJT	Open	Coordinating response

RTCA TOC Recommendations

Category	Sub Category	TOC TFR Recommendations	Lead Organization(s)	Agency Position	Status
Textual Format		38. The FAA should standardize the language and format of TFR NOTAMs to facilitate the effective transfer of critical information to pilots.	AJR	Open	Meet with AJR-B11 again;
		39. The FAA should restructure the TFR NOTAM format to be consistent across all types to allow pilots to have a standardized reading pattern and improve the understanding of restrictions.	AJR	Open	Meet with AJR-B11 again;
		40. The FAA should remove from the NOTAM, to the extent possible, all extraneous information and publish that information elsewhere or at the end of the NOTAM.	AJR	Open	Meet with AJR-B11 again;
		41. The FAA should ensure automated plain language interpretation for all TFRs can be accomplished.	AJR	Open	Meet with AJR-B11 again
		42. The cut out or exception area language should be published in a standardized format.	AJR	Open	Meet with AJR-B11 again
		43. The FAA should expand their NOTAM issuance policy to allow TFR NOTAMs to be published seven days ahead of the activation time, instead of the usual three days, when the information is available.	AJR	Open	Meet with AJR-B11 again; Concur AJR-B11
		44. The FAA should publish a single standard for the latitude/longitude format that can be stated in a TFR NOTAM.	AJR	Open	Meet with AJR-B11 again; Concur AJR-B11

RTCA TOC Recommendations

Category	Sub Category	TOC TFR Recommendations	Lead Organization(s)	Agency Position	Status
FIS-B Uplink	Range of Transmission	45. The FAA should increase the FIS-B radio station look ahead range for the NOTAM-TFRs.	ANG	Open	
	FIS-B Text	46. The FAA should task the appropriate committee (e.g., SC-206 SG-5) to investigate undoing the change to the FIS-B radio stations that truncates uplinked NOTAM-TFR text records.	ANG	Open	
	Graphic Legality	47. The FAA should evaluate the use of FIS-B NOTAM-TFR graphics to meet regulatory requirements for navigation and operational use in the cockpit.	ANG, AFS, AIR, AGC	Concur	

RTCA TOC Recommendations

Category	Sub Category	TOC TFR Recommendations	Lead Organization(s)	Agency Position	Status
Education	Written Questions for Airmen	48. The FAA should consider additional knowledge exam questions on TFRs that emphasize checking NOTAMs, comprehension of restrictions, avoidance, and the process of requesting ingress/egress permission.	AFS	Concur	
	Pilot Guidance	49. The FAA should publicize the best practices for TFR awareness and avoidance in appropriate pilot guidance as well as in the Flight Instructor Refresher Course, pilot flight reviews, and in the FAA's WINGS program.	AFS	Concur	
		50. The FAA should work to publicize how pilots can meet the requirements of FAR 91.103 using graphics and how pilots need not call Flight Service to feel they have met their preflight obligations concerning TFR awareness.	AFS, AJR	Non-concur at this time Current TFR NOTAM graphics do not meet the requirements of 91.103. Pilots need to contact Flight Service or review FAA originated textual TFR NOTAMs	
	Unmanned Aircraft Guidance	51. The FAA should conduct additional outreach and education to unmanned aircraft remote pilots to ensure they understand their responsibility to avoid TFRs.	AFS, AJR	Open	
		52. Law Enforcement Organizations (LEO) should be provided a single online resource for guidance on responding to intruder unmanned aircraft.	AJR	Open	
	TFR Outreach and Communications	53. The FAA should promote the importance of proactively engaging industry at all levels of TFR issuance and at all TFR issuing facilities.	AJR, AJT	Concur	ATO Top 5

RTCA TOC Recommendations

Category	Sub Category	TOC TFR Recommendations	Lead Organization(s)	Agency Position	Status
Additional TFR Considerations		54. The FAA should work with industry to develop implementation guidelines for congressional language on new TFRs in order to avoid creating a patchwork of TFRs across the country that could have a negative impact on aviation.	AJR	Open	

National Procedures Assessment: Circling Procedures Cancellation Update

Presented to: Tactical Operations Committee

By: Mark Adams

Date: December 05, 2017

Status Update

- **Proposed Rule published Oct 06, 2017, in the Federal Register with comment period ending Nov 06, 2017:**
  - https://www.regulations.gov/document?D=FAA-2017-0879-0001
  - https://www.regulations.gov/document?D=FAA-2017-0879-0007
- **Eleven comments received:**
  - https://www.regulations.gov/docketBrowser?rpp=25&po=0&dct=PS&D=FAA-2017-0879&refD=FAA-2017-0879-0001
- **Currently adjudicating comments and coordinating responses with FAA's Office of the Chief Counsel**

Status Update (cont.)

- **Summary of comments:**
  - Support for cancellation of circling procedures
  - Unrealistic expectation to retain circling IAPs if all runways at the airport do not have a straight-in IAP with lower mins
  - Lack of understanding that circling mins, not just a circling IAP, can be used to satisfy the Instrument ACS circling requirement
  - Concern regarding removal of legacy circling procedures in consideration of GPS outage condition
  - Impact on convenience/efficiency (approach distance) and safety (avoiding adverse weather via circling IAPs)
  - Request for evaluation of "IFR use" at every IFR airport over the last 3-5 years before making determinations regarding circling procedure cancellations

Status Update (cont.)

- **Summary of comments** (continued)**:**
  - Circling procedures are “safety critical” for piston aircraft
  - Request to maintain or improve access to each airport, not reduce access
  - Concern for impact on simulator training (AOPA)
  - Request to delay circling cancellation criteria due to FMS nav-database concerns (NBAA). Also requested RTCA TOC tasking to evaluate “impacts associated with FMS glitches and how those impacts should be considered in IAP cancellation critieria”
  - **Note: Lack of understanding of proposed criteria indicates additional language is needed to provide clarity regarding implementation of the criteria**

Status Update (cont.)

- **Next Steps**
  - Publicize upcoming Final Rule with responses to comments and collaborate with stakeholders (OSG Offices, DoD, Air Traffic, AOPA, NBAA, etc.)
  - Continue stakeholder engagement/outreach efforts on FAA processes moving forward
  - Publish Final Rule with responses to comments by June 30, 2018
  - Initiate cancellation and reduction of redundant circling procedures and circling lines of minima by September 30, 2018

RTCA

THE GOLD STANDARD FOR AVIATION SINCE 1935

Other Business – Discussion on NOTAMs

Jerry Torres, FAA

Closing Comments

Co-Chairs:

Bart Roberts, JetBlue

Jeff Woods, NATCA

Designated Federal Officer:

Jodi McCarthy, Federal Aviation Administration

RTCA

THE GOLD STANDARD FOR AVIATION SINCE 1935

Next Meetings:

March 1, 2018

July 12, 2018

November 8, 2018

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RTCA Paper No. 242-17

TOC-036

August 22, 2017

Meeting Summary, August 22, 2017

Tactical Operations Committee (TOC)

The seventeenth meeting of the Tactical Operations Committee (TOC), held on August 22, 2017, convened at 10:30 a.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 December 13, 2016 TOC Meeting
Attachment 4 - Recommendations for the Performance Based Navigation (PBN) Route System
Attachment 5 - Use Cases & Benefits AIMM S3 FNL
Attachment 6 - TOC Airport Construction Non-Concurs

Welcome and Introductions

Committee Co-Chairs, Capt. Bart Roberts, JetBlue, and Mr. Jeff Woods, 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).

Capt. Roberts and Mr. Woods 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 December 13, 2016 Meeting Summary

The Chairs asked for and received approval of the written summary for the December 13, 2016 meeting (Attachment 3).

FAA Update

Ms. Ray provided the FAA update. Ms. Ray informed the Committee that this was her last meeting as the FAA's Designated Federal Officer of the TOC as she was retiring by September 30th. She informed members that Ms. Jodi McCarthy would join the TOC as the new DFO for the Committee. Committee members thanked Ms. Ray for her service and wished her well.

Ms. Ray spoke to the Committee about controller hiring, noting that the FAA was at 102% of its goal for fiscal year 2017. As of mid-August, 1,616 new hires had been placed by the FAA. She addressed specific concern regarding staffing in the New York TRACON, or N90. A series of steps were underway to improve the staffing health of N90. Local, on-the-spot, hiring authority had been granted to a wider group of individuals to help pull more new hires into the facility from the local area. Additionally, Ms. Teri Bristol, Chief Operating Officer of the FAA's Air Traffic Organization, had sent letters for former certified controllers and supervisors at N90 with information about a short term incentive program to bring such individuals back to N90 while the pipeline of new hires received appropriate training.

Regarding the budget, Ms. Ray told the TOC that the FAA needed both a new authorization and appropriation by the end of Fiscal Year 2017. She said the FAA expects Continuing Authorizations and Continuing Resolutions until the end of the calendar year. No lapse in operations is expected.

Ms. Ray spoke about stadium news. The new Los Angeles stadium was under construction and involves use of cranes. Proceeding on construction required use of a Wide Area Multilateration system for surveillance and the National Football League was providing a majority of the resources to augment the radar interference. Additionally, a circularization was out to the public for the new Las Vegas stadium. This is still open for public comment and would proceed to obstacle evaluation as a next step.

Finally, Ms. Ray provided an update about the NorCal Noise Initiative. The community's Select Committee had provided 7 recommendations to the FAA and the FAA had recently provided responses back to the three members of Congress for the region. One of the significant issues in NorCal has been the SERFR OPD which the Select Committee requested be moved back to its previous track. The FAA agreed to do so but with the intent to keep the aircraft at higher altitudes.

Consideration of Recommendations for the PBN Route System

Mr. Mark Hopkins, Delta Airlines, and on of the industry Chairs of the PBN Route System Task Group provided a high level overview of the recommendations for the future PBN route system. The work of this group was completed in March 2017 and previously briefed to TOC members. Mr. Hopkins reviewed the salient points on the report and there were no questions.

- **Committee Action**: The Committee agreed by consensus to accept the "Recommendations for the Performance Based Navigation (PBN) Route System". Attachment 4 to this report is the final

and approved report that the TOC transmitted to the FAA. With this report, the work of this Task Group was complete and the group was sun set.

Consideration of Use Cases and Benefits for AIMM Segment 3

Ms. Heidi Williams, National Business Aviation Association, and Mr. Scott Dehart, Southwest Airlines, Co-Chairs of the AIMM Segment 3 Task Group, next briefed the TOC on recommendations regarding Aeronautical Information Management Modernization (AIMM) Segment 3. The work of this group was completed in June 2017 and previously briefed to TOC members. Ms. Williams and Mr. Dehart reviewed the salient points on the report and there were no questions.

- **Committee Action**: The Committee agreed by consensus to accept the recommendations "Use Cases and Benefits for AIMM Segment 3". Attachment 5 to this report is the final and approved report that the TOC transmitted to the FAA. With this report, the work of this Task Group was complete and the group was sun set.

FAA Response on Airport Construction Recommendations

Ms. Chris Chesak, FAA, provided an update on the FAA's response to previous TOC recommendations on airport construction. Members of the TOC were interested in understanding detail around the four recommendations with which the FAA non-concurred. Details on these non-concurs were provided to the Committee members and are included as Attachment 5. A follow on action was identified for Ms. Chesak to speak in further detail with a sub-group of interested Committee members regarding these four non-concur recommendations.

Areas of Future TOC Interest

<u>Common Support Services Flight Data</u>

Ms. Linda Chen next provided an update on a new tasking for the TOC with the Common Support Services – Flight Data program. In a previous TOC discussion, the CSS FD team had introduced its work to the TOC, and the Committee elected to have a sub-team discuss the issue in further detail with the CSS FD team. Since the last TOC engagement, a sub team involving different TOC stakeholders representing GA, business aviation and airlines had worked with the CSS FD team to refine its task request to the TOC. Ms. Chen briefed the TOC on the task request and informed the Committee that this task would begin immediately following this TOC meeting.

One TOC member inquired about what stakeholders were needed to participate in this task. The Committee identified the value in having third party flight planning vendors participate along with the Collaborative Decision Making CAT, or CDM Automation Team.

<u>PIREPs</u>

Ms. Ray provided an update on a potential task to the TOC on PIREPs. She noted that the FAA has multiple activities underway to follow up on National Transportation Safety Board recommendations

regarding PIREPs. The FAA is working to determine the right role for the TOC to play in its overall follow up regarding PIREPs. One TOC members requested the FAA continue to brief the TOC on this topic as operators have keen interest on the topic.

Temporary Restricted Areas

Ms. Melissa Rudinger, AOPA, next presented concerns around Temporary Restricted Areas to the TOC. AOPA had previously identified its concerns about TRAs and proposed a series of solutions to the issues. Ms. Rudinger noted that the intent of bringing this before the TOC was to provide greater visibility to the topic. The TOC agreed to continue monitoring the subject in future meetings.

Current Task Update: Intentional GPS Interference

Ms. Wes Googe, American Airlines and Co-Chair of the GPS Interference Task Group, next provided an update on the work of the GPS Interference group. Mr. Googe informed the Committee that the Task Group had its initial kickoff meeting and had excellent participation from operators, the Department of Defense and the FAA. A Committee member encouraged the Task Group to ensure that Original Equipment Manufacturers (OEMs) stayed involved with the work and provided guidance on the potential impacts of GPS interference.

Thanks to Lynn Ray

Finally, Ms. Margaret Jenny, President RTCA, spoke to the TOC about Ms. Lynn Ray. Ms. Jenny offered RTCA's sincerest thanks and appreciation to Ms. Ray for her storied career and, in particular, her tireless efforts to establish and lead the Tactical Operations Committee.

Adjourn

Chairmen Roberts and Woods ended the meeting of the Committee at 12:30 p.m.

Next Meeting

The next meeting of the TOC is planned for December 5, 2017.

RTCA

THE GOLD STANDARD FOR AVIATION SINCE 1935

Approved by the Tactical Operations Committee December 2017

Recommendations for Focus in the CSS-FD Program

A Report of the Tactical Operations Committee in Response to Tasking from the Federal Aviation Administration

December 2017

Recommendations for Focus in the CSS-FD Program

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Executive Summary

The Common Support Services – Flight Data (CSS-FD) Task Group of the Tactical Operations Committee (TOC) examined capabilities envisioned in the CSS-FD Program that enable the ICAO concept of Flight and Flow Information for a Collaborative Environment (FF-ICE). The concept envisions an environment for flight planning where all relevant information is shared amongst stakeholders, allowing stakeholders to make collaborative decisions based on consistent information. Implementation of CSS-FD will require investment from both the FAA and industry. This report provides TOC feedback on the value and risks associated with CSS-FD in support of a 2018 Investment Analysis Readiness Decision (IARD).

First and foremost, critical to success of CSS-FD is the alignment of investment decision-making between FAA and industry. Aviation history includes multiple examples of either the FAA or industry investing without corresponding investment from the other party. In an effort not to repeat mistakes of the past, the CSS-FD program is implored to develop its capabilities in a sequence that will motivate industry investment.

To that end, this report provides recommendations of specific system constraints that should be prioritized in the evolution of CSS-FD. Certain constraints are recommended for initial focus, including airspace constraints, ATC assigned routes, certain Traffic Management Initiatives and runway status information. CSS-FD envisions providing additional constraint information beyond these and the group recommends these be delivered as well.

This report was developed with expertise across different operator groups (Large commercial, Business Aviation, General Aviation), different operating disciplines (Dispatch, Flight Deck), and flight planning vendors. The work was conducted quickly and all constraint evaluation was qualitative in nature based on subject matter expertise. As follow-on to this effort, this report recommends FAA continue collaborative analysis to further quantify the value of constraint information as well as to build out a concept of use of CSS-FD.

Additional CSS-FD components received support: provision of constraint information through CSS-FD and moving away from prescriptive reroutes enables operators to build optimal routes for their individual operations. This is a long sought objective in the operator community. Additionally, expanding the allowable time of electronic flight planning collaboration up to wheels off will deliver a significant enhancement to the current highly manual reroute process today. Finally, operators are supportive of providing increased flight planning information should this data enhance the trajectory models used in operational decision making. Industry seeks greater detail on what operational data provides the greatest operational value.

Ultimately, implementation of CSS-FD will carry with it a series of risks that require mitigation. These risks are delineated in the report and include aligning investment decisions and timelines

between FAA and industry, accuracy of the shared information used for planning, and clarity on the use and dissemination of sensitive information.

Introduction

The International Civil Aviation Organization (ICAO) has been developing a concept for Flight and Flow Information for a Collaborative Environment (FF-ICE) as a component of the transition to Trajectory Based Operations (TBO). This concept envisions using standardized information exchange models and modern service oriented interfaces to set up an environment for planning flights where all relevant information is shared amongst stakeholders, allowing stakeholders to make collaborative decisions based on consistent information. This environment will be available for service providers to implement, but will not be required: operators and service providers can decide whether to participate. Non-participants will continue to file flight plans using the existing ATS messages over AFTN.

The FAA has established the Common Support Services – Flight Data (CSS-FD) program which is planning to provide a standards-based flight planning environment consistent with the FF-ICE concept. Implementation of CSS-FD will require investment from the FAA and industry to enable increased information sharing, collaboration and new automation and work flows.

The CSS-FD Program has an Investment Analysis Readiness Decision (IARD) planned for first quarter of CY2018 and is interested in understanding what types of flight plan impacting system constraints and related information are of the highest priority to motivate industry investment in automation to support FF-ICE. To further understand this, the FAA requested the RTCA Tactical Operations Committee (TOC) to respond to the following task (see Appendix A for the full tasking letter):

Task 1: Assist the CSS-FD team in establishing areas of focus for the investment, by identifying the features of the concept that will provide the most operational benefit, e.g.

a) Knowing which ATM constraints will affect a flight
b) Being able to provide additional details on the expected flight trajectory that will allow more accurate FAA assessment of the constraints
c) Being able to create an operator-optimized plan in response to a TMI rather than simply fly a TFM-assigned reroute
d) Being able to electronically coordinate changes to a flight plan after the normal lock-out time

Task 2: Assist the CSS-FD team in identifying areas of risk and operator constraints that could impact successful implementation of the early collaborative planning envisioned in the concept.

The aviation industry understands and appreciates that information sharing and exchange of data is increasing worldwide. Recent examples of industry sharing 11 operational data elements in the United States and data exchange for London Heathrow operations highlight the fact that there are real-world examples of implementing and expanding data exchange that improve operations today and move towards TBO. Additionally, the Flight Information Exchange Model (FIXM) is well structured to enable increased exchange. However, operator systems and databases will require extensive refactoring to migrate to these new data and exchange models, and this will remain a significant challenge for the industry in the years ahead.

Methodology

The TOC established the CSS-FD Task Group as a working group of the full Committee to consider the task request and develop a draft recommendation report. The result of this Task Group's work is this report. The Task Group included expertise from different stakeholders in the National Airspace System (NAS), including operators (General Aviation, Business Aviation, Commercial Aviation), labor groups, flight planning vendors as well as Subject Matter Experts from the FAA (see Appendix B for Task Group membership). The group held multiple briefings and discussions to identify the most valuable information in CSS-FD and risks as well as to develop this written report.

This report is focused on FF-ICE Phase 1 which is flight planning before departure. Findings and recommendations contained here are relevant to planning and collaboration before 'wheels off' for an aircraft.[1]

The FAA/Industry Investment Challenge

Finding 1.	**Alignment of investment decision-making between FAA and industry is the underlying driver of success for CSS-FD.**

The underlying challenge to CSS-FD is to align timing of investment between the FAA and industry such that all stakeholders can make investment decisions with a higher level of confidence in achieving the anticipated benefit from the investment. Being sensitive to this challenge, the FAA would like to ensure that if it invests in implementation of the CSS-FD Program that flight planning vendors and flight operators will make corresponding investments to utilize the capabilities. Similarly, if vendors and operators invest in new automation and workflows to leverage CSS-FD, they would like to ensure that FAA provides the expected capabilities that will deliver the highest return on investment. Both FAA and industry have

[1] Note that the scope of Eurocontrol's FF-ICE Phase 1 activity ends at filing of the flight plan.

previous experiences in which it made investments in new capabilities without a corresponding investment from other stakeholders, thereby significantly limiting the return on investment. The intent of this report is to help identify and prioritize the set of capabilities the Program should focus on such that FAA, vendors and operators all move to quickly invest with some level of certainty that the required components for payback and success will be made available.

Capabilities Considered in CSS-FD

CSS-FD will provide opportunity for TFM, ATC and the operator to all work from the same set of applicable constraints. If operators employ the system, CSS-FD will assist the FAA in receiving earlier submission of preliminary planning information from operators and a greater understanding of the anticipated demand on the system. Correspondingly, operators will be provided with valuable feedback on flights, which in turn enables new capabilities focused on easing the coordination and negotiation of changes between operators and the FAA.

This group considered the following key capabilities proposed in CSS-FD:

- Flight plan feedback on applicable Air Traffic Management constraints for trial, preliminary and filed flight plans
- Monitoring service for changes to constraints after initial submission
- Capability for operators to communicate more information about their intended flight, likely enhancing trajectory prediction and negotiation.
- Improved capability to update flight plans after current lockout time up to “wheels up” or when the flight is activated in the NAS System.

In addition to these capabilities, CSS-FD also includes a more flexible data exchange to enable improved collaborative flight planning. This Task Group did not focus on data exchange but recognizes that other industry working groups that are more focused on information and technology will need to evaluate the merits and risks of future changes and expansion of current, agreed to levels of data exchange.

Response to Tasking Requests

The sections below provide responses to the five task elements from the FAA’s task request (included in Appendix A). The five specific questions that are addressed are:

1. Highest Value Flight Plan Feedback Data (Task 1a)
2. Additional Operator Data to the FAA (Task 1b)
3. Value of Operator Optimized Routes (Task 1c)
4. Value of Route Adjustment After Lockout Time (Task 1d)
5. Risks to Successful Implementation of CSS-FD (Task 2)

Highest Value Flight Plan Feedback Data

This section is focused on the value of receiving feedback on various ATM constraints that impact a flight plan. The information here is intended to assist the CSS-FD team in focusing on the feedback that provides the most operational benefit.

The Task Group reviewed a list of potential types of constraints provided by the FAA (See Appendix C for constraint list provided by FAA to the Task Group).

Recommendation 1.	**CSS-FD should place initial focus on provision of flight plan feedback related to airspace constraints, ATC constraints and routes, certain Traffic Management Initiatives (AFPs, MITs) and runway status information.**

To help establish priorities, the group used the following guiding principles when evaluating the value of feedback on each constraint type:

- Identify feedback that would directly impact the flight planning process and the route that is filed
- Identify feedback that would have the greatest value in flight planning decision making and encourage early investment
- Do not consider CSS-FD constraints solely as a new method to acquire flight planning data that vendors or operators already have; instead, focus on the timely notification of constraints impacting each flight that may change flight plans. Even though some constraint information may be available to operators today, these are still important to receive through CSS-FD since they are provided at the time of planning.
- Identify feedback that is new data that vendors/operators cannot currently access.
- Given this tasking and associated report were developed on an expedited timeframe, the group primarily utilized qualitative assessment and subject matter expertise.
- A scale of High (H), Medium (M), and Low (L) were used to prioritize the constraint types. Some constraints were prioritized as M/H if they were considered between Medium and High priority. The constraints identified for initial focus in CSS-FD are the High and Medium/High priority constraints.

The group recommends that the high and medium/high priority constraints noted below be the initial focus of CSS-FD.

Table 1 Constraints for Initial Focus in CSS-FD

Constraint Category	Priority	Constraint Detail
Airspace Constraints	H	Temporary Flight Restrictions
	H	Active SUA/ATCAA

		Inclusive of scheduled to be active, actual activation/deactivation, NOTAM activated SUA and any other dynamic information relative to when a flight is projected to reach the airspace. This is dynamic information and operators are interested to know if airspace will be hot or cold when aircraft reaches a SUA boundary.
	H	Closed and impacted routes *Examples are routes unavailable due to interference, ATC zero, airway NOTAM'd out of service, change in MEA, unavailable transition, etc.*
	H	Prohibited Areas
ATC Constraints and Routes	H	ATC assigned route (automated or manual) ERAM auto-route or ATC Preferred Route
	H	TFM assigned route (Route Advisory-Required)
	H	Altitude or speed crossing restriction from ATC SOP/LOA
Traffic Management Initiatives	M/H	Airspace Flow Program *Larger operators handle at network level; smaller operators may derive greater value from this. Feedback enables operators to confirm that a route-out removes a flight from an AFP as intended.*
	M/H	Miles-in-Trail or Minutes-in-Trail Restrictions *Operators interested in impact of MIT (delay, miles, etc.); knowing MIT impact(s) to a route may adjust routing*
Runway Status	M/H	Closed Runway *Runway changes can have an impact on SID/STAR and impact route*
	M/H	Runway configuration at departure/destination *May impact SID/STAR and impact route*

Recommendation 2. CSS-FD should also deliver feedback on the full constraint set.

The intent of the group's constraint prioritization is to set an order of highest perceived return that may be used to influence development strategy. While those constraints noted as high priority in recommendation 1 are most beneficial in terms of providing initial return on investment, they should not be considered the only constraints required for a successful CSS-FD deployment. The remaining medium and lower priority constraints are still very important and must be included in CSS-FD development and implementation plans as well.

The following table lists the remaining constraints along with the identified medium or low ranking, and were established using the same guiding principles used during identification of the high priority items in recommendation 1.

Table 2 Constraints for Secondary Focus in CSS-FD

Constraint Category	Priority	Constraint Detail
Traffic Management Constraints		***Delays/ Reroutes***
	M	Controlled Departure Time
	L	Flow Evaluation Area (FEA) or Flow Constrained Area (FCA)
	L	TFM Advisory— Route Advisory--Recommended
	L	TFM Advisory— Route Advisory--Planned
	L	TFM Advisory— Route Advisory--FYI
		Traffic Management Initiatives (TMIs)
	M	Ground Delay Program
	L	Ground Stop
	L	Collaborative Trajectory Options Program
	M	Fix Constraints
	M	Metering Restrictions
NAS Resource Constraints – Outages	M	Navigation Aid (NAVAID)
	L	Radar
	L	Closed Taxiway
	L	Instrument Landing System (ILS)
	M	Global Positioning System (GPS)
Resource Constraints due to Meteorological Conditions – Airport / Route	L	Deicing operations
	M	Standard Instrument Departure (SID)/Standard Terminal Arrival Route (STAR) status

Recommendation 3. The FAA and industry should conduct collaborative analysis on the impacts of flight plan feedback to further inform future investment decisions.

While vendors and operators see value in the constraints referenced in Recommendations 1 and 2, a deeper analysis is required to conduct a proper investment evaluation of having this feedback. The above priorities were established within a limited timeframe with a limited set of resources, and we feel are a solid starting point. Further analysis may change the priorities slightly based on the findings of an investment analysis. The group suggests that additional FAA and industry analysis is warranted to further quantify the value of feedback on these key constraints as well as determine how to operationalize the concept of operations into a concept of use. Multiple industry venues such as the TOC, Collaborative Decision Making or others may be appropriate for such follow-on work.

Additional Operator Data to the FAA

Recommendation 4.	**The FAA should identify which operator data elements provide the greatest operational benefits by improving trajectory modeling and engage the vendor/operator community to evaluate feasibility to submit such information.**

Operators have significant detail available related to their intended flight plan, as well as the capabilities and limitations of the assigned aircraft that may impact the route. Hence, there is opportunity for operators to provide additional detail on their flight plans to the FAA to enhance the ATC system's understanding and predictability of each flight trajectory. However, depending on the specific data elements involved, gathering and transmitting data may be time consuming and costly for the operator community.

Vendors and operators note that data already generated in flight planning would be relatively simple to transmit to the FAA. Some potentially valuable data in this category include:

- Aircraft Top of Climb, Top of Descent, and planned runway transitions
- Detailed Flight time Information: Given operators' focus on managing the times associated with their flights, detailed information about intended timing of each flight provided via CSS-FD could prove valuable to Time Based Flow Management (TBFM) activities
- Aircraft performance related information: Additional operator data on the limitations of a specific aircraft operating a flight segment. Due to variations in aircraft performance, even those in the same fleet within an airline, inclusion of this data could enhance trajectory models.

Though industry could provide more data to the FAA, industry would only do so if it was clear that the FAA would leverage the new information in its trajectory modeling, and in certain cases may require that the data be restricted from public dissemination. Today, operators provide planned en route altitude information that is not used by the FAA in its models.

Additionally, while operators could provide certain information to the FAA, it is not clear which data elements are the most important to improving the accuracy of trajectory modeling. Given the resources required to extract and transmit data, all stakeholders would be well served by identification of which data is most impactful to trajectory modeling in operational systems.

Should operators ultimately provide additional data to the FAA for improving trajectory models and operations, changes to FIXM may be required. Such changes take significant effort and FAA and industry would require close collaboration to integrate any new data into FIXM.

Value of Operator Optimized Routes

Finding 2.	**CSS-FD constraint feedback is valuable to operators to optimize individual flight plans, as well as make flight planning decisions that optimize an operator's network.**

CSS-FD is anticipated to provide constraint information that enables operators to more effectively plan their own optimal routes. Operators are supportive of the FAA providing constraint information instead of prescriptive required routes.

For an operator flying one or a small number of flights, "optimal" routes may be shortest time or least fuel, and each operator may have his or her own preference for what drives optimality. The constraint information will equip the operator to plan according to that individual definition.

For large network airlines, constraint information and less prescriptive reroutes are also valuable. These operators are expected to utilize the information to build individual flight plans that enhance network operations. Achieving network optimality will not necessarily equate to optimality of each individual flight. For example, large airlines may be willing to trade off the fuel burn of an individual flight in exchange for maintaining system integrity for the network as a whole. The receipt of early and continual constraint based feedback is expected to improve planning of the airline's network operations with greater predictability earlier in the planning process.

Value of Route Adjustment After Lockout Time

Finding 3.	**The ability for operators to submit a route adjustment after lockout time has high operational value, in terms of safety and efficiency.**

Today, when operational conditions require new routes, re-planning routes after lockout time is a significant resource drain and logistical challenge for both operators and the FAA. Tedious manual processes, often conducted via phone and include the manual typing of full route strings, are required between traffic managers and dispatchers. This results in more errors, minimal flexibility, and decreased usage. The CSS-FD concept shifts some of this work to the Dispatcher to propose changes through new automation. This reduces the current bottleneck of Traffic Management workload in rerouting, improves accuracy, and speeds up decision making on the execution of reroutes.

Additionally, in reroute scenarios there are situations where multiple strips are printed in a facility on the same flight number. This can result in the inconsistent understanding of an

aircraft's intended route of flight between the pilot and controller. Multiple strips is a known safety issue[2] today in the NAS, and the CSS-FD capabilities should help to reduce this issue.

Risks to Successful Implementation of CSS-FD

The following risks have been identified for successful implementation of CSS-FD:

Risk	Detail
Cost of investment (automation, data, workflow)	To participate in CSS-FD will require changes to automation and dispatcher workflow. These changes will require investment and the value of CSS-FD will need to outweigh such costs. Additionally, the prevalence of legacy automation systems and data infrastructure will challenge the investment to upgrade to FIXM and a collaborative planning environment. Robust analysis on the impacts of CSS-FD to both FAA and operators will help to strengthen the business case for investment by all parties and ensure a sufficient level of participation.
Linkage to multiple other systems/concepts	CSS-FD value is related and/or dependent upon successful implementation of other FAA Programs. Clear mapping of dependencies on other systems or Programs will be required to ensure stakeholder confidence and a strong value proposition in favor of its implementation.
Additional automation required for amendments to flight plan after lockout	CSS-FD will require development of a set of automation and procedures to enable changes to flight plans after lockout time. Until paper flight strips are replaced with electronic flight data, amendments after the lockout period will still require some manual coordination.
Accuracy of constraint information	Some of the high value constraint information is dynamic in nature. If these data sources are reliable and stable they can be utilized and deliver operational value. However, if they are not reliable this could deteriorate confidence in the overall feedback provided by CSS-FD.

[2] A flight plan can not be modified by the operator within a certain period before proposed departure (the period varies by facility but is typically 45 minutes). Because of this, a common practice is to call the relevant ATC facility and ask to have the plan removed, followed by a sending of the modified plan. When the first plan is not removed first, two flight plans for that flight end up in the system. Depending on timing, strip printing and posting, ATC may not be aware of the second flight plan when delivering the pre-departure clearance and could issue "cleared as filed". If ATC activates the first plan and the pilot is on the second plan, an unexpected turn can result. These incidents are infrequent but do occur. Traditional pre-departure clearance (not DCL) also delivers a partial route and could be ambiguous as to which plan is being cleared. Examples of recent incidents include:

- Confusion over multiple amendments and then a replacement flight plan (after the clearance was delivered) resulted in a pilot flying a route other cleared by ATC, which took the flight directly into a Warning Area.
- A late MEL issue made a flight ineligible for the NAT tracks, and they sent a replacement flight plan that avoided the tracks. However they were cleared on the original flight plan and unexpectedly turned in Oceanic airspace.

Accuracy of trajectory models	The NAS is a dynamic system and trajectories change. There is uncertainty as to whether models will be precise enough for dynamic feedback to be consistently useful.
Program funding	FAA budget challenges could impact the program. If funding challenges or other external factors change the Program, impact the implementation timeline or reduce its planned capabilities, this could negatively impact operator perceived benefit and investment decisions.
Collaboration	Close collaboration is required between FAA and industry throughout the process of concept development and implementation of CSS-FD. If this collaboration is not maintained, the Program risks divergence between the FAA and industry and, ultimately, a reduction in benefits due to limited participation.
Use of operator provided data	There is concern about the utilization of data provided in planning. Operators are concerned that data provided while exploring 'what if' scenarios through preliminary plans could be utilized to make system management decisions or be prematurely released to the public. Clear policies on data usage will be required to address operator concerns.
Release of operator provided data	Some operator data could be sensitive and operators may not wish for it to be released to the public. Clear policies on data sharing will be required.

Summary of Potential Value from CSS-FD

The operator community identified the following key areas of potential value from CSS-FD:

Benefit Area	Detail
More predictable operations	With improved operator provided information, trajectory models and flight plan feedback (including access to new information like SUA status and LOA/SOP), system knowledge of trajectory and times should be improved.
Possible reduction in fuel carried and/or increase in payload	Improved information should more precisely align planned and actual fuel required. Over time, fuel loads could be more accurately planned thereby reducing actual fuel burn and allowing for optimized (increased) payload to be carried.
Reduction in workload to Dispatchers	As a result of both (a) monitoring service post-submission that alerts based on change in constraint and (b) capability to electronically coordinate changes.
Improvements to network operations	With improved information sharing on constraints, operators will be better equipped to make better flight planning decisions for individual flights that support the network operation as a whole.

Appendix A: Tasking Letter

U.S. Department
of Transportation
**Federal Aviation
Administration**

AUG 2 1 2017

Ms. Margaret Jenny
President
RTCA, Inc.
1150 15th Street NW
Washington, DC 20036

Dear Ms. Jenny:

The International Civil Aviation Organization (ICAO) has been developing a concept for Flight and Flow Information for a Collaborative Environment (FF-ICE). This concept envisions using standardized information exchange models and modern service oriented interfaces to set up an environment for planning flights where all relevant information is shared amongst stakeholders, allowing stakeholders to make collaborative decisions based on consistent information. This environment will be available for service providers to implement, but will not be required: operators and service providers can decide whether to participate. Non-participants will continue to file flight plans using the existing ATS messages over AFTN.

The FAA has established the Common Support Services- Flight Data (CSS-FD) program to provide a standards-based flight planning environment consistent with the FF-ICE concept.

To ensure successful delivery of NextGen operational improvements, the FAA requests that the Tactical Operations Committee (TOC) use their broad expertise within the air traffic management community to help refine and/or validate the goals and approach to the flight planning service as described in the tasks below.

Background:

CSS-FD will provide a flight planning service that allows an operator to:

1) Convey more information to the FAA about their intended flight than is currently possible (allowing more accurate assessment of the plan with respect to constraints);
2) Obtain feedback from the FAA indicating the Air Traffic Management constraints applicable to a submitted flight; and
3) Use modern XML and web services to collaboratively plan with TFM and ATC according to the emerging global FF-ICE standards.

CSS-FD will provide opportunity for TFM, ATC, and the operator to all work from the same set of applicable constraints. This will assist the FAA in assessing the flight using all relevant information from the operator, if the operator employs the system.

The CSS-FD flight planning service will also provide opportunities to:

1) Simplify addressing of flight plans (all flight plans will be sent to one place); FAA will route to appropriate center(s).
2) Partially automate revisions to flight plans inside 45 minutes from departure, by allowing manual review of submitted changes and the ability to accept or defer the change depending on state of the flight. No phone call would be required for such changes.
3) Submit Trial (what-if) changes to see the effect of a reroute being considered.

The attached Concept of Operations describes the service as currently envisioned.

FAA request for TOC Tasking:

Task 1 – Assist the CSS-FD team in establishing areas of focus for the investment, by identifying the features of the concept that will provide the most operational benefit, e.g.

a) Knowing which ATM constraints will affect a flight, e.g.
    i. ERAM-assigned route
    ii. Traffic Management Initiatives
    iii. SAA penetration
    iv. TFR penetration
    v. NOTAMs
    vi. ATC SOP and LOA constraints
b) Being able to provide additional details on the expected flight trajectory that will allow more accurate FAA assessment of the constraints
c) Being able to create an operator-optimized plan in response to a TMI rather than simply fly a TFM-assigned reroute
d) Being able to electronically coordinate changes to a flight plan after the normal lock-out time

Task 2 – Assist the CSS-FD team in identifying areas of risk and operator constraints that could impact successful implementation of the early collaborative planning envisioned in the concept.

Fulfillment of this request by November, 2017 will provide the FAA with clearer insight into industry needs and constraints in support of the CSS-FD IARD planned for January 2018. The FAA will provide documentation and subject matter experts as needed to support this effort.

Sincerely,

Elizabeth L. Ray
Vice President, Mission Support Services
Air Traffic Organization

Appendix B: Participants in the CSS-FD Task Group

Darrell Pennington, Air Line Pilots Association (ALPA)

Rune Duke, Aircraft Owners and Pilots Association

Tim Stull, American Airlines, Inc. (Co-Chair)

Russ Richmond, Delta Air Lines, Inc.

Denise Fountain, DoD Policy Board on Federal Aviation

Ray Ahlberg, Federal Aviation Administration (FAA)

Steve Anderson, Federal Aviation Administration (FAA)

Linda Chen, Federal Aviation Administration (FAA)

Maureen Keegan, Federal Aviation Administration (FAA)

Denise Wellspeak, Flight Plan

Ken Wilson, Flight Plan

Kim Lantz, Foreflight LLC

Tammy Bowe, Jeppesen (Co-Chair)

Joe Bertapelle, JetBlue Airways

Marcus Hantschke, Lufthansa Systems

Mark Prestrude, National Air Traffic Controllers Association (NATCA)

Ernie Stellings, National Business Aviation Association

Trin Mitra, RTCA, Inc.

Stephane Mondoloni, The MITRE Corporation

Tejal Topiwala, The MITRE Corporation

Perry Lewis, United Airlines, Inc.

Allan Twigg, United Airlines, Inc.

Ms. Jodi McCarthy
Vice President, Mission Support Services
Air Traffic Organization
Federal Aviation Administration
December 1, 2017

Ms. McCarthy,

We write to you as operators in the National Airspace System and members of the Tactical Operations Committee with interest to work with the FAA on issues related to One Engine Inoperative (OEI) procedures and obstacles. These topics have recently been highlighted as a by-product of the TOC's previous work on airport construction.

14 CFR 121 Subpart I and 14 CFR 135 Subpart 1 impose regulatory requirements on affected flights to assess obstacle clearance for the net takeoff flight path following an engine failure on takeoff or landing. The procedures for performing this assessment are contained in AC 120-91 (OPR AFS 410) and require the operator to use the "best available data", which includes the location of temporary obstacles that might lie below this path. The ground track selected to be flown following an engine failure may differ from the IFR departure procedure ground track. Relevant obstacles include those both on and off airport property.

Recent operational experience with respect to temporary obstacles highlights industry concerns on the topic. During the obstacle evaluation for an off airport crane near a NE airport, impacts to air carrier operations were not fully recognized or considered in the evaluation and limited OEI performance for a key departure runway. As a result, operators had to make rapid adjustments to OEI procedures that included reduction in aircraft lift capability. The experience highlighted concerns about the review process in general as well as the lack of visibility of OEI performance into the obstacle assessment process. As growth of buildings and construction continues around airports, operators have concerns about the impact these will have on departure and arrival procedures. Operators are seeking improvements to the process for evaluating these impacts at major airports.

Another concern relates to operators having precise/timely information about obstacles, specifically location and height. Looking up the obstacle evaluation (OE) record is time consuming and workload intensive. With a lack of precise knowledge of the location of temporary obstacles, operators must make generalized assumptions about obstacle location. This may result in the need to reduce payload on the aircraft due to lack of precision of the location of a temporary obstacle. Flight operators seek the highest level of real-time precision related to the location (latitude/longitude) and height of temporary obstacles.

Operators are also interested in knowing the real-time status of temporary obstacles. Without current status information, operators must assume the obstacle has not changed its configuration. At a West coast airport, on one occasion a crane was actually down but operators were unaware (and the NOTAM was not cancelled). As the weather degraded, Cat II/III approaches were

unavailable due to the crane impact and 32 aircraft diverted from this airport, including multiple international wide body aircraft.

To address some of these issues, we request the FAA to consider tasking the Tactical Operations Committee. Below, we have provided our perspective and ideas for what the FAA might include in a tasking:

1) Review the current process and procedure for evaluation and publication of cranes/obstacles information and identify recommendations to improve. This may include:

- How best to engage stakeholders in better planning and execution in scenarios where temporary or permanent obstacles are being considered that might have a negative effect in the terminal environment
- Determining whether there is appropriate level of evaluation by all parties for obstacle reviews both on and off the airport
- Ideas for how to consider OEI procedures on and off airport obstacle assessment with focus on how to avoid conflicts between company OEI procedures and obstacles
- Assessment of crane impact based on the single controlling obstacle for procedures vs impact of individual cranes on OEI procedures
- Mechanisms to ease and improve provision of data on obstacle assessment to operators
- Identify any training or education required for the FAA to better understand OEI procedures
- Any other limitations to the current process

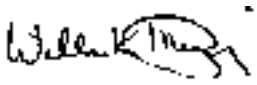
2) Review the process for providing information on location, height and status of temporary obstacles and identify recommendations to improve. This may include:

- Identify the key limitations to providing real time latitude, longitude and height information about temporary obstacles and offer recommendations on how to improve
- Provide recommendations for communicating real time status of temporary obstacles
- Identify any concerns from the all flight operators relating to burden of processing the constant flow and increase of information relating to temporary obstructions.

We believe that a collaborative effort between industry and FAA on issues related to OEI procedures and obstacles would deliver important operational improvements for all stakeholders.

Thank you for your consideration.

Mark Hopkins
Director, Air Traffic Management & Industry Affairs - Delta Air Lines
Member, Tactical Operations Committee



Bill Murphy
Assistant Director SFO- Americas - International Air Transport Association
Member, Tactical Operations Committee

RTCA

THE GOLD STANDARD FOR AVIATION SINCE 1935

Drone Advisory Committee

Drone Advisory Committee Update

- Members:
  - 34 Industry Members
  - FAA Deputy Administrator (DFO)
- DAC Subcommittee (160+ participants) formed three task groups
  - Roles and Responsibilities
  - Access to Airspace
  - UAS Funding
- Held 4 meetings in 2017 (one virtual)
- Delivered both Interim and Final recommendations

Drone Advisory Committee Status

- The Drone Advisory Committee
  - New DFO (Dan Elwell) joined in early summer
  - DAC Meetings receive updates and recommendations from the sub committee task groups
    - TG1: Roles and Responsibilities of the Local/State/Federal Government
      - Analyze State or Local Government Interests
      - Provide Recommendations on relative roles & responsibilities for making and enforcing rules and regulations
    - TG2: Access to Airspace
      - Provide Recommendations on UAS Operations/Missions Beyond Those Currently Permitted; Define Procedures for Access to the Airspace
    - TG3: Funding of UAS Integration
      - Analyze Potential Mechanisms Funding the Activities and Services Required
      - Provide Recommendations on Preferred Method for funding Federal Activities and Services

Task Groups Status

- Expecting updated tasking for TG1
  - New TG will be formed based upon the tasking
- Current Status
  - TG1: Roles and Responsibilities of the Local/State/Federal Government
    - Interim report delivered at November DAC
    - Nine Common Principles: 5 consensus; 4 non-consensus
    - New local/county/state representatives added
  - TG2: Access to Airspace
    - Final report delivered at November DAC
    - Five recommendations submitted
  - TG3: Funding of UAS Integration
    - Status only at November DAC
    - Work begun on Long-term (greater than 24 months) recommendations

TG2 Recommendations

- Summary of Recommendations
  1. Prioritize sUAS BVLOS operations within the Mode C Veil below 400 ft AGL
  2. Develop technology-neutral navigation performance requirements
  3. Evaluate the minimum requirements needed to meet low altitude UAS command and control (C2) operations
  4. Establish a FAR Part 135 regulatory "pathfinder" program for commercial UAS low-altitude (<400') BVLOS Operations
  5. Beyond 24 month Timeframe Recommendations

GPS Outage Impacts

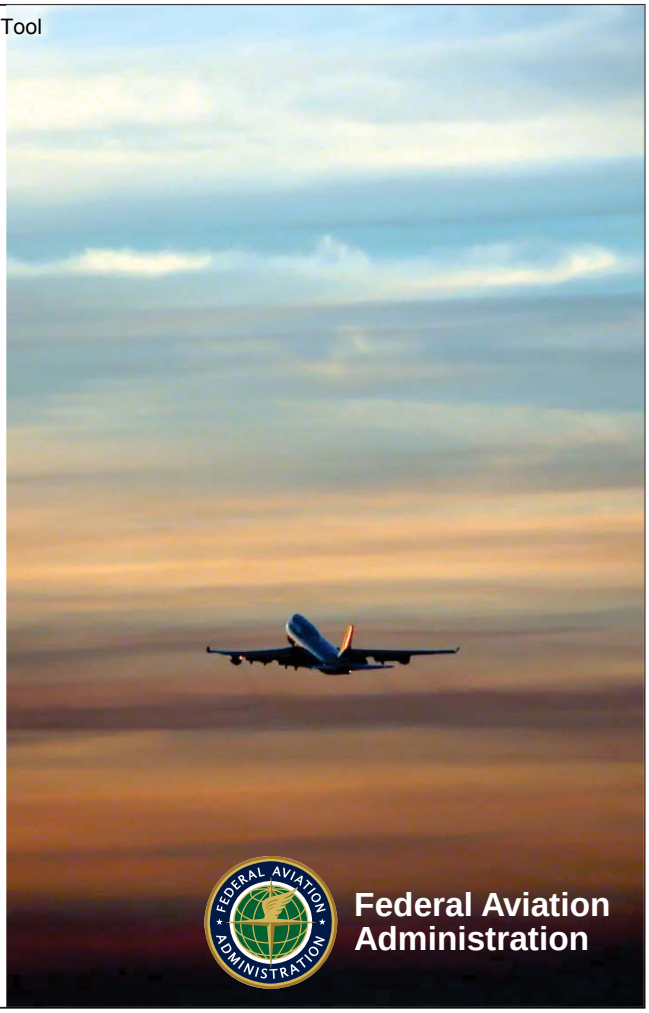
Awareness and Operational Impact Monitor Background

Presented to: RTCA TOC – GPS Interference WG

By: Ronald L Stroup on behalf of Jeffrey L Lyons

Date: December, 5, 2017

By: Ronald L. Stroup
Chief Systems Engineer
Federal Aviation Administration
NAS Enterprise Engineering Branch, ANG-B21
Ronald.L.Stroup@faa.gov
Office: (202) 267-1532



Agenda

- **Background on Enterprise Monitor**
- **Live Demo**
- **Way Forward**
- **Next Steps**

Justification

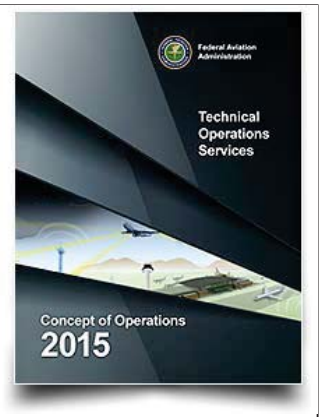
FAA Order 6000.30F, NAS Maintenance Policy

11d - Certification is a quality control method used by Technical Operations to ensure NAS systems and services are performing as expected. Technical Operations must determine certification requirements. Technical Operations' independent discretionary judgment about the provision of advertised services; the need to separate profit motivations from operational decisions; and the desire to minimize liability make the regulatory function of certification and NAS oversight an inherently governmental function.

13.a.5 - Leased or Provisioned Services. FAA oversight and management of a contractor provided and maintained service. A leased or provisioned service is a service-only contract to provide a NAS Infrastructure Service requirement which could include research, development, procurement, implementation, monitoring, and/or operational functionality, from a vendor in accordance with the Contract Data Requirements List (CDRL) associated with a contract document. The FAA will define the requirements and specifications for leased or provisioned services, but typically we may not own or maintain any equipment used to produce these services. Unless specified in the contract, the vendor providing the leased or provisioned service is responsible for determining the maintenance requirements on the equipment producing the leased or provisioned service. Specifically, the FAA will:

*(a) Define the technical performance measures which we will use to **provide oversight through monitoring** and confirmation of the delivery of leased or provisioned services;*
(b) Provide management for leased or provisioned services, coordinate and document their availability; and
(c) Certify leased or provisioned services providing operational functionality if required.

Technical Operations Service Conops 2015



The NAS of the future is service-centric. Technical Operations will operate and maintain both existing and NextGen systems while expanding its focus from equipment and systems to NAS end-user service delivery and will prioritize restoration based on overall impact to NAS.

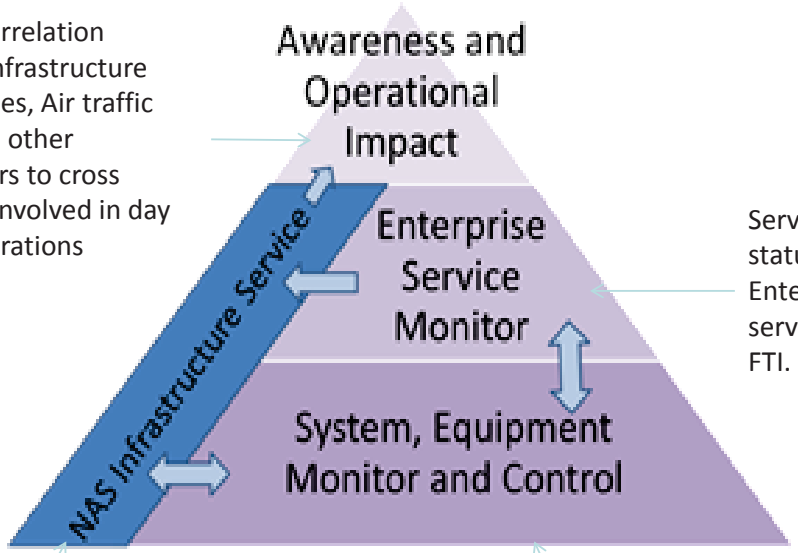
Technical Operations Service Conops Implementation Plan

• Sub-Strategy 1.2: Enhance NAS infrastructure situational awareness and operational impact through a modernized and integrated Service and Infrastructure monitoring capability.

•An integrated service and infrastructure monitoring system will be used to provide real-time and predictive homogeneous information needed to accomplish system and equipment maintenance, troubleshoot service threads and prioritize restoration to reduce the impact on NAS end-users.

Enterprise Monitor

AOI provides correlation between NAS infrastructure service anomalies, Air traffic operations, and other impacting factors to cross domain teams involved in day to day NAS Operations



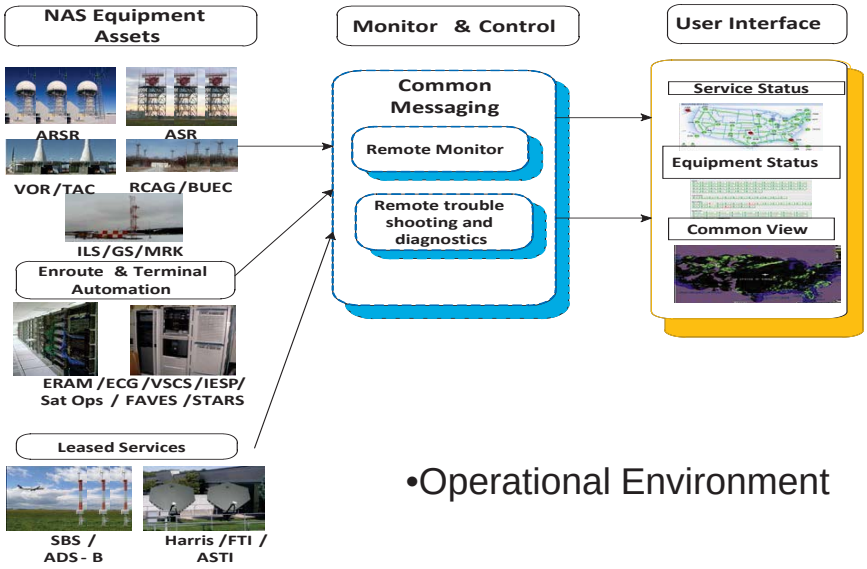
Service monitors provide status for oversight of Enterprise and leased services such as SBS and FTI.

The NIS monitor provides NAS infrastructure service status using system alarms, telecommunication status messages, enterprise service status, and NAS maintenance logs.

The Systems monitor and control tools provide NAS equipment and system status and are used for local and remote maintenance

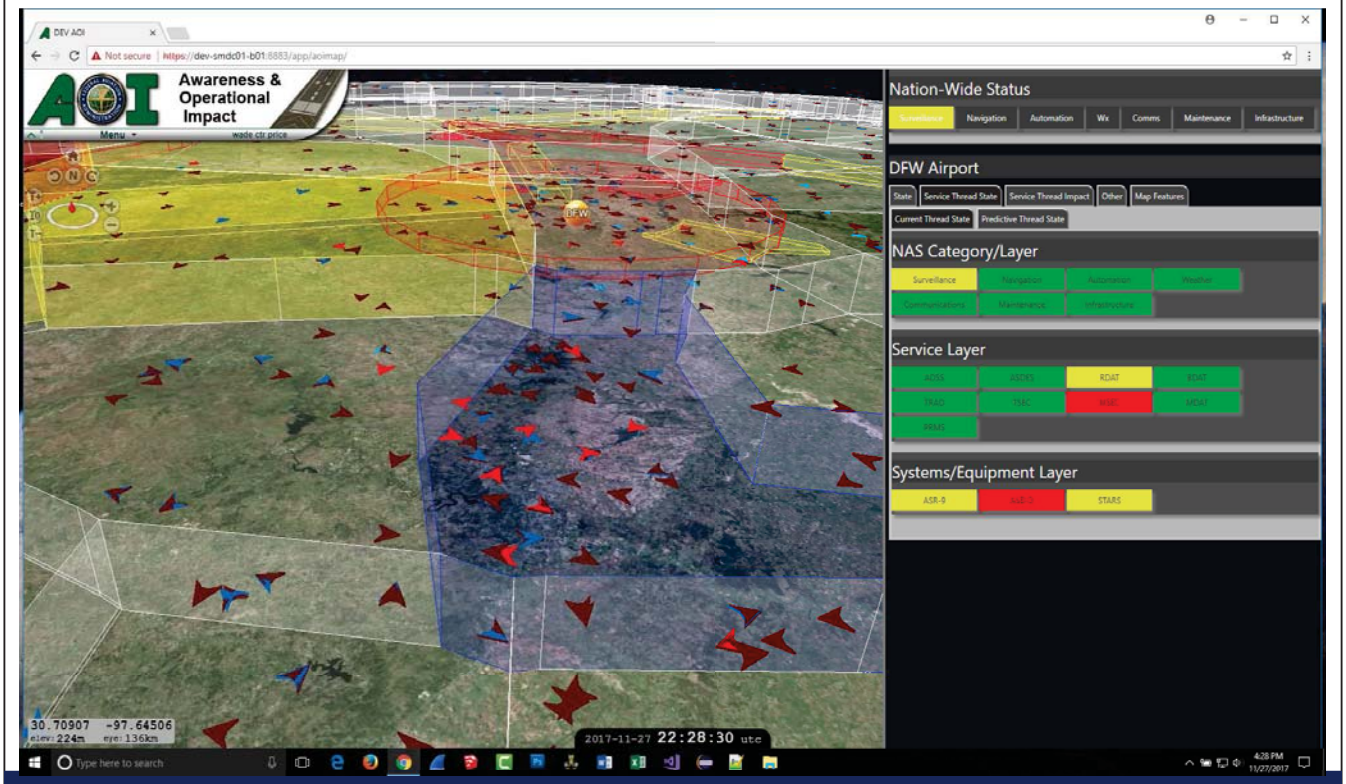
Awareness and Operational Impact (AOI) Monitor

- **Purpose - The AOI monitor is designed to enable diverse teams, composed of representatives from various Air Traffic Management (ATM) operational organizations to collaborate on topics critical to Air Traffic service delivery Air Traffic Service**



•Operational Environment

Live Demo

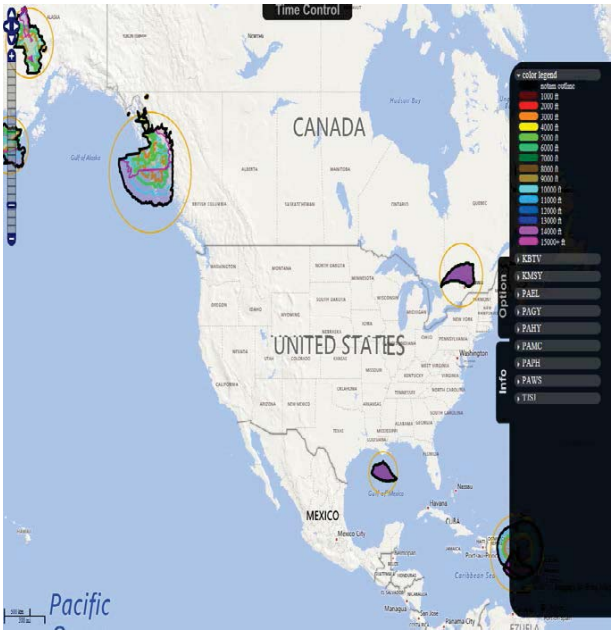


Way Forward

- **Acquire past test dates and conditions to develop map model (Proposed at last briefing – August 22, 2017by J. Lyons)**
  - NIC/NAC levels
  - GPS logs
  - WAAS PDOP
- **Next Test(s)**
  - Develop predictive map prior to test(s)
  - During test – monitor aircraft to check accuracy, evaluate procedures to notify NOTAM office, identify which equipage configurations are impacted, etc..

FAA AOI system can evaluate your issue but was not developed to be the solution

Next Steps ?



- **!GPS 11/106 (KZAB A0510/17) ZAB NAV GPS (EDW GPS 17-04) (INCLUDING WAAS, GBAS, AND ADS-B) MAY NOT BE AVBL WI A 248NM RADIUS CENTERED AT 345545N1175741W (PMD 004019) FL400-UNL, 196NM RADIUS AT FL250, 123NM RADIUS AT 10000FT, 111NM RADIUS AT 4000FT AGL, 93NM RADIUS AT 50FT AGL. 1712011700-1712012230**

NOTAM Task Force

Overall Review

Date:
December 5, 2017

Presented to:
RTCA

Presented by:
Jerry Torres, Manager
NOTAM Governance and Operations

FAA Air Traffic Organization

Establishment of NOTAM Task Force

- **FY-17 ATO Top 5 Risks to the NAS**
  - **Wrong Surface Landings**
  - **Runway Flyovers**
  - **NOTAM Issuance/Cancellation**
  - **NOTAM Prioritization/Filtering**
  - **IFR/VFR**

Establishment of NOTAM Task Force

- **ATO Top 5 "NOTAM Issuance/Cancelation Corrective Action Plan: NOTAMs are not effectively coordinated (i.e., from originator to end user)"**
  - Establish Task Force with Charter – signed by COO July 2017
  - Deliver Gap Analysis (Problem Statements, Causes, Impacts) – Delivered August 31, 2017

Developing TF FY18 Goals

- **Met Face to Face October 31-November 2**
- **Finalized the Mitigations**
  - Priority
  - Length to accomplish
  - To whom it is tasked
    - Steering Committee (Director or higher level)
    - Task Force
    - Individual offices

Task Force FY18 Goals

Mitigations	Priority
Ensure that automation provides advanced notice (e.g., a pop-up window) of NOTAMs with short lead times.	High
When there is a planned event, every effort should be made to present at the National Customer Forum. The FAA should promote the importance of proactively engaging industry at all levels of NOTAM issuance and at all issuing facilities	High
Review NFDC policy (7900.2) about airports' requirement to notify NFDC directly	High
Identify automation platforms affected by NOTAM policy changes and engage with affected organization.	High
Review Aeronautical Data Change (ADC) / NFDC process about airports' requirement to notify NFDC directly when a change to an airport is required. If there is no action to chart the change, the D-NOTAM should not have PERM as an end date.	Mid

Top 3 Problem Statements

Problem Statement	Mitigation	Tasked to
Airport/runway conditions are not communicated to ATC / pilots/dispatch in a timely manner.	Establish or identify an organization to oversee issued NOTAMs and ensure that all issuance requirements are met. (Mitigation for several Problem Statements)	SC MT/HP
NOTAM originators do not understand the complete NOTAM process, from identifying a condition that warrants a NOTAM to cancelling the NOTAM when the condition no longer exists; therefore, it becomes difficult to manage the whole NOTAM process consistently.	Arrange outreach and education efforts (especially for small, non-towered airports). Involve State Aviation.	TF MT/MP
The NOTAM system and origination tools have a backlog of bugs/fixes/enhancements and are not being fully updated with changes in the NAS (i.e., ICAO contractions, location IDs, NOTAM format, etc.)	The PMO needs funding for the NOTAM System (USNS/FNS) Create a Task Order to bridge the gaps of USNS	SC ST/HP SC ST/HP

SC= Steering Committee
ST (short-term)
MT (mid-term)
LT (long -term)

TF=Task Force
LP (low priority)
MP (mid priority)
HP (high priority)

Summary and Conclusion

- In FY-17 NOTAMS were identified in the ATO's Top-5 Hazards to the NAS
- FY-18 Task Force met Face-to-Face (Oct 31 – Nov 2)
- A Task Force was organized and chartered to conduct a Gap Analysis, identify mitigation, and assign tasks at different organizational levels
  - Steering Committee (Director/above), Task Force, or Individual Offices

Discussion: Non-compliance Of US Aeronautical Data With ICAO Standards

NOTAM Stakeholders Telecon

- **Meetings held Quarterly**
- **Future Meetings:**
  - Monday December 18
  - March 13, 2018
  - June 12, 2018
  - September 11, 2018
  - December 11, 2018
- **POC: Amy Seador (202) 267-1435; amy.seador@faa.gov**

Backup Slide

Back-Up Material
2018-2022 Mitigations/Taskers

	Task Force	Individual Office		Steering Committee
PS 1	Recommend as a Best Practice that ARP revise AC 150-5200-28 for airport operators (for consistency with FAA Order 7930.2S)	Refine the process for dissemination of information (e.g., notify controlling facility before actively remedying the hazardous condition).	AJR-B1	Establish or identify an organization(s) to oversee issued NOTAMs and ensure that all issuance requirements are met.
	Arrange outreach and education efforts (involve Office of Airports and NASAO). Create training that informs airports on the proper use of NOTAMs.	Ensure that automation provides advanced notice (e.g., a pop-up window for OASIS, NM, ENII) of NOTAMs with short lead times.	PMO	Look into levels of course certifications for NOTAM Manager / ENII users.
PS 2	Arrange outreach and education efforts	Review Aeronautical Data Change (ADC) / NFDC process about airports' requirement to notify NFDC directly when a change to an airport is required.	OCC and AJV-5	Identify an oversight organization
PS 2b	Review NFDC policy (7900.2) about airports' requirement to notify NFDC directly	Use the ICAO NOTAM format, as this will eliminate the aforementioned A Series–only issue.	AJR-B1	Annotate NOTAMs with free-form text for review by an oversight organization.

Problem Statement – Non-compliance of US Aeronautical data with ICAO standards.

Problem areas:

- US Aeronautical data is not published in accordance with ICAO standard format. (AIP, AIC, Trigger NOTAMs etc.).
- Various LOA's (letter of agreement between Air Traffic Centers exist) unknown to operators but yet the airlines are expected to comply.
- Various route schemes (domestic and international) exist with updates and re-design implementations being communicated via email by the various Air Traffic Center authorities.
- No standard format exists for officially delivered PowerPoint presentations. Additionally, no formal method for the distribution of this information currently exists.
- Limitations within ERAM's processing of flight plan data result in adaptive departure routes not matching filed routes.
- TFRs are not published as international NOTAMs. TFRs should be added onto the list of domestic NOTAMs to be crossed-over into the ICAO NOTAM distribution.
- Development of an ICAO like substitute for SNOTAMS is needed; however, unlike SNOTAMS there is no separate NOTAM series for FICONs. This leaves users without a method to easily separate out FICON reports from general NOTAMs.
- The NOTAM system not fully ICAO compliant and is limited to just a single NOTAM series with a total of 9999 NOTAMs. As NOTAMs issued, within the same year, exceed 9999. The USNOF is forced to restart and re-use previously cancelled NOTAM numbers in an attempt to continue to serve the community. A NOTAM system which contains multiple series (S, O, etc.), for the specified NOTAM types, would solve the issue of re-using/re-issuing NOTAM series numbers within the same year.
- Industry-wide communication of timelines. A road map for future development and integration of AIS data does not exist.

Summary:

Broadly speaking the current system is comprised of various entities using various legacy systems and methodologies. The current tools used to gather and distribute Aeronautical Information Data to the user community are not ICAO compliant. This places an undue burden upon large airlines (operating worldwide) and navigation data providers, who must then individually navigate through a labyrinth of various entities, websites and email distribution chains in order to maintain and ensure awareness of the various changes throughout the system. Failing to have these resources in place can introduce risks and can also decrease efficiency. Potentially affecting safety of flight while severely restricting our ability to maximize airspace usage by the use of least cost route optimization.

PROPOSAL:

- We propose that a hard date of 2025 is established for the full adoption of ICAO standards which also includes the publication and distribution of U.S. Aeronautical Information data, commonly referred to as Aeronautical Information Systems (AIS) data. This proposal is fully endorsed and supported by IATA and air carriers worldwide. Without a hard date, there will be is no defined target and decades of slippage will continue to be the norm as previously observed since 1947.
- Create a single oversight and managing body. Centralize currently separated entities such as; the US NOTAM Office, Pilot Web/FNS, NFDC, Chart Supplements, AIP, AIC, OBSTACLES, into one single AIS umbrella to manage, collect, validate, quality assure and distribute NOTAM/AIS data worldwide.
- Leverage SWIM towards the centralized distribution of AIS data.