Eighteenth Meeting of the RTCA Tactical Operations Committee

December 5, 2017
Hosted by NBAA
Washington, DC

Welcome and Introductions

Co-Chairs:
Bart Roberts, JetBlue
Jeff Woods, NATCA
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
Review and Approval of:

August 22, 2017
Meeting Summary

FAA Report

Jodi McCarthy
Vice President, Mission Support Services
Air Traffic Organization
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.
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

Highest Value Flight Plan Feedback Data

- **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

Flight Plan Feedback Data (Cont.)

- **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

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
Update on TOC Areas of Interest

- PIREPs
- Alaska Terminal
- OEI/Obstacles

Jodi McCarthy, FAA

BREAK
Other Business – Awareness and Operational Impact (AOI) Overview

Ron Stroup & Wade Price, FAA

LUNCH
Update on the NextGen Advisory Committee (NAC)

Andy Cebula, RTCA

October 4th meeting
Record NAC Attendance >135

Michael’s last NAC meeting

Dave Bronczek (NAC Chair) Dan Elwell, DFO
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

Note: themes above do not depict all initiatives recommended for the first 18-month timeframe
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

<table>
<thead>
<tr>
<th>Capability</th>
<th>Average Rank</th>
<th>Percent of Responses with Capability Ranked in Top 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deconflict Airports</td>
<td>5.2</td>
<td>73%</td>
</tr>
<tr>
<td>Improve Individual Airport Throughput</td>
<td>4.6</td>
<td>56%</td>
</tr>
<tr>
<td>Improve and Integrate Existing Flow Management Capabilities</td>
<td>4.5</td>
<td>42%</td>
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<tr>
<td>Improve Airspace Throughput</td>
<td>4.1</td>
<td>47%</td>
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<tr>
<td>Implement New Flow Management Decision Support Tools</td>
<td>3.9</td>
<td>38%</td>
</tr>
<tr>
<td>Improve NAS Information, Common SA</td>
<td>3.5</td>
<td>27%</td>
</tr>
<tr>
<td>Create New Noise Abatement Procedures</td>
<td>2.0</td>
<td>16%</td>
</tr>
</tbody>
</table>
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
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

High Altitude
26 recommendations

FL180

CONUS Low Altitude
43 recommendations

Alaska Low Altitude
23 recommendations

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

92 Recommendations

In CONOPS Already
• Agree with recommendation and identify location in ConOps
• Respond

Agree but not in CONOPS
• Agree with recommendation
• Respond and incorporate in CONOPS as needed

Vetting thru a few Lines of Business
• Prepare recommendation for vetting with relevant information and proposed response
• Respond and incorporate in CONOPS as needed

Vetting thru multiple Lines of Business
• Prepare recommendation for vetting with relevant information and proposed response
• Respond and incorporate in CONOPS as needed

Analysis Required then Vetting thru Lines of Business
• 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

• 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**

<table>
<thead>
<tr>
<th>Charting</th>
<th>Graphics Availability and Electronic Presentation</th>
<th>FIS-B Uplink</th>
</tr>
</thead>
<tbody>
<tr>
<td>Origination</td>
<td>FSS + ATC</td>
<td>Education</td>
</tr>
<tr>
<td>Transmission to Industry</td>
<td>Textual Format</td>
<td>Additional TFR Considerations</td>
</tr>
</tbody>
</table>
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

• 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**

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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

<table>
<thead>
<tr>
<th>Category</th>
<th>Sub Category</th>
<th>TFR TFR Recommendations</th>
<th>Lead Organization(s)</th>
<th>Agency Position</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>FAA Charting (VFR Sectional/TAC)</td>
<td>Long Term TFRs</td>
<td>1. Long-term TFRs should be charted on Sectional and Terminal Area Charts.</td>
<td>AJV-5</td>
<td>Open</td>
<td>AVI-5 to form working group to review request</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Long-term TFRs should be identified using standardized criteria.</td>
<td>AJV-5</td>
<td>Open</td>
<td>AVI-5 to form working group to review request</td>
</tr>
<tr>
<td></td>
<td></td>
<td>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.</td>
<td>AJR-B11 (USNOF Operations and Policy Group)</td>
<td>Concur with recommendation</td>
<td>Supported by AIR-B11</td>
</tr>
<tr>
<td>Sporting Event TFRs</td>
<td>Charting Specifications</td>
<td>1. The FAA should develop a charting requirement document for TFRs to ensure consistency and to reduce pilot confusion.</td>
<td>AJV-5</td>
<td>Open</td>
<td>AVI-5 to form working group to review request</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. The FAA should modernize the Sectional and Terminal Area Chart production process to achieve a 56-day charting cycle.</td>
<td>AJV-5</td>
<td>Concur with recommendation and will implement upon completion of the VFR chart automation project</td>
<td></td>
</tr>
</tbody>
</table>

RTCA TOC Recommendations

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<tbody>
<tr>
<td>TFR Origination</td>
<td>Standardized Entry Method</td>
<td>1. Any tools the FAA utilizes to generate TFR NOTAMs should produce a standard output.</td>
<td>PMD and AIR</td>
<td>Concur with recommendation and will implement pending funding</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. 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.</td>
<td>PMD and AIR</td>
<td>Concur with recommendation and will implement pending funding</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. TFR NOTAM templates should be centrally managed electronically for all uses.</td>
<td>AIR and PMD</td>
<td>Concur with recommendation and will implement pending funding</td>
<td></td>
</tr>
<tr>
<td>TFR NOTAM (Oversight (text and graphic))</td>
<td>1. The FAA should designate a 24/7 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.</td>
<td>AIR</td>
<td>Concur with recommendation and will implement pending funding</td>
<td>ATO Top 5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>12. The TFR submission tool should provide a graphical depiction of the impacted area to all affected ATC agencies.</td>
<td>AIR and PMD</td>
<td>Concur with recommendation and will implement pending funding</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>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.</td>
<td>PMD, AIR, AJT, and AJV-11</td>
<td>Concur with recommendation and will implement pending funding</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### RTCA TOC Recommendations

<table>
<thead>
<tr>
<th>Category</th>
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<th>TOC TFR Recommendations</th>
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<th>Agency Position</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transmission to Industry</td>
<td></td>
<td>1. The FAA should provide TFR NOTAMs in AIXM/GML digital format</td>
<td>PMO</td>
<td>Concur</td>
<td>Implement pending funding</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5. The FAA should ensure that the SWIM onboarding process is efficient/ timely for all approved “partners”</td>
<td>PMO</td>
<td>Concur</td>
<td>Implement pending funding</td>
</tr>
<tr>
<td></td>
<td></td>
<td>13. The FAA should communicate changes to TFR NOTAM policy to industry.</td>
<td>AJR-B11, PMO</td>
<td>Concur</td>
<td>ATO Top 5</td>
</tr>
</tbody>
</table>

#### Format of GML Portrayal Script

- Prototype testing of GML Portrayal Scripts by the FAA and multiple vendors should be done and circulated to investigate:
  1. The range of graphical interpretations of AIXM data.
  2. The interoperability of SLD/SE portrayal scripts for AIXM.

- PMO: Open

#### Notification Process for Changes

- The FAA should communicate changes to TFR NOTAM policy to industry.
  - PMO: Concur
  - Agency: ATO Top 5

#### Transmission to Industry

- 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
  - Implement pending funding

- 21. Changes should be made in NOTAM Search to improve consumption of TFR information.
  - PMO: Concur
  - 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
  - Implement pending funding

- 23. The FAA should have a standard for displaying TFR overlay graphics on its website.
  - PMO: Concur
  - 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.
  - PMO: Concur
  - Implement pending funding

#### Disclaimer for FAA Produced Electronic Presentation

- 25. After adding TFR graphics to NOTAM Search, the disclaimer should explicitly state that TFR graphics can be relied upon for navigation.
  - PMO, AOC, AIR, and ATC: Concur
  - Implement pending funding

#### Sporting Event Blanket TFR

- 27. For each sporting event, the FAA should display TFRs on NOTAM Search.
  - PMO: Concur
  - Implement pending funding

#### Accuracy of FAA TFR Depictions Provided Online

- 28. All TFR graphics being displayed should have a correctly oriented chart.
  - PMO: Concur
  - Implement pending funding

#### Industry Standard for Electronic Depiction

- 29. The FAA should establish industry standards for electronic depiction of TFRs by testing the appropriate groups, contractors and/or committees.
  - PMO, AOC, and ASG-5: Concur
  - Implement pending funding

#### Graphics Availability and Electronic Presentation

- 30. The FAA should ensure that 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
  - Implement pending funding

- 31. Changes should be made in NOTAM Search to improve consumption of TFR information.
  - PMO: Concur
  - Implement pending funding

- 32. 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
  - Implement pending funding

- 33. The FAA should have a standard for displaying TFR overlay graphics on its website.
  - PMO: Concur
  - Implement pending funding

- 34. 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.
  - PMO, AOC, AIR, and ATC: Partially Concur

- AJV-8 & PMO: Working to provide NTAP in HTML format

#### FAA TFR Graphical Website-Human to Machine

- 35. The FAA should explicitly state that TFR graphics can be relied upon for navigation.
  - PMO, AOC, AIR, and ATC: Concur
  - Implement pending funding

#### FAA TFR Accuracy TFR Depictions Provided Online

- 36. All TFR graphics being displayed should have a correctly oriented chart.
  - PMO: Concur
  - Implement pending funding

#### FAA TFR是我们需要的唯一一个代表

- 37. For each sporting event, the FAA should display TFRs on NOTAM Search.
  - PMO: Concur
  - Implement pending funding

#### PMO TFR Depictions Provided Online

- 38. All TFR graphics being displayed should have a correctly oriented chart.
  - PMO: Concur
  - Implement pending funding

#### FAA TFR Accuracy TFR Depictions Provided Online

- 39. The FAA should explicitly state that TFR graphics can be relied upon for navigation.
  - PMO, AOC, AIR, and ATC: Concur
  - Implement pending funding

#### FAA TFR Accuracy TFR Depictions Provided Online

- 40. All TFR graphics being displayed should have a correctly oriented chart.
  - PMO: Concur
  - Implement pending funding

#### FAA TFR Accuracy TFR Depictions Provided Online

- 41. The FAA should explicitly state that TFR graphics can be relied upon for navigation.
  - PMO, AOC, AIR, and ATC: Concur
  - Implement pending funding
## RTCA TOC Recommendations

<table>
<thead>
<tr>
<th>Category</th>
<th>Sub Category</th>
<th>TOC TFR Recommendations</th>
<th>Lead Organization(s)</th>
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</tr>
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<tbody>
<tr>
<td>FSS and ATC</td>
<td>Availability for FSS and ATC</td>
<td>30. The FAA should ensure controller automation (ERAM, STARS) can visually display TFRs on the controller scope.</td>
<td>PMO, AJT</td>
<td>Open</td>
<td>Coordinating response</td>
</tr>
<tr>
<td>FSS and ATC</td>
<td></td>
<td>31. The FAA should implement ERAM/STARS enhancement that allows the drawing of a TFR on one scope and pushing it to another.</td>
<td>PMO, AJT</td>
<td>Open</td>
<td>Coordinating response</td>
</tr>
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<td>FSS and ATC</td>
<td></td>
<td>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.</td>
<td>AS, AIR</td>
<td>Open</td>
<td></td>
</tr>
<tr>
<td>FSS and ATC</td>
<td></td>
<td>33. Interpretation of TFR restrictions and what ATC can authorize should be standardized among facilities.</td>
<td>AS, AIR</td>
<td>Open</td>
<td></td>
</tr>
<tr>
<td>FSS and ATC</td>
<td></td>
<td>34. The FAA should depict sporting event venues with over 30,000 seats on ATC radar maps.</td>
<td>ASL, 5, AJT</td>
<td>Open</td>
<td>Coordinating response</td>
</tr>
<tr>
<td>FSS and ATC</td>
<td></td>
<td>35. The FAA should depict long-term TFRs on ATC radar maps.</td>
<td>ASL, 5, AJT</td>
<td>Open</td>
<td>Coordinating response</td>
</tr>
<tr>
<td>Briefing NOTAM Order Changes</td>
<td></td>
<td>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.</td>
<td>AJT, All</td>
<td>Open</td>
<td>ATO Top 5</td>
</tr>
<tr>
<td>Standard Manner of Providing Graphic to Specialists</td>
<td></td>
<td>37. The FAA should make sporting event venues and their 3 NM radius lateral rings available on controller charts.</td>
<td>ASL, 5, AJT</td>
<td>Open</td>
<td>Coordinating response</td>
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### Textual Format

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<tr>
<td>Textual Format</td>
<td></td>
<td>38. The FAA should standardize the language and format of TFR NOTAMs to facilitate the effective transfer of critical information to pilots.</td>
<td>AJR</td>
<td>Open</td>
<td>Meet with AJR-B11 again;</td>
</tr>
<tr>
<td>Textual Format</td>
<td></td>
<td>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.</td>
<td>AJR</td>
<td>Open</td>
<td>Meet with AJR-B11 again;</td>
</tr>
<tr>
<td>Textual Format</td>
<td></td>
<td>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.</td>
<td>AJR</td>
<td>Open</td>
<td>Meet with AJR-B11 again;</td>
</tr>
<tr>
<td>Textual Format</td>
<td></td>
<td>41. The FAA should ensure automated plain language interpretation for all TFRs can be accomplished.</td>
<td>AJR</td>
<td>Open</td>
<td>Meet with AJR-B11 again;</td>
</tr>
<tr>
<td>Textual Format</td>
<td></td>
<td>42. The cut out or exception area language should be published in a standardized format.</td>
<td>AJR</td>
<td>Open</td>
<td>Meet with AJR-B11 again;</td>
</tr>
<tr>
<td>Textual Format</td>
<td></td>
<td>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.</td>
<td>AJR</td>
<td>Open</td>
<td>Meet with AJR-B11 again; Concur AJR-B11</td>
</tr>
<tr>
<td>Textual Format</td>
<td></td>
<td>44. The FAA should publish a single standard for the latitude/longitude format that can be stated in a TFR NOTAM.</td>
<td>AJR</td>
<td>Open</td>
<td>Meet with AJR-B11 again; Concur AJR-B11</td>
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<td><strong>FIS-B Uplink</strong></td>
<td>Range of Transmission</td>
<td>45. The FAA should increase the FIS-B radio station look ahead range for the NOTAM-TFRs.</td>
<td>ANG</td>
<td>Open</td>
<td></td>
</tr>
<tr>
<td></td>
<td>FIS-B Text</td>
<td>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.</td>
<td>ANG</td>
<td>Open</td>
<td></td>
</tr>
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<td></td>
<td>Graphic Legality</td>
<td>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.</td>
<td>ANG, AFS, AIR, AGC</td>
<td>Concur</td>
<td></td>
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<td><strong>Written Questions for Airmen</strong></td>
<td></td>
<td>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.</td>
<td>AFS</td>
<td>Concur</td>
<td></td>
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<tr>
<td><strong>Pilot Guidance</strong></td>
<td></td>
<td>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.</td>
<td>AFS</td>
<td>Concur</td>
<td></td>
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<td></td>
<td></td>
<td>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.</td>
<td>AFS, AIR</td>
<td>Concur</td>
<td></td>
</tr>
<tr>
<td><strong>Unmanned Aircraft Guidance</strong></td>
<td></td>
<td>51. The FAA should conduct additional outreach and education to unmanned aircraft remote pilots to ensure they understand their responsibility to avoid TFRs.</td>
<td>AFS, AIR</td>
<td>Open</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>52. Law Enforcement Organizations (LEO) should be provided a single online resource for guidance on responding to intrusive unmanned aircraft.</td>
<td>AIR</td>
<td>Open</td>
<td></td>
</tr>
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<td><strong>TFR Outreach and Communications</strong></td>
<td></td>
<td>53. The FAA should promote the importance of proactively engaging industry at all levels of TFR issuance and at all TFR issuing facilities.</td>
<td>AIR, AJT</td>
<td>Concur</td>
<td>XTO Top 5</td>
</tr>
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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.
Status Update

• Proposed Rule published Oct 06, 2017, in the Federal Register with comment period ending Nov 06, 2017:

• Eleven comments received:

• 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 criteria”
  • **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
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
Next Meetings:

March 1, 2018
July 12, 2018
November 8, 2018