RTCA PROGRAM MANAGEMENT COMMITTEE
MEETING SUMMARY
March 21, 2019

The RTCA Program Management Committee (PMC) convened at 8:30 a.m. on March 21, 2019 at RTCA. The attendance list and action items are attached.

AGENDA ITEM 1
Welcome and Introductions

A. PMC Chairman Dr. Chris Hegarty welcomed the group, asked attendees to introduce themselves and to note their organization of affiliation. PMC Secretary Karan Hofmann reviewed the anti-trust statement, proprietary policy, and membership policy.

AGENDA ITEM 2
Review / Approve

A. The summary of the December 13, 2018 meeting was approved with one administrative change (RTCA Paper No. 250-18/PMC-1813).

B. The following administrative Special Committee Terms of Reference (TOR) Revisions were presented:

- SC-216 – Aeronautical Information Systems Security – New phone number for Government Authorized Representative (GAR) – approved (RTCA Paper No. 038-19/PMC-1852).

- SC-217 – Joint Aeronautical Databases – Formally changing committee to "Active Monitor Status" – on hold per discussion associated with agenda item 6A.

- SC-229 – 406 MHz Emergency Locator Transmitters (EOTs) – Formally changing committee to "Active Monitor Status" - on hold per discussion associated with agenda item 6A.

AGENDA ITEM 3
Publication Consideration/Approval

A. **New Document – *MASPS for Collision Avoidance System Interoperability* prepared by SC-147 (Aircraft Collision Avoidance Systems)**

The work on this document is not complete and its presentation is scheduled for a later PMC

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meeting.

B. DO-317B Change 1 – *MOPS for Aircraft Surveillance Applications (ASA) System* **prepared by SC-186 (Automatic Dependent Surveillance Broadcast (ADS-B))**

- Jessie Turner, SC-186 Co-Chairman, presented.

This document is Change 1 for DO-317B and is an Appendix (U) that describes specific aircraft track sets that are used to provide stimulus scenarios for TSAA testing. The tracks are split into two categories: 1) Must Alert and 2) Must Not Alert. Must Alert tracks test the alerting capabilities of a TSAA system for a range of aircraft encounters that have historically occurred in both airport and en route environments. Must Not Alert tracks test similar encounters as the Must Alert tracks except that the closest point of approach is modified to separate aircraft such that no alerting should occur according to pilot and industry experts. Each track set contains multiple scenarios that test a range of track data sources as well as track state variables.

The committee also mentioned there may be a future TOR revision to coordinate with Combined Surveillance Committee (CSC) proposals (see agenda item 8C).

The PMC approved the document. It will be published as DO-317B Change 1. EUROCAE Council is currently reviewing with publication expected in mid-April.

C. DO-343B – *AMS(R)S Data and Voice Communications Supporting Required Communications Performance (RCP) and Required Surveillance Performance (RSP)* **prepared by SC-222 (Aeronautical Mobile Satellite (Route) Services (AMS(R)S))**

- Dr. Charles LaBerge, SC-222 Chairman, presented.

This document contains Minimum Aviation System Performance Standards (MASPS) for Aeronautical Mobile Satellite (Route) Services (AMS(R)S) that provide safety communications to aircraft in airspace where 1) procedural separation is applied or 2) ATS surveillance services are provided. The performance defined in this document is intended to provide (1) data communication services that comply to the RCP130, RCP240, RCP400/A1 or RCP400/A2 standards of Required Communications Performance (RCP) for two-way, bidirectional, Controller Pilot Data Link Communications (CPDLC) and to the RSP160, RSP180 or RSP400 standards of Required Surveillance Performance (RSP) for one-way aircraft-to-Air Navigation Service Provider surveillance-related information, and (2) voice communication services that comply to the RCP400/V standard for two-way, bidirectional voice communications between pilots and controllers and to the RSP400/V standards for one-way voice communications between pilots and controllers. The document contains includes Technique Specific Normative Appendices for INMARSAT and Iridium. The new revision also contains more explicit language on data security.

Dr. LaBerge praised the superior efforts of Alan Schuster-Bruce (INMARSAT) for completion of this document.

The PMC approved the document. It will be published as DO-343B vs. DO-343A Change 1 (as specified in the TOR) to align with WG-82 designation (TOR change forthcoming to ensure alignment with future joint documents). EUROCAE Council is currently reviewing with publication expected in early April.

D. DO-262D – *Minimum Operational Performance Standards for Avionics Supporting Next Generation Satellite Systems* **prepared by SC-222 (Aeronautical Mobile Satellite (Route) Services (AMS(R)S))**

- Dr. Charles LaBerge, SC-222 Chairman, presented.

This document contains minimum operational performance standards (MOPS) for avionics that provide Aeronautical Mobile Satellite (R) Services (AMS(R)S) by means of satellite communications technologies scheduled to become operational in context of the global and regional ATM and CNS modernization (e.g. ICAO/Global Air Navigation Plan, Europe/SESAR, US/NextGen). Each of these technologies is individually and collectively referred to as a "Next Generation Satellite System" (NGSS), and the NGSS nomenclature will be used throughout this document. This release is a joint RTCA/EUROCAE document and includes Technique Specific Normative Appendices for INMARSAT Swift Broadband and Iridium Block 1. The new revision also contains more explicit language on data security.

Dr. LaBerge praised the superior efforts of Radek Zaruba (Honeywell International, Inc.) for completion of this document.

The PMC approved the document. It will be published as DO-262D vs. DO-262C Change 1 (as specified in the TOR) to align with WG-82 designation (as with agenda item 3C, TOR change forthcoming to ensure alignment with future joint documents). EUROCAE Council is currently reviewing with publication expected in early April.

E. New Document – *C2 Link Systems MASPS* **prepared by SC-228 (Minimum Performance Standards for Unmanned Aircraft Systems (UAS))**

- Jim Williams, SC-228 WG-2 Co-Lead, presented.

This document contains the Minimum Aviation System Performance Standards (MASPS) for a C2 Link System connecting a Control Station (CS) and an Unmanned Aircraft (UA). It covers UA operations requiring a C2 Link System that allows the UA to operate within line of sight (LOS) and beyond the line-of-sight (BLOS) of a Control Station. This MASPS contains the standards which specify system characteristics, i.e., it is design independent, that should be useful to UAS operators, Original Equipment Manufacturers (OEM), and equipment manufacturers plus the FAA, as UAS operate within the U.S. airspace.

After much discussion about kinetic energy and the purpose for inclusion in this document, Mr. Clay Barber agreed to provide specific wording to include in these minutes. (action – see input below)

During the briefing presentation of the Risk Matrix (labeled incorrectly as Table D-1 in the document presented for PMC approval but corrected to Table C-1 for final publication), Clay Barber brought up a concern with the Risk Class 3 UAS row for C2 Link Systems supporting Integrate/DAA remote pilot activities. Clay noted that the 10^{-9} Catastrophic value sets an expectation that is not consistent with TSO-C213 Table 2, which specifies 10^{-6}. Clay also noted that 10^{-9} is not consistent with the Catastrophic values in AC 23.1309-1E for Part 23 <6,000 lb manned aircraft; specifically, 10^{-6} for Class I and 10^{-7} for Class II. Jim Williams clarified that that the Integrate/DAA row was targeting operations in Class B airspace. Clay responded that the 10^{-9} value still seemed high when considering that TCAS II is considered a 10^{-7} Hazardous condition and even manned aircraft sometimes experience pilot medical emergencies at a more frequent rate than 10^{-9}. Dr. Mike Romanowski indicated Clay's concerns were noted and would receive additional consideration by FAA.

The PMC approved the document with a few administrative corrections associated with incorrect table labeling (action). It will be published as DO-377.

F. Change 1 to DO-363 – *Guidance for the Development of Portable Electronic Devices (PED) Tolerance for Civil Aircraft***, originally prepared by SC-234 (Portable Electronic Devices (PED))**

- Brian Verna, SC-234 GAR, presented.

DO-363 Change 1 includes a technical amendment clarifying the description of low powered technologies. This change is applied to DO-363 to replace section 6.2.2 item 1 with the new text.

The PMC approved the document. It will be published as DO-363 Change 1. EUROCAE Council is currently reviewing with publication expected in early April.

G. New Document – *MASPS for Coexistence of Wireless Avionics Intra-Communication within 4200-4400 MHz* **prepared by SC-236 (Standards for Wireless Avionics Intra-Communication System (WAIC) within 4200-4400 MHz)**

The work on this document is not complete and its presentation is scheduled for the June 2019 PMC meeting.

AGENDA ITEM 4
Integration and Coordination Committee (ICC)

No ICC updates reported. See agenda items 6C for action item update.

AGENDA ITEM 5
Cross Cutting Committee (CCC)

No CCC updates reported. See agenda items 6B and 6C for action item updates.

AGENDA ITEM 6
Action Item Review.

A.   Procedure for Active Monitor Status Committee - Presentation

- Rebecca Morrison, RTCA Program Director, presented.

The RTCA Staff recommended the following process:
- When a committee has completed their TOR but still believes there is value in having the committee remain intact, the chairs may request to be placed on "Active Monitoring" status
- A committee in Active Monitor Status will update their TOR to show:
  - On the first page of the TOR it will say, "Committee Status: Active Monitoring"
  - Deliverables will be removed from the TOR
  - A paragraph under the empty deliverables table will indicate that the committee is on Active Monitoring Status
  - The condition for sunset for the committee will change to indicate the committee will request to be sunset when the need for active monitoring has been addressed
- It is expected a committee on Active Monitor Status will submit a chair report after each meeting
- If the committee does not meet at least once in a year, it is expected the committee will submit a chair report to support remaining in Active Monitor Status

After discussion, PMC members recommended including RTCA staff monitor the individual committees and contact leadership periodically as part of process and evaluation of expertise and membership to committee (action). Also, members recommended including a paragraph in the Monitor Status Committee TOR to describe what is expected of the committee while in this status. (Action)

PMC members wanted these actions completed prior to approving any Active Monitor SC TORs. Thus, SC-217 (agenda item 2B), SC-227 (agenda item 7C), and SC-229 (agenda item 2B) TOR revisions will wait until June PMC meeting for final review and approval. (Action)

B.   Review CCC Charter - Discussion

- Clay Barber (CCC Chairman) presented.

The CCC was tasked to review its charter considering alignment with new RTCA SDO structure, expanding business development purposes, possibly combine with ICC, or disbandment.

CCC members met February 26th with the following discussion points:

- Aid coordination / determination of joint RTCA / EUROCAE committees; e.g., DME/DME RNP, HTAWS Class A, cybersecurity SC/WG scope
  - Monitor EUROCAE activity – CCC could make recommendation to PMC for joint committees
- Identify air/ground scope opportunities to develop enterprise MASPS and MOPS; e.g., EUROCAE regularly develops ground system documents while RTCA does so irregularly (GBAS); could be benefits to breaking down silos
  - Both sides make assumptions about each other – CCC could assist with improving coordination between ground based and airborne systems
    - Access to data (SWIM); air-to-ground link (Data Comm)
  - EUROCAE developing documents for Data Comm ground systems; sovereign state issues on ground equipment
- Support SCs in non-active state to identify technical triggers to reactivate the SC; e.g., ELT and aeronautical databases SCs
  - CCC could be overseer of non-active SCs
- Identify opportunities to develop capability level performance standards across multiple platforms and/or domains; e.g., UAS Traffic Management (UTM) / ATC interoperability
  - Close to CCC original charter purpose
  - CCC could aid in originating RTCA "owned" activities (self-tasking)
    - Other SDOs can self-task
- Conclusions
  - Taskings that need readiness review are rare but there is no harm having CCC "at the ready"
    - Alternatives could be to merge responsibility with ICC or PMC generates an ad hoc as circumstances require
  - Other potential uses discussed by CCC seem appropriate for consideration for expanded charter
- Recommendations
  - Retain CCC
  - Consider expanding charter to other potential uses that PMC agrees are appropriate

After discussion on the various points made, the PMC decided to keep the CCC around as we continue through the RTCA transition period. Action closed.

C.   Annual review of ICC and CCC Membership - Discussion

- Dr. George Ligler (ICC Chairman) and Clay Barber (CCC Chairman) presented.

PMC members confirmed approval of the following ICC and CCC membership slates for a one-year term to include:

ICC:
- Dr. George Ligler, ICC Chairman
- Clay Barber, Garmin
- Bob Hekl, MITRE

- Karan Hofmann, RTCA
- Bob Lee, Collins Aerospace
- Darrell Pennington, ALPA
- Ron Stroup, FAA

CCC:
- Clay Barber, CCC Chairman
- Rune Duke, AOPA
- Ed Hahn, ALPA
- Bob Lee, Collins Aerospace
- Al Secen, RTCA
- Ron Stroup, FAA
- Jessie Turner, The Boeing Company
- Jeff Woods, NATCA

Action closed.

D.   Share RTCA-ICAO Document Reference Spreadsheet with PMC Members – Discussion

- Al Secen, RTCA Vice President, Aviation Technology and Standards, presented.

Per ICAO request, RTCA and EUROCAE Staffs are compiling spreadsheets to map our documents to ASBUs. This request went to many other standard organizations and we are having problems accomplishing this task. Thus, the task is ongoing. Once complete, the sheet will be made available to PMC members. Action still open.

E.   Follow up with EUROCAE on clarification of objectives/purpose of WG-109 - Status

- Al Secen, RTCA Vice President, Aviation Technology and Standards, presented.

Mr. Secen reported most of EUROCAE's activity ties to ICAO work. WG-109 is related to runway contamination reporting. He has the original presentation to the TAC about this work. If interested, please reach out to Mr. Secen for copy. Action closed.

F.   Clarification on SC-228 TOR wording request – Discussion.

- Randy Kenagy (PMC Member) presented.

Mr. Kenagy reported all ALPA's concerns were addressed in the latest approved revision of the SC-228 TOR. Action closed.

G.   **Send Call Out for possible TAWS SC RTCA members support - Status**

- Rebecca Morrison, RTCA Program Director, presented.

Original message was sent out December 18, 2018 to all RTCA members and posted on RTCA website. RTCA received 35 positive responses, 12 of which were SC-231 members. President McVenes followed up with individual emails to those that responded asking for supporting letters. Six letters were received. Action closed.

H.   **Prepare Request Package for possible TAWS SC creation - Status**

- Rebecca Morrison, RTCA Program Director, presented.

With the enthusiastic response from the above action, the request for work completion includes re-energizing SC-231 (sunset for just over 1 year) with experienced leadership (all have agreed to server in their former roles). Proposed deliverable would be a white paper list of recommendations to the PMC (including a FRAC). FAA would participate and will review recommendations to determine any possible use.

PMC members discussed a clarification of the deliverable to narrow focus to provide white paper on TAWS. They also wanted to ensure the committee would not be in the role of evaluating GAGSC actions. The PMC approved re-activating SC-231 to begin start up processing to include setting first meeting date. Although original request package was prepared (action closed), an Ad Hoc was formed (to include Dr Mike Romanowski, Doug Arbuckle, and Rebecca Morrison) to adjust the draft TOR (action). Estimate 2 weeks for action.

I.   **Conduct electronic approval for TAWS SC - Status**

- Karan Hofmann, PMC Secretary, presented.

Due to the time involved in answering agenda items 6G and 6H, this action was delayed from completion prior to this March meeting. Once the draft TOR is revised by the Ad Hoc under agenda item 6H above, an electronic call to PMC members for final TOR approval will be conducted within a two-week period (action).

J.   **Send Call Out for possible HTAWS SC RTCA members support - Status**

- Rebecca Morrison, RTCA Program Director, presented.

Original message was sent out December 18, 2018 to all RTCA members and posted on RTCA website for possible joint effort with EUROCAE WG-110. RTCA received 19 positive responses. President McVenes followed up with individual emails to those that responded asking for supporting letters. Five letters were received. Action closed.

Due to large positive response, a request package was prepared for possible HTAWS SC creation.

PMC members were supportive of keeping synchronized with EUROCAE and FAA sees flexibility with having two MOPS – one for over-land operations and one for over water operations. Draft TOR not complete but PMC members approved creation of SC-237 to meet with WG-110 next week. Follow on action for SC-237 to finalize TOR shortly after meeting (action). Then an electronic call to PMC members for final TOR approval will be conducted within a two-week period (action).

K.   Obtain list of FAA participants on EUROCAE's WG's - Status

- Rebecca Morrison, RTCA Program Director, presented.

A representative from the FAA can contact Anna von Groot (EUROCAE) for this list. Action closed.

L.   Further discussion on Unmanned Aircraft System (UAS) Traffic Management (UTM) involvement by RTCA - Status

- Al Secen (RTCA Vice President, Aviation Technology and Standards) presented.

Mr. Secen reported there is ongoing discussion with ASTM on partnership to address UTM as it is too large a task for one individual SDO. Working a broad base/conceptual approach at the moment. Maybe OSED/SPR – still to be determined.

President McVenes mentioned UTM was going to be a topic of discussion at the upcoming RTCA Symposium, June 5th.

This action considered closed, but RTCA will keep the PMC updated on any activity in this area.

M.   Investigate pulling requirements from documents and making available in separate format - Status

- Al Secen (RTCA Vice President, Aviation Technology and Standards) presented.

Mr. Secen reported that, on a case-by-case basis in the past, documents have made available in non-PDF format for internal use by an approved party. A problem exists that there is no standard format to easily identify requirements – each committee has used own method. All agreed a definite defined structure is needed and should be part of the MASPS and MOPS Style Guides (see agenda item 7E). Prototype expected for June PMC meeting. Action remain open.

N.   Obtain CtL from Safron (and possibly others) for SC-159 MOPS with follow-up to PMC - Status

- Mats Brenner, SC-159 WG-2C Co-Chairman, presented.

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The committee would like to include examples in an appendix in their new MOPS for GNSS-aided inertial navigation systems. As is it potential proprietary/patented information, there has been ongoing discussions on inclusion and proper protocol for that inclusion. SC-159 feels CtL's are not needed, as the information is not to comply with for certification to meet requirements.

Much discussion about the need for including the examples to cover pros and cons – should include all examples, not just a few to show preference. Just trying to represent what can be done and what cannot be done. The committee wants to provide a specific case to help flush out requirements. A couple of quick hand votes were conducted with the majority not wanting to include the examples, or if so with CtL's.

There was also discussion about the current wording in the RTCA Policy for Proprietary References in RTCA Documents (for which a summary is read at the beginning of each Plenary, including the PMC meetings). Some feel it only covers items specified in requirements vs. any proprietary information in the document. The PMC recommended an Ad Hoc (to include Mats Brenner, Dr. George Ligler, Terry McVenes, Al Secen, and a EUROCAE representative to ensure harmonization) review the current policy and report back to the June meeting with possible adjustments and recommended course of action for the SC-159 request (action).

AGENDA ITEM 7
Discussion.

A. UAS Forum on Aeronautical Software (FAS) Ad Hoc - Report.

- Jim Krodel (Former FAS RTCA Chair) and Patty Bath (FAS RTCA Chair), presented.

Through the PMC (and in coordination with the EUROCAE's Technical Advisory Committee (TAC)), the FAS was tasked with an Ad Hoc effort to:
- Understand the concerns and claims raised against the applicability of the DO-178/ED-12 and related documents to UAS
- Produce a comprehensive review (in the form of a white paper) of the applicability of DO-178/ED-12 with regards to UAS software and operation, and list recommendations (if any) for future RTCA/EUROCAE activities to address findings
- The group should also identify other ongoing/planned standardisation activities for development assurance, specifically in the domain of software for UAS
- The outcome of the activity shall be a comprehensive review of the concerns raised / problem statement and recommendations for future EUROCAE/RTCA activities, if any, to address these concerns

The effort, which started in mid-May 2018, was led by Mr. Krodel. UAS Subject Matter Experts (mostly from SC-228) supported this review. They met weekly for coordination, discussion and review.

A report was prepared by the Ad Hoc and the final version provided to the PMC and the TAC. Its content was summarized during Mr. Krodel's presentation:

- 11 issues (two with sub-issues) were identified
- Responses have been proposed for all issues
- Recommendations have been proposed for all issues – if the issue can be dealt with by those outside of FAS, by FAS clarification, or by providing supplemental guidance
- None of the recommendations propose re-opening or amending DO-178C/ED-12C or DO-278A/ED-109A at this time
- All issues except one have consensus
- There were four additional subjects discussed, there are no formal recommendations as they are not identified as issues; and there was consensus on all but one of the subjects

After the presentation, PMC members thanked the members of the UAS FAS Ad Hoc for their excellent and very informative report. Discussion ensued with the following recommended actions:

1. PMC Chairman Hegarty to have a discussion with the TAC Chairman after the TAC receives the briefing (scheduled for April 22nd).
2. Have FAA capture their use/need for the output of a supplement
3. UAS FAS Ad Hoc provide a schedule for when they could deliver IPs as listed. They were also asked to provide an outline for the envisioned supplement.
   a. Both of these items will wait until after the TAC is briefed.

- The report and presentation are posted on Workspace (RTCA Paper No. 054-19/PMC-1859).

B. Actions Taken on Previously Published Documents – Report and Government Authorized Representative (GAR) List –Update.

- Charles "Chip" Bulger, FAA, presented

FAA Published Documents that reference published RTCA Documents, FAA Pending Documents for RTCA Documents Published, and FAA plans for RTCA Documents pending PMC approval were reviewed. Original document is posted in Workspace (RTCA Paper No. 057-19/PMC-1862).

FAA Published Guidance (Since Previous PMC)

RTCA Document	Developed By	FAA Guidance	Approval Date	Comment
DO-220A, Change 1, MOPS for Airborne Weather Radar Systems	SC-230	TSO-C63f	Dec 14, 2018	Airborne Weather Radar
DO-204B – MOPS for 406 MHz ELTs	SC-229	TSO-C126c	March 2019	Updated design guidance for ELTs

RTCA Document	Developed By	FAA Guidance	Planned Release Date	Comment
DO-311A, MOPS for Rechargeable Lithium Batteries and Battery Systems	SC-225	AC 20-184A	July 2019	Installation standard for rechargeable lithium batteries
DO-227A, MOPS for Non-Rechargeable Lithium Batteries	SC-235	AC 20-192	July 2019	Airworthiness installation criteria for non-rechargeable lithium batteries
DO-315A, DO-359, MASPS for SVGS, MASPS for ASA-SVS	SC-213	AC 20-185A	April 2019	Consolidates synthetic vision (SVS), synthetic vision guidance system (SVGS), and airplane state awareness guidance
DO-315A, MASPS for EVS, SVS, CVS, EFVS	SC-213	AC 20-167B	September 2019	Consolidates enhanced and combined vision system airworthiness criteria. No new criteria.
DO-220A, Change 1, MOPS for Airborne Weather Radar Systems	SC-230	AC 20-182B	July 2019	Aircraft weather radar installation guidance
Multiple RTCA data comm references from AC 20-140C	SC-214	AC 20-140D	July 2019	Incorporates clarification memo from Dec 2017 and policy for partial FANS-1/A installations
DO-372, Addressing Human Factors/Pilot Interface Issues for Avionics	SC-233	AC	July 2019	Best practices, informational AC (00-HF)
DO-362, Command and Control Data Link MOPS	SC-228	AC 20-187	September 2019	Airworthiness C2 installation guidance.
DO-365, Detect and Avoid MOPS Phase I. DO-366, MOPS for Air-to-Air Radar for Traffic Surveillance	SC-228	AC 20-DAA	November 2019	Airworthiness installation of a UAS DAA system
DO-368, MOPS for GPS/GLONASS (FDMA + Antenna) L1-only Airborne Equipment	SC-159	None	N/A	

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DO-246E, GNSS-Based Precision Approach Local Area Augmentation System Signal-in-Space Interface Control Doc	SC-159	None	N/A	This document is a reference for DO-253D. It is published by RTCA for the convenience of avionics OEMs
DO-253D, MOPS for GPS Local Area Augmentation System Airborne Equipment	SC-159	TSO-C161b and TSO-C162b	September 2019	Change 1 with VDB resolution FRAC'd in March. PMC in June. Will incorporate updated GAST-D design standard supporting CAT II/III op; maintenance updates to legacy VDB standards
DO-356A, Airworthiness Security Methods and Considerations	SC-216	AC	September 2019	Supports Special Conditions
DO-370, Guidelines for the In Situ Eddy Dissipation Rate (EDR) Algorithm Performance	SC-206	TBD	N/A	
DO-373, MOPS for GNSS Active Antenna in the L1/E1 and L5/E5A Bands	SC-159	TSO-C215	TBD	New TSO. (Need DO-292A (2020) for interference environment)
DO-230I, Standards for Airport Security Access Control Systems	SC-224	N/A	N/A	Provides guidance on acquiring and designing systems, testing and evaluating system performance, and operational requirements. Incorporates the latest technological advances. Adds a credentialing operational checklist.
New MOPS to Specify the ACAS X_a System and ACAS $X_{a/o}$ Functionality (Class 1 ACAS X & Class 2 ACAS X)	SC-147	TSO	November 2019	Performance standard and installation guidance for Class 1 ACAS X (basic collision avoidance functionality) and Class 2 ACAS X (closely spaced runway operations and do not alert)
		AC	May 2020	
SPR for Vision Systems for Takeoff	SC-213	None	N/A	Establish safety case for the takeoff operation.

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DO-281C, MOPS for aircraft VDL Mode 2 Physical Link and Network Layer	SC-214	TSO	2021	SC-214/WG-92/AEEC DLK recommends TSO/ETSO-C160a not be revised until publication of DO-281D/ED-92D planned in late 2020
DO-201B – User Requirements for Navigation Data	SC-217	AC 20-153B Change 1	July 2020	Updates navigation data quality requirements (DQRs).

RTCA Documents Pending PMC Approval

RTCA Document	Developed By	Planned FAA Guidance	Planned Release Date	Comment
DO-317B Change 1	SC-186	Note to Manufacturers for TSO-C195b	April 2019	Note to Manufacturers will post on FAA RGL with TSO-C195b, announcing availability of MOPS change.
DO-343B MASPS for AMS(R)S	SC-222	None	N/A	
DO-262D MOPS for Next Gen Satellite Systems	SC-222	None	N/A	TSO revision will synch with subsequent MOPS update
New C2 Link MASPS	SC-228	AC 20-187A	2020	
DO-363 Change 1	SC-234	AC 91.21-1D	Sept 2019	Updating AC to incorporate Change 1

Terry McVenes, RTCA President, asked how RTCA is notified when TSO/ACs are open for public comment. FAA confirmed that the GAR's notify RTCA Program Directors for associated SCs and the PDs send messages to SC membership.

C. Special Committees - Chairmen's Reports, Active Inter-Special Committee Requirements Agreements (ISRA) – Review.

- Rebecca Morrison, RTCA Program Director, presented.

Highlights from the Chair Reports for several selected Special Committees were reviewed. Reports were received from SC-159 (late), SC-213, SC-216, SC-224, SC-227, and SC-230. After

discussion, PMC members recommended putting SC-227 in Active Monitor status and to revise TOR per discussion in agenda item 6A (Action).

SC-159 completed FRAC on two documents in February and SC-206 completed FRAC in January but extended into February to accommodate government shutdown. SC-223 closed FRAC/OC in late March. SC-236 closed FRAC in mid-January but allowed late comments due to government shutdown. PMC members are included in FRAC release notification and invited to participate. Other information on SC activity was included in presentations during this PMC meeting.

SC-213 expressed concern about conforming their document with the RTCA MASPS Drafting Guide. They would like to request a deviation for their upcoming document. PMC agreed they should present at the June meeting (Action).

Members can expect a revised TOR from SC-147 to reflect new work schedule at June PMC meeting.

The complete matrix and individual committee reports are posted on Workspace (RTCA Paper No. 058-19/PMC-1863).

D. European/EUROCAE Coordination – Status Update.

- Rebecca Morrison, RTCA Program Director, presented.

Topics of Note:
- New Documents Released by EUROCAE since last PMC
    - ED-91A – *Aircraft Lightning Zoning* – WG-31, January 2019
    - ED-255/DO-375 – *MASPS for a Combined Vision Guidance System for Rotorcraft Operations* – WG-79/SC-213, January 2019
    - ED-258 – *OSED for Detect & Avoid (Traffic) in Class D-G airspaces under VFR/IFR* – WG-105/SG-12, January 2019
    - ED-77A/DO-201B – *User Requirement for Navigational Data* – WG-44/SC-147, January 2019
    - ED-259 – *Minimum Operational Performance Standard for Galileo – Global Positioning System – Satellite-Based Augmentation System Airborne Equipment* – WG-62, February 2019
    - ED-62B/DO-204B – *MOPS for Aircraft Emergency Locator Transmitters 406 MHz* – WG-98/SC-229, December 2018
- New EUROCAE WG-111 – Airport Collaborative Decision Making Strategy
    - Update Existing Document
        - ED-141 Rev A Minimum Technical Specifications for Airport Collaborative Decision Making (Airport CDM) Systems
        - ED-145 Rev A Airport CDM Interface Specification
        - ED-146 Rev A Guidelines for Test and Validation Related to Airport CDM Interoperability
        - New ED Airport CDM SWIM Service Performance Specification

- o These documents at not currently joint with RTCA
- o TOR available on the PMC workspace
- CANSO World ATM Conference – March 12-14, 2019 in Madrid, Spain
  - o Al Secen represented RTCA
  - o Potential new members of committees and new RTCA members
  - o Confirmed panelists for RTCA Symposium June 5, 2019 in Crystal City
- ICAO Panel
  - o Al Secen is an official observer of both the RPAS and the Surveillance Panels at ICAO
  - o RPAS completing their SARPS work this year
  - o Surveillance Panel meets in Toulouse March 18-22, 2019
- EUROCAE Upcoming Meetings:
  - o TAC #77: April 24, 2019, Toulouse, France
  - o EUROCAE Symposium: April 24-25, 2019
    - ▪ Terry McVenes, Al Secen, and Steve Brown to attend
    - ▪ Terry is opening the second day
  - o TAC #78 - TBD

E. RTCA Drafting Guides – Status Update.

- • Karan Hofmann, RTCA Program Director, presented.

The RTCA staff continues working on updates to the drafting guides in coordination with EUROCAE to align the guides as much as possible. PMC members recommended including the more structured requirement format. The plan forward is to share with PMC members for a FRAC period in mid-2019.

AGENDA ITEM 8
Other Business.

A. RTCA Award Nominations – Consideration / Approval of Nominations.

- • Karan Hofmann, RTCA Program Director, presented.

The PMC approved all nominations for Outstanding Leader Awards and Significant Contributor Awards. Presentations will occur at the RTCA 2019 Global Aviation Symposium, June 5, 2019.

B. SDO New Committee Process - Presentation.

- • Karan Hofmann, PMC Secretary, presented.

The following outline is the projected outline for creating a new Special Committee:
- Initial Topic is introduced to PMC
  - • RTCA member(s) brings topic/task to PMC (signed letter(s) requested)
  - • EUROCAE (or other SDO) inquiries about potential joint work

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- PMC reviews and approves further action:
  - Call out to RTCA members for additional support/possible participation
  - Seek specific FAA support for particular topic if not presented by FAA
- With sufficient membership support (at least 2, but preferably 3, member companies / organizations), work with original requester to prepare TOR
- Present TOR and all endorsements to PMC for approval
- Once PMC approved, go forward as we do with another SC startup
- At this time there is no additional expense other than company/organization support as in the past

There was some discussion about possibly going outside of the aviation focus and coordination with other SDO's in a liaison type relationship. Outline very similar to what RTCA has been doing – FAA can always approach RTCA for committee activity – we don't want to really develop an aviation standard that will not be used by FAA. Need strong commitment from companies to go forward.

C. Combined Surveillance Committee (CSC) – Potential Deliverable Slip – Presentation.

- Jessie Turner, SC-186 Co-Chairman, presented.

Mr. Turner gave a schedule summary for the CSC. CSC Terms of Reference (SC-186 and SC-209) has MOPS completion in December 2019. Products include updates to ADS-B 1090 MHz Extended Squitter MOPS to publish DO-260C, Mode S Transponder MOPS to DO-181F, and UAT ADS-B MOPS to DO-282C. Rationale for opening ADS-B MOPS was to support ADS-B Advanced Interval Management (A-IM) application under development in SC-186 Working Group 4. In addition, develop revisions to maintain consistency with requirements for current and new collision avoidance systems, Detect and Avoid systems, Aeronautical Information Services (AIS) and Meteorological Data Link Services to support Aircraft-based Observation (AbO) meteorological requirements.

There are a few open MOPS developments impacting this schedule:
- Weather Messages
- Reply rate limiting to protect users of 1090 MHz
- A-IM performance requirements and enhanced receiver
- Hight Altitude-High Velocity (Commercial Space) Support
- Phase Modulation

Additionally, the government shutdown, delay in ICAO Surveillance Panel providing an agreed maximum squitter rate increase to support version 3, dependency on other current standards developments (SC-186 A-IM, SC-147 ACAS-X_u, and the above-mentioned open MOPS developments have contributed to the need for a schedule extension.

Based on current status, completing the DO-181F, DO-260C, and DO-282C MOPS updates in December 2019 is not possible unless major initiatives that are driving MOPS revisions are

dropped. CSC agrees that since MOPS are open for updates infrequently, it makes sense to attempt to support all currently agreed MOPS changes.

CSC requests PMC to consider approving change to schedule to allow CSC to complete MOPS:
- Will bring to June PMC Meeting - SC-186 & SC-209 TOR updates to slide schedule for these CSC MOPS from December 2019 to December 2020
- EUROCAE WG-49/WG-51 SG1 agree and accept a schedule extension

D. SC-222, AMS(R)S Systems – Discussion – Possible Revised TOR

- Dr. Chuck LaBerge, SC-222 Chairman, presented.

This topic was discussed under agenda items 3C and 3D. Besides possible reidentification of the next releases of deliverables to synchronize with WG-82, there may also be a need to include work to answer SC-228 ISRA with the final approval and release of DO-377 (agenda item 3E).

E. SC-236 - Standards for Wireless Avionics Intra-Communication System (WAIC) within 4200-4400 MHz – Discussion – Scope of MOPS Deliverable

- Steve Rines, SC-236 Chairman, presented.

The committee wanted a better understanding where the MOPS for WAIC will fit within the suite of industry documentation for MOPS.

Chairman Rines provided an activity summary:
- WAIC MASPS, reviewed and conditionally approved by members during Mobile, AL Plenary, hit a snag in FAA review. Two issues:
  - Additional detail needed to justify Radio Altimeter interference threshold and recommended power limit;
  - Aircraft test procedure considered too complex.
- Justification for RA interference threshold and power limit are being documented in an AVSI report that will be attached as an appendix
- Test procedure has been rewritten to allow the possibility of proof by analysis rather that strict measurement.
- Revised MASPS will be reviewed with FAA/EASA at end of March in advance of Plenary
- They are still on schedule to publish MASPS in coordination with ICAO SARPS
- System Theoretical Process Assessment – Security continues to fully capture equipment and network security requirements

Recommended path forward for synchronizing between RTCA documents and documents from other standards organizations:
- WAIC MOPS will address non-interference, spectrum usage, and cyber security in compliance with the TOR.

- MOPS equipment/network interoperability will be limited to defining a common PHY/MAC/Link Layer interface such that interoperability can be addressed in ARINC characteristics.
- Cyber security requirements are applicable to all applications using wireless communications for safety and regularity of flight functions, not just WAIC
- MOPS verification test procedures must apply to equipment capabilities and network implementation
- MOPS equipment cyber security requirements could result in a TSO/ETSO for equipment capable of being assembled into a security-compliant network
- MOPS network cyber security requirements can only be verified on an integrated system
- ARINC Secure Messaging characteristic will have to satisfy MOPS network security requirements

SC-236/WG-96 Status:
- SC-236 scope is somewhat reduced from original expectations due to expected delegation of network interoperability responsibility to ARINC
- SC-236 is still on track to finish in 1st quarter 2021 but MOPS would need ARINC characteristic to be useful for system implementation with known certification approach
- ARINC has not yet approved APIM for Secure Messaging characteristic. Ad hoc working group has formed to maintain progress while waiting for ARINC approval (Boeing, Airbus, Safran, Panasonic, others)
- Knowledge base development and hosting under discussion with AVSI

PMC members discussed that technological changes affect the way we think/operate – maybe should be joint effort with ARINC? Also matter of right sizing – RTCA SC-216 is more focused on large aircraft, while ASTM F44 is focused on small aircraft. And this may be related to what we hear from FAS – maybe a possible ICC or CCC activity?

F. 4D TBO Speed Control Interoperability – Discussion

- Mike Jackson, Honeywell, presented.

Dr. Jackson discussed that the development of requirements for Flightdeck Interval Management (F-IM) by SC-186 and Time of Arrival Control (TOAC, also known as RTA) by SC-227 were built upon assumptions of how the capabilities would be used by ATC. The committees did not coordinate to ensure that the designs were compatible. There appears to be an inconsistency in how speed constraints on STARs are treated that we think needs to be fixed.

PMC members discussed the need for FAA internal coordination on operation concept prior to tasking SC-227 and SC-186. Mr. Arbuckle took lead to follow up on this coordination (action). Then follow up Ad Hoc action with Dr. Jackson, SC-227 and SC-186 (as well as WG-51) leadership (action).

F. SC-159 – Navigation Equipment Using the Global Navigation Satellite System (GNSS) – Discussion – Revised TOR.

- Dr. Chris Hegarty, SC-159 Co-Chairman, presented.

The committee requested delaying the update to DO-235C for updating L1 interference report and delaying DO-292 for the update on L5 interference environment report. There continues to be delays in expected completion of technology research.

The revised TOR was approved (RTCA Paper No. 083-19/PMC-1880).

G. Working Toward Increasing GNSS Resiliency – Presentation.

- Barbara Clark, SC-159 Government Authorized Representative, presented.

Ms. Clark indicated SC-159 is looking for clarity, so she is making presentation to the PMC for information and guidance.
- SC-159 Terms of Reference Guidance
  - "New MOPS should address, to the extent practicable, the threats of intentional interference and spoofing."
- One working group (WG) has actively started drafting requirements and test methods for derived requirements. Two WGs are "one step" behind.
  - First MOPS expected in 2020 for GPS/INS. Multiple MOPS for DFMC (GPS/Galileo) expected 2020-2023.
- SC-159 Working Groups are discussing whether any of their working methods, working documents or products should have additional constraints or restrictions above that afforded by existing RTCA Workspace restrictions, committee work processes, and MOPS drafting guidelines.
- Discussion highlights
  - Considerations:
    - Clarity of guidance and boundaries for participants developing standards on security related matters
    - Conflict/opposition of restricting information versus facilitating the development and use of open standards
    - Efficacy of any new methods or constraints as compared to the cost of their use
    - Timely availability of information to OEMs
    - Standard use in Technical Standard Orders
    - Future core constellation expansion (Note: Scope of current TORs include GPS, GLO, GAL, and BDS.)
  - Prior RTCA related precedents are not directly applicable
    - Aircraft Secondary Barriers and Alternative Flight Deck Security Procedures (DO-329)
    - GPS/GBAS VHF Data Broadcast Authentication Protocols (DO-253)

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PMC members discussed concept of export laws (which really doesn't apply to RTCA documents directly), releasing information for work on document since open discussion at meetings (can't discuss SSI), possibility of working with other organizations, or look to cyber experts (possibly get some inputs from PMC Member Mr. John Craig). No easy answer – will need to continue to investigate.

AGENDA ITEM 9
Schedule for Committee Deliverables and Next Meeting Date

Documents expected for the June 27, 2019 meeting:

- SC-147, Aircraft Collision Avoidance Systems – Expect Later with Revised TOR
    - New Document – *MASPS for Collision Avoidance System Interoperability*

- SC-159, Navigation Equipment Using the Global Navigation Satellite System (GNSS)
    - DO-246E Change 1 – *GNSS-Based Precision Approach Local Area Augmentation (LAAS) Signal-in-Space Interface Control Document (ICD)*
    - DO-253D Change 1 – *Minimum Operational Performance Standards for GPS Local Area Augmentation System Airborne Equipment*

- SC-206, Aeronautical Information and Meteorological Data Link
    - DO-358A – *Minimum Operational Performance Standards (MOPS) for Flight Information Services – Broadcast (FIS-B) with Universal Access Transceiver (UAT)*

- SC-223, Internet Protocol Suite (IPS) and Aeronautical Mobile Airport Communication System (AeroMACS) – at risk for March
    - New Document – *Aviation Profiles for Internet Protocol Suite*

- SC-236, Standards for Wireless Avionics Intra-Communication System (WAIC) within 4200-4400 MHz
    - New Document – *MASPS for Coexistence of Wireless Avionics Intra-Communication within 4200-4400 MHz*

The dates for the next four PMC meetings were confirmed: Thursday, June 27, 2019; Thursday, September 12, 2019; Thursday, December 19, 2019; and Thursday, March 26, 2020.

AGENDA ITEM 10
New Action Item Summary

See PMC Action Item Table.

/Signed/
Karan Hofmann, Secretary
RTCA Program Management Committee

CERTIFIED to be a true and accurate report of the meeting.

/Signed/
Christopher Hegarty, Chair
RTCA Program Management Committee

Program Management Committee – March 21, 2019 ATTENDANCE LIST		
PMC MEMBERS:		
Christopher	Hegarty	The MITRE Corporation Chairman
Doug	Arbuckle	Federal Aviation Administration
Clay	Barber	Garmin, Ltd
Rune	Duke	Aircraft Owners and Pilots Association
Jens	Hennig	General Aviation Manufacturers Association
Robert	Ireland	Airlines for America
Donald	Kauffman	Honeywell International, Inc. (Proxy for Randy Robertson)
Randy	Kenagy	Air Lines Pilot Association
George	Ligler	Project Management Enterprises Inc.
Terry	McVenes	RTCA, Inc.
Michael	Romanowski	Federal Aviation Administration Government Authorized Representative
Al	Secen	RTCA, Inc.
Ron	Stroup	Federal Aviation Administration (Proxy for Joseph Post)
Jessie	Turner	The Boeing Company
Heidi	Williams	National Business Aviation Association

OTHER ATTENDEES:		
Moin	Abulhosn	Federal Aviation Administration
Patty	Bath	Esterline
Mats	Brenner	Honeywell International, Inc.
Chip	Bulger	Federal Aviation Administration
Barbara	Clark	Federal Aviation Administration
Matt	Erickson	Collins Aerospace
Ka'Nika	Evans	RTCA, Inc.
Charisse	Green	Federal Aviation Administration
Ed	Hahn	Air Line Pilots Association
Marvin	Hammond	Technology Providers
Don	Heck	The Boeing Company
Karan	Hofmann	RTCA, Inc.
Michael	Jackson	Honeywell International, Inc.
Jim	Krodel	Consultant
Chuck	LaBerge	EPL LaBerge Engineering
Barbara	Lingberg	Federal Aviation Administration

Paul	McDuffee	The Boeing Company
Rebecca	Morrison	RTCA, Inc.
Gregg	Nesemeier	Federal Aviation Administration
Tom	Pagano	Federal Aviation Administration
Steve	Rines	Zodiac Inflight Innovations
George	Romanski	Federal Aviation Administration
Andrew	Roy	ASRI
Paul	Takemoto	Federal Aviation Administration
Brian	Verna	Federal Aviation Administration
Anna	von Groote	EUROCAE
Joel	Wichgers	Collins Aerospace
Jim	Williams	JHW Unmanned Solutions

Program Management Committee
March 21, 2019

PMC ACTION ITEM TABLE

TRACKING NUMBER (Meeting Date and agenda item from which original action resulted)	ACTION	ACTION ASSIGNED TO	DUE DATE	STATUS
12/13/2018 Agenda Item 3B	12/13/2018 – Setup procedure for annual review of committees in "active monitor" status 03/21/2019 – Include PMC recommendations in Active Monitor Status Process	RTCA Staff	Jun 2019	Open
03/21/2019 Agenda Item 3E	03/21/2019 – Clay Barber provide wording for PMC summary about DO-377	Clay Barber	Apr 2019	Open
03/21/2019 Agenda Item 3E	03/21/2019 – Administrative Appendix C table cleanup for DO-377	RTCA Staff	Apr 2019	Open
09/20/2018 Agenda Items 4 & 5	09/20/2018 – Review ICC and CCC Charters wrt RTCA SDO status 12/13/2018 – Revised ICC Charter approved; CCC Charter further investigation	George Ligler Clay Barber	Mar 2019	Closed
09/20/2018 Agenda Items 4 & 5	09/20/2018 - Annual review of ICC and CCC memberships	George Ligler Clay Barber	Dec 2018	Closed
03/21/2019 Agenda Items 6A &7C	03/21/2019 – Adjust proposed TORs for SC-217, SC-227, and SC-229 for Active Monitor Status	Rebecca Morrison	Jun 2019	Open
12/13/2018 Agenda Item 6D	12/13/2018 – Once complete, share RTCA-ICAO document referenced spreadsheet with PMC	Al Secen	Jun 2018	Open
03/21/2019 Agenda Item 6H	03/21/2019 – Ad Hoc review and revise new draft SC-213 (TAWS) TOR	Dr. Romanowski, Doug Arbuckle, Rebecca Morrison	Apr 2019	Open
03/21/2019 Agenda Item 6J	03/21/2019 – Review and Revise draft SC-237 (HTAWS) TOR	SC-237	Apr 2019	Open
03/21/2019 Agenda Item 6J	03-21-2019 - Once revised draft SC-237 (HTAWS) TOR complete, conduct electronic TOR approval	Karan Hofmann	Apr 2019	Open

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03/21/2019 Agenda Item 6N	03/21/2019 – Ad Hoc review IP Policy (coordinate with EUROCAE) and recommend action for SC-159 GNSS-aided inertial navigation systems MOPS	Terry McVenes, Al Secen, George Ligler, Mats Brenner, EUORCAE Rep	Jun 2019	Open
03/21/2019 Agenda Item 7A	03-21-2019 - PMC Chair have discussion with TAC Chair after the TAC receives UAS FAS Ad Hoc briefing	Chris Hegarty	Jun 2019	Open
03/21/2019 Agenda Item 7A	03-21-2019 - FAA capture their use/need for output of a DO-178C supplement	FAA Dr. Romanowski, Doug Arbuckle	Jun 2019	Open
03/21/2019 Agenda Item 7A	03-21-2019 - UAS FAS Ad Hoc provide a schedule for when they could deliver IPs as listed. They were also asked to provide an outline for the envisioned supplement	UAS FAS Ad Hoc	Jun 2019	Open
03/21/2019 Agenda Item 7A	03-21-2019 - UAS FAS Ad Hoc provide an outline for the envisioned supplement	UAS FAS Ad Hoc	Jun 2019	Open
09/20/2018 Agenda Item 7C	09/20/2018 – Follow up w/EUROCAE for further clarification on objectives/purpose of WG-109	RTCA Staff	Mar 2019	Closed
03/21/2019 Agenda Item 7C	03/21/2019 – SC-213 present to June PMC mtg on MASPS deviation request	SC-213	Jun 2019	Open
12/13/2018 Agenda Item 7F	12/13/2018 – Clarification on wording request included in SC-228 revised TOR	ALPA Randy Kenagy	Mar 2019	Closed
12/13/21018 Agenda Item 7G	12/13/2018 – Prepare request package (including TOR) for SC to investigate possible TAWS actions	Lou Volchansky, RTCA Staff	Feb 2019	Closed
12/13/2018 Agenda Item 7G	12/13/2018 – Conduct electronic approval for TAWS SC creation (with TOR) 03/21/2019 – Once revised draft TOR complete, conduct electronic TOR approval	Karan Hofmann	Apr 2019	Open
12/13/2018 Agenda Item 7G	12/13/2018 –Send call out to RTCA members for interest in supporting TAWS SC activity	RTCA Staff	Mar 2019	Closed
12/13/2018 Agenda Item 7H	12/13/2018 – Send call out to RTCA members for possible interest in support a joint HTAWS effort	RTCA Staff	Mar 2019	Closed
12/13/2018 Agenda Item 7K	12/13/2018 – Obtain list of FAA participants on EUROCAE WG's	Lou Volchansky	Mar 2019	Closed
12/13/2018 Agenda Item 8B	12/13/2018 – Further discussion on UTM involvement by RTCA	Al Secen	Mar 2019	Closed

06/21/2018 Agenda Item 8C	06/21/2018 – Investigate feasibility of providing redlined versions of completed documents 09/20/2018 – Update provided, but further questions 12/13/2018 – Redirect to pulling reqs from documents and making available separate format 03/21/2019 – More structure format needed for requirements in MOPS and MASPS – prototype forthcoming	Al Secen	Jun 2019	Open
12/13/2018 Agenda Item 8D	12/13/2018 – Obtain CtL from Safron for SC-159 WG-2C MOPS and follow up at next PMC mtg 03/21/2019 – Action adjusted under agenda item 6N	SC-159 WG-2C	Mar 2019	OBE
03/21/2019 Agenda Item 8F	03/21/2019 – internal FAA 4D TBO coordination	Doug Arbuckle	Jun 2019	Open
03/21/2019 Agenda Item 8F	03/21/2019 – After FAA coordination, Ad Hoc with SC-227 and SC-186 (w/WG-51) leadership on 4D TBO	Doug Arbuckle	Jun 2019	Open

Program Management Committee
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