

**RTCA SC-228**  
**Summary of Plenary 14 – RTCA Paper No: 189-17/SC228-053**  
**Washington, D.C.**  
**9:00 a.m., Friday, July 14, 2017**

The fourteenth Plenary of RTCA Special Committee 228 was called to order by SC-228 Co-Chair, Richard Heinrich at 9:00 a.m. on 14 July 2017, using WebEx audio and web conferencing. Rick welcomed all attendees and deferred to AI for logistics and administrative remarks.

1. Agenda Item #1 - Welcome/Introductions/Administrative Remarks.
  - 1.1 Steve Van Trees, the Designated Federal Official, read the Public Meeting Announcement.
  - 1.2 AI reviewed the proprietary policy and RTCA committee participation and membership policy. AI is the point of contact for copies of either policy.
  - 1.3 Roll Call – The complete list of session participants is listed in Appendix A.
2. Agenda Item #2 – Agenda Overview.
3. Agenda Item #3 – DAA MOPS Approval.
  - 3.1 Rick stated that DO- 365 & -366 are approved and available. Both documents are being adopted by EUROCAE to be used as starting point to develop their standards.
  - 3.2 Rick congratulated both WGs for their efforts. Brandon echoed the same.
  - 3.3 Rick shared that coordination is happening between the leadership of WG-105 and SC-228. A joint document will not be developed; however, harmonization will occur.
4. Agenda Item#4 – WG-1 White Paper Status Update – FRAC Announcement
  - 4.1 Brandon presented for the team and acknowledged that Don Walker’s last day with the FAA is today.
  - 4.2 Paul Campbell announced that he would like to step down as secretary of WG-1. Brandon thanked Paul Campbell for his role as the Phase 1 DAA Secretary and indicated that the position is open for Phase 2.
  - 4.3 DO-365 & -366 were issued on May 31, 2017. A draft of TSO-c211 & -c212 is out for public comment and Sheila Mariano is adjudicating comments. Sheila is also working on a draft of the advisory circular.
  - 4.4 The FAA SRM Panel is complete and is being socialized within the FAA. The objective of the panel was to provide support for the approval of Class 1 & 2 DAA equipment in Class D & Class E airspace. The document is in the review and signature cycle internal to the FAA.
  - 4.5 The scope for Phase 2 continues the work of Phase 1 (transit operations in Class A/D/E/G) and expands to extended operations, including oceanic. Upper Class E will not be considered in Phase 2.
  - 4.6 Deliverables for Phase to are:
    - 4.6.1 September 2019 -ground-based/primary radar MOPS and revision to DO-365
    - 4.6.2 September 2020 - airborne sensor MOPS, update to DO-366 and air-to-air, and 2<sup>nd</sup> update to DO-365.

- 4.6.3 The 2<sup>nd</sup> revision to DO-365 will be updated to include the recommendations of the ACAS-Xu SC-147 MOPS.
- 4.6.4 Rick asked if an ISRA (inter-special committee agreement) exists between the DAA WG and SC-147. Brandon indicated that one already exists and the collaboration is strong.
- 4.7 Non-concur and high comments on the Phase 2 DAA Whitepaper were reviewed and adjudicated at the DAA WG meeting earlier this week. Medium, low and editorial comments will be resolved by the section authors. A copy was distributed last night for review for further review.
  - 4.7.1 It was noted that the wording in Section 3.2.1 (formerly 3.1.1) does not properly reflect the discussion outcome.
  - 4.7.2 **ACTION:** Brandon will review and ensure the section is updated accordingly. [completed 7/14]
- 4.8 Organization of the DAA WG for Phase 2 will maintain the same structure as Phase 1. All leads and sub-leads have been confirmed and are available for participate.
  - 4.8.1 Don Nellis asked which sub-group is handling the RF link to the aircraft. Brandon responded it is the Ground-based Radar group. There is a concern that the requirements for the spectrum may require an additional action. RF link are not being properly scoped.
  - 4.8.2 **ACTION:** Brandon and Don will discuss spectrum issues and identify a resolution.
- 4.9 Schedule Overview – Brandon stated that completing the OSED and updating the quantitative definition of “well clear” are high priority items to be completed in the first quarter of 2018. He pointed out that the new sensors added to DO-365 and -366 will go through a review process; however, revisions to the two documents will not go through FRAC.
  - 4.9.1 In response to a question from the floor, Brandon stated that NASA is leading the tasks related to the “well clear” definition with help from the US Airforce, industry and FAA. SARP is not formally engaged in leading this activity as they were in Phase 1.
  - 4.9.2 The next face-to-face meeting is scheduled for September in Settle. Agenda items include the OSED scenarios and modelling and simulation activities.
  - 4.9.3 The last meeting for this calendar year is scheduled for December.
- 5. Agenda Item #5 – WG-2 White Paper Status Update – FRAC Announcement
  - 5.1 Steve Van Trees presented for the C2 WG; Co-chair John Moore is in Toulouse.
  - 5.2 The Baseline Radio TSO was released from Steve’s office this week and currently going through FAA coordination. The Advisory Circular (AC-20-187) is in draft waiting for the disposition of TSO.
  - 5.3 Proposed Deliverable (not yet finalized) are:
    - 5.3.1 December 2018 -C2 Data Link MASPS (2 use cases)
    - 5.3.2 March 2019 - C2 Data Link MOPS (SATCOM)
    - 5.3.3 December 2019 – C2 Data Link MOPS DO-362A
    - 5.3.4 March 2020 – C2 MOPS (rev A)
    - 5.3.5 June 2020 - C2 Data Link MASPS (rev A)

- 5.4 ConOps, Use Cases and end-to-end standards are currently within scope. The WG is looking for input from Wes Ryan (Aircraft Certification UAS lead) to ensure alignment.
  - 5.5 The Whitepaper is structured into 4 sections and 2 appendices. The more prominent sections are: C2 Link MASPS Considerations (ConOps/ConUse, OSA &OPA, Interworking & Verification Methods) and C2 Link MOPS Considerations (Ka/Ku SATCOM MOPS & DO-362a)
  - 5.6 There were 250 comments for the C2 Whitepaper that were resolved by the group. An updated version will be available soon.
  - 5.7 The WG will not have sub-groups. The team has standing meetings daily (except Fridays). The writing teams and their leads are: OSED – Marvin Hammond, OSA/OPA – Michael Neale, Interworking Standards – Lee Nguyen & Terrestrial C2 Standards Task – Chris Reichelt.
    - 5.7.1 ConOps/Use Case – updated to include recent commercial use cases, aggregate of 9 D)-320 scenarios and using a technology neutral view. Coordinating with UAS in the NAS -RTT and have reviewed for alignment with the FAA.
    - 5.7.2 MASPS development – safety based performance requirements, ISRA in process or existing to ensure alignment with each of the specific technologies (see slide 10 for technologies).
  - 5.8 A notional work plan and schedule were presented but dates are not finalized. For FY18 tentative meetings in September, January, April, and July. Expecting a FRAC for the MASPS in August and to present it at the December PMC.
  - 5.9 ISRAs with SC-222, SC-SATCOM/223 and SC-IPS/135 Environmental Qualification are being developed. SC-222 has been briefed and is reviewing the ISRA. SC-223 and SC-135 have agreed to the ISRAs.
    - 5.9.1 Bruce Eckstein stated that SC-135 has implications to both WG1 and WG2 and asked if the DAA WG has formally interfaced with -group. Brandon responded that DAA Co-chair Don Walker has been coordination.
    - 5.9.2 **ACTION:** Brandon will follow-up on a coordination mechanism with SC-135.
  - 5.10 Rick stated that at the next PMC (scheduled for September 21<sup>st</sup>) a concise, streamlined version of the briefings given by each of the WGs with be presented for approval.
6. Agenda Item #6 – SC-228 and WG-105 Leadership Coordination
    - 6.1 Rick indicated that he and Paul have met with WG-105 co-chairs through participation in RPAS and other meetings. If schedules align, representatives from WG-105 will participate in plenaries and possibly WGs meeting. Rick emphasized the need to finalize WG dates so that coordination with a broader group can occur.
    - 6.2 Al shared the federal registry process and stated that the current requirement is for the date to be submitted 90 days. He suggests that generic agendas be developed to allow for flexibility of meeting topics.
      - 6.2.1 He also shared that any new committees that are formed must be approved by the DOT Secretary. The onus is on the FAA to socialize the need.
      - 6.2.2 Meetings held outside of DC, the exception is international committees, draw scrutiny and may slow down the plenary request. A justification may be needed if the DFO has to travel outside of DC.

- 6.2.3 Jim William added that it's not unusual for new administrations to pull back authority and then re-delegate as time moves forward.
7. Agenda Item #7 – Leadership Meeting Update
- 7.1 Rick stated that generic agreement is needed to standardize ConOps because there are several touch points between the WGs.
- 7.2 Rick asked Steve is there going to be a Steering Group Chair appointment. Steve responded that Wes Ryan, currently the AIR lead for UAS, is planning a monthly coordination call where SC-228 will be invited to participate. Rick indicated that the Steering Committee is a part of the process.
8. Agenda Item #8 – Action Item Review
- 8.1 (4.6.2) Brandon will review and ensure the section is updated accordingly. [completed 7/14]
- 8.2 (4.7.2) Brandon and Don will discuss RF concern and identify a resolution
- 8.3 (5.9.2) Brandon will follow-up on a coordination mechanism with SC-135
- 8.4 Acceptance of Plenary #13 minutes; moved by Jim Williams, 2<sup>nd</sup> by Steve Van Tree – unanimously approved.
9. Agenda Item #9 – Adjourn
- 9.1 Al briefed on the activities of the DAC and noted that the next meeting is expected to be short and will be held virtually.
- 9.1.1 He stated that Paul provided an overview briefing of SC-228 to the DAC. The briefing is posted to the SC-228 Workspace. The DAC leadership wanted to ensure that the DAC members were aware of the tasks undertaken by SC-228.
- 9.1.2 Al also shared that SC-228 activities are being followed by the RPAS DAA Panel and ICAO has recognized SC-228 as being the first to have standards for both DAA and C2.
- 9.2 Rick acknowledged the outstanding job done by both of the WGs and thanked them for their contributions.
- 9.3 Adjourned at 10:20 am.

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Kristina Carr  
Secretary, RTCA SC-228

CERTIFIED as a true and accurate summary of the Meeting.

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Richard Henrich  
Co-Chair, RTCA SC-228

**Appendix A – List of SC-228 Plenary Participants**

Paul McDuffee	SC-228 Plenary Co-Chair	Insitu
Paul Campbell	SC-228 Plenary, WG1 Secretary	FAA, AUS-420
Brandon Suarez	SC-228 WG1 for DAA, Co- Chair	General Atomics
Steve Van Trees	SC-228 DFO, WG2 for C2, Co-Chair	FAA, AIR-130
Al Secen	SC-228 Program Director	RTCA
Kristina Carr	SC-228 Secretariat	FAA, ANG- C35

First Name	Last Name	Company
Kevin	Aurandt	Federal Aviation Administration (FAA)
Scott	Brenton	Northeast UAS Airspace Integration Research Alliance (NUAIR)
Paul	Campbell	Federal Aviation Administration (FAA)
Kim	Cardosi	US Department of Transportation
Andrew	Carter	SRC, Inc.
Won-Zon	Chen	JeSTAR Associates
John	Coffey	National Oceanic and Atmospheric
Dennis	Colbert	ARCON
Jack	Connolly	NASA
Sheila	Conway	The Boeing Company
James	Davis	Sagetech Corporation
Bruce	Eckstein	Firebird SE LLC
Matthew	Edwards	MIT Lincoln Laboratory
Thomas	Farrier	ClancyJG International
Alex	Fu	Federal Aviation Administration (FAA)
Peter	Georgiou	Federal Aviation Administration (FAA)
Dan	Griffith	MIT Lincoln Laboratory
Jim	Griner	NASA
Marvin	Hammond	Technology Providers, Inc.

First Name	Last Name	Company
Maureen	Hartney	Echodyne Corp
Robert	Helgeson	Federal Aviation Administration (FAA)
Ruth	Hirt	Federal Aviation Administration (FAA)
Keith	Hoffler	Adaptive Aerospace Group
Derek	Hufty	Federal Aviation Administration (FAA)
Robert	Hughes	Northrop Grumman Corporation
Robert	Joslin	Federal Aviation Administration (FAA)
Jeffrey	Knickelbein	Cobham Aerospace Communications
Jarrett	Larrow	Federal Aviation Administration (FAA)
Seungman	Lee	NASA
Ted	Lester	The MITRE Corporation
Sheila	Mariano	Federal Aviation Administration (FAA)
Anthony	Narkawicz	NASA
Michael	Neale	Federal Aviation Administration (FAA)
Don	Nellis	Federal Aviation Administration (FAA)
Gregg	Nesemeier	Federal Aviation Administration (FAA)
Lee	Nguyen	Federal Aviation Administration (FAA)
Hiroshi	Okochi	Japan Radio Air Navigation Systems
Michelle	O'Leary	Regulus Group
Thomas	Pagano	Regulus Group
A. James	Pala	Air Line Pilots Association (ALPA)
Brian	Patterson	The MITRE Corporation
Daniel	Salvano	SAIC
Hyunchul	Shim	Korea Advanced Institute of Science and
Samantha	Smearcheck	Calhoun Analytics
Christopher	Swider	Federal Aviation Administration (FAA)
Erik	Theunissen	Information Systems Delft
Jessie	Turner	The Boeing Company
Chris	Wargo	Mosaic ATM, Inc.
Jim	Williams	JHW Unmanned Solutions LLC
Ray	Young	Northeast UAS Airspace Integration Research Alliance (NUAIR)
Brian	Ulm	ACSS
Samuel	Welch	Ligado Networks
Rebecca	Morrison	RTCA, Inc.
Maria	Kuffner	MIT Lincoln Laboratory
Dennis	Colbert	ARCON Corporation
Tod	Lewis	NASA
Sherry	Chappell	FAA