

**RTCA SC-230 Plenary #20 Meeting Minutes (January 21-23, 2019)**

**Attendance list:**

<b>January 21<sup>st</sup> - WG11</b>	
<b>Name</b>	<b>Company</b>
Karan Hofmann	RTCA
Jean-Baptiste Berthier	Airbus
Kenny Ren	Boeing
Dawn Gidner	Honeywell
Jeff Finley	Collins
Venkata Sishtla	Collins
Fred Proctor	NASA
Ivan Clark	NASA
Shigeru Machida	JAXA
Shumpei Kameyama	MELCO
Shiki Nakagawa	MELCO
Rockee Zhang	OU
Nobuki Kotake	JAXA
Abe Masatoshi	Mitsubishi Electric
Audrey Mach	Boeing

<b>January 22<sup>nd</sup> - WG11</b>	
<b>Name</b>	<b>Company</b>
Karan Hofmann	RTCA
Jean-Baptiste Berthier	Airbus
Kenny Ren	Boeing
Dawn Gidner	Honeywell
Jeff Finley	Collins
Venkata Sishtla	Collins
Fred Proctor	NASA
Ivan Clark	NASA
Shigeru Machida	JAXA
Shumpei Kameyama	MELCO
Shiki Nakagawa	MELCO
Rockee Zhang	OU
Nobuki Kotake	JAXA
Abe Masatoshi	Mitsubishi Electric
Audrey Mach	Boeing

<b>January 23<sup>rd</sup> - WG10</b>	
<b>Name</b>	<b>Company</b>
Karan Hofmann	RTCA
Jean-Baptiste Berthier	Airbus
Kenny Ren	Boeing
Dawn Gidner	Honeywell
Jan Lukáš	Honeywell
Jeff Finley	Collins
Venkata Sishtla	Collins
Steven Harrah	NASA
Fred Proctor	NASA
Patricia Hunt	NASA
Justin Strickland	NASA
Ivan Clark	NASA
Shigeru Machida	JAXA
Shiki Nakagawa	MELCO
Rockee Zhang	OU
Greg McFarquhar	OU
Alex Ryzhkov	OU
George Switzer	NASA
Mark Smith	Collins
Marius Irimia	Collins

## 1/21/2020 (14:00-17:00 PST)

### Administrative and agenda review:

Welcome/Administrative Remarks – RTCA Opening remarks on Anti-Trust Laws, IP Policy, and Membership Policy provided by Karan Hofmann. Jeff led introductions.

Introductions/Agenda/Minutes Approval - Minutes were approved without comment

### Review WG-11 Schedule and Deliverables:

Technical matters need to be complete by end of plenary (01/22/2020)

Grammatical and wording need to be complete before FRAC submission (2-3 weeks after plenary)

Then submit for comments

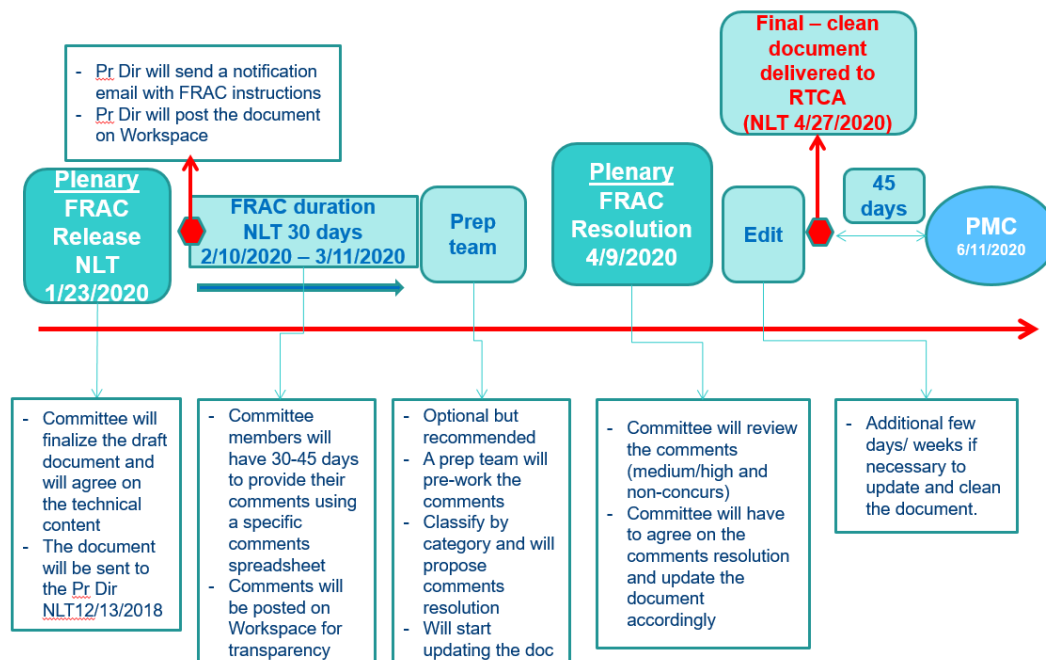
30 days for comments

30 days for comments resolution

Final plenary session (4/9/2020), WG-11 will review the document and vote to concur to present to PMC.

### Reference RTCA LiDAR FS FRAC notional Timeline:

## LIDAR FS FRAC Timeline





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www.rtca.org

RTCA Paper No. 027-20/SC230-046  
February 4, 2020

**Feasibility report comments review:**

[Action Karan editorial] research the legality of using pictures in the feasibility report (NASA pictures, textbook pictures etc.)

[Action Ven/Ivan **technical/must**] email working copy to Ivan, Ivan review section 5 (complete 1/22/2020)

[Action Shigeru/Shumpei **technical/must**] update section 8.1.1 on low altitude wording, executive summary, 3<sup>rd</sup> paragraph of section 8.2

[Action Ven, editorial] re-word section 8.1 to initiate section 8.1.2 [done]

[Action Ven, editorial] fix LIDAR capitalization

[Action Ven, editorial] come up with definition for moderate/severe turbulence in section 8.2, offload the definition of moderate/severe definition to outside document AC 120-88a, and place in

[Actions Shumpei, editorial] confirm with Patrick regarding the “???”s and “TBD”s

[Action Ven, editorial] retrace reference list



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## **WG-11 Agenda 1/22/2020**

Continue LiDAR feasibility report review, mainly focused on closing remaining Technical items.

[Action Ven] Add in recommendation section about future work on low altitude contamination (captured in word side comments)

[Action Ven] define Vx, Vy, Vz inline

[Action group] references/bibliography (source manager)

Need to verify reference to document is correct,

Verify each document to see if they are public (not copy righted). All documents will need to be uploaded to working space.

Examine figure to see if source is copyrighted, if copyrighted, cannot use figure.

[Action Ven] put in future work section, research on the conversion between EDR to G-loading:

Find relationship between Lidar measured turbulence and aircraft G-loading

[Action Shumpei] to send re-word for section 5.2.1 to Ven

[Action Ivan] email Patrick regarding the distribution of aerosols at the poles?

### **Summary:**

No outstanding technical comments, still some open editorial comments

[Action Karan] schedule 1/29/2020 WG-11 meeting (5pm EST) progress review

[Action Jeff] update FRAC date to 2/18 – 3/19

**[Feasibility document FRAC Status]** Group have consensus, for document to go into FRAC process.

**WG-10 1/23/2020**

**Jeff review agenda and schedule:**

□ **Thursday January 23 (all times Eastern Standard Time)**

- |                                      |                                          |
|--------------------------------------|------------------------------------------|
| □ Review Schedule/Deliverables       | 11:00 – 11:05 A.M. (Finley/Gidner)       |
| □ HAIC Working Group Status/Review   | 11:05 – 1:45 P.M. (Jean-Baptiste, Steve) |
| □ Review Action Items                | 1:45 – 1:55 P.M. (Ren)                   |
| □ Review Date/Place for Next Plenary | 1:55 – 2:00 P.M (Committee)              |
| □ Adjourn                            | 2:00 P.M.                                |

**Deliverable:** Updated MOPS: DO-220B due March 2021 (FRAC complete)

**Co-chairs review schedule/action item status:**

Action item #1 (performance index):

[Action Jeff/Jan/Steve] overarching goal/next weekly meeting topic: develop parameters for the performance index or alternative/modified method to calculate performance index for measuring radar performance for ICI. By next plenary, have a proposal for PI (ICI) calculation. Note, PI for ICI is highly dependent on signal processing techniques (SWERLing and dual pole).

**General notes regarding PI calculations used today for weather detection:**

Radar manufacturers calculate performance index and look up on the range table (radar is capable of operating at this range per calculated performance index)

Performance index is calculated differently for Avoidance vs penetration of weather (attenuation is different, ref DO-220). Current performance index calculation may need to be updated to accommodate HIAC detection algorithm.

[Status update] ADWRS work: NASA is tailoring ADWRS to suit HAIC measurements.

Rockee's question regarding TASS model capability:

Steve: ICI can have different shape and sizes, particles are so small, TASS may not have enough dimension for particles to grow.

**DO-220B comments sheet review:**

ADWRS still has some large variations that NASA is addressing. Steve does have some concerns with the ADWRS approach due to the extra variation that's presented in ADWRS that's not present in real weather radar.

[Action Steve/NASA] to further assess the capability/changes to ADWRS for ICI modeling. Some (potentially minor) changes to ADWRS may be required. If ADWRS proves to have too much variability, an alternative may need to be assessed. (Potential long lead)

Some test cases have been developed.

[Action Jean-Baptiste/Steve] Assign members to populate detailed information regarding ICI Detailed Test Procedures in Section 2.4.3.6. In working group meetings, start migrating from general discussion, and get into the specifics of individual requirements. Assign requirements in the document to names for document review

[Action Jean-Baptiste /Steve] Include Steve's NASA TP into the appendix (or reference the paper) which was published in SAE regarding SWERLing method.

[Action Steve] upload NASA TP to working group.

[Action Jean-Baptiste /Steve] Develop project plan and list/monitor any long lead items that could impact on time delivery of MOPS.

**Jeff reviewed general SC-230 schedule:**

- 
- |                                                     |                       |
|-----------------------------------------------------|-----------------------|
| □ Joint plenary: NASA Langley, VA                   | June 25-27, 2019      |
| □ Joint plenary telecom: Webex                      | September 24-25, 2019 |
| □ Joint plenary: University of Oklahoma             | November 12-14, 2019  |
| □ LiDAR Feasibility FRAC                            | January 21-23, 2020   |
| □ LiDAR Feasibility FRAC Resolution: Washington, DC | April 7-9, 2020       |

## Action item summary

Action Item #	Action	Person(s)	Estimated Completion Date
<b>Day 1/Day 2 WG-11 – LIDAR:</b>			
Refer to main body of meeting minutes document for <u>action items</u>			
Group conducted feasibility report review			
Group concurred on the resolution of all technical items. Feasibility report will be ready for FRAC			
<b>Day 3 WG-10 - HAIC:</b>			
1	Overarching goal/next weekly meeting topic: develop parameters for the performance index or alternative/modified method to calculate performance index for measuring radar performance for ICI. By next plenary, have a proposal for PI (ICI) calculation. Note, PI for ICI is highly dependent on signal processing techniques (SWERLing and dual pole).	Jeff, Jan, Steve, Rockee	
2	To further assess the capability/changes to ADWRS for ICI modeling. Some (potentially minor) changes to ADWRS may be required. If ADWRS proves to have too much variability, an alternative may need to be assessed. (Potential long lead)	Steve/NASA	
3	Assign members to populate detailed information regarding ICI Detailed Test Procedures in Section 2.4.3.6. In working group meetings, start migrating from general discussion, and get into the specifics of individual requirements. Assign requirements in the document to names for document review	Jean-Baptiste, Steve	
4	Include Steve's NASA TP into the appendix (or reference the paper) which was published in SAE regarding SWERLing method.	Jean-Baptiste, Steve	
4.1	Upload NASA TP to working group.	Steve	



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5	Develop project plan and list/monitor any long lead items that could impact on time delivery of MOPS.	Jean-Baptiste, Steve	
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CERTIFIED as a true and accurate summary of the meeting.

Kenny Ren, SC-230 Secretary

Jeff Finley, SC-230 Co-chair

Dawn Gidner, SC-230 Co-chair