



RTCA Paper No. 283-22/SC223-127
 EUR265-22/WG108-45

Washington D.C. & Saint Denis, 5 October 2022

MINUTES OF JOINT RTCA SC-223 (PLENARY # 52) /
EUROCAE WG-108 (MEETING #23) / JOINT MEETING #16
“Internet Protocol Suite (IPS)”

Date	September 26 to 30, 2022
Time	9am – 5pm EST, Monday – Friday (Lunch 12:00am – 1:00pm)
Hosted by	RTCA
Venue	1150 18th St NW, Suite 910 Washington, DC 20036
Contact	Rebecca Morrison , Program Director, RTCA (202) 330-0654 or rmorrison@rtca.org Abinaya Kannan , Technical Programme Manager, EUROCAE +33 1 49 46 19 72 or abinaya.kannan@eurocae.net

Note: EUROCAE WG-108 and SC-223 were in joint sessions with the AEEC IPS Subcommittee on Monday September 26th and Wednesday September 28th.

Attendees:

Name	Role	Affiliation
Chen, David	Member	FEDERAL AVIATION ADMINISTRATION (FAA)
Dlouhy, Ron	Member	COLLINS AEROSPACE
Emberger, Luc	Member	AIRBUS

Name	Role	Affiliation
Esmael, Mahmoud	Member	COLLINS AEROSPACE
Fernandez, David	Guest	ESA
Gandolfi, Catherine	Member	EASA
Garza, Milton	Member	AMERICAN AIRLINES
Graefe, Jonathan	Member	COLLINS AEROSPACE
Gragu, Florin	Observer	ROMATSA
Haindl, Bernhard	Member	FREQUENTIS A.G.
Hawkins, Rich	Member	WIMAXFORUM
Ibarz, Santi	Member	AIRTEL ATN
Jaron, Zdenek	Member	HONEYWELL INTERNATIONAL, INC.
Kannan, Abinaya	Technical Programme Manager	EUROCAE
Ladron, Daniel	Member	BOEING
Leonardon, Laurent	Guest	COLLINS AEROSPACE
Morrison, Rebecca	Program Director	RTCA, INC.
Nepute, Brandon	Member	BOEING
Nisbet, David	Member	THALES GROUP
Olive, Mike	Member	HONEYWELL
Pelleschi, Stephane	WG-108 Chair	COLLINS AEROSPACE
Phillips, Brent	Government Authorized Representative	FEDERAL AVIATION ADMINISTRATION (FAA)
Popescu, Liviu	Member	EUROCONTROL
Prisaznuk, Paul	AEEC Executive Secretary	SAE ITC
Pruvot, Stephane	Member	SITA
Roy, Alope	SC-223 Chair	VISIONAR SYSTEMS, LLC
Saccone, Greg	Member	BOEING
Segers, Robert	Member	FEDERAL AVIATION ADMINISTRATION (FAA)
Skorepa, Michal	Member	HONEYWELL
Soléry, Michel	Member	DSNA
Stevenson, Mark	Member	COLLINS AEROSPACE
Tamalet, Stephane	Member	AIRBUS
Tran, Hoang	Guest	FEDERAL AVIATION ADMINISTRATION (FAA)
Varkonyi, Bela	Member	FREQUENTIS A.G.
Warns, Timo	Member	AIRBUS
Wrobel, Fryderyk	Member	AIRTEL ATN
Young, Chris	Guest	COLLINS AEROSPACE
Yu, Ming	Member	FEDERAL AVIATION ADMINISTRATION (FAA)
Zeng, Dongsong	SC-223 Secretary	THE MITRE CORPORATION

Agenda Items 1. Welcome address. Meeting Organizational Issues

Aloke Roy, Chair of SC-223, and Stephane Pelleschi, Chair of WG-108, welcomed the participants.

Agenda Item 2. Approval of the Agenda

The group reviewed and approved the meeting agenda.

Agenda Item 3. Administrative Remarks

Rebecca Morrison, Program Director, RTCA, and Abinaya Kannan, Technical Programme Manager, EUROCAE, presented the RTCA / EUROCAE antitrust, proprietary and membership policy statements. Paul Prisaznuk, AEEC Executive Secretary, presented AEEC antitrust, proprietary and membership policy statements. All participants agreed on the statements and no issues were raised.

Agenda Item 4. Current State of Standards

4a. ICAO WG-I (ICAO Annex 10, DOC 9896 ed 3, DOC 10090, DOC 10094, DOC 10095, DOC 10145)

Liviu Popescu, EUROCONTROL, briefed the group on the schedule of ICAO IPS standards development, which is shown in Figure 1.

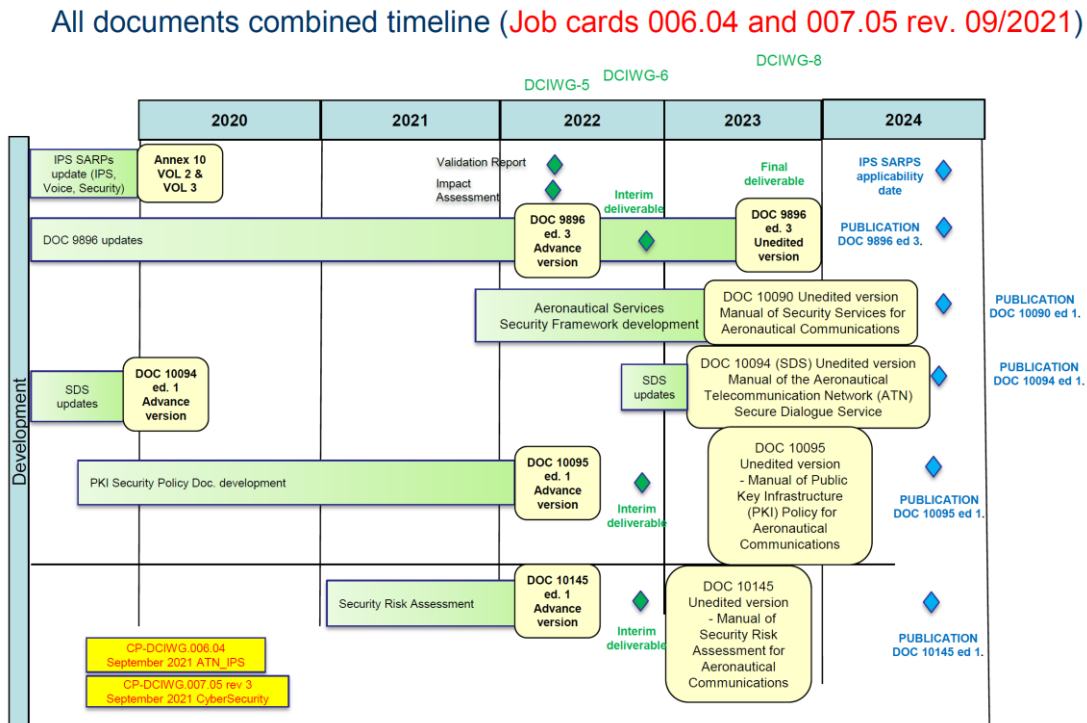


Figure 1. ICAO IPS SARPs and Docs Timeline

4b. AEEC IPS Subcommittee

Mike Olive, Honeywell, presented a slide deck titled “A858 Document Status and Plan,” which summarizes the current IPS standards roadmap, A858 development status, and key challenges.

4c. ICAO TFSG

Robert Segers, FAA, reported that the ICAO TFSG will be transformed into a new ICAO panel “Trust Framework Panel (TFP)” by the end of 2022. Robert Segers will be the U.S. representative at the panel. The job card of this panel is forthcoming.

4d. Other Relevant Standards

Dongsong Zeng, MITRE, reported that the PMC approved SC-214 TOR Revision # 18 which extends the IPS-capable VDL2 MASPS and MOPS completion date from the end of 2022 to the end of 2023. The VDL2 Air-Ground Interoperability guidance standard revision is planned to be completed by the end of 2024.

Agenda Item 5. FAA IPS Strategy

Brent Phillips, FAA, presented an information paper titled “FAA IPS Implementation Planning Update,” which shows a draft FAA IPS roadmap of standards development, regulatory development, U.S IPS validation, avionics development and fleet installation, IPS acquisition management system (AMS) process, and IPS acquisition and deployment. The initial deployment of IPS will be with FANS services and ATN/B2 may come in a later stage. The group welcomed the presentation and believed that the roadmap is in line with the current IPS standardization schedule.

Agenda Item 6. Harmonization of MASPS and AEEC A858 Document including gap analysis review, security coordination, etc. (Joint SC-223/WG-108/AEEC IPS)

Mike Olive, Honeywell, presented a spread sheet named “A658-AppendixD_IPS Gap Analysis Update_20220926.xlsx,” which details the progress of all IPS standard development fronts and emphasizes the gaps that need to be addressed promptly by the joint committees.

Jonathan Graefe, Collins Aerospace, presented a slide deck titled “ROHC Corner Case,” which proposes to use RObust Header Compression (ROHC) protocol to compress IPS packets to save transmission bandwidth. Zdenek Jaron, Honeywell, expressed some concerns about the implementation complexity of the ROHC. The group would like to give more thoughts to this proposal and revisit it again next time.

Agenda Item 7. Review and Approval of Previous Meeting Notes

Dongsong Zeng, MITRE, went through the report of last meeting. The group reviewed and approved it.

Agenda Item 8. IPS MASPS Development

8a. MASPS Development Progress Overview and Action Items Update

Stephane Pelleschi, Collins Aerospace, provided a status update of the MASPS development progress.

Aloke and Stephane requested the group review all sections of the MASPS in preparation of upcoming RAC and FRAC.

8b. Operational Requirements

Stéphane Tamalet, Airbus, presented an input paper titled “Operational Requirements for IPS,” in which he deliberated the definitions and conventions of operational requirement in various standards/advisories, and advocated to follow the ARP 4754’s definition in IPS MASPS. The group would like to give more thoughts to the current draft MASPS operational requirements and revisit them next time.

Action 10. Aloke Roy to clarify the operational context in MASPS Section 3.3.5.1.2 Airspace before October 26.

8c. Performance Requirements

Stéphane Tamalet, Airbus, presented an input paper titled “Proposed Update to Performance Requirements Section of IPS MASPS.” The ensuing discussion led to Decision 3.

Decision 3. IPS MASPS needs to have requirements that RCTP from higher level documents shall be satisfied. Add explanatory texts to guide the readers and implementers why these requirements are applicable.

- IPS_REQ_PR_YYY
- The Aircraft SHALL meet the requirements from the RCTP of the applicable RCPs as defined in the applicable SPR standards.

- IPS_REQ_PR_YYY
- The combination of CSP and ACSP SHALL meet the requirements from the RCTPcsp of the applicable RCPs as defined in the applicable SPR standards.

- IPS_REQ_PR_YYY
- The ANSP SHALL meet the requirements from the RCTPatsu of the applicable RCPs as defined in the applicable SPR standards.

Action 9. Stephane Pelleschi and Stephane Tamalet to review the explanatory texts for performance requirements in IPS MASPS before October 26.

Action 12. Aloke Roy, Stephane Pelleschi, Bela Varkonyi and Ron Dlouhy to update Section 3.3 before October 26.

8d. Verification Methods

Bela Varkonyi, Frequentis, presented his proposed changes to MASPS Chapter 5 Performance Verification. The proposed changes with Alope Roy's comments are saved in file "DRAFT IPS MASPS Chapter 5 FRQ-AR-comments.docx".

Action 1. Group to review MASPS Section 5 proposed by Bela and provide feedbacks in 2 weeks; Bela will update Section by end of October; Stephane Pelleschi will incorporate it to the MASPS in November.

Action 13. Alope Roy, Bela Varkonyi and Dongsong Zeng to update Section 5 before October 26.

8e. Safety and Security

Timo Warns, Airbus, presented a slide deck titled "Certificate Revocation Checks," which provides an overview of potential solutions such as CRL, OCSP and SCVP and proposes a way forward for IPS. The group discussed an existing patent about SCVP Stapling that may prevent its adoption for the IPS standards and believed that OCSP stapling with Trusted Responders may be a valid alternate approach. The group made the following decisions.

Decision 2. A single layer of intermediate CA is required.

Decision 4. The meeting considered a proposal to use OCSP Stapling with Trusted Responders, SCVP Stapling, Vanilla OCSP and CRL-based checks.

The meeting concluded that short lived certificates would be mandatory for all ground entities communicating via IPS. Each ground entity would also implement OCSP Stapling with Trusted Responders as defined in RFC 6066 Certificate Status Request respectively. Each ground entity must respect the trusted responder list sent by the aircraft and fetch OCSP responses from servers indicated by the aircraft. A "any available" responder list while valid in the RFC is discouraged in the Aviation space. (Due to potential IP infringement, SCVP-stapling option was eliminated by the group.) If an aircraft implements OCSP stapling with trusted responder(s), it would no longer need CRLs. OEMs remain free to select other approaches such as CRL based lists. The meeting took the action to consider and coordinate with ICAO WG-I 10095 and 9896 to generate the ground requirements. The air/ground requirements would be captured in the MASPS with a reference to the MASPS section put into the profile notes on the certificate status request section. WG-I needs to standardize the interchange and function of the OCSP trusted responder which will respond singularly to the entire trust chain with an approval or denial or some kind of error message. -- To be discussed at WG-I.

Decision 6. No profiles for EST RFCs, RFC 5272, and RFC 5273, are needed.

Action 2. Rob Segers to clarify how to revoke the trust between states.

Action 3. Mike Olive to pull out MASPS requirements that reference Doc 10095 and bring them to the SSG to make sure they are properly addressed.

Action 4. Mike Olive to specify the requirements for ephemeral key generation and corresponding performance in the MASPS.

Action 5. Rob Segers to provide texts replacing SCVP stapling with OCSP stapling with trusted responder in MASPS section 3.5.8 to Timo before October.

- Action 6.** Timo Warns to write up guidance on the use of short-lived certificate and what to do with expired certificate when the ground trusted responder is not available.
- Action 7.** Aloke Roy to coordinate with Vic to get FAA-ANSP perspective on who can be a trusted responder.
- Action 8.** Rob Segers to review and revise MASPS Section 3.5.8.4.2 and ARINC858 Section 4.4.1.1.5 Revocation Checks before October 26.
- Action 14.** Brandon Nepute and Timo Warns to update the fail-secure section before October 26.

8f. MASPS Walk Through for RAC Release

Aloke Roy, VisionAR Systems, LLC, presented an input paper on IPS safety requirements. The group discussed the paper and provided comments. The master document of MASPS will be updated accordingly.

Decision 1. Group decided on a workplan for the MASPS with specific objectives to complete Version 1 for FRAC in December 2022 and a Version 2 at a future date.

Decision 5. Decisions for MASPS requirement methodology:

- Refine existing requirements (PR, SEC, OR...) if needed in the context of IPS and do not duplicate existing reqs in other higher level standards.
- Add derived (PR, SEC, OR...) specific to IPS in the context of the MASPS, as needed
- Provide clear traceability to existing standards for refined reqs.

Action 11. Group to follow the Decision 5 to review and update MASPS requirements before October 26.

Agenda Item 9. Profiles Update

Due to the time limit, the group did not get a chance to discuss the profiles during the meeting.

Agenda Item 10. Future Meetings

SC-223 P53 / WG-108, December 5 - 9, 2022, EUROCAE (in person meeting, room reserved).

SC-223 P54 / WG-108, March 20 - 24, 2023, RTCA (room waiting for confirmation)

SC-223 P55 / WG-108, June 19 - 23, 2023, EUROCAE, Paris (room reserved)

Monthly telecons

10:00 am – 12:00 pm EST, third Wednesday every month through the end of this year.

Agenda Item 11. Any Other Business

No other business was brought up during the meeting.

Agenda Item 12. Review of Meeting Decisions and Actions

The group reviewed the decisions made and actions created during the meeting.

Agenda Item 13. Adjourn

The meeting was adjourned around 12:00pm CEST, September 30, 2022.

List of Action Items

Action Item #	Action Content	Responsible	Due Date	Status
P49-2	Develop typical SCVP operation scenarios and collect/estimate the SCVP performances for those scenarios.	Robert Segers and his team	March 7, 2022	03/14/2022 – keep open. 06/13/2022 – keep open. Performance will be addressed by Timo in this meeting. 0927/2022: keep open. Short-lived certificate is to be proposed by Timo. Based on this proposal, SCVP response will be adjusted.
P49-3	Provide information on SCVP client	Laurent Leonardon,	March 7, 2022	03/14/2022 – keep open. Rob to check the FAA’s Java implementation availability for industry, Madhu to provide COTS information. Liviu to check EUROCONTROL C# implementation. 06/13/2022 – Closed. Avionics COTS are not available. Ground portion may be available based on information provided by the FAA. May not have new use cases other than SWIM.
P49-4	Identify the planned submittal date of the draft RFC with SCVP stapling extension.	Robert Segers and Patrick Patterson	March 7, 2022	03/14/2022 – keep open. 06/13/2022 – keep open. Presentation to IETF is planned for June 2022. 0927/2022: Closed. Submitted in June.
P49-5	Review IPS CA performance requirements proposed by Timo Warns and check whether the proposed requirements are sufficient to meet the RCPs.	Performance focus group	March 7, 2022	03/14/2022 – keep open. 06/13/2022 – Closed. Review is ongoing.
P49-6	Investigate EST over COAP.	Madhu Niraula and Stephane Pelleschi	March 7, 2022	03/14/2022 – keep open. 06/13/2022 – Closed.
P50-1	Find out who (e.g., ANSP, AOC) is accountable for the end-to-end security of the ATS and AOC data links from the SLA perspective. Coordination with Doc 10090 for guidance	Aloke Roy	June 6, 2022	06/13/2022 – keep open. Waiting for OPLINK feedbacks. 0927/2022: keep open. still waiting.
P50-2	Provide material for WG-I discussion to address: <ul style="list-style-type: none"> ▪ MASPS identifies the need for various PKI CA services (e.g., trust anchor provisioning, certificate provisioning, certificate renewal/rekeying, etc.) to be performed in a “timely manner.” Further discussion in WG-I SSG	Madhu Niraula	June 6, 2022	06/13/2022 – Closed. It is being discussed by WG-I SSG.

	<p>needed to define what that means from a PKI performance perspective.</p> <ul style="list-style-type: none"> ▪ WG-I to consider whether off-system key generation is permissible (per IATF CP). ▪ WG-I to define requirements for certificate validation (i.e., what items need to be checked), and any additional validation steps that may be necessary during certificate provisioning (e.g., pair-wise consistency check). 			
P50-3	Draft a general guidance on security operation (e.g., loss of security) and coordinate with ICAO OPDLWG and DCIWG.	Aloke Roy	June 6, 2022	06/13/2022 – Closed. Papers have been presented at DCIWG and OPDLWG. It is being worked at secretary level.
P50-4	Consider and document the security vulnerabilities of this SCVP approach.	Robert Segers and team	June 6, 2022	06/13/2022 – Keep open. Rob is investigating this. 0927/2022: keep open until SCVP RFC closes.
P50-5	Provide a notional architecture	Robert Segers and team	June 6, 2022	06/13/2022 – Keep open. 0927/2022: Closed.
P50-6	Provide deployment considerations and guidance for SCVP. Should be high level but beyond the what include how and some examples	Patrick Patterson	June 6, 2022	06/13/2022 – Keep open. 0927/2022: keep open.
P50-7	Make the RFC have option to either provide a list of URIs or a trust anchor – need to think through validation of response	Robert Segers and team	June 6, 2022	06/13/2022 – Keep open. 0927/2022: Closed.
P50-8	Bring a working paper to next WG-I meeting at end of March, can be a draft but need something.	Robert Segers and team	June 6, 2022	06/13/2022 – Closed.
P50-9	Begin work on SCVP RFC	Robert Segers, Patrick Patterson and team	June 6, 2022	06/13/2022 – Keep open. 0927/2022: Closed.
P50-10	Bring discussion to next WG-I meeting: Which documents (Doc 9896, Doc10095, MASPS, Profiles) should include SCVP requirements?	Robert Segers and team	June 6, 2022	06/13/2022 – Keep open. 0927/2022: Closed.
P50-11	Contact DCIT/DSG to set up a focus group for performance verification.	Stephane Pelleschi	June 6, 2022	06/13/2022 – Closed.
P50-12	All presenters to update their proposed contributions and provide them to Stephane for incorporation into the draft MASPS	All presenters	June 6, 2022	06/13/2022 – Closed.
P50-13	The group to review and comment on the draft MASPS and Profiles.	The group	June 6, 2022	06/13/2022 – Keep open. 0927/2022: keep open.
P50-14	Provide real values of performance for both CPDLC and ADS-C.	Michel Soléry	June 6, 2022	06/13/2022 – Keep open. 0927/2022: keep open. Target draft is planned for end of October.
P51-1	Double check traceability and linkage from SARPs and Doc9896 to MASPS safety requirements.	Aloke Roy	Sept.19, 2022	0927/2022: Closed. Subject to review.

P51-2	Provide Chapter 5 outline and initial texts by the end of August.	Bela Varkonyi	Sept.19, 2022	0927/2022: Closed. Subject to review.
P51-3	Propose Operational Requirements for Section 3.2.	Stephane Tamalet	Sept.19, 2022	0927/2022: Closed. Subject to review.
P51-4	Check the traceability of the MASPS security requirements to other security standards such as Doc 10095, 10145, TFSG docs, etc.	Timo Warns	Sept.19, 2022	0927/2022: keep open.
P51-5	Provide descriptions of IPS user, service provider, and high-level IPS context diagram.	Aloke Roy	Sept.19, 2022	0927/2022: Done. Closed.
P51-6	Review Section 3.3 to ensure all architecture diagrams in MASPS and Profiles are aligned.	Stephane Tamalet and Stephane Pelleschi	Sept.19, 2022	0927/2022: Paper submitted. Closed.
P51-7	Prepare notional architecture to include C2 link element and ensure consistency with the MASPS regarding C2Link.	Aloke Roy	Sept.19, 2022	0927/2022: Done and Closed.
P51-8	Provide draft guidance regarding IPS performance allocation and sub-allocation.	Ron Dlouhy and Stephane Pruvot	Sept.19, 2022	0927/2022: keep open.
P51-9	Review and comment on Bela's presentation.	Ron Dlouhy and Stephane Pruvot	Sept.19, 2022	0927/2022: Closed.
P51-10	Provide initial GB-LISP profile draft before next meeting.	Bernhard Haindl	Sept.19, 2022	0927/2022: Done and closed.
P51-11	Review profiles of RFC 7030 initiated by Madhu.	Group	Sept.19, 2022	0927/2022: keep open.
P51-12	Check the need for profiling RFC 9148.	Timo Warns	Sept.19, 2022	0927/2022: Timo suggested not to profile. Subject to review. Closed.
P51-13	Review profiles of RFC 9147 initiated by Madhu.	Group	Sept.19, 2022	0927/2022: keep open.
P51-14	Check the need for profiling RFC 9150.	Jonathan Graefe	Sept.19, 2022	0927/2022: keep open.
P51-15	Check the need for profiling RFC 7252.	Timo Warns	Sept.19, 2022	0927/2022: Timo suggested not to profile. Subject to review. Closed.
P51-16	Review deprecated RFCs.	Jonathan Graefe	Sept.19, 2022	0927/2022: Jonathan submitted proposals. Subject to review. Closed.
P51-17	Address comments from previous reviews and finalize the update initiated by Madhu	Group	Sept.19, 2022	0927/2022: keep open.
P51-18	Check the need for profiling RFC 4210.	Daniel Ladron	Sept.19, 2022	0927/2022: keep open.
P51-19	Check the need for profiling RFC 5272.	Laurent Leonardon	Sept.19, 2022	0927/2022: Closed. Not needed.
P51-20	Check the need for profiling RFC 5273.	Laurent Leonardon	Sept.19, 2022	0927/2022: Closed. Not needed.
P51-21	Check the need for profiling RFC 5785.	Daniel Ladron	Sept.19, 2022	0927/2022: keep open.
P51-22	Check the need for profiling SCVP RFCs.	Rob Segers and Patrick Patterson	Sept.19, 2022	0927/2022: Done. Closed.
P51-23	Check the need for profiling RFC 4815.	Jonathan Graefe	Sept.19, 2022	0927/2022: keep open.

P51-24	Check the need for profiling RFC 3095.	Jonathan Graefe	Sept.19, 2022	0927/2022: keep open.
P51-25	Check the need for profiling RFC 8951.	Jonathan Graefe	Sept.19, 2022	0927/2022: keep open.
P52-1	Review MASPS Section 5 proposed by Bela and provide feedbacks in 2 weeks; Bela will update Section by end of October; Stephane Pelleschi will incorporate it to the MASPS in November.	Group	Oct. 26, 2022	
P52-2	Clarify how to revoke the trust between states.	Rob Segers	Oct. 26, 2022	
P52-3	Pull out MASPS requirements that reference Doc 10095 and bring them to the SSG to make sure they are properly addressed.	Mike Olive	Oct. 26, 2022	
P52-4	Specify the requirements for ephemeral key generation and corresponding performance in the MASPS.	Mike Olive	Oct. 26, 2022	
P52-5	Provide texts replacing SCVP stapling with OCSP stapling with trusted responder in MASPS section 3.5.8 to Timo before October.	Rob Segers	Oct. 26, 2022	
P52-6	Write up guidance on the use of short-lived certificate and what to do with expired certificate when the ground trusted responder is not available.	Timo Warns	Oct. 26, 2022	
P52-7	Coordinate with Vic to get FAA-ANSP perspective on who can be a trusted responder.	Aloke Roy	Oct. 26, 2022	
P52-8	Review and revise MASPS Section 3.5.8.4.2 and ARINC858 Section 4.4.1.1.5 Revocation Checks before October 26.	Rob Segers	Oct. 26, 2022	
P52-9	Review the explanatory texts for performance requirements in IPS MASPS before October 26.	Stephane Pelleschi and Stephane Tamalet	Oct. 26, 2022	
P52-10	Clarify the operational context in MASPS Section 3.3.5.1.2 Airspace before October 26.	Aloke Roy	Oct. 26, 2022	
P52-11	Follow the Decision 5 to review and update MASPS requirements before October 26.	Group	Oct. 26, 2022	
P52-12	Update Section 3.3 before October 26.	Aloke Roy, Stephane Pelleschi, Bela Varkonyi and Ron Dlouhy	Oct. 26, 2022	
P52-13	Update Section 5 before October 26.	Aloke Roy, Bela Varkonyi and Dongsong Zeng	Oct. 26, 2022	
P52-14	Update the fail-secure section before October 26.	Brandon Nepute and Timo Warns	Oct. 26, 2022	

-S-
Dongsong Zeng
Secretary

CERTIFIED as a true and accurate summary of the meeting.

- S-

Aloke Roy
SC-223 Chairman

- S-

Stephane Pelleschi
WG-108 Chairman