



To Traffic and Weather Surveillance Subcommittee **Date** January 14, 2020

From P. J. Prisaznuk | Larry Hesterberg **Reference** 20-999/SMA-160 lth
ARINC Industry Activities
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Subject **Meeting Announcement**
Traffic and Weather Surveillance Subcommittee

Chairman **Mohammed Ahmed, Boeing**

Host **L3Harris Technologies**

When **March 17-20, 2020**
Tuesday, Wednesday, Thursday, March 17 to 19, from 0900 to 1700
Friday, March 20 from 0900 to 1200

Note: March 17-18 will be dedicated to Mode S Transponder, TCAS/ACAS, and Integrated Surveillance System (ISS) topics. March 19-20 will be dedicated to Weather Radar topics.

Where **L3Harris Technologies**
960 West Behrend Drive
Phoenix, Arizona 85027
tel: 1-623-445-7000

Note: The meeting rooms are at the northwest corner of the office park. The building is labeled "960". L3Harris ACSS is located at 19810 N 7th Avenue, which shares the same parking lot.

Point of Contact
Rob McCullen
tel: 1-623-445-6607
email: robert.mccullen@l3harris.com
www.l3commercialaviation.com

L3Harris is a secure facility. All participants must provide information necessary for entry in to L3H to Darcey Christians before March 6, 2020 (Darcey.Christians@l3harris.com). Non-US Citizens must also include a copy of their passport. See Attachment 1 to this announcement.

Hotels There are many hotels near L3Harris to meet your budget and comfort needs. A list is provided as Attachment 2 to this meeting announcement.

Instructions Please notify the Industry Activities staff of your intention to attend by registering online at: <https://www.aviation-ia.com/events>.
The meeting is open to all interested parties. Individuals requesting time on the agenda should contact Paul Prisaznuk. The agenda will be finalized one week prior to the meeting.

Activity Scope The Traffic and Weather Surveillance Subcommittee will define traffic surveillance systems capable of ADS-B Out and ADS-B In (Automatic Dependent Surveillance - Broadcast) applications. It will define a second generation Integrated Surveillance System (2G ISS) for future aircraft. It will define a new federated weather radar system with remote RF components and advanced antenna design.

Meeting Objectives **Traffic and Weather Surveillance Meeting in Phoenix**
The AEEC Executive Committee has approved three APIMs (ARINC Proposals to Initiate/Modify ARINC Standards) for future aircraft development activities and for current aircraft retrofit.

Statements of Work

- **APIM 19-007** – Second Generation Integrated Surveillance System (2G ISS)
- **APIM 19-008** – New Airborne Weather Radar with Remote RF
- **APIM 19-009** – Update of Existing TCAS, XPDR, and ISS Standards

The APIMs are reproduced as Attachments 3 through 5 respectively.

Standards to be Produced

- **ARINC Project Paper 768A:** *Second Generation Integrated Surveillance System (2G ISS)*
- **ARINC Project Paper 7xx:** *Airborne Weather Radar System and Aircraft Installation Standards*
- **Supplement 5 to ARINC Specification 718A:** *Mark 4 ATC Transponder (ATCRBS/MODE S)*
- **Supplement 3 to ARINC Specification 735B:** *Traffic Computer TCAS and ADS-B Functionality*
- **Supplement 3 to ARINC Specification 768:** *Integrated Surveillance System (ISS)*

APIM 19-007 – New ARINC Project Paper 768A

Tuesday and Wednesday, March 17-18, will be dedicated to Mode S Transponder, TCAS/ACAS, and Integrated Surveillance System (ISS) topics.

Scope – Prepare ARINC Project Paper 768A: Second Generation Integrated Surveillance System (2G ISS)

- Start from ARINC Characteristic 768, ISS

- Add Distance Measuring Equipment (DME) function
- Remove Weather Radar
- Include latest RTCA MOPS requirements (per Supp 3 to ARINC 768)

The objectives are to support new aircraft designs and yield 50% reduction in size and weight as compared to currently fielded ARINC 768 ISS Processor Units. A mature document is expected to emerge in May 2021.

APIM 19-009 – Update ARINC 718A, ARINC 735B, and ARINC 768

The Traffic Surveillance Subcommittee will prepare three Supplements to existing ARINC Standards as follows:

ARINC Characteristic 718A will be updated to define ATC Transponder and ADS-B Out functions based on the latest RTCA Standards:

- RTCA DO-181F – ATCRBS/Mode S MOPS
- RTCA DO-260C – 1090 MHz ADS-B Out MOPS

ARINC Characteristic 735B will be updated to define TCAS/ACAS-X/ADS-B In functions based on the latest RTCA Standards:

- RTCA DO-260C – 1090 MHz ADS-B Out MOPS
- RTCA DO-361A – Advanced Flight deck based Interval Management (FIM) MOPS
- RTCA DO-385 – Airborne Collision Avoidance System – X (ACAS-X) MOPS

ARINC Characteristic 768 will be updated to define ATC Transponder, ADS-B Out functions, ADS-B functions, and TCAS/ACAS-X functions based on the latest RTCA Standards:

- RTCA DO-181F – ATCRBS/Mode S MOPS
- RTCA DO-260C – 1090 MHz ADS-B Out MOPS
- RTCA DO-361A – Advanced Flight deck based Interval Management (FIM) MOPS
- RTCA DO-385 – Airborne Collision Avoidance System – X (ACAS-X) MOPS

Mature documents are expected to emerge in May 2021.

APIM 19-008 – New ARINC Project Paper 7xx

Thursday and Friday, March 19-20, will be dedicated to Weather Radar topics.

Scope – Prepare ARINC Project Paper 7xx: Airborne Weather Radar System and Aircraft Installation Standards

- Define Weather Processor Unit (WPU)
- Define Weather Radar Antenna Unit (WRAU) - All RF located near antenna
- Define single and dual antenna drive configurations using electronically steerable antenna technologies
- Use ARINC 708A WXR and ARINC 768 ISS definitions

The objectives of a new weather radar equipment standard are to support new aircraft designs, achieve supplier system interchangeability, and provide common installation solutions. A mature document is expected to emerge in May 2021.

Travel Information

L3Harris is located 23 miles North of the Phoenix Sky Harbor International Airport (PHX). Directions to L3Harris are provided below as well as a link that takes you to Google maps so you can get directions from the airport.

From Phoenix Airport to L3Harris

1. Follow signs to Interstate 10 (I-10) West and Downtown for 5 miles
2. Take Interstate 17 (I-17) North for 15 miles
3. Exit 214C Route 101 Loop east (AZ-101) and follow it for 1.5 miles
4. Exit 25, 7th Avenue
5. Turn right on **North 7th Avenue** (Not to be confused with 7th Street)
6. Enter the office park immediately to the right (look for signs for Centuri Construction and ACSS)
7. L3Harris is in the northwest corner of the office park, building labeled “960”
8. Park your car in any uncovered spot not marked ‘Reserved’

L3Harris (ACSS)

960 West Behrend Drive
Phoenix, Arizona 85027

[*Click here for directions*](#)

Attachment 1

L3Harris Visitor Request Form
Send Directly to L3Harris before Friday, March 6, 2020

Darcey Christians at L3H is the point of contact for visitor requests.

Email: Darcey.Christians@L3Harris.com

All participants must submit the following information to Darcey before March 6, 2020:

Name:

Company:

Title:

Citizenship:

(Note Photo ID is required for entry)

In addition, for each individual attending:

Is the parent company foreign owned? Yes or No

If Yes, Is the US entity incorporated in the US to do business?

Is the visitor's company representing another company? Yes or No

If Yes, Is the company they are representing foreign owned?

Non-US Citizens must also submit a copy of their passport to Darcey before March 6, 2020. Those arriving without having provided this information will not be allowed to enter the L3H facility.

Attachment 2

NORTH PHOENIX AREA HOTELS

Courtyard by Marriott Phoenix North - Happy Valley
2029 W Whispering Wind Dr
Phoenix, Arizona 85085
866-925-7881

Drury Inn & Suites Phoenix - Happy Valley
2335 W Pinnacle Peak Rd
Phoenix, Arizona 85027
866-925-7881

Extended Stay America Phoenix - Deer Valley
20827 N 27th Ave
Phoenix, Arizona 85027
866-925-7881

Hampton Inn & Suites Phoenix North - Happy Valley
2550 West Charlotte Drive
Phoenix, Arizona 85085
866-925-7881

Hilton Garden Inn Phoenix North - Happy Valley
1940 W Pinnacle Peak Rd
Phoenix, Arizona 85027
866-925-7881

Holiday Inn Express & Suites Phoenix North - Happy Valley
24655 NORTH 23RD AVENUE
Phoenix, Arizona 85085
866-925-7881

Homewood Suites by Hilton Phoenix North - Happy Valley
2470 West Charlotte Drive
Phoenix, Arizona 85085
866-925-7881

Attachment 3

ARINC Project Initiation/Modification (APIM)

1.0 Name of Proposed Project **APIM 19-007**
ARINC Project Paper 768A: Second Generation Integrated Surveillance System (ISS)

1.1 Name of Originator and/or Organization
Boeing / Jessie Turner

2.0 Subcommittee Assignment and Project Support

2.1 Suggested AEEC Group and Chairman
Systems Architecture and Interfaces (SAI) Subcommittee
SAI Chairmen: Reinhard Andrae and Rich Stillwell
Surveillance Working Group Chairman: Jessie Turner

2.2 Support for the activity
Airlines: American, Delta, FedEx, TAP Portugal, UPS
Airframe Manufacturers: Airbus, Boeing
Suppliers: ACSS, Collins Aerospace (TBC), Gables, Garmin, Honeywell
Others:

2.3 Commitment for Drafting and Meeting Participation
Airlines:
Airframe Manufacturers: Airbus, Boeing
Suppliers: ACSS, Garmin, Honeywell
Others:

2.4 Recommended Coordination with other groups
None

3.0 Project Scope

3.1 Description
This project proposes to create a generational [2nd Generation (2G)] update (ARINC 768A) to the existing ARINC 768 "Integrated Surveillance System (ISS)" characteristic which would support new aircraft designs. It is expected that the ARINC 768A – 2G ISS would result in a >50% reduction in size and weight as compared to currently fielded ARINC 768 ISS Processor Units and a >60% savings in volume and weight (at the aircraft-level). Overall equipment acquisition costs are expected to be reduced and overall reliability is expected to increase.

The Integrated Surveillance System (ISS) represents the integration of standalone aircraft surveillance systems and has resulted in the reduction of the cost, as well as the size, weight, and power (SWaP) requirements, for the suite of the following surveillance functions:

- Air Traffic Control (ATC)/Mode S Transponder
- Automatic Dependent Surveillance – Broadcast Out (ADS-B Out)
- ADS-B In
- Airborne Collision Avoidance System (ACAS-X)
- Terrain Awareness and Warning System (TAWS) with Reactive Wind Shear (RWS)

The initial version of ARINC Characteristic 768: Integrated Surveillance System was developed in 2002-2004, and was first published in October 2005. This characteristic has been successfully used by both Airbus (A380 and A350) and Boeing (787 and 777-8/-9).

In the ~15 years since the first development of the ISS, there have been significant technology advancements in processors and Radio Frequency (RF) components/designs which are expected to result in further reductions in cost and SWaP requirements. Also, with future aircraft designs having a network-based interface design (in lieu of point-to-point ARINC 429/discrete wiring), the equipment can be designed to specifically support network-based interfaces without carrying the overhead of legacy ARINC 429/discrete interfaces. In addition, lessons learned from industry implementations of the ARINC 768 standard can be incorporated into an updated ARINC 768A industry standard.

The Distance Measuring Equipment (DME) function, which currently resides in a standalone ARINC 709 DME Interrogator (along with a dedicated DME antenna), operates in the same L-Band frequency range as the ATC Transponder, TCAS, and ADS-B. The DME function can be included within the 2G ISSPU (and bottom ATC antenna connection) resulting in additional, significant cost and SWaP savings at the aircraft-level.

Lastly, the new ARINC 768A standard should also support a bottom mounted omni-directional antenna (in lieu of a directional antenna). This would provide installation and weight savings, since the omni-directional antenna is smaller/lighter and only requires a single coaxial cable (versus 4 coaxial cables required for a directional antenna).

3.2 Planned usage of the envisioned specification

New aircraft developments planned to use this specification yes no

- Specify: Boeing - new air transport aircraft
- Airbus - new air transport aircraft

Modification/retrofit requirement yes no

Specify:

Identify: ACSS, Collins Aerospace, Honeywell

4.2 Specific project benefits (Describe overall project benefits.)

4.2.1 Benefits for Airlines

- Expected reduced equipment and operating cost (< weight and volume)
- Equipment supplier choices
- Higher reliability (no separate hardware for dual DME installation, and more reliable omni antennas)

4.2.2 Benefits for Airframe Manufacturers

- Common installation(s)/solution(s), less variability
- Equipment volume reduction (reduction in equipment racks, or allows other avionics equipment to be installed without additional equipment racks)

4.2.3 Benefits for Avionics Equipment Suppliers

- Provide equipment that can be installed on multiple aircraft platforms, across multiple aircraft OEMs.

5.0 Documents to be Produced and Date of Expected Result

ARINC Characteristic 768A, "Second Generation Integrated Surveillance System (2G ISS)", May 2021.

5.1 Meetings and Expected Document Completion

The following table identifies the number of meetings and proposed meeting days needed to produce the documents described above.

Activity	Mtgs	Mtg-Days (Total)	Expected Start Date	Expected Completion Date
ARINC 768A – 2G ISS	4 (plus teleconferences)	12	October 2019	March 2021

6.0 Comments

6.1 Expiration Date for the APIM

October 2021

Attachment 4

ARINC Project Initiation/Modification (APIM)

- 1.0 Name of Proposed Project** **APIM 19-008**
New ARINC Project Paper 7XX: Airborne Weather Radar System and Aircraft Installation Standards
- 1.1 Name of Originator and/or Organization**
Boeing / Jessie Turner
- 2.0 Subcommittee Assignment and Project Support**
- 2.1 Suggested AEEC Group and Chairman**
Systems Architecture and Interfaces (SAI) Subcommittee
SAI Chairmen: Reinhard Andreae and Rich Stillwell
Surveillance Working Group Chairman: Mohammed Ahmed, Boeing
- 2.2 Support for the activity**
Airlines: American, Delta, FedEx, TAP Portugal, UPS
Airframe Manufacturers: Airbus, Boeing
Suppliers: Collins (TBC), Garmin, Honeywell (TBC), Gables
Others:
- 2.3 Commitment for Drafting and Meeting Participation**
Airlines:
Airframe Manufacturers: Airbus, Boeing
Suppliers: Garmin
Others:
- 2.4 Recommended Coordination with other groups**
None
- 3.0 Project Scope**
- 3.1 Description**
This project calls for a new Weather Radar ARINC Project Paper 7XX to support new, ARINC 664 network-based, aircraft designs.
- ARINC Characteristic 708A “Airborne Weather Radar with Forward Looking Windshear Detection Capability” was last updated with Supplement 3 in 1999. The ARINC 708A-3 architecture has the WXR antenna and antenna drive under the nose radome, and interconnected, via a waveguide, to a Receiver/Transmitter (that contains the RF front-end and processing) installed in a tray inside the pressure vessel.

In the last 10 years, suppliers have designed and fielded newer WXR system installations that are not compliant with ARINC 708A (or any other standard). In these WXR installations, the RF front end is installed within a Receiver/Transmitter Module (RTM) under the nose radome and is interconnected with a standalone ARINC 600 rack-mounted WXR processor in the EE bay. Also, no separate waveguide installation is required for these newer WXR installations. [Note: This type of newer WXR architecture (with an RTM under the nose radome) is documented in the ARINC 768 Integrated Surveillance System (ISS) characteristic, but ARINC 768 has an ISS Processor Unit in lieu of a standalone WXR Processor in the EE bay].

Although these newer WXR installations provide cost and Size, Weight, and Power (SWaP) benefits over-and-above the ARINC 708A WXR installations, these newer, standalone WXR installations do not follow an industry standard and are not interchangeable between suppliers. Consequently, if one supplier's WXR system needs to be swapped-out to install another supplier's WXR system, extensive aircraft changes are required to be made (e.g. the WXR Processor's ship-side connector, RTM ship-side connector, and wiring between the WXR Processor and RTM need to be changed). This has a significant impact if an airframer or airline wants to switch between WXR equipment suppliers.

For future network-based aircraft, the WXR system installation needs to be standardized so that these extensive aircraft changes are not required. Note that this standard would allow interchangeability at the WXR system level. For example, it is not expected that one supplier's WXR RTM be compatible with another supplier's WXR Processor. The working group should consider an interface definition for accommodating the receipt and transmission of raw weather data.

3.2 Planned usage of the envisioned specification

New aircraft developments planned to use this specification yes no

Specify: Next new Boeing air transport aircraft
Next new Airbus air transport aircraft

Modification/retrofit requirement yes no

Specify:

Needed for airframe manufacturer or airline project yes no

Specify: Next new Boeing air transport aircraft

Mandate/regulatory requirement yes no

Is the activity defining/changing an infrastructure standard? yes no

Specify:

When is the ARINC Standard required? May 2021

What is driving this date? Target design date

Are 18 months (min) available for standardization work? yes no

Are Patent(s) involved? yes no

If YES please describe, identify patent holder:

3.3 Issues to be worked

It is expected that the following specific items will be addressed as part of the WXR standard development (and others as they arise):

- 1) Standardize WXR processor form, fit, function, and interfaces with reduced SWaP compared to ARINC 708A
- 2) Specify the WXR Processor connector size, keying, and pinouts to support:
 - a) ARINC 664 network-based connections (e.g., fiber, and others if required)
 - b) Connections to the RTM (see item 4 below)
- 3) Specify RTM interfaces (not form factor or installation)
- 4) Specify a single Weather Radar Antenna Unit (WRAU) connector that supports connections to the WXR Processor that includes:
 - a) Two uni-directional fiber connections (and others if required)
 - b) Power/Power Return (power to RTM is provided by the Processor)
- 5) Single or dual WXR System installations are supported (e.g. single or dual antenna drives). Installation of a single RTM into a dual drive (with provisions for the 2nd RTM) shall be supported.

4.0 Benefits

4.1 Basic benefits

Operational enhancements? yes no

For equipment standards:

a. Is this a hardware characteristic? yes no

b. Is this a software characteristic? yes no

c. Interchangeable interface definition? yes no

d. Interchangeable function definition? yes no

If not fully interchangeable, please explain: Not applicable

Is this a software interface and protocol standard? yes no

Specify:

Product offered by more than one supplier yes no

Identify: Collins Aerospace, Honeywell

4.2 Specific project benefits (Describe overall project benefits.)

4.2.1 Benefits for Airlines

- Supplier system interchangeability

4.2.2 Benefits for Airframe Manufacturers

- Common installation(s)/solution(s), less variability
- Supplier system interchangeability

4.2.3 Benefits for Avionics Equipment Suppliers

- Provide equipment that can be installed on multiple aircraft platforms, across multiple aircraft OEMs.

5.0 Documents to be Produced and Date of Expected Result

ARINC Characteristic 7XX, Airborne Weather Radar System and Aircraft Installation Standards, May 2021.

5.1 Meetings and Expected Document Completion

The following table identifies the number of meetings and proposed meeting days needed to produce the documents described above.

Activity	Mtgs	Mtg-Days (Total)	Expected Start Date	Expected Completion Date
<i>ARINC 7XX - WXR</i>	4 (plus teleconferences)	12	October 2019	March 2021

6.0 Comments

6.1 Expiration Date for the APIM

October 2021

Completed forms should be submitted to the AEEC Executive Secretary & Program Director, Paul Prisaznik (pjp@sae-itc.org).

Attachment 5

ARINC Project Initiation/Modification (APIM)

1.0 Name of Proposed Project APIM 19-009

Updates to ATC Transponder, Traffic Computer, and ISS Characteristics
(ARINC 718A, ARINC 735B, ARINC 768)

1.1 Name of Originator and/or Organization

Boeing / Jessie Turner

2.0 Subcommittee Assignment and Project Support

2.1 Suggested AEEC Group and Chairman

Systems Architecture and Interfaces (SAI) Subcommittee
SAI Chairmen: Reinhard Andreae and Rich Stillwell
Surveillance Working Group Chairman: Mohammed Ahmed, Boeing

2.2 Support for the activity

Airlines: American, Delta, FedEx, TAP Portugal, UPS
Airframe Manufacturers: Airbus, Boeing
Suppliers: ACSS, Collins (TBC), Garmin, Honeywell
Others:

2.3 Commitment for Drafting and Meeting Participation

Airlines:
Airframe Manufacturers: Airbus, Boeing
Suppliers: ACSS, Garmin, Honeywell
Others:

2.4 Recommended Coordination with other groups

None

3.0 Project Scope

3.1 Description

ATC Transponder/ADS-B Out Functions

This project proposes to update the following ARINC Characteristics based on changes being incorporated into RTCA DO-181F - ATCRBS/Mode S Minimum Operational Performance Standards (MOPS) and RTCA DO-260C - 1090 MHz ADS-B Out MOPS [both ECD Dec. 2019]:

- Prepare Supplement 5 to ARINC 718A: MARK 4 ATC TRANSPONDER (ATCRBS/MODE S)
- Prepare Supplement 3 to ARINC 768: INTEGRATED SURVEILLANCE

SYSTEM (ISS)

TCAS/ACAS-X/ADS-B In Functions

This project also proposes to update the following ARINC Characteristics based on newly released RTCA DO-385 - Airborne Collision Avoidance System – X MOPS (dated Oct. 2, 2018) and changes being incorporated into RTCA DO-361A - Advanced Flight deck based Interval Management (FIM) MOPS and RTCA DO-260C - 1090 MHz ADS-B Out MOPS [both ECD Dec. 2019]:

- Prepare Supplement 3 to ARINC 735B: TRAFFIC COMPUTER, TCAS AND ADS-B FUNCTIONALITY
- Prepare Supplement 3 to ARINC 768: INTEGRATED SURVEILLANCE SYSTEM (ISS)

3.2 Planned usage of the envisioned specification

New aircraft developments planned to use this specification yes no

Specify:

Modification/retrofit requirement yes no

Specify: ADS-B In & ACAS-X changes

Needed for airframe manufacturer or airline project yes no

Specify: Supports future ADS-B In/ACAS-X projects

Mandate/regulatory requirement yes no

Is the activity defining/changing an infrastructure standard? yes no

Specify:

When is the ARINC Standard required? May 2021

What is driving this date? Target design date

Are 18 months (min) available for standardization work? yes no

Are Patent(s) involved? yes no

If YES please describe, identify patent holder:

3.3 Issues to be worked

ATC Transponder/ADS-B Out Functions

Update ARINC 718A and ARINC 768 to reflect changes necessary due to changes to the ATC/Mode S Transponder MOPS (RTCA DO-181F) and the 1090MHz ADS-B Out MOPS (RTCA DO-260C).

TCAS/ACAS-X/ADS-B In Functions

Update ARINC 735B and ARINC 768 to reflect changes necessary due to the new ACAS-X MOPS (RTCA DO-385) and changes being incorporated into the Advanced FIM MOPS (RTCA DO-361A).

Potential changes include (but are not limited to): descriptions of functions supported, input/output pin definitions, and ARINC 429 label/bit definitions.

4.0 Benefits

4.1 Basic benefits

Operational enhancements? ADS-B In yes no

For equipment standards:

a. Is this a hardware characteristic? yes no

b. Is this a software characteristic? yes no

c. Interchangeable interface definition? yes no

d. Interchangeable function definition? yes no

If not fully interchangeable, please explain: Not applicable

Is this a software interface and protocol standard? yes no

Specify:

Product offered by more than one supplier yes no

Identify: ACSS, Collins Aerospace, Honeywell

4.2 Specific project benefits (Describe overall project benefits.)

4.2.1 Benefits for Airlines

- Supports future ADS-B In/Collision Avoidance capabilities
- Equipment supplier choices with common interfaces

4.2.2 Benefits for Airframe Manufacturers

- Supports future ADS-B In/Collision Avoidance capabilities
- Common installation(s)/solution(s), less variability

4.2.3 Benefits for Avionics Equipment Suppliers

- Supports future ADS-B In/Collision Avoidance capabilities
- Provide equipment that can be installed on multiple aircraft platforms, across multiple aircraft OEMs.

5.0 Documents to be Produced and Date of Expected Result

- Supplement 5 to ARINC 718A: MARK 4 ATC TRANSPONDER (ATCRBS/MODE S), May 2021
- Supplement 3 to ARINC 735B: TRAFFIC COMPUTER - TCAS AND ADS-B FUNCTIONALITY, May 2021
- Supplement 3 to ARINC 768: INTEGRATED SURVEILLANCE SYSTEM (ISS), May 2021

5.1 Meetings and Expected Document Completion

The following table identifies the number of meetings and proposed meeting days needed to produce the documents described above.

Activity	Mtgs	Mtg-Days (Total)	Expected Start Date	Expected Completion Date
Supplement 5 to ARINC 718A XPDR	4 (plus teleconferences)	12	Oct 2019	Mar 2021
Supplement 3 to ARINC 735B ADS-B				
Supplement 3 to ARINC 768 ISS				

6.0 Comments

6.1 Expiration Date for the APIM

October 2021