

TERMS OF REFERENCE
Special Committee (SC) 186
Automatic Dependent Surveillance Broadcast (ADS-B)
Revision 24

REQUESTORS:

Organization	Person
Federal Aviation Administration	Steve Zaidman

SC LEADERSHIP:

Position	Name	Affiliation	Telephone	email	Change
Chairman	Rocky Stone	United Airlines	303-780-3949	Rocky.stone@united.com	Corrected phone number
Chairman	Jessie Turner	The Boeing Company	425-234-9624	Jessie.turner@boeing.com	
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BACKGROUND:

There are a number of potential benefits that FAA customers (e.g., airlines and the flying public) and service providers (e.g., air traffic controllers) can realize with the use of ADS-B technology and associated applications. Over 70 ADS-B operational capabilities have been identified that could provide benefit if implemented and provided as a tool for flying public use. These benefits include enhanced safety, increased aviation efficiency and the potential to increase the capacity of all air and ground space used by the aviation industry. To satisfy the need for providing the ADS-B capabilities, SC-186 has been established to recommend industry standards for ADS-B applications that can be made available to governments, industry and other organizations. Version update releases are planned to support the phased operational implementation of ADS-B applications.

The activities of Special Committee 186 are directly traceable to the NextGen Operational Concept.

DELIVERABLES:

Product	Description	Due Date	Change
Advanced Flight-deck Interval Management (FIM) SPR, Interop, DO-328 Rev B	Additional revision to FIM OSED and SPR, Interop (DO-328) based on changes to OSED to support final scope of Advanced FIM MOPS.	Dec 2019	Delete note 1
Advanced Flight-deck Interval Management (FIM) MOPS, DO-361 Rev A	Application MOPS that will be developed with follow-on capabilities to the initial FIM MOPS (DO-361).	February 2020	Dec 2019 Delete note 1
ASA MOPS, DO-317 Rev C	Review/add CAVS requirements to account for smaller minimum alerting distances; changes to Traffic prioritization to support FIM; update Appendix H (surface link mitigation service status); document rationale for using existing HFOM metrics for surface applications; update to TCAS bearing validation; correct CAVS test scenario/vector errors; develop and update the ADS-B velocity error model and ATAS (formerly TSAA) test vectors, as appropriate; add additional ATAS Test Scenarios based on ADS-B data mining for ATAS Helicopter Scenarios, and the diverging scenarios suggested by industry.	May 2020	Delete note 1
Advanced Flight-deck Interval Management (FIM) MOPS, DO-361 Rev A, Change 1	Add Appendix G [Test Description and Data] and make updates in response to changes occurring with updates to DO-260C, DO-181F, and DO-317C	August 2020	New

Product	Description	Due Date	Change
1090 MHz ADS-B MOPS, DO-260C	Review/correction of issues that have been identified since the publishing of 1090 MHz ADS-B MOPS (DO-260B). Implement revisions and implement additional information required by Advanced FIM. Make other improvements including support of ACAS X, providing additional weather information, as well as accommodating UAS and commercial space vehicles.	August 2020	Delete note 1
UAT ADS-B MOPS, DO-282C	Update to align with changes in DO-260C. Review/correction of issues that have been identified since the publishing of UAT ADS-B MOPS (DO-282B)	August 2021	

SCOPE:

Special Committee 186 (SC-186) shall codify operational requirements based upon the airborne and ground user needs for an Automatic Dependent Surveillance-Broadcast (ADS-B) system. The development activities of SC-186 shall consider the relevant work of other bodies, including ICAO Panels, FAA/CAAs, EUROCAE, AEEC, SAE, and other RTCA Special Committees. The Special Committee should coordinate with these bodies, including the EUROCAE and ICAO representatives.

ENVISIONED USE OF DELIVERABLE(S):

MOPS published by SC-186 are intended to be used by the FAA and other civil aviation authorities (CAAs) as an acceptable means of certifying ADS-B equipment for civil aircraft. Additional documents from SC-186 may form the basis of advisory material for certification authorities and may inform the operational approval process and safety risk management directives for the FAA and other CAAs.

Specifically, the deliverables above are intended for the following purposes:

ADS-B MOPS: provides equipment specifications for the ADS-B link on 1090MHz (1090ES) and 978 MHz (UAT). This is intended to result in a TSO for manufacturers of this equipment. Version 3 ADS-B (DO-260C and DO-282C) systems will be compatible with Version 2 ADS-B (DO-260B and DO-282B), which serves as the minimum avionics standards for the U.S. ADS-B Out rule.

FIM MOPS: provides equipment specifications for the Interval Management set of ADS-B-In applications. This is intended to result in a TSO for manufacturers of this equipment.

FIM SPR: provides the revised Operational Services and Environment Definition (OSED) for the FIM application. Will also update accordingly the DO-328 safety and performance analysis and derived requirements. This will be used to develop and justify the MOPS-level requirements for the FIM MOPS which will be tightly coupled to the ASA System MOPS (DO-317C).

ASA MOPS: provides equipment specifications for ADS-B In applications. The revisions in DO-317C include the following: update/add CAVS requirements to account for smaller minimum alerting distances; changes in Traffic prioritization algorithms to support FIM; updates to Appendix H to reflect the FAA's new Same-Link Rebroadcast (SLR) service; rationale for using existing HFOM metrics for surface applications; update to TCAS bearing validation to exclude cross-check at ranges less than 1 NM; updates to CAVS test scenarios and test vectors to address errors; and, potential changes to ADS-B Traffic Advisory System (ATAS), which was formerly known as TSAA, test vectors [pending updates to the ADS-B velocity error model, the ADS-B data mining for ATAS Helicopter Scenarios, and the diverging scenarios suggested by industry].

SPECIFIC GUIDANCE:

The committee should:

1. Harmonize operational concepts and perform high-level safety, performance and interoperability performance analysis for well-defined aircraft surveillance (AS) and ground surveillance (GS) applications brought to the committees from key stakeholders, other user groups, and sponsor programs, such as FAA/SBS and Eurocontrol/CASCADE.

The efforts will be based on previous work done within RTCA and in Europe. The work products of these efforts will be documents addressing the entire set of applications that include the following:

- Operational Services and Environment Definition (OSED),
 - Safety and Performance Requirements,
 - Interoperability Requirements.
2. Working jointly with EUROCAE WG-51, update and maintain, as required, Minimum Operational Performance Standards (MOPS) for an ADS-B system operating on 1090 MHz frequency (RTCA Document No. RTCA/DO-260[]). DO-260B is a basis for the U.S. ADS-B Out rule (14 CFR 91.225 and 14 CFR 91.227), so any subsequent versions of DO-260[] must be compatible with the broadcast requirements in DO-260B.

3. Update and maintain, as required, Universal Access Transceiver (UAT) ADS-B MOPS (RTCA Document No. RTCA/DO-282[]). DO-282B is a basis for the U.S. ADS-B Out rule (14 CFR 91.225 and 14 CFR 91.227), so any subsequent versions of DO-282[] must be compatible with the broadcast requirements in DO-282B
4. Develop and maintain, jointly with EUROCAE WG-51 MOPS for Aircraft Surveillance Application (ASA) System, RTCA DO-317[]. *Note that SC-186 is tasked only with developing standards related to the traffic display. SC-186 is not authorized to make any changes to DO-185[] (TCAS MOPS) or DO-385[] (ACAS-X MOPS). Any changes that are determined to be required to DO-185[] or DO-385[] shall be coordinated through the RTCA Program Management Committee.*
5. Develop and maintain, jointly with EUROCAE WG-51, SPR and MOPS for Flight-deck Interval Management (FIM). These MOPS will provide all system-level requirements for the FIM application, including display requirements and algorithm performance and be tightly aligned with the ASA System platform as specified in DO-317[]. Revisions are anticipated to accommodate future growth of IM capabilities.
6. Coordinate with SC-147 and EUROCAE WG-75 for all issues pertaining to the use of ADS-B as a potential surveillance source with the ACAS X_A system, and for how ACAS X_O will be integrated with ASA System applications.
7. Coordinate with SC-214 and EUROCAE WG-78 to ensure that CPDLC messages and functions meet the needs of operational concepts requiring ASA System applications and Air Traffic Data Communications services.
8. Coordinate with SC-227 to ensure proper requirement allocation, as needed, to support navigation system integration with ASA System applications, such as FIM.
9. Coordinate closely with other government and industry groups, as appropriate, e.g., EUROCAE, ICAO, as well as with other RTCA special committees and working groups including, for example, SC-159, SC-206, SC-209, SC-217, and SC-228.

TERMINATION:

Activities of Special Committee SC-186 will terminate with approval by the Program Management Committee (PMC) of the committee's final document.

ACRONYMS:

ACAS X	Airborne Collision Avoidance System for Next Gen
ASA	Aircraft Surveillance Applications
ATAS	ADS-B Traffic Advisory System
CAVS	CDTI-Assisted Visual Separation
CDTI	Cockpit Display of Traffic Information
CPDLC	Controller-Pilot Data Link Communications
FIM	Flight-deck- Interval Management
IM	Interval Management
MOPS	Minimum Operational Performance Standards
OSED	Operational Services and Environmental Definition
SPR	Safety and Performance Requirements
TSAA	Traffic Situation Awareness with Alerts
TSO	Technical Standard Order
UAT	Universal Access Transceiver