Aeronautical Information and Meteorological Data Link Services

RTCA's Program Management Committee (PMC) held its fall meeting approving four critical guidance documents addressing aircraft collision avoidance, DataComm and advanced vision technologies that assist pilots.

The standards approved cover the following areas:

- Performance standards for new Airborne Collision Avoidance System (ACAS), designed to improve air safety as a method of preventing mid-air collisions or near mid-air collisions. This new Minimum Operational Performance Standards (MOPS) for Airborne Collision Avoidance System X (ACAS X) (ACAS X, and ACAS X(J) standard goes beyond the current system and
SC-216, Aeronautical Systems Security, was established June 26, 2007, completing its work with the publication of five documents by June 2018. The Committee was formed to develop airworthiness security methods and considerations, and was most recently tasked to harmonize specific topics within DO-356, *Airworthiness Security Methods and Considerations* and EUROCAE ED-203 with Working Group (WG) 72. The goal of the Committee is to help ensure safe, secure and efficient operations amid the growing use of highly integrated electronic systems, and network technologies used on-board aircraft for Communication, Navigation and Surveillance/Air Traffic Management (CNS/ATM) systems, and air carrier operations and maintenance.

“The Committee as a whole put in a lot of hours to achieve these documents, to create them, review them and integrate comments,” said Committee Chair David Pierce. “There was a lot of discussion, sometimes vociferous discussion, and it was good to have everyone involved. We have provided guidance where there was no clear guidance before, and we have made it easier for the industry to achieve compliance and for regulators to assess whether compliance has been achieved.”

Both Pierce and Committee Secretary, Siobvan Nyikos expressed heartfelt thanks to RTCA Program Director Karan Hofmann, and their fellow committee members at large.

Both also expressed appreciation for EUROCAE’s collaboration with RTCA. “I would like to acknowledge Michel Messerschmidt from WG-72 and Airbus, for his outstanding work as the DO-356A/ED-203A editor,” said Nyikos. “Without his hard work and leadership, this document would not have been published.”

Pierce said moving forward, members will be watching what the industry is doing concerning systems security, and will also continue to observe what related committees are doing.
is designed for some of the reduced separation and traffic flows (including conventional aircraft and unmanned aircraft systems) envisioned by the FAA’s NextGen and European SESAR initiatives.


- Performance improvements in standards for the Data Communications (Data Comm) program that provides a direct link between ground automation and flight deck avionics for safety-of-flight clearances, instructions, traffic flow management, flight crew requests and reports. These new improvements allow messages to be transmitted without establishing a link first – all ground stations that receive the message transmit towards destination.

- Minimum Operational Performance Standards (MOPS), for Aircraft Very High Frequency (VHF) Digital Link (VDL) Mode 2 Physical Link and Network Layer – defines processes and test procedures for Air/Ground (A/G) data communications systems for voice and text.

- Communications Minimum Aviation Systems Performance Standard (MASPS), Signal-in-Space for MASAP Advanced VHF Digital Data Communications Including Compatibility with Digital Voice Technique – defines requirements for principles of operation of digital data communication systems with the current analog voice system and proposed future VDL systems that will include two different modes of operation – one for carrier sense multiple access for data and one for simultaneous voice and data capability.

Chaired by Chris Hegarty, of The MITRE Corporation, the PMC is the RTCA oversight body charged with producing timely and robust standards and guidance documents to ensure interoperability of aviation systems and equipment. The standards encourage innovation and serve as the basis for meeting FAA regulations. An important responsibility of the PMC is ensuring the operational application of the technical standards.

The Committee reviewed workplans for the 18 Special Committees (SC), and approved leadership changes for two committees:

- New Government Authorized Representative for SC-222 - Aeronautical Mobile-Satellite (R) Service
- New Chairman for SC-236 - Standards for Wireless Avionics Intra-Communication System (WAIC) within 4300-4400 MHz

Details from the PMC Meeting are contained in a letter from Chris Hegarty to FAA Associate Administrator for Aviation Safety, Ali Bahrami. ■
Steve Brown

Steve Brown, Chairman, is chief operating officer for National Business Aviation Association (NBAA). He has a thirty-five year history volunteering with RTCA, including a past term as Chairman of the Board. He appreciates the collaborative atmosphere of the organization, saying “We share core values in the aviation industry. While competition is good for consumers and the industry, none of us compete when it comes to safety. We have a strong safety record and we’re always trying to improve on it. So while we may be competing for the best onboard entertainment system, seat design or fuel efficiency, when it comes to the safety of the flight, it’s not a competition. Safety is our foundation, and we all acknowledge this as our shared goal.”

Brown identifies the biggest challenge facing RTCA as continued growth, saying “We’ve grown domestically, but the focus is now toward more international growth. There’s a real need for technical standards to be global in nature and be uniformed in order to be more efficient and more valuable as we adopt them internationally. RTCA for decades, has been known for its exemplary record of bringing together subject matter experts across the industry and it’s in our interests to expand and grow it globally.”

Todd Zarfos

Todd Zarfos is vice president for Engineering Functions and senior chief engineer of Airplane Systems within The Boeing Company, and has been involved with RTCA his entire thirty-three year career. He says he sees the two greatest challenges facing RTCA as maintaining a strong and productive relationship with the FAA and continuing RTCA’s role as a leader in producing quality aviation standards in an environment where companies are facing increasing financial challenges in supporting industry activities.

Of RTCA’s role, Zarfos says, “RTCA is recognized as an industry leader in serving as an honest broker in the development of important aviation standards. RTCA has directly contributed to the growth and maintenance of the United States as being the worldwide leader in aviation.”

Steve Timm

Steve Timm, Vice Chair has an impressive claim to being born into the industry, given that his great-great uncle was Charles Lindbergh’s flight instructor in California, in the 1930’s. Timm became a member of RTCA’s Policy Board eight years ago, as Rockwell Collins’s representative. At Rockwell Collins, he works in their business unit as well as designing components of the flight deck. Timm believes the greatest challenge facing RTCA is working with a more complex airspace with dense congestion, saying “What used to be an open sky is more technical and complex, and we need to stay ahead on safety and performance. The changing airspace requires the same level of performance when it comes to our safety record.”

Timm says, “People don’t realize how well individuals in this industry work together, and they don’t have to know, as long as RTCA is out there keeping us safe. I would say the most impressive thing is the collaborative environment they created, and the level of expertise and collaboration. You’ll see competitors in the industry and competing aerospace experts leaving their badges at the door and working on behalf of the industry and performance standards. We do this because it’s important, and competitors do the work together phenomenally.”
Carl Esposito

Carl Esposito fell in love with aviation in college, while reading his roommate’s Aviation Week & Space Technology magazine. He says he ultimately tailored his degree specialization into radio/RF engineering as a result. Esposito is the President of the Electronic Solutions Strategic Business Unit at Honeywell Aerospace, where he has worked for thirty years. He serves on the FAA’s Next Generation Advisory Council, is on the Board of Governors for the Flight Safety Foundation and is a member of GAMA.

“RTCA is evolving – as it migrates to a standards organization, it will need to be flexible and agile, to ensure it stays ahead of the rapidly evolving aerospace technologies. New products like urban mobility, air taxis, autonomous systems and the associated equipment, systems and operational environments will be exciting but also push the organization to move very quickly,” said Esposito.

Sharon Pinkerton

Sharon Pinkerton SVP of Legislative and Regulatory Policy at Airlines for America (A4A) since 2011, leads policy development on legislative and regulatory matters. She has also served as assistant administrator for aviation policy, planning and environment at the FAA, and as transportation counsel to House Aviation Subcommittee Chairman John L. Mica (R-Fla.) which, she says, put her in a good position to understand RTCA’s mission and work. She says she appreciates how RTCA has established itself as a highly valuable asset for the aviation community, saying “RTCA’s history and reputation for integrity and knowledge make it an indispensable go-to organization for aviation professionals.”

The biggest challenges facing RTCA, says Pinkerton, is new focus on being a standards organization, and educating members about the best way to participate in RTCA’s work. She echoes Chairman Brown when she says RTCA should also work on marketing its work globally.

Melissa Rudinger

Melissa Rudinger, Treasurer, joined an aviation explorer post during high school, having no idea she would someday work her way up to becoming Vice President of governmental affairs for Aircraft Owners and Pilots Association (AOPA). Rudinger flew at that early age, advancing to becoming a flight instructor, when fate intervened. The flight school she was working for went under and Rudinger was able to find a way to turn that tragedy into an even greater aviation career. Rudinger started at AOPA in 1991, and discovered an aptitude for governmental affairs work, moving all the way up to the position of vice president of governmental affairs. Rudinger acknowledges AOPA has worked hand-in-hand with RTCA since the beginning, and she herself has been involved for years, working first on a special use air space committee, then a working group on free flight, which evolved into NextGen.

Of RTCA’s challenges moving forward, Rudinger says, “We’re positioned as an industry leader and we need to continue to grow RTCA’s role as a standard setting organization. We’re well positioned to do that. We need to deal effectively with modernizing our system, which is in constant evolution.”
Airborne Weather Detection Systems

DO-220A Change 1, Minimum Operational Performance Standards (MOPS) For Airborne Weather Radar Systems

Issued 08-17-2018 | Prepared by SC-230

This document contains Minimum Operational Performance Standards (MOPS) for Airborne Radar Systems that may include any combination of the following functions: weather detection, ground mapping, forward-looking windshear detection, forward-looking turbulence detection, or atmospheric threat awareness capability.

Since the last revision to DO-220, there have been many technological advances in the field of airborne weather radar. DO-220A incorporates updates and corrections to the previous version. In addition to modernizing the requirements and test procedures for the weather, ground mapping, and predictive windshear functions set out in its predecessors, specifications for radar detection of turbulence and atmospheric threat awareness were added. Any of these functions may be implemented individually or in combination with any others. DO-220A has been designed so that the requirements and test procedures for each function are grouped into distinct sections to facilitate testing and the showing of compliance.

These standards specify system characteristics that should be useful to designers, manufacturers, installers, and users of the equipment.

DO-220A Change 1 Reference Supplement

Issued 08-17-2018 | Prepared by SC-230

This Reference Supplement includes the following items referenced in DO-220A Change 1:

- NASA Windshear Database Models, NASA Langley Research Center
- ADWRS, Airborne Doppler Weather Radar Simulation program, NASA Langley Research Center. (Note: NASA developed the initial version of ADWRS in FORTRAN. They continue to refine and develop this simulation, including versions in other computer languages. Submit any requests for this software in computer languages other than FORTRAN directly to NASA. NASA will provide source code in the requested computer language if it has already been developed and is available for release. Contact NASA directly at Software Release Authority, NASA Langley Research Center, Hampton, VA 23681-2199)
- NASA Turbulence Event Scenarios, NASA Langley Research Center


Issued 09-20-2018 | Prepared by SC-213

This document provides the minimum operational, safety, and performance requirements (SPR) and interoperability requirements by which takeoff operations using an Enhanced Flight Vision System (EFVS) can be safely conducted in natural visibilities lower than currently authorized. These takeoff minima and associated SPRs are established for the use of EFVS, treated as subsystems, which together with other subsystems including navigational aids and airport lighting and markings, meet the operational goal/intended function and achieve the levels of reliability, availability, and integrity consistent with other systems and subsystems used for the similar intended function and phase of flight. In this document, recommendations for EFVS takeoff minima are defined with various associated aircraft equipage,
operational and interoperability requirements, and airport infrastructure. The visibility minima are defined in terms of natural visibility since, in the event of a failure or failures, the PF uses a combination of the remaining functional elements, other aircraft subsystems, and available out-the-window natural vision cues (e.g., lights and/or markings of the runway) to mitigate the failure effects and conduct a safe, successful takeoff or rejected takeoff.

Standards for Air Traffic Data Communication Services

DO-281C, Minimum Operational Performance Standards (MOPS) for Aircraft VDL Mode 2 Physical Link and Network Layer
Issued 09-20-2018 | Prepared by SC-214

The material in this document highlights the minimum procedures for the physical link and network layer of the VDL Mode 2 subnetwork.

The test procedures used in this document have been coordinated with EUROCAE Working Group (WG) 92 during the preparation of EUROCAE Document ED-92C. Appendix E provides a differences table between RTCA DO-281C and EUROCAE ED-92C.

This document includes four other appendices. Appendix B should be considered a normative appendix.

DO-224D, Signal-In-Space Minimum Aviation System Performance Standards (MASPS) for Advanced VHF Digital Data Communications Including Compatibility with Digital Voice Techniques
Issued 09-20-2018 | Prepared by SC-214

The purpose of this document is to define Minimum Aviation System Performance Standards (MASPS) for the signal-in-space characteristics for advanced Very High Frequency (VHF) digital data communications, including compatibility with digital voice techniques.

The MASPS document is divided into three sections; an introduction, aviation user requirements, and technical characteristics.

The introductory section provides VHF communications system characteristics including aeronautical VHF communications frequencies utilized and its implications to spectrum congestion.

The aviation user requirements section identifies the users of the systems and specific aircraft characteristics.

The technical characteristics section describes the new system. Two modes of operation are defined: VDL Mode 2 and VDL Mode 3.

Traffic Alert & Collision Avoidance System (TCAS)

DO-385 Volume I and II, Minimum Operational Performance Standards (MOPS) for Airborne Collision Avoidance System X (ACAS X) ACAS Xa and ACAS Xo) (AVAILABLE IN EARLY OCTOBER)
Issued 09-20-2018 | Prepared by SC-147

The ACAS X MOPS: Specifies minimum requirements for a collision avoidance system including surveillance, tracking and threat resolution functionalities. These MOPS specify the optimized logic methodologies used by the collision avoidance logic and its performance, as well as providing testing of all requirements.

DO-385 Supplements (AVAILABLE IN EARLY OCTOBER)
Issued 09-20-2018 | Prepared by SC-147

Look-up Tables and Test Suite files. Part of the Final Review and Comment (FRAC) process and required to implement ACAS X and validate that implementation.

FAA Program Office Documents used as justification for final performance of ACAS X system and tools implementers may want to use in their development. These materials are not required to decipher the MOPS or implement the system and were not part of the FRAC/Open Consultation (OC) process.
STAFF SPOTLIGHT: BRENDA STEPNEY

RTCA’s newest staff member is the first person you encounter when you call or visit the office: new Office Administrator Brenda Stepney, who welcomes visitors, directs callers to the appropriate personnel in the organization and assists with meetings and events.

A self-described “people person,” Stepney says she is loving her experience at RTCA thus far, because of her co-workers, and the members and volunteers she has met. “I like interacting with the public, which has been a major part of each professional position I’ve had,” she said. “At RTCA, I really enjoy meeting the members of the Committees and Working Groups.”

Since joining RTCA in April, Stepney says she has learned a lot. Prior to coming to RTCA, her only experience with aviation was taking the opportunity to fly everywhere she could, but now, she is learning a great deal about what goes into the safety of our airspace, and about how each individual and organization contributes to the mission.

“It has been a great blessing to work with people who really care about the progress of RTCA,” said Stepney. “Here, members mean everything.”

Brenda brings a history of administration and organization to this position and says her past positions as an Administrative Assistant has prepared her well for her role with RTCA.

When Brenda is not at RTCA, she is busy working as the Pastor of her church in Maryland, spending her weekends in service to her community and giving pastoral care at Calvert County Hospital. Family is very important to her, as she is the mother of three sons and grandmother of seven grandchildren, all ranging in age from elementary to college. She loves spending quality time with them and enjoying food and family at home.

“Brenda has been a wonderful addition to RTCA,” said Leila Green, Vice President, Business Operations. “We appreciate her welcoming presence, her organizational skills and her willingness to assist wherever she can. We’re glad she's a part of our close-knit team.”

HAPPY RETIREMENT!

RTCA would like to congratulate PMC members, Chris Benich and Rick Heinrich on their retirements. Their contributions have been invaluable to RTCA and the aerospace industry. We wish you all the best in your new chapters!
RTCA WELCOMES NEW MEMBERS

Bye Aerospace
Englewood, Colorado USA
Tina Affield

Bye Aerospace is applying innovative solar-electric configuration, structural, propulsion and mechanical systems along with aerodynamic advances to design, build and market aerospace products that will offer significant increases in performance to aerospace markets. One such project includes a solar-electric Unmanned Aircraft Vehicle (UAV) designed to provide a significant enhancement in range and loiter time relative to current UAV designs.

Bye Aerospace engineers provide consulting services to the aerospace industry with a full spectrum of engineering services ranging from conceptual development, preliminary design, prototype aircraft to optimizing technical processes, materials qualification and complex structural analysis.

Embention
Alicante, SPAIN
David Benavente

Embention develops components and critical systems for UAS (Unmanned Aircraft Systems), also known as Remotely Piloted Aircraft Systems (RPAS), and commonly called Drones.

Founded in 2007 and based in Alicante (Spain), Embention started its activity focused in the development of an autonomously guided firefighting bomb, Flamingo. This technology has been applied to the development of equipment for unmanned aircrafts, and complete UAV / RPAS, being successfully installed in multiple projects. After winning several awards for innovation, Embention has become one of the references in the Unmanned Aircraft industry.

Kitty Hawk
Mountain View, California USA
Nate Fisher

Kitty Hawk is an American aircraft manufacturer producing electric aircraft called Kitty Hawk Flyer. The Flyer is a prototype personal aircraft, kept aloft by eight battery-powered propellers. The vehicle was widely publicized and is still under active development.

The production Flyer was revealed on June 6, 2018: it does not need a pilot license as it is built under US FAR Part 103 ultralight regulations.

Renmark Pacific Corporation
Torrance, California USA
Duncan Ferguson

Renmark Pacific Corporation specializes in the design, manufacture, installation, and service of material handling systems used by the air cargo industry worldwide such as unit loading devices (ULD), ground system equipment (GSE), cargo conveyors, cargo scales, transfer systems, etc...

Renmark has extensive experience and expertise in the design of air cargo facilities and integrated systems. Their customers include major airlines, freight handlers, forwarders and expeditters.

Truweather Solutions
Reston, Virginia USA
Nathan Green

TruWeather Solutions is a micro-weather analytics and technology company, providing custom weather impacts to the aviation, logistics and emergency management industries. They empower clients by reducing micro-weather uncertainty through the collection, fusion and translation of diverse weather data sets into simple insights and actionable decisions, with a focus on the emerging weather vulnerable Unmanned Autonomous Systems industry.

The company’s weather business system utilizes a team of technology and operations experts to analyze weather and water data and develop locally specific, real-time technology systems that assist customers in decision making as it relates to weather and water sensitive events and redesign old processes blended with the creation of new for weather sensitive businesses, enabling customers to get weather related data, reduce their cost and increase profit.

Tier 1 Engineering
Santa Ana, California USA
Glen Dromgoole

Tier 1 Engineering is a provider of engineering services, specializing in lightweight composite structures. They offer engineering design and build services to the Aerospace, Energy, Marine, Medical, and Consumer Product sectors. They handle all projects in a secure environment to protect client privacy and follow AS9100-compliant quality practices.
TRAFFIC ALERT & COLLISION AVOIDANCE SYSTEM (TCAS)

SC-147 met jointly with EUROCAE Working Group (WG)-75 in a virtual Plenary, in August. During this session, the Committee closed the Final Review and Comment (FRAC) period and approved the new *Airborne Collision Avoidance System (ACAS) Xa/Xo Minimum Operational Performance Standards (MOPS) document* and *ACAS Xa/Xo Algorithm Design Description (ADD)* for referral to the Program Management Committee (PMC). The PMC approved the new documents as DO-385 Volume I and II at their December meeting. The documents are expected to be published once the EUROCAE versions have been released.

With publication of these documents, the Committee’s size will likely decrease to include only those developing the next iteration of ACAS, Xu. This version will specifically address the integration of unmanned aerial vehicles into airspace. This document is scheduled for publication in 2020.

ACAS Xa has been developed as a TCAS II-like system, designed to provide more appropriate alerts and collision avoidance guidance for today’s airspace. The ACAS Xa MOPS also includes ACAS Xo functionality, which provides the ability for a flight crew to designate an aircraft for which operational specific alerting criteria can be applied.

AUTOMATIC DEPENDENT SURVEILLANCE - BROADCAST (ADS-B)


In addition to the Appendix U update of DO-317B, the Committee is also working toward revisions to DO-361, *Minimum Operational Performance Standards (MOPS) for Flight-deck Interval Management (FIM) DO-260, MOPS for 1090 MHz Automated Dependent Surveillance – Broadcast (ADS-B) and DO-282, MOPS for Universal Access Transceiver (UAT) ADS-B all scheduled for the first quarter of 2020.*
RTCA ONLINE STORE
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• Establish a common understanding of performance requirements
• Ensure interoperability of equipment, systems and processes in the highly complex, safety-critical aviation enterprise
• Expedite innovations to market

For additional information and to order documents, please visit rtca.org.
SC-206 met in September at RTCA, Washington, DC. Sub-Group 1 (SG-1) continues work with the Combined Surveillance Committee (CSC) and has been focusing on Working Paper (WP) development on Winds, Icing Status and Anti-ice, EDR, Gross Weight, Static Air Temperature, Emitter Category, and Manned vs. Unmanned Operations.


SC-214 met in late September at SESAR Joint Undertaking (SJU) and EUROCONTROL in Brussels, Belgium. The gathering was a joint collaboration with EUROCAE Working Group (WG-92) and ARINC Airlines Electronic Engineering Committee (AEEC) Data Link (DLK) Systems Sub Committee.

The group began work on DO-224E, Signal-In-Space MASPS For Advanced VHF Digital Data Communications Including Compatibility with Digital Voice Techniques. They also started work on DO-281D/ED-92D, MOPS for Aircraft VDL Mode 2 Physical Link and Network Layer. Both documents are scheduled for completion in late 2020.

The group also discussed changes to their Terms of Reference (TOR) to adjust delivery dates and possible addition of a new companion document to cover ground equipment.

STANDARDS FOR AIR TRAFFIC DATA COMMUNICATION SERVICES

SC-214, Standards for Air Traffic Data Communication Services

CO-CHAIRS
Stephane Pelleschi, Rockwell Collins, Inc.
Chuck Stewart, United Airlines, Inc.
Jerome Condis, Airbus SAS

NEXT MEETING
December 10-14, 2018, at Honeywell International, Inc. Phoenix, AZ

SC-222, met jointly with Working Group (WG) 82, chaired by Armin Schlereth, DFS GmbH, virtually in mid-September. The groups discussed the revisions of DO-343A/ED-242, Minimum Aviation System Performance Standard (MASPS) for AMS(R)S Data and Voice Communications Supporting Required Communications Performance (RCP) and Required Surveillance Performance (RSP) and DO-262C/ED-243, Minimum Operational Performance Standards (MOPS) for Avionics Supporting Next Generation Satellite Systems (NGSS). The first set of revisions are expected to be complete by early 2019.

AERONAUTICAL MOBILE-SATELLITE (R) SERVICE

SC-222, Committee for Aeronautical Mobile-Satellite (R) Service

CHAIR
Dr. Charles LaBerge, EFC LaBerge Engineering & Analysis, LLC and UMBC

NEXT MEETING
November 8-9, 2018, Virtual
INTERNET PROTOCOL SUITE (IPS)
AND AeroMACS

SC-223, Internet Protocol Suite (IPS) and AeroMACS met in August, at INMARSAT in Washington DC to continue its review of the current draft of the potential Request for Comment (RFC) standards, to bring consensus on the IETP RFP profiles to be included in their next document, *Aviation Profiles for Internet Protocol Suite*.

The Committee met again in September, jointly with EUROCAE Working Group (WG) 108, at RTCA in Washington, DC. The joint Committees reviewed the draft profiles document during their meeting. The group started drafting the other document in their TOR, *The Minimum Aviation System Performance Standard (MASPS) for the IPS used in Aviation A-G Communication System*. They plan to work on the two documents concurrently over the next three months.

The joint Committee will consider initiating Open Consultation (OC) and Final Review and Comment (FRAC) at their next meeting. Development of the MASPS will continue and is expected to be complete by the end of 2019.

COMMITTEE
SC-223, Internet Protocol Suite (IPS) and AeroMACS

CHAIR
Aloke Roy, Honeywell International, Inc.

NEXT MEETING
December 10-14, 2018, at Frequentis, Vienna, Austria

SC-223 Members at IMARSAT, Washington, DC

Members of SC-223 during their joint meeting with EUROCAE, at RTCA
SC-224 met in mid-September RTCA, Washington, DC to work on DO-230J, *Standards for Airport Security Access Control System*. This version will primarily update the credentialing, procurement, biometrics and video sections. The document is expected to be published in the Fall of 2019.

**AIRPORT SECURITY ACCESS CONTROL SYSTEMS**

**COMMITTEE**
SC-224, Airport Security Access Control Systems

**CO-CHAIRS**
Alan Paterno, Transportation Security Administration
Christer Wilkinson, AECOM Technology Solutions

**NEXT MEETING**
November 15, 2018, at RTCA, Washington, DC

SC-228 met in July at RTCA, in Washington, DC. During the session, the Committee received updates from the working groups (WG) on the status of the Phase II activities and approved some changes to the Terms of Reference (TOR) deliverables to be discussed at the upcoming PMC meeting. There was also discussion of previously approved TOR language that was not completely agreed upon by the committee, and discussions continued to refine that language into a consensus version.

The Committee met again in September and split into working groups. WG-1 and WG-2 met for the week and concluded with a Plenary session, where they approved the final language of the TOR. This new language as well as recommendations for Minimum Aviation System Performance Standards (MASPS) document for WG-2 will be presented to the PMC in December. The Committee continues to make progress on the development of Minimum Operational Performance Standards (MOPS) for a ground-based sensor, MOPS for an airborne sensor and an update to the Detect and Avoid (DAA) MOPS, as well as extensions to point-to-point C2 architectures to address Beyond-Radio-Line-of-Sight (BRLOS) applications.

SC-228 is working toward revisions to various documents scheduled for delivery in 2019 and 2020.

**MINIMUM OPERATIONAL PERFORMANCE STANDARDS FOR UNMANNED AIRCRAFT SYSTEMS**

**COMMITTEE**
SC-228 MOPS for Unmanned Aircraft Systems

**CO-CHAIRS**
Paul McDuffee, The Boeing Company
John Moore, Rockwell Collins, Inc.

**NEXT MEETING**
October 25th, 2018 at RTCA, Washington, DC
DO-178C, SOFTWARE CONSIDERATIONS IN AIRBORNE SYSTEMS AND EQUIPMENT CERTIFICATION, TRAINING COURSE

December 11-13 at RTCA

RTCA, Inc. has teamed up with The MITRE Aviation Institute to offer high quality and relevant training for the aviation industry in understanding the requirements and parameters for avionics software development necessary to obtain FAA certification.

The two world class organizations are using their collective experience and expertise to provide training on the new standards and recommended practices contained in the DO-178C, Software Considerations in Airborne Systems and Equipment Certification.

In addition to the comprehensive course manual developed by the experts at The MITRE Aviation Institute, each training course attendee will receive the latest standards developed over a six-year period by RTCA Special Committee 205.

The course is led by instructors who will provide a thorough understanding of the requirements and the applicability of DO-178C; the fundamental techniques of software development considerations in airborne systems and equipment certification; and an introduction and overview of Software Tool Qualification Considerations, Formal Methods Supplement to DO-178C, Model-Based Development and Verification Supplement to DO-178C, and Object Oriented Technology and Related Techniques Supplement to DO-178C.

SUPPLEMENTS TO DO-178C, SOFTWARE CONSIDERATIONS IN AIRBORNE SYSTEMS AND EQUIPMENT CERTIFICATION, TRAINING COURSE

December 14 at RTCA

As an adjunct to DO-178C, this course will provide the background and scope on the four documents supporting DO-178C:

• DO-330, Software Tool Qualification Considerations
• DO-331, Model-Based Development and Verification Supplement to DO-178C and DO-278A
• DO-332, Object-Oriented Technology and Related Techniques Supplement to DO-178C and DO-278A
• DO-333, Formal Methods Supplement to DO-178C and DO-278A

Attendees will receive detailed instruction on DO-331 covering the objectives, activities, explanatory text and software life cycle data that should be applied when model-based development and verification are used as part of the software life cycle.

In addition, the training will cover the systems requirements linkage to the DO-178C and Supplement processes through an explanation of the interface to ARP 4754A, Guidelines for Development of Civil Aircraft and Systems.

*Unless otherwise noted, all training courses will take place at RTCA Headquarters, located conveniently in downtown Washington, DC. For additional information, please visit www.rtca.org or email training@rtca.org.
2018 COURSE CALENDAR*  
TRAINING CENTER  

DO-160G, ENVIRONMENTAL CONDITIONS AND TEST PROCEDURES FOR AIRBORNE EQUIPMENT, TRAINING COURSE  
December 12-15 at RTCA  

RTCA, in partnership with Wichita State University’s National Institute for Aviation Research (WSU-NIAR), offers high quality training covering RTCA’s DO-160G, Environmental Conditions and Test Procedures for Airborne Equipment. The course will provide an understanding of the use of DO-160G and how it fits in with the greater picture of requirements, design, certification and TSOs. Course participants will gain a clear and relevant understanding of the applicable FAA regulations, advisory material, certification procedures, design approaches/trade-offs, inspection and conformity requirements, as well as details of the necessary parts of a test plan, test report, compliance plan and compliance report. A strong focus is placed on the reduction of risk, cost and schedule throughout the design/certification process, by use of targeted design and increased first-pass success on design and testing. In addition to a comprehensive course manual, each training course attendee will receive a copy of RTCA’s DO-160G, supporting material, and will participate in real-world exercises applying the knowledge learned from the class.

DO-254, DESIGN ASSURANCE GUIDANCE FOR AIRBORNE ELECTRONIC HARDWARE, TRAINING COURSE  
December 18-20 at RTCA  

RTCA is hosting a three-day training course, tailored specifically to design/verification engineers and project/certification managers requiring DO-254 compliance.

This three-day course will:

• Provide an overview and application of RTCA DO-254, as defined by current FAA and EASA guidance in airborne electronic systems.

• Describe how to apply the DO-254 lifecycle and supporting processes; understand system safety assessments and the design assurance level (DAL); and set up a project correctly through proper planning and standards.

• Present techniques and writing requirements for electronic hardware, and how to optimize requirements for verification processes.

• Describe how to efficiently and effectively verify requirements with simulation and hardware tests.

• Address specific considerations for programmable logic devices (PLDs) such as FPGA/ASIC versus all electronics; commercial off-the-shelf (COTS) components usage; and tool assessment and qualification.

*Unless otherwise noted, all training courses will take place at RTCA Headquarters, located conveniently in downtown Washington, DC. For additional information, please visit www.rtca.org or email training@rtca.org.
SC-229 met jointly with EUROCAE Working Group (WG) 98 in Saint Denis, France, to address all findings from the Open Consultation (OC) and Final Review and Comment (FRAC) held over the summer for updates to DO-204A, Minimum Operational Performance Standards (MOPS) for 406 MHz Emergency Locator Transmitters (ELT) and ED-62A.

The Committee reviewed all comments and reached consensus on the final draft for Emergency Locator Transmitters at 406 MHz. The document will be presented to the Program Management Committee (PMC) in December.

The Committee includes members of International Regulators, Airframers, COSPAS-SARSAT and ELT manufacturers from both Europe and the United States.
SC-236 met in joint Plenary with EUROCAE Working Group (WG) 96, at RTCA in Washington, DC. The group is working to create a joint standard to define the Minimum Operational Performance Standard (MOPS) to use WAIC in the 4200-4400 MHz band, as well as a Minimum Aviation System Performance Specification (MASPS) for Coexistence of Wireless Avionics Intra-Communication Systems within 4200-4400 MHz.

During the meeting, the draft MASPS was reviewed and approved for an internal comment and review prior to initiating Open Consultation (OC) Final Review and Comment (FRAC) at their next meeting. The Committee expects to address all formal comments at a Plenary to be held in January 2019.

RTCA presents the William E. Jackson award to an outstanding student in the field of aviation electronics and telecommunications in honor of William E. Jackson, a pioneer in the development and implementation of the nation’s air traffic control system and an enthusiastic supporter of student engineers. The recipient of this award receives a personalized plaque and a $4000 honorarium and is recognized at a special banquet during the RTCA Annual Symposium.

Any graduate student studying for a degree in the field of aviation electronics, software, or telecommunication systems is eligible. Submissions must be in the form of a thesis, project report or technical journal paper. The work on which the submission is based must have been completed within the three years preceding the closing date and the papers submitted for consideration must be written in English and provided without publication restrictions.

For additional questions email RTCA Program Director Karan Hofmann, khofmann@rtca.org, or visit the William E. Jackson Award page.

Spread the word to deserving graduates—the deadline is Friday, November 30.
RTCA CALENDAR

October

October 5
Hosted by RTCA
Washington, DC

October 9-12
SC-236, Standards for Wireless Avionics Intra-Communication System (WAIC) within 4200-4400 MHz
Hosted by Panasonic
Tokyo, Japan

October 22-26
SC-217, Aeronautical Databases
Hosted by SIA
Bordeaux, France

October 23-25
SC-213, Enhanced Flight Vision System & Synthetic Vision System
Hosted by RTCA
Washington, DC

October 25
SC-135, Environmental Testing
Hosted by Honeywell International, Inc.
Morris Plains, New Jersey

November

November 2
SC-186, Automatic Dependent Surveillance Broadcast (ADS-B)
Hosted by RTCA
Washington, DC

November 5-9
SC-228, Minimum Operational Performance Standards for Unmanned Aircraft Systems
Hosted by RTCA
Washington, DC

November 6-7
SC-230, Airborne Weather Detection Systems
Hosted by RTCA
Washington, DC

November 8-9
SC-222, AMS(R)S
Hosted by RTCA
Virtual

November 15
SC-224 Airport Security Access Control Systems
Hosted by RTCA
Washington, DC

December

December 3-6
SC-206, Aeronautical Information and Meteorological Data Link Services
Hosted by Harris Corporation
Palm Bay, FL

December 10-14
SC-223, Internet Protocol Suite (IPS) and AeroMACS
Hosted by Frequentis
Vienna, Austria

December 13
PMC, Program Management Committee
Hosted by RTCA
Washington, DC

January

January 10
SC-224, Airport Security Access Control Systems
Hosted by RTCA
Washington, DC

January 14-18
SC-236, Standards or Wireless Avionics Intra-Communication System (WAIC) within 4200-4400 MHz
TBD

January 31-February 1
SC-222, AMS(R)S
Hosted by RTCA
Virtual