

APRIL 2019

# RTCA DIGEST

NEW HEIGHTS REACHED, TOGETHER

## Features

- 4 Chairman's Column
- 6 New Members



## BOOM SUPERSONIC FOUNDER AND CEO BLAKE SCHOLL TO DELIVER KEYNOTE AT RTCA'S 2019 GLOBAL SYMPOSIUM

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## STANDARDS OVERSIGHT COMMITTEE ACTS ON SAFETY AND EMERGING TECHNOLOGIES

Washington, DC, March 26, 2019 – RTCA's Program Management Committee (PMC) held its spring meeting approving five critical guidance documents, reviewing workplans for the Special Committees (SC), and incorporating changes to the various committee Terms of Reference (TOR) that reflect leadership and work plan changes.

Chaired by Chris Hegarty of The MITRE Corporation, the PMC is the RTCA oversight body charged with producing timely and

[continued on page 2](#)

[PMC continued from page 1](#)

robust standards and guidance documents to ensure interoperability of aviation systems and equipment. The standards encourage innovation and serve as the basis for meeting Federal Aviation Administration (FAA) regulations. An important responsibility of the PMC is ensuring the operational application of the technical standards.

The Members of the PMC approved five standards covering the following areas:

- The Traffic Situation Awareness with Alerting (TSAA) test vectors for the Automatic Dependent Surveillance Broadcast (ADS-B) System. The new Minimum Operational Performance Standard (MOPS) for Aircraft Surveillance Applications (ASA) System describes updated specific aircraft track set tests that are used to provide stimulus scenarios for TSAA testing.
- Revised AMS(R)S Data and Voice Communications Supporting Required Communications Performance (RCP) and Required

Surveillance Performance (RSP) provides safety communications to aircraft in airspace where 1) procedural separation is applied or 2) Air Traffic Surveillance services are provided. The document contains Technique Specific Normative Appendices for INMARSAT and Iridium.

- Satellite communications technologies. The Minimum Operational Performance Standards (MOPS) Avionics Supporting Next Generation Satellite Systems describes these new technologies scheduled to become operational in context of the global and regional Air Traffic Management and Communication, Navigation and Surveillance modernization.
- A change to the Guidance for the Development of Portable Electronic Devices (PED) Tolerance for Civil Aircraft included a technical amendment clarifying the description of low powered technologies with respect to PEDs.
- Unmanned Aircraft (UA) operations requiring a C2 Link

System that allows the UA to operate within line of sight (LOS) and beyond the line-of-sight (BLOS) of a Control Station. The Minimum Aviation System Performance Standards (MASPS) for C2 Link Systems Supporting Operations of Unmanned Aircraft Systems in U.S. Airspace contains the standards which specify system characteristics that should be used by UAS operators, Original Equipment Manufacturers 701 (OEM), and equipment manufacturers, plus the FAA, as UAS operate within the U.S. airspace.

The Committee also approved an administrative change to SC-216, Aeronautical Information Systems Security, TOR and changes to the work plan for SC-159, Navigation Equipment Using the Global Navigation Satellite System (GNSS).

Details from the March 21, 2019 PMC meeting are contained in a letter from Chairman Hegarty to FAA Associate Administrator for Aviation Safety, Ali Bahrami. ■



March Program Management Committee (PMC) Meeting at RTCA Headquarters

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# CHAIRMAN'S COLUMN

## A Word from RTCA's PMC Chairman, Chris Hegarty

Since it was established in April 1998, the RTCA Program Management Committee (PMC) has provided "cradle-to-grave" oversight of RTCA's Special Committees. This function was provided earlier by RTCA's Technical Management Committee (TMC). At the first meeting of the PMC on 30 April 1998, Dave Watrous (then RTCA's President) stated in his opening remarks that the formation of the PMC represented a "move from a purely technical orientation to one seeking balance between technical and operational considerations."

Today, the PMC still manages RTCA's Special Committees seeking an appropriate balance of technical and operational objectives. Per RTCA's Bylaws, the members of the PMC are appointed by RTCA's President to "assure an appropriate balance of government and industry perspectives and coverage for all disciplines expected to be addressed by Special Committees." Throughout the years, the number of PMC members has been at or close to 20 with representatives from across

the aviation community, including the Federal Aviation Administration (FAA), U.S. Armed Forces, airframers, equipment manufacturers/associations, owner/pilot/operator associations, and consultants.

In recent months, PMC members have been frequently asked "how has the establishment and operation of RTCA Special Committees changed since RTCA's transition to an independent Standards Development Organization (SDO)"? The answer, from my perspective, is that more has



Christopher Hegarty,  
D.Sc., PMC Chair

stayed the same than has changed. Special Committees formed prior to the transition have continued to progress their work in accordance with their extant Terms of Reference. The PMC continues to meet four times a year and establishes new Special Committees after careful deliberations of proposals to ensure that the new work is well-defined, beneficial to the aviation community, and will be supported by an adequate number of volunteers. The PMC continues to pay close attention to how Special Committee products are envisioned to be used, e.g., by the FAA or other regulatory authorities, and also on international harmonization. Many RTCA Special Committees work jointly with EUROCAE Working Groups to develop joint standards and this practice will continue. One benefit from operating as an SDO is that RTCA is more agile in establishing new Special Committees since it no longer needs to rely on just one member (FAA) to submit new work proposals but rather can now receive these from any member. ■



Chris Hegarty with RTCA's Al Secen, VP Aviation Technology and Standards



## NAVIGATION EQUIPMENT USING GLOBAL NAVIGATION SATELLITE SYSTEM (GNSS)

### COMMITTEE

SC-159,  
Navigation Equipment  
Using Global Navigation  
Satellite System (GNSS)

### CO-CHAIRS

Dr. Christopher Hegarty,  
The MITRE Corporation

Dr. George Ligler,  
Project Management Enterprises, Inc.

### NEXT MEETING

October 4, 2019,  
at RTCA,  
Washington, DC

SC-159 met at RTCA in early March. The group completed Final Review and Comment (FRAC) Resolution for DO-253D Change 1, Minimum Operational Performance Standards (MOPS) for GPS Local Area Augmentation System Airborne Equipment and DO-246E Change 1, GNSS-Based Precision Approach Local Area Augmentation System (LAAS) Signal-in-Space Interface Control Document (ICD), both from Working Group (WG) 4. These documents were approved for presentation to the June Program Management Committee (PMC) for final approval and publication.

The group is also scheduled to release updates to DO-235B, *The L1 Interference Environment Report* (WG-6). WG-2, WG-2C, and WG-7 each met and reviewed contributions to their developing standards.

Details of the deliverables can be found in the Terms of References on the RTCA SC-159 Special Committee page. ■



## AERONAUTICAL SYSTEMS SECURITY

### COMMITTEE

SC-216, Aeronautical  
Systems Security

### CHAIR

David Pierce,  
General Electric Aviation

### NEXT MEETING

June 11-13, 2019,  
at RTCA,  
Washington, DC

SC-216 met jointly with EUROCAE Working Group (WG) 72 in March in St. Denis, France and was hosted by EUROCAE. The groups are working on an update to DO-355/ED-204, *Information Security Guidance for Continuing Airworthiness*, and a new document to address gaps in current Security Event Management processes. Publication is expected in late 2019 and 2020, respectively. ■



Members of SC-216 in St. Denis, France

# RTCA WELCOMES NEW MEMBERS

## **AeroVironment**

Simi Valley, California USA

AeroVironment is an American technology company that is primarily involved in energy systems, electric vehicle systems, and unmanned aerial vehicles (UAVs). The company is probably most well-known for developing a series of lightweight human-powered and then solar-powered vehicles. AeroVironment is the Pentagon's top supplier of small drones — including the Raven, Wasp and Puma models. They are currently developing a solar-powered unmanned aircraft and ground control stations for high-altitude station keeping.

AeroVironment's family of integrated and interoperable UAS also gives law enforcement personnel and first responders the ability to see and assess the situation ahead. While AeroVironment's information solutions will significantly change the way farmers and energy providers monitor and manage their assets.

## **Aquiline Drones, LLC.**

Hartford, Connecticut USA

Aquiline Drones, LLC (AD) is a US-based Aircraft Manufacturer who embarked on a mission to build the world's first generation of Labor-Force Drones (LFDs). These artificially intelligent humanoids are scheduled for production starting 4Q 2019.

Aquiline will also be manufacturing Agile Workstation Cells and Mobile Command Centers.

Aquiline's manufacturing process includes the use of robotics, Additive Manufacturing/3D Printing and other advanced technologies.

## **AviaGlobal Group**

Phoenix, Arizona USA

AviaGlobal Group is a partnership of experienced aerospace professionals, specializing in the fusion of engineering & business savvy to solve aviation problems.

## **Electron International Inc.**

Phoenix, Arizona USA

Electron International Incorporated (EII) specializes in avionics but has a breadth of knowledge in systems engineering.

Electron International has been involved in the latest aerospace programs and projects, from proposal, design, and certification to post-certification support. EII has coordinated with leaders to the aerospace industry including Boeing, Airbus, Honeywell, and Rockwell-Collins.

Electron International is experienced in providing DER Services, System Design, Analysis, Development, Verification and Validation (V&V, Hardware Requirements, Design and Analysis, Software Development, Documentation, V&V and Quality Assurance, Safety and Reliability Analyses, Test Equipment Design and Development Qualification Testing Plans, Procedures and Support, ARP 4754, ARP 4761, DO254, DO160, DO178B, Mil-Std-882, Fly-By-Wire (FBW) Flight Controls Autopilot / Autoflight / Flight Director, Avionics (Integrated, Federated), Radios (ILS, VOR, VDR, ADF, DME, Radio Altimeter), TCAS / T2CAS, FMS, Performance Management Controls for Engines and Engine Electrical Systems.

## **End State Solutions**

White Salmon, Washington USA

End State Solutions, a firm focused on certification, airspace access and operational excellence in aviation. They have significant experience in synthesizing certification, operational

approvals, and aerial data collection with UAS. End State Solutions works closely with the FAA to meet enterprise customer needs and is currently supporting clients that are active applicants for certification under 14 CFR § 21.17 and operational certification under 14 CFR § 135 air carrier operations. Their clients face all the challenges of tackling successful commercial UAS operations. Technical challenges include mitigation of mid-air collision, spectrum access, pilot certification and enhanced reliability.

## **German Orbital Systems GmbH**

Berlin, GERMANY

The idea to take the respect of the term "Rocket-Science" through an optimally coordinated product and service range of the broad mass led in 2014 to the founding of German Orbital Systems. The founders are working at the Department of Astronautics at the Technical University Berlin, where they actively participated in numerous projects of the department. Among other things, they gained a lot of practical experience in the fields of satellite electronics, software development, structural mechanics and carried out start-up campaigns. They contributed to the satellites of the TUBSAT and BEESAT series as well as to TechnoSat and TUBIN. Hardware from GOS is currently also being used by other manufacturers such as Sputnik (TableSat Aurora) or BST (LEOS Satellite Platform).

GOS is a so called NewSpace company, building and operating small satellites for different customers as well as for their own purposes. The two recent satellites (D-Star ONE Sparrow and D-Star ONE iSat) featured an ADS-B receiver and demonstrated the feasibility of ADS-B reception from space. They are already working with several airlines on defining the parameters of an ideal satellite-based ADS-B system and will launch an upgraded version in summer 2019.

[\(continued on page 7\)](#)



[New Members \(continued\)](#)

**National Technical Systems (NTS)**  
Calabasas, California USA

National Technical Systems, Inc. (NTS) is the leading North American provider of qualification testing, inspection, and certification services. The company serves a broad range of dynamic industries, including the civil aviation, space, defense, nuclear, telecommunications, industrial, electronics, medical, and automotive end markets. During its more than 50 years in business, NTS has built the broadest geographic presence and sole national footprint in North America, an unparalleled breadth of capabilities, and has fostered continuous innovation, making NTS a unique one-stop resource to meet its clients' demanding and evolving requirements. Operating through a network of more than 25 technologically advanced testing laboratories across North America, NTS facilities are near its more than 4,000 clients, allowing NTS to serve the nation's most innovative companies with industry-leading accessibility and responsiveness. NTS' offering spans more than 70 distinct testing categories, including climatic, structural, dynamics, fluid flow, EMI/EMC, lightning, product safety, acoustics, failure analysis, chemical, and other industry-specific tests, allowing it to handle its clients' most demanding needs. Additionally, the company is accredited by numerous national and international organizations, which allows NTS to have its test data nearly universally accepted worldwide. NTS operates its inspection division under the Unitek brand, providing a wide range of supply chain management services. NTS' certification division, which operates under the NQA brand, is one of the largest and most respected global ISO registrars, with active certifications in more than 75 countries.

**PAE ISR**  
Sterling, Massachusetts USA

PAE ISR specializes in national and international unmanned aerial systems-centric security missions using inspired methodologies and approaches to address complex real-world problems.

PAE ISR is a full-service provider for unmanned aerial systems. The company provides expertise in intelligence, surveillance, and reconnaissance solutions and services to U.S. government agencies, NATO, and other international organizations.

PAE ISR is the original equipment manufacturer and systems integrator for the Resolute Eagle, a long endurance, Group 3 UAS.

**Passenger Drone Research Private Limited**  
Nashik, Maharashtra INDIA

PDRL is a B2B company primarily into research, development, marketing, sales and support of autonomous aerial vehicle (AAV). Pravaas G1 is a Made in India electrically powered vertical take-off and landing light aircraft designed by PDRL. Pravaas G1 is India's first indigenous eVTOL aircraft. The company plans to use the aerial vehicle for urban mobility as an air taxi that produces zero carbon emission in flight. The Air Taxi will carry passengers from one point to other (P2P) autonomously.

PDRL is recognized by the Government of India, Department of Industrial Policy & Promotion, Ministry of Commerce & Industry.

**Polytape Pty Ltd.**  
Sydney, South Wales AUSTRALIA

Polytape Pty Ltd. is a small consulting firm, specializing in the design of high-performance, high-reliability and energy-efficient hardware and software systems. They manufacture a small amount of highly specialized hardware devices, but most of their work is consulting.

Their engineering history is in wired and wireless communications, motion planning and control, and in the verification and optimization of hardware and software systems. However, since 2018, they started working with clients who are involved in aviation, both UAVs and manned aircraft. To date, they have been asked to perform customization and optimization work on UAV autopilot hardware and software, as well as high bandwidth (10Gbit/s) radio hardware development for UAV and manned aircraft.

**Sentient Blue Technologies**  
Stradella di Collecchio, Parma ITALY

Sentient Blue Technologies is an aerospace engineering company founded in Parma, Italy in November 2017. Their primary activity is the development of efficient, more environmentally friendly micro gas turbine-based power plants for use in radio-controlled aircraft, unmanned aerial vehicles (UAVs), also known as drones. The engines they have under development can also be adapted and be used in combined power and heating systems (CPH).

[\(continued on page 8\)](#)

# RTCA WELCOMES NEW MEMBERS

## New Members (continued)

They are also involved in some novel UAV designs that will harness the capability of their engines to deliver UAV performance that is currently not possible with current technology. These UAVs are being developed for civilian missions such as search and rescue, environmental protection, parcel delivery and medical missions and disaster relief.

One of Sentient Blue's goals is to introduce advanced development tools and a rigorous, scientific approach used by companies such as General Electric and Pratt and Whitney on large gas turbines used in aviation to push the capability of microturbine design and optimize the Brayton Cycle at this significantly reduced scale seen in microturbines.

### **Transcend Air Corporation** Rancho Santa Fe, California USA

Transcend Air Corporation are group of experienced aerospace executives, engineers, and entrepreneurs who have designed a tiltwing VTOL aircraft, the Vy 400. Three times faster than helicopters, with half the operating costs, and enhanced safety, they expect it to grow to dominate the VIP transport helicopter segment. It will also enable a new city-center to city-center airline service, cheaper than current air travel options, and three to five times faster door to door. Since 2009, they have built and flown 15 prototype VTOL aircraft, giving their patent-pending Vy a nearly decade-long lineage of real-world experience. Using proven technologies, including the P&WC PT6A engine and BRS Aerospace whole-aircraft parachute, and requiring no new regulatory regimes nor air traffic control systems, the Vy will finally bring the promise of civil VTOL flight within everyone's reach.

### **University of Southampton** Southampton, UNITED KINGDOM

The University of Southampton dates back to the founding of the Hartley Institution in 1862. In 1902, the Institution developed into the Hartley University College, awarding degrees from the University of London. On 29 April 1952, the institution was granted full university status, allowing it to award its own degrees. Southampton is a founding member of the Russell Group of research-intensive universities in Britain. In the most recent Research Excellence Framework the university was ranked 18th in the United Kingdom for average quality of research submitted, 11th for research power and 8th for research intensity.

The University of Southampton currently has 17,535 undergraduate and 7,650 postgraduate students, making it the largest university by higher education students in the South East region.

### **Wind Talker Innovations, Inc.** Anchorage, Alaska USA

Wind Talker Innovations is developing the first scalable, distributive, self-healing network, called Osmosis. Osmosis works just like the term suggests, by selecting the path of least resistance to get you to an information source. Osmosis uses devices themselves to create the network by communicating through each other, via downloaded software.

Osmosis' DirectPath™ routing extends existing networks (cellular, WiFi and Satellites, etc.), can create completely new off-grid networks, or seamlessly transition between networks, using least-cost routing. Their solution will provide an OTT capability anywhere a consumer is. Their goal is to reduce infrastructure while providing a platform agnostic transport medium for global connectivity and safety.

### **Yamakawa RF Lab. LLC** Tokyo, JAPAN Hroyuki Masago

Yamakawa RF Lab. LLC is an aircraft satellite communication system and other avionics technical consulting for Japanese government, aircraft industries and operators. Getting Japanese certification (technical conformity test and application) consulting). ■





# AERONAUTICAL INFORMATION AND METEOROLOGICAL DATA LINK SERVICES

## COMMITTEE

SC-206, Aeronautical Information and Meteorological Data Link Services

## CO-CHAIRS

Tom Evans,  
NASA

Rocky Stone,  
United Airlines, Inc.

## NEXT MEETING

April 30, 2019  
Virtually

SC-206, Sub Group (SG) 6 met jointly with Working Group (WG) 76 in Brussels, Belgium and was hosted by EUROCONTROL, while SG-1 and SG-5 met virtually March 18-21.

SG-1 continued work on activities supporting ADS-Wx / Mode S Wx requirements developing addressing SC-206 Inter-Special Committee Requirements Agreements (ISRAs) with SC-186, Automatic Dependent Surveillance-Broadcast (ADS-B) and SC-209, Air Traffic Control Radar Beacon System/Mode Select (ATCRBS/Mode S) Transponder) through the Combined Surveillance Committee (CSC) WxS SG.

SG-5, under the leadership of Co-Chairs Paul Freeman, Harris Corporation and John Ferrara, Ferrara Consulting, worked Final Review and Comment (FRAC) resolution for DO-358A, *Flight Information Services Broadcast (FIS-B) with Universal Access Minimum Operational Performance Standard (MOPS)*. The FRAC resolution is scheduled to be completed in late April and presented to the Program Management Committee (PMC) in June.

SG-6 is working on revising DO-364, *Minimum Aviation System Performance Standards (MASPS) for Aeronautical Information / Meteorological Data Link Services*, as a joint document with EUROCAE WG-76 expecting delivery in late 2020. ■



SC-206 members gather for dinner after their working sessions



# RTCA DID YOU KNOW...

## RTCA'S FIRST PUBLISHED STANDARD

In 1937, Subcommittee No. 1 published RTCA's first standard, *Precipitation Static: Design and Development of Anti-Static Antennas*. During that time the Committee was chaired by J.C. Franklin (1935-1937) and H.K. Morgan (1937-1941), both from Transcontinental & Western Air.

Excerpt from *The Authority of Agreement – A History of RTCA*  
by G. Osmun



*In 1935, precipitation static was a major obstacle to instrument flight. A pilot flying through rain or snow would find the signals from the radio range "blocked out" for a period of up to ten minutes after the rain or snow had stopped. TWA developed a shielded loop antenna that reduced precipitation static significantly. The results of TWA's work and the experience of other operators were shared through Subcommittee No. 1. In some very heavy precipitation, and especially in the Pacific Northwest, the shielded loop was less effective. United developed static discharge wicks to overcome this condition.*

*A 1941 summary of RTCA accomplishments during the first five and a half years of its existence reported that recommendations made by Subcommittee No. 1 "resulted in recognition of these two methods of reducing precipitation static. One method, the shielded loop, is legally required on all transports." ■*

## ACCESS INTELLIGENCE SYMPOSIUM

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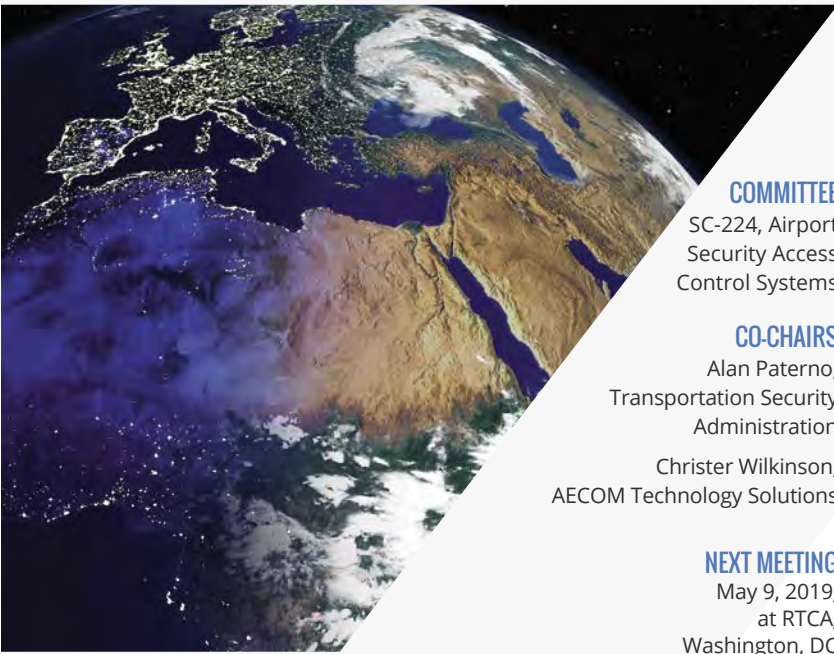
<http://www.gcasummit.com/>. ■

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## AIRPORT SECURITY ACCESS CONTROL SYSTEMS

SC-224 met March 14th to continue work on DO-230J, *Standards for Airport Security Access Control System*. This version will primarily update the credentialing, procurement, biometrics and video sections. This document is expected to be published Fall 2019. ■

### COMMITTEE

SC-224, Airport Security Access Control Systems

### CO-CHAIRS

Alan Paterno,  
Transportation Security Administration

Christer Wilkinson,  
AECOM Technology Solutions

### NEXT MEETING

May 9, 2019,  
at RTCA,  
Washington, DC



# ARE YOU THINKING OF TAKING DO-254 TRAINING?



- Have you been assigned the task of preparing a PHAC without knowing what you are expected to include?
- Do you know if your project is for a simple or complex device and what it will mean to your plan for certification?
- Do you need to communicate why following DO-254 could help save your project time and money?

If you want to find out more about getting your electronics hardware certified for use on aircraft, then you should attend this comprehensive RTCA training course.

- Three days of instruction focused on the details of DO-254
- Registration discount for RTCA members
- Online registration on RTCA's DO-254 Training site.

**Next Class: September 9-11, 2019**

**Classes start at 8am and end at 5pm each day.**  
**Questions? Contact [training@rtca.org](mailto:training@rtca.org)**

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## AIRBORNE WEATHER DETECTION SYSTEMS

### COMMITTEE

SC-230, Airborne Weather Detection Systems

### CO-CHAIRS

Jeff Finley,  
Collins Aerospace, Inc.

Dawn Gidner,  
Honeywell International, Inc.

### NEXT MEETING

June 25-27, 2019,  
at NASA Langley,  
Hampton, VA

SC-230 held a virtual Plenary in March to continue work on two new projects. The first is to conduct a feasibility study on clear air turbulence detection using Airborne LIDAR Systems with a projected completion date in early 2020. The second is an update to DO-220A Change 1, *Minimum Operational Performance Standards (MOPS) for Airborne Weather Radar Systems* to add detection requirements for High Altitude Ice Water Conditions using Airborne Weather Radar Systems with a completion date in early 2021. ■

# ARE YOU INTERESTED IN TAKING DO-178C TRAINING?

- Do you know how the Software Life Cycle at your organization relates to the Software Development Process that supports producing software which can be approved?
- Is your System Process supporting your Software Development Cycle to ease implementation of the aspects of certification for software?
- Can you explain how what you do in your software process relates to a certification process?

If you need better answers to these and other questions, join the graduates who have benefited from our course. Register early to guarantee your seat.

- Three days of instruction focused on the details of DO-178C
- Registration discount for RTCA members
- Online registration on RTCA's DO-178C Training site

**Next Class: June 17-19, 2019**

**Classes start at 8:30am and end at 5pm each day.**

**Questions? Contact [training@rtca.org](mailto:training@rtca.org)**

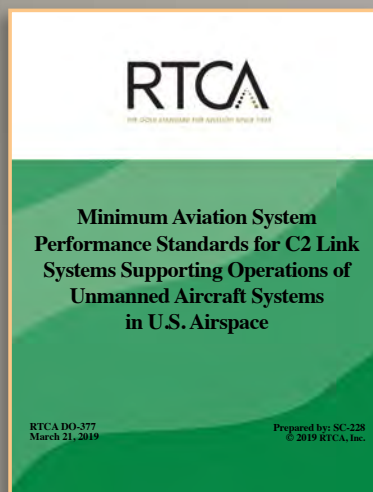
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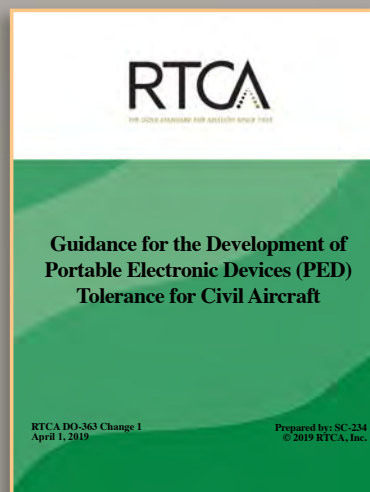
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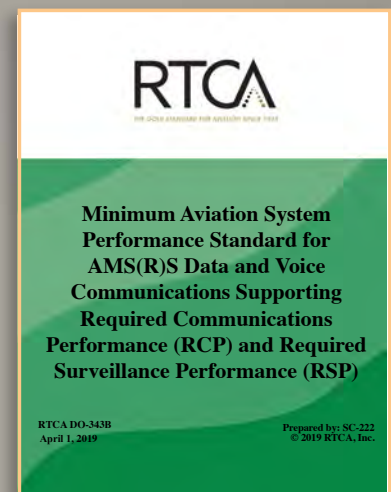
- Establish a common understanding of performance requirements
- Ensure interoperability of equipment, systems and processes in the highly complex, safety-critical aviation enterprise
- Expedite innovations to market



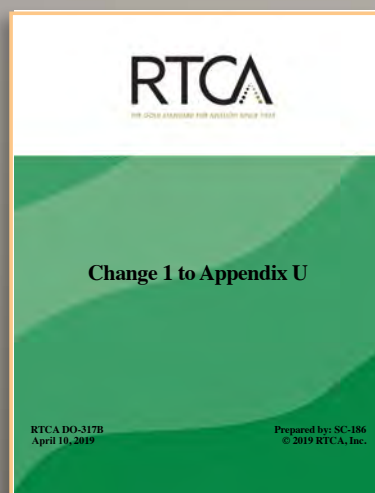
Unmanned Aircraft Systems



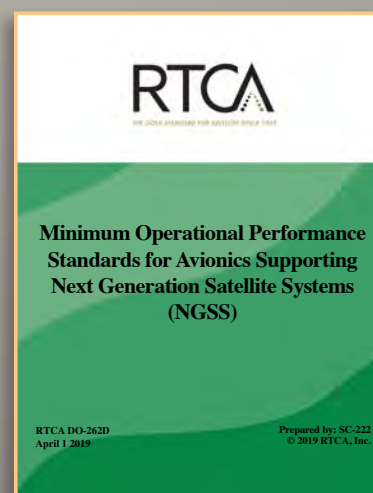
Portable Electronic Devices (PEDs)



AMS(R)S



Automatic Dependent Surveillance-Broadcast (ADS-B)



AMS(R)S

For additional information and to order documents, please visit [rtca.org](http://rtca.org).

# NEW DOCUMENTS

## AMS(R)s

### **DO-343B, Minimum Aviation System Performance Standard (MASP) for AMS(R)S Data and Voice Communications Supporting Required Communications Performance (RCP) and Required Surveillance Performance (RSP)**

Issued 3-21-2019 | Prepared by SC-222

Description This document contains Minimum Aviation System Performance Standards (MASPS) for Aeronautic Mobile Satellite (Route) Services (AMS(R)S) that provide safety communications to aircraft in airspace where 1) procedural separation is applied or 2) ATS surveillance services are provided. The performance defined in this document is intended to provide (1) data communication services that comply to the RCP130, RCP240, RCP400/A1 or RCP400/A2 standards of Required Communications Performance (RCP) for two-way, bidirectional, Controller Pilot Data Link Communications (CPDLC) and to the RSP160, RSP180 or RSP400 standards of Required Surveillance Performance (RSP) for one-way aircraft-to-Air Navigation Service Provider surveillance-related information, and (2) voice communication services that comply to the RCP400/V standard for two-way, bidirectional voice communications between pilots and controllers and to the RSP400/V standards for one-way voice communications between pilots and controllers. The document contains includes Technique Specific Normative Appendices for INMARSAT and Iridium. The new revision also contains more explicit language on data security.

### **DO-262D, Minimum Operational Performance Standards (MOPS) for Avionics Supporting Next Generation Satellite Systems (NGSS)**

Issued 3-21-2019 | Prepared by SC-222

Description This document contains Minimum Operational Performance Standards (MOPS) for avionics that provide Aeronautical Mobile Satellite

(R) Services (AMS(R)S) by means of satellite communications technologies scheduled to become operational in context of the global and regional ATM and CNS modernization (e.g. ICAO/Global Air Navigation Plan, Europe/SESAR, US/NextGen). Each of these technologies is individually and collectively referred to as a "Next Generation Satellite System" (NGSS), and the NGSS nomenclature will be used throughout this document. This release is a joint RTCA/EUROCAE document and includes Technique Specific Normative Appendices for INMARSAT Swift Broadband and Iridium Block 1. The new revision also contains more explicit language on data security.

## Automatic Dependent Surveillance-Broadcast (ADS-B)

### **DO-317B, Change 1 to Appendix U**

Issued 4-10-2019 | Prepared by SC-186

This document is Change 1 for DO-317B and is an Appendix (U) that describes specific aircraft track sets that are used to provide stimulus scenarios for TSAA testing. The tracks are split into two categories: 1) Must Alert and 2) Must Not Alert. Must Alert tracks test the alerting capabilities of a TSAA system for a range of aircraft encounters that have historically occurred in both airport and en route environments. Must Not Alert tracks test similar encounters as the Must Alert tracks except that the closest point of approach is modified to separate aircraft such that no alerting should occur according to pilot and industry experts. Each track set contains multiple scenarios that test a range of track data sources as well as track state variables. GNSS – specifications and RLS

[\(continued on page 15\)](#)



# NEW DOCUMENTS

[2019 Documents \(continued\)](#)

## Portable Electronic Devices (PEDs)

DO-363 Change 1, Guidance for the Development of Portable Electronic Devices (PED) Tolerance for Civil Aircraft

Issued 4-1-2019 | Prepared by SC-234

DO-363 Change 1 includes a technical amendment clarifying the description of low powered technologies. This change is applied to DO-363 to replace section 6.2.2 item 1 with the new text.”

Note: Please also purchase DO-363 Change 1 for replacement text of Section 6.2.2 Item 1.

## Unmanned Aircraft Systems

DO-377, Minimum Aviation System Performance Standards (MASPS) for C2 Link Systems Supporting Operations of Unmanned Aircraft Systems in U.S. Airspace

Issued 03-21-2019 | Prepared by SC-228

This document contains the Minimum Aviation System Performance Standards (MASPS) for a C2 Link System connecting a Control Station (CS) and an Unmanned Aircraft (UA). It covers UA operations requiring a C2 Link System<sup>3</sup> that allows the UA to operate within line of sight (LOS) and beyond the line-of-sight (BLOS) of a Control Station. This MASPS contains the standards which specify system characteristics, i.e., it is design independent, that should be useful to UAS operators, Original Equipment Manufacturers 701 (OEM), and equipment manufacturers<sup>1</sup> plus the FAA, as UAS operate within the U.S. airspace.

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For additional information and to order documents, visit RTCA's store at [www.rtca.org/store\\_list.asp](http://www.rtca.org/store_list.asp). RTCA Members may download electronic documents at no cost and qualify for a 60% discount on paper documents.

2019 COURSE CALENDAR\*

# TRAINING CENTER

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

June 17-19 at RTCA

September 9-11 at RTCA

December 2-4 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

June 20 at RTCA

September 12 at RTCA

December 5 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](http://www.rtca.org) or email [training@rtca.org](mailto:training@rtca.org).

2019 COURSE CALENDAR\*

# TRAINING CENTER

Limited space:  
Register Today!

## DO-254, DESIGN ASSURANCE GUIDANCE FOR AIRBORNE ELECTRONIC HARDWARE, TRAINING COURSE

September 9-11 at RTCA

December 9-11 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.

## DO-160G, ENVIRONMENTAL CONDITIONS AND TEST PROCEDURES FOR AIRBORNE EQUIPMENT, TRAINING COURSE

October 8-11 at WSU

December 2-5 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.

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# RTCA CALENDAR

## April

April 1-3  
**DO-178C Training**  
Hosted by RTCA  
Washington, DC

April 1-4  
**DO-160G Training**  
Hosted by RTCA  
Washington, DC

April 4  
**Supplements to DO-178C Training**  
Hosted by RTCA  
Washington, DC

April 8-12  
**SC-236, Standards for Wireless Avionics Intra-Communication System (WAIC) within 4200-4400 MHz**  
Hosted by EASA  
Cologne, Germany

April 18  
**SC-228, Minimum Operational Performance Standards for Unmanned Aircraft Systems**  
Hosted by RTCA  
Washington, DC

April 25  
**SC-147, Traffic Alert & Collision Avoidance System**  
Hosted by RTCA  
Virtual

April 26  
**SC-135, Environmental Testing**  
Hosted by RTCA  
Washington, DC

April 30  
**SC-206, Aeronautical Information and Meteorological Data Link Services**  
Hosted by RTCA  
Virtual

## May

May 9  
**SC-224, Airport Security Access Control Systems**  
Hosted by RTCA  
Washington, DC

May 21-23  
**SC-213, Enhanced Flight Vision Systems and Synthetic Flight Vision Systems (EFVS/SFVS)**  
Hosted by Airbus  
Toulouse, France

## June

June 5  
**RTCA 2019 Global Symposium**  
Hosted by RTCA  
Arlington, VA

June 10-14  
**SC-206, Aeronautical Information and Meteorological Data Link Services**  
Hosted by AOPA  
Frederick, MD

June 11-13  
**SC-216, Aeronautical Systems Security**  
Hosted by RTCA  
Washington, DC

June 12  
**SC-214, Standards for Air Traffic Data Communication Services**  
Hosted by EUROCAE  
St. Denis, France

June 12-13  
**SC-222, AMS@S**  
Hosted by RTCA  
Virtual

June 17-21  
**SC-223, Internet Protocol Suite (IPS) and AeroMACS**  
Hosted by EASA  
Cologne, Germany

June 20  
**SC-224 Airport Security Access Control Systems**  
Hosted by RTCA  
Washington, DC

June 25-27  
**SC-230, Airborne Weather Detection Systems**  
Hosted by NASA Langley  
Hampton, VA

June 27  
**PMC, Program Management Committee**  
Hosted by RTCA  
Washington, DC