

RTCA DIGEST

THE GOLD STANDARD FOR AVIATION SINCE 1935

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RTCA's 2016 Global Aviation Symposium: Reaching New Heights Together

Top aviation leaders and experts from around the world will be attending this premier event happening at the National Press Club in Washington, D.C., June 1-2.

The Symposium features thought-provoking sessions as well as the annual Awards Luncheon,

celebrating the achievements of RTCA volunteers and their contributions to the consensus process. Don't miss this opportunity to examine current and emerging issues, and interact with colleagues from the aviation community.

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PMC Approves Documents and Committee TOR Revisions

Under the leadership of Chris Hegarty of The MITRE Corporation, the Program Management Committee (PMC) met and approved revisions to five documents and eight Terms of References (TORs) for RTCA Special Committees (SC).

Documents Approved by the PMC:

- Change 1 to DO-300A, *Minimum Operational Performance Standards (MOPS) for Traffic Alert and Collision Avoidance System II (TCAS II) Hybrid Surveillance*, prepared by SC-147, provides additional requirements to help prevent spurious Resolution Advisories during transition from passive to active surveillance;
- Change 2 to DO-300 - *Minimum Operational Performance Standards (MOPS) for Traffic Alert and Collision Avoidance System II (TCAS II) Hybrid*



PMC DFO Rich Jennings presented with a gift from RTCA for his service to the Committee

Surveillance, prepared by SC-147, provides additional requirements to help prevent spurious Resolution Advisories during transition from passive to active surveillance. This document will be used by manufacturers in support of their justification package for TSO deviation;

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RTCA

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[Global Aviation Symposium continued from Page 1](#)

Engaging topics just announced including:

- An Update from the NextGen Advisory Committee: Unique Venue for Public/Private Collaboration
- The FAA-Industry Joint Analysis Team: Taking Collaboration to the Next Level to Measure Benefits of NextGen
- Making Top Priorities a Reality (From Surface to Metroplex to Controller-Pilot Data Communications and Beyond)
- Integrating Unmanned Aircraft Systems into the NAS – Performance Standards, Performance-based Regulations
- Tackling Tactical Operational Challenges in the NAS
- International Harmonization – Initiative Underway to Ensure

- Safe and Seamless Global Operations
- Challenges and Opportunities of the Increasingly Sophisticated and Integrated Cockpit
- Lessons Learned from CAA/ANSP Transitions in other Countries
- Conversation on FAA Reform: Outlook for What's Ahead
- PBN Roadmap Strategy, Delivering Incremental Benefits: From Ground-based to Flight deck-based Interval Management
- Unmanned Aircraft Systems: Solving the Newest, Biggest Challenge to Aviation Since the Wright Brothers
- ADS-B: Meeting the 2020 Mandate and an Examination of What Comes Next

For more information, visit <http://symposium.rtca.org>. Be sure to take advantage of the Early Bird Rate and register today! ■

[PMC Continued from Page 1](#)

- Change 1 to DO-262B, *Minimum Operational Performance Standards for Avionics Supporting Next Generation Satellite System (NGSS) Iridium Specific Appendix D*, prepared by SC-222, corrects typographical errors, clarifies document language in several places, and updates test requirements and test procedures in support of AMS(R)S safety services;
- DO-230F, *Standards for Airport Security Access Control Systems*, prepared by SC-224, provides guidance on acquiring and designing security access control systems, testing and evaluating system performance, and operational requirements; and
- DO-283B, *Minimum Operational Performance Standards for Required Navigation Performance for Area Navigation*, prepared by SC-227, provides guidance to enable the implementation of RNP equipment containing navigation capabilities and functions defined in the RNP RNAV MASPS, DO-236C and Change 1 to DO-236C.

In addition to document and TOR approvals, updates were presented to the PMC:

- SC-233, Addressing Human Factors/Pilot Interface Issues for Avionics, provided a status update to include a more detailed outline for their final deliverable.
- The PMC was apprised of topics discussed during a FAA/EASA meeting. These topics include Runway Overrun Alerting and Design for Guidance for Airborne Electronic Hardware.
- The FAA is working on a request letter and draft TOR to generate a



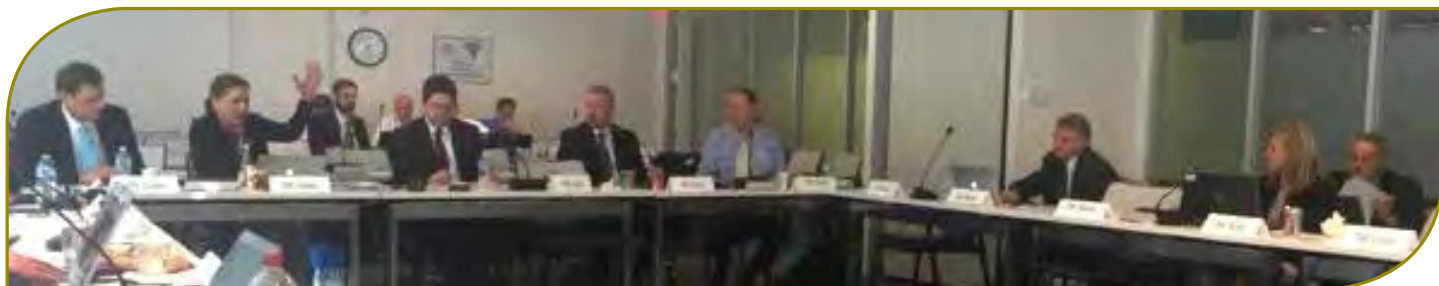
Jim Krodel, Forum of Aeronautical Software Chair, was recognized for his years of service to the Committee

new Special Committee for a Wireless Avionics Intra Communication MOPS. This will most likely be a joint committee with EUROCAE.

Additionally, the PMC held a special Forward Planning Session the day after the PMC to brainstorm future topics. Subjects included:

- Categorization of SCs and possible new SCs
- True Harmonization
- EUROCAE Work Program Disconnects
- ICAO Involvement and coordination with FAA
- Committee Leadership Training
- The PMC's Role with respect to Documents
- Globalization of RTCA Standards
- RTCA Document Classification and Numbering Schemes
- Cross Cutting Committee

The next PMC meeting is scheduled for March 17. ■



The European ATM Master Plan: 2015 Update

By Florian Guillermet
Executive Director, SESAR Joint Undertaking



The research and development activities of the SESAR project are carried out by the SESAR Joint Undertaking (SESAR JU), a public-private partnership associating the European Union, Eurocontrol, manufacturing industry and the ATM stakeholders. It constitutes the “technology pillar” of the Single European Sky (SES) initiative, which aims at achieving “more sustainable and better performing aviation” for Europe.

More concretely, the SES has set several high-level goals, namely to enable a threefold increase in capacity, which will also reduce delays both on the ground and in the air; to improve safety by a factor of 10; to enable a 10 % reduction in the effects flights have on the environment; and to provide ATM services to airspace users at a cost of at least 50 % less.

The key to reaching these goals is the establishment of an innovation lifecycle that connects visionary and performance-driven technology development with synchronised, timely and cost-efficient deployment. This is the purpose of the European ATM Master Plan, the main planning tool for defining ATM modernisation R&D priorities and ensuring that SESAR technological solutions become a reality.

The 2015 edition of the Master Plan was officially adopted on December 15, 2015, after a twelve-month campaign carried out in close collaboration with the SESAR JU members and all aviation stakeholders. It provides for the first time, a comprehensive and long-term (2035) vision of the future ATM system, allowing for the definition of long-term performance ambitions and a preliminary business view, thus demonstrating the crucial contribution of technology to achieving the SES high-level goals.

This vision builds on the notion of ‘trajectory based operations’ and relies on the provision of air navigation services in support of the execution of the business or mission trajectory, meaning that aircraft can fly their preferred trajectories without being constrained by airspace configurations. This is enabled by a progressive increase of the level of automation support, the use of digital information sharing through data services, the implementation of virtualisation technologies, as well as the use of standardised and interoperable or integrated systems.

Accordingly, the system infrastructure is expected to gradually evolve with digitalisation technology, allowing air navigation service providers (ANSPs), irrespective of national borders, to plug in their operations where needed, supported by a range of information services. Airports will be fully integrated into the ATM network level, which will facilitate and optimise airspace user operations. Performance-based operations would then gradually be implemented across Europe, with multiple options envisaged such as full end-to-end air navigation services provided at network level.

It is widely recognised that to increase performance, ATM modernisation should look at the flight as a whole, within a

flow and network context, rather than segmented portions of its trajectory, as is the case today. With this in mind, the vision has to be realised across the entire ATM system, offering improvements at every stage of the flight. Reaching the optimal level of performance will also require a change in the way that solutions are deployed, as well as possible evolutions in the way services are provided. Through a four-phase approach, the implementation of the vision will see the high-level architecture gradually moving, from the existing fragmented network based on locally specific architecture, to a more interoperable, common and flexible service provision infrastructure at regional or the entire European network level.

It provides for the first time, a comprehensive and long-term (2035) vision of the future ATM system...

Scenarios for an optimal deployment synchronisation of the critical changes are described in the Master Plan so as to ensure convergence of timelines across stakeholders and optimal ground-ground and air-ground deployment scheduling.

The campaign aims at addressing new key areas such as the inclusion of all vehicles (including RPAS) in the ATM environment and cyber-security. Furthermore, a systematic and in-depth integration of military needs and specificities was achieved through an early involvement of the military authorities in the campaign. The successful outcome of this major update campaign allows the SESAR JU to now ramp up the next phase of R&D activities (SESAR 2020), based upon a sound and robust roadmap with a long-term vision, widely supported and endorsed by the European ATM community as a whole.

In a global arena, through the US-EU Memorandum of Cooperation, SESAR and NextGen have been key contributors to the ICAO GANP/ASBU modules and continue to support ICAO through shared and joint positions and close cooperation with other regions of the world. In this respect, the 2015 Edition of the Master Plan will enable further collaboration between SESAR and NextGen and facilitate a joint EU-US approach to global fora such as ICAO, to promote global interoperability and synchronisation where and when necessary. ■

¹ Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of Regions on SES II, COM(2008) 389/2, 25 June 2008.



Airborne Weather Detection Systems

SC-230 completed its Final Review and Comment (FRAC) resolution for the revisions of DO-220, *MOPS for Airborne Weather Radar with Forward-Looking Windshear Detection Capability*, and DO-213, *MOPS for Nose-Mounted Radomes*. Both documents incorporate advances in design and technology and Program Management Committee (PMC) approval is expected at their March meeting.

The Committee will now develop a report on the feasibility to standardize In-Flight Ice Crystals Long Range Awareness capabilities by Weather Radar (WXR). The report will provide preliminary guidance for the definition of the intended function and operational concept of the Ice Crystals Long Range Awareness functionality, along with possible recommendations for design and validation of the function. The report, to be developed



SC-230 members all smiles after FRAC resolution

Committee: SC-230, Airborne Weather Detection Systems
Co-Chairs: Jeff Finley, Rockwell Collins, Inc. and Dawn Gidner, Honeywell International, Inc.
Next Meeting: February 16-18, 2016 at GKN Aerospace, Luton, England, UK

jointly with EUROCAE WG-95, will provide recommendations on the content of potential future standardization activities, and a means to standardize icing-related WXR functions using new or existing EUROCAE/RTCA documents. It is expected to be finalized by November 2016. ■

Terrain Awareness Warning System (TAWS)

The sixth meeting of SC-231 was held in mid-December at RTCA to continue the development of single TAWS Minimum Operation Performance Standards (MOPS). The document will cover both legacy Ground Proximity Warning Systems (GPWS) modes as well as new TAWS modes. The new MOPS will also provide the foundation for revising Technical Standard Order (TSO)-C151c.

During the meeting, the Class A TAWS requirements were completed. This included reaching consensus on the Mode 1-5 alert envelopes as well as the Premature Descent Alerting (PDA) envelope; and the Forward Looking Terrain Awareness (FLTA) alert conditions. The Committee will turn its focus on

Class A verification tests and the development of initial Class B/C requirements. The Committee holds monthly teleconferences to work all sections of the document. ■

Committee: SC-231, Terrain Awareness Warning System (TAWS)
Co-Chairs: Yasuo Ishihara, Honeywell International, Inc. and Rick Ridenour, ACSS
Next Meeting: February 9-11, 2016, at ACSS/L-3, Phoenix, AZ

Airport Security Access Control Systems

SC-224, held Plenary #37 in mid-December at RTCA. The Committee is creating operational checklists for inclusion in DO-230G, *Standards for Airport Security Access Control System*. The document is scheduled to begin the Final Review and Comment (FRAC) period in March. ■

Committee: SC-224, Airport Security Access Control Systems
Chair: Christer Wilkinson, AECOM Technology Solutions
Next Meeting: March 10, 2016, at RTCA, Washington, DC

SOARING TO NEW HEIGHTS

Tackling the Hottest Topics in Aviation

- An Update from the NextGen Advisory Committee: Unique Venue for Public/Private Collaboration
- The FAA-Industry Joint Analysis Team: Taking Collaboration to the Next Level to Measure Benefits of NextGen
- Making Top Priorities a Reality (From Surface to Metroplex to Controller-Pilot Data Communications and Beyond)
- Integrating Unmanned Aircraft Systems into the NAS – Performance Standards, Performance-based Regulations
- Tackling Tactical Operational Challenges in the NAS
- International Harmonization – Initiative Underway to Ensure Safe and Seamless Global Operations
- Challenges and Opportunities of the Increasingly Sophisticated and Integrated Cockpit
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- Unmanned Aircraft Systems: Solving the Newest, Biggest Challenge to Aviation Since the Wright Brothers
- ADS-B: Meeting the 2020 Mandate and an Examination of What Comes Next
- Recognition of Excellence: Annual Awards Luncheon

The RTCA logo is positioned at the bottom center of the page, within the oval window frame. It consists of the letters 'RTCA' in a bold, black, sans-serif font. To the right of the letters is a stylized graphic of a triangle composed of small dots in shades of blue and yellow.

Spotlight on Volunteers: SC-232: Multiplying the Signals

The majority of RTCA Special Committees deal with new advancements in aviation that bring much-needed updates to outdated systems. But not every Committee's deliverables outline such a measurably huge step forward as does the upcoming document from SC-232, Airborne Selective Calling (SELCAL) Equipment.

The SELCAL system is a signaling method used to alert an individual aircraft that a ground station wishes to communicate with the aircraft. This Committee,

and we're excited to see SC-232 accomplish that."

"In 2011, we decided as an industry to expand from a 16-tone system to a 32-tone system," said the Committee's Co-Chair, Vic Nagowski. "Our biggest challenges included surveying interested parties across the aviation community to identify a solution, and updating standards provided by the Airline Electronic Engineering Committee (AEEC), RTCA, and the International Civil Aviation Organization (ICAO)."



Eric Kehoe
AvtechTyee, Inc.



Vic Nagowski
VJN Enterprises

With the publication of this MOPS, the system will grow from handling 10,290 unique aircraft codes to 215,760, and will keep up with the substantial growth in aviation.

which addresses the problem of duplicate SELCAL signals, is set to deliver an update to the system that will again allow unique code assignments for each new aircraft.

Back in 1959, when SELCALs were first introduced, the 10,290 unique codes available over the sixteen tone system provided more than enough unique codes for each individual aircraft. But over time, as more aircraft were put into the airspace and it became necessary to issue duplicate codes, complications arose, along with incident reports.

"There are currently over 30,000 existing assignments and new requests are averaging approximately 200 per month," said RTCA President Margaret Jenny. "To meet the requirements for new assignments, it was necessary to assign duplicate codes. Therefore, it became necessary to update the SELCAL standards to allow unique code assignments to each aircraft,

"We needed to address both the airborne side—the equipment installed in aircraft—and the ground station side, with recommendations to ICAO, since the radio equipment that transmits to the planes needed to be upgraded," said Co-Chair Eric Kehoe.

With the implementation of the new 32-tone system that has been developed, the number of unique codes explodes from 10,290 to 215,760.

"RTCA has provided everything we've needed to do our jobs," said Eric. "We've especially benefitted from the guidance of RTCA Program Director Hal Moses. He's been a great help. Any questions we've had, he has answered, or pointed us to the right person."

Both SC-232 Co-Chairs have distinguished careers in the aviation industry.

Eric has worked as a software engineer for almost thirty years, with ten

being spent in the aerospace industry. He is currently a Principal Engineer with AvtechTyee, Inc. "Working with Eric's been a real blessing," said Vic. "Eric manages the technical side of the Committee and I am more of the administrative lead, knowing how RTCA works and how the SELCAL functions in the real world."

Vic spent more than 25 years with ARINC and has been with VJN Enterprises since 2006. He has also been involved in other RTCA Committees and appreciates the way RTCA moves the process along. "It's been a pleasure working with Vic," said Eric. "He's got a lot of experience and has been involved with a lot of committees, so it's been a fun collaboration."

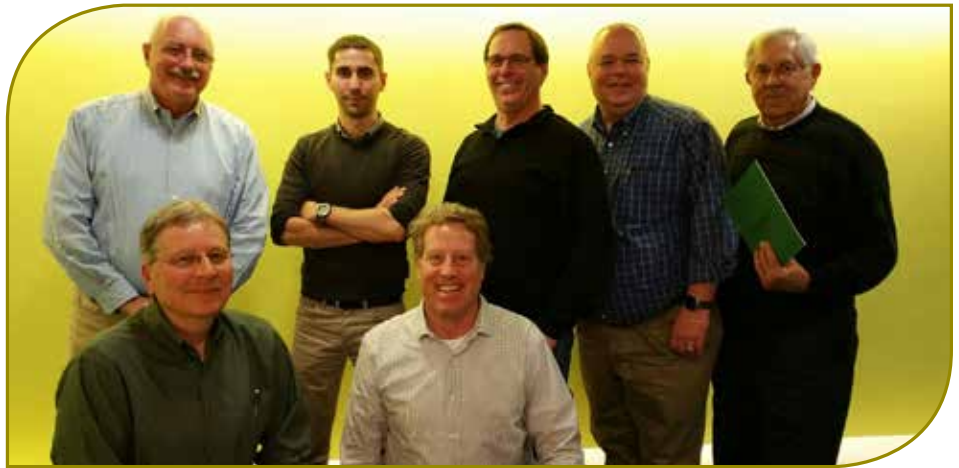
Eric says the testing of the new system that has taken place so far has been promising. The main objective in the testing has been to show that ground systems upgraded to the new standard will not cause false detections in current airborne SELCAL systems. Vic said feedback has been overwhelmingly positive, and final testing results have shown no false detections.

SC-232 completed their document for Final Review And Comment (FRAC) in November 2015 and plans to publish the document in March 2016. The new system will not be retrofitted on older planes; it will only be installed on new aircraft. Upgrading ground systems is the next step and is expected to take two to three years. ■

Airborne Selective Calling Equipment

SC-232 prevailed over the Blizzard of 2016 and office closures to meet and approve the revised DO-93, *Minimum Performance Standards – Airborne Selective Calling Equipment*. The SELCAL system enables selective calling to individual aircraft by linking ground stations with the aircraft. The revised document increases the 16-tones to 32-tones and results in the possibility of over 215 thousand usable unique codes—the current assignments of codes reached its capacity.

Francois Courbun, Airbus, reported on Airbus' test campaign that validated the new capabilities across their total fleet. The results confirmed backward compatibility with legacy decoders, inter-tone spacing, radio propagation effects, and ground implementation and interoperability in representative flight conditions. Similar results were reported by other industry members. The Committee finished their meeting by reviewing an update to Technical Standard Order (TSO) C59. The FAA plans to issue the revised TSO in parallel with the RTCA Program Management Committee approval of the document, which is set to happen in March. ■



Committee members weathered the storm at RTCA

Committee: SC-232, Airborne Selective Calling Equipment
Co-Chairs: Eric Kehoe, AvtechTyee, Inc., and Vic Nagowski, VJN Enterprises, Inc.
Next Meeting: Not Applicable

Portable Electronic Devices

At their recent meeting, SC-234 and WG-99 met at RTCA in Washington, DC. After an opening plenary lead by the SC-234 Chair with WG-99 Co-Chairs Robert Kebel, Airbus, and Stephan Schulte, HAW Hamburg/Lufthansa Group, the week was designated as face-to-face Task Group (TG) working sessions, including collaborative one-on-one TG breakout sessions to harmonize the sections of the document, the TG's have been working on separately.

David Walen, Federal Aviation Administration, and Robert Kebel, Airbus, are co-chairing a new TG to revise DO-307. This effort will result in a joint document



Chair Billy Martin and Committee members collaborating on their document

Committee: SC-234, Portable Electronic Devices
Chair: Billy Martin, National Institute of Aviation Research
Next Meeting: April 12-15, 2016, at Lufthansa, Frankfurt, Germany

DO-307A/ED-239, approved by the RTCA Program Management Committee (PMC) and the EUROCAE Technical Advisory Committee (TAC).

During the closing Plenary, the Committee discussed and approved a recommendation to change of the SC-234 documents' delivery dates to October 2016 to synchronize with the WG-99 Terms Of Reference. This request will be presented to the PMC in March. ■

Spotlight on RTCA Staff: Harold “Hal” Moses

For many who have worked with RTCA, at one time or another their point of contact has been Harold “Hal” Moses, who has been synonymous with RTCA for more than 20 years. “With my time here, I’ve probably managed and supported over thirty committees,” says Hal, “which has led to the production of more than 130 public documents, not as the author, but behind the scenes, making sure committees are successful.”

Now, after twenty-three years as a Program Director at RTCA, Hal is retiring. “It’s hard to imagine RTCA without Hal’s input,” says Margaret Jenny, RTCA President. “We’ve counted on him for so long—he is woven into the fabric of so many documents and standards. Hal is the consummate professional and he will definitely be missed.”

Retirement is bittersweet for Hal, as he looks back on more than two decades with RTCA. “The greatest reward has been watching people who have been put in leadership positions on these committees and seeing that translate into leadership positions and more responsibility within their companies. Those types of successes make this all worthwhile.” Hal says that seeing implementation is good as well. “You might not see the name RTCA, but those in the know, know what went into it.”

During Hal’s tenure at RTCA, he has seen

many significant changes. “We’ve become more international. Our membership has grown and participation on committees has become more global. There’s a greater diversity of ideas, and this brings great value as part of a committee. Topics have become more complex and more analysis goes into the development of a document.” Hal also says that as the level of complexity has increased over the years, more coordination between committees has been required. In addition, documents have increased in specificity.

Hal has watched RTCA membership more than quadruple, from the 120 organizations when he came onboard in 1992, to more than 500 member organizations to date. “This shows that there is value in participating in RTCA,” he says.

Hal was bitten by the aviation bug while growing up in Indiana. “Security was different back then. You could hang around the airport, sit in a plane and dream.” When Hal was about to be drafted to



serve in Vietnam, he made the decision to enlist so that he could join the Air Force to become a pilot. He trained on several aspects of aviation, including air traffic control, and became an Air Force Officer before retiring from military

service. At that point, he joined the staff of RTCA as a Program Director, and it has been history ever since.

“It’s the people that I’ll miss the most,” says Hal. “Not only all the people who have been involved with the committees I’ve worked with, but also the solid team that works together at RTCA that makes my job enjoyable. I’ll miss the interaction, the sense of responsibility and being dedicated to the mission of RTCA. It’s going to be hard to step away—I have good memories of the people here.”

Even though Hal is leaving RTCA, aviation will continue to remain a passion. He is open to other opportunities that come with retirement, and looks forward to spending time with his family, in particular, his grandchildren. ■



During his retirement celebration, Hal was presented with a plaque to rename one of the RTCA conference rooms in his honor. Hal was joined by his family at the celebration.

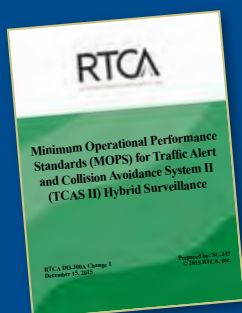
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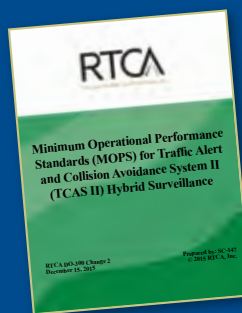
OVER 300 DOCUMENTS

Serving as the basis for FAA Regulation Compliance

JUST RELEASED



DO-300A Change 1, Minimum Operational Performance Standards (MOPS) for Traffic Alert and Collision Avoidance System II (TCAS II) Hybrid Surveillance



DO-300 Change 2, Minimum Operational Performance Standards (MOPS) for Traffic Alert and Collision Avoidance System II (TCAS II) Hybrid Surveillance



DO-283B, Minimum Operational Performance Standards for Required Navigation Performance for Area Navigation



DO-230F, Standards for Airport Security Access Control Systems

For additional information and to order documents, please visit www.rtca.org.



THE GOLD STANDARD FOR AVIATION SINCE 1935

TRAINING CENTER

2016 COURSE CALENDAR*



DO-160G, Environmental Conditions and Test Procedures for Airborne Equipment, Training Course



March 15-18
June 7-10 @ Wichita State University/National Institute Aviation Research
September 20-23 | December 13-16

RTCA has teamed up with Wichita State University's National Institute for Aviation Research (WSU-NIAR) to offer 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.

*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.

DO-178C, Software Considerations in Airborne Systems and Equipment Certification, Training Course



March 21-23 | June 21-23 | September 19-21 | December 12-14

RTCA 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 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 will provide a thorough understanding of the requirements and 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*.



The Supplements to DO-178C, Software Considerations in Airborne Systems and Equipment Certification, Training Course



March 24 | June 24 | September 22 | December 15

The 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.

LIMITED SPACE: REGISTER TODAY!

*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.

Require Navigation Performance (RNP)

DO-283B, *Minimum Operational Performance Standards for Required Navigation Performance for Area Navigation*

ISSUED 12-15-15 | PREPARED BY SC-227

This document supersedes RTCA DO-283A, *Minimum Operational Performance Standards for Required Navigation Performance for Area Navigation*, published in October 2003. The document provides guidance to enable the implementation of RNP equipment containing navigation capabilities and functions defined in the RNP RNAV MASPS, DO-236C and Change 1 to DO-236C. Updated and new requirements included are those for Vertical Navigation, Temperature Compensation, and Time of Arrival Control. Also new to this version are the specifications for two equipment classes for RNP. Class A equipment has the advanced functions consistent with Advanced RNP operations as described in the ICAO PBN Manual. Class B equipment is consistent with Advanced RNP operations as described in the ICAO PBN Manual. Class B equipment is consistent with RNP APCH operations and radius to fix leg capability, described in the ICAO PBN Manual.

Security

DO-230F, *Standards for Airport Security Access Control Systems*

ISSUED 12-15-15 | PREPARED BY SC-224

This document provides guidance on acquiring and designing security access control systems, testing and evaluating system performance, and operational requirements. It incorporates the latest technological advances in security access control systems and identity management technologies, including smart cards and biometrics. The major areas covered are:

- Introduction and Overview
- Credentialing
- Biometrics
- Physical Access Control Systems (PACS)
- Perimeter Intrusion Detection Systems (PIDS)
- Video Surveillance Systems
- Security Operations Center (SOC)
- Integration
- Communications Infrastructure
- General Acquisition-Related Considerations

This revision predominately addresses the Credentialing Section and the technical criteria needed due to rapid advances in technology, trends and policy. The major items

included changes such topics as potential use of an airport credential for both identification and for physical and logical access to a range of privileges; clarification of airport operator status as the ultimate responsible party for issuance of credentials; additional security measures consistent with state or local law on issuance of such credentials; and the airport credentialing process requirements specifics including background and security checks.

Of note, DO-230F is dedicated to Mr. Charles Chambers, Senior Vice President and Chief Development Officer of the National Safe Skies Alliance. Mr. Chambers was an active member of SC-224 until his untimely death in mid-October 2015. He was instrumental in increasing the distribution of DO-230 to airport security officials and security consultants in the aviation domain.

TCAS

DO-300A Change 1, *Minimum Performance Standards (MOPS) for Traffic Alert and Collision Avoidance System II (TCASII) Hybrid Surveillance*

ISSUED 12-15-2015 | PREPARED BY SC-147

This document provides additional requirements to help prevent spurious Resolution Advisories during transition from passive to active surveillance. The change includes:

- New requirements which ensure that there is no “residue” from ADS-B surveillance when a track transitions from passive to active surveillance.
- An optional requirement allowing a system to be designed to only perform hybrid surveillance for an intruder whose ADS-B OUT version is greater than or equal to 2.
- Appendix G is added demonstrating that the safety analysis in Appendix D still applies. It documents that a TA and an RA will still be generated at the same time as a TCAS II system which does not use the hybrid surveillance techniques of this specification.
- Adopt the text from FAA TSO-C119d Appendix 2. That appendix was created in response to comments received during the public comment phase for TSO-Cc119d. FAA disposition of certain comments received during that review period necessitated creation of Appendix 2 to affect changes to certain sections of DO-300A.

[continued on Page 13](#)

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DO-300 Change 2, Minimum Performance Standards (MOPS) for Traffic Alert and Collision Avoidance System II (TCASII) Hybrid Surveillance

ISSUED 12-15-15 | PREPARED BY SC-147

This document provides additional requirements to help prevent spurious Resolution Advisories during transition from passive to active surveillance. The change includes:

- New requirements which ensure that there is no “residue”

from ADS-B surveillance when a track transitions from passive to active surveillance.

- An optional requirement allowing a system to be designed to only perform hybrid surveillance for an intruder whose ADS-B OUT version is greater than or equal to 2.

For additional information and to order documents, visit [RTCA's store](#). RTCA Members may download electronic documents at no cost and qualify for a 60% discount on paper documents.

Non-Rechargeable Lithium Batteries

SC-235 held their second Plenary in early January at RTCA to work on revising DO-227, *Minimum Operational Performance Standard for Non-Rechargeable Lithium Batteries*, standards for batteries installed on aircraft.

Among topics covered, a recommendation to change the delivery schedule for the document to April 2017 was discussed. The Committee’s initial start was slightly delayed and thus the time needed to complete the work needs to be extended. This

revised schedule will be presented to the Program Management Committee in March. ■

- Committee:** SC-235, Non-Rechargeable Lithium Batteries
- Chair:** John Trela, The Boeing Company
- Next Meeting:** April 26-27, 2016, at Radiant Power Corp., Sarasota, FL



Committee members enjoying dinner together



SC-235 ready to work

Aerospace Industries Association
Arlington, Virginia USA
Ali Bahrami

The Aerospace Industries Association (AIA), founded in 1919 only a few years after the birth of flight, is the premier trade association representing major aerospace and defense manufacturers and suppliers in the United States.

Today, more than 300 major aerospace and defense companies and their suppliers are members of the association, embodying every high-technology manufacturing segment of the U.S. aerospace and defense industry, from commercial aviation and avionics, to manned and unmanned defense systems, to space technologies and satellite communications.

The association concentrates on issues covering civil and commercial space, civil aviation, defense and security, and international.

Air Traffic Control Association (ATCA)
Alexandria, Virginia USA
Peter Dumont

Established in Washington, D.C. in 1956 by a group of air traffic controllers, the Air Traffic Control Association has been from the outset, dedicated to progress in the science of air traffic control and the preservation of a safe flight environment. It provides a forum in which those concerned can address the myriad issues inherent to the development of viable air traffic control systems and aviation infrastructures, and the ever increasing demands on the global navigable airspace environment. Those in the aviation community; the providers of air traffic control, system architects, manufacturers, suppliers, system operators and users join together in ATCA to share their collective experience and knowledge, and efforts in pursuit of common goals. ATCA is unique in representing the broad spectrum of civil-military cooperation typical of global flying activities.

Airphrame
San Francisco, California USA
Talbot Martin

Airphrame is an unmanned vehicle technology company developing an aerial imaging and mapping service for commercial markets.

Aviation Safety Supplies, Ltd.
Tauranga, NEW ZEALAND
Lloyd Klee

Aviation Safety Supplies, Ltd. is a Part 145 sales and service and distributor of 406MHz Emergency Locator Transmitter (ELTs).

CAL Analytics
Columbus, Ohio USA
Sean Calhoun

CAL Analytics is a small business focusing on the development of aviation and autonomous systems. Located in Columbus, Ohio and founded in 2010, CAL Analytics has expertise in navigation systems, remote sensing, signal analysis, and information fusion. CAL Analytics is a leading contributor in the development of key innovations for integrating unmanned aircraft into service for both military and commercial applications.

Carlisle Interconnect Technologies
Saint Augustine, Florida USA
Jeff Behlendorf

Carlisle Interconnect Technologies is one of the world's leading designers and manufacturers of high-performance wire and cable, including optical fiber. Since 1940, the company has grown their product portfolio to include specialty and filtered connectors, contacts, cable assemblies, complex harnesses, racks, trays and installation kits. In addition, they provide a high level of support by offering engineering and certification services for the commercial aerospace, military and defense electronics, industrial, test & measurement, and medical industries.

Defense Research Associates, Inc.
Beavercreek, Ohio USA
Andrew White

Defense Research Associates, Inc. (DRA) is a veteran-owned small business specializing in developing innovative technologies, in conjunction with government research laboratories, and transitioning them to support the Warfighter. DRA is headquartered in Dayton, Ohio with an additional office in Crane, Indiana.

DRA has a 90% commercialization rate for technology developed under Small Business Innovative Research programs, and in 2003 was awarded the Small Business Administration's Award for Excellence for innovative utilization of affordable Commercial-off-the-Shelf (COTS) technology.

General Dynamics Mission Systems
Fairfax, Virginia USA
Sam Gonzales

General Dynamics Mission Systems is a business unit of General Dynamics, the global aerospace and defense company. They are a leading provider of mission critical C4ISR systems across the land, sea, air, space and cyber domains. They are an established global presence in secure communications and networking, command and control systems, imagery sensors and cyber.

In January 2015, General Dynamics Mission Systems began a new chapter, combining the resources and capabilities of General Dynamics Advanced Information Systems and General Dynamics C4 Systems. General Dynamics Advanced Information Systems provided mission-related systems development, integration and operations support. General Dynamics C4 Systems was a leading integrator of secure communications, information systems and technology.

Gillespie Avionics
Letterkenny, Co. Donegal IRELAND
Allan Gillespie

Founded in 2007, Gillespie Avionics develops innovative electronics products for clients in varying industries.

The company specializes in the area of electronic paper display technology, which provides a paper-like reading experience, and has developed prototype products aimed at the aviation community.

Their services range from initial project scoping to small-scale prototype builds and include: electronic product development, user-interface development, embedded hardware & software and electronic-paper display technology.

Jacobs Technology, Inc.
Nashua, New Hampshire USA
Cheryl Mooney

Jacobs Technology handles the technology business of Jacobs Engineering Group and designs and oversees the construction of engineering and test facilities, as well as provides software engineering services. The company's customers are typically from the aerospace and automotive industries, but it is also involved in environmental and nuclear projects. Automotive projects include aerodynamics facilities, driveability test facilities, climatic wind tunnels, and powertrain and engine test facilities. Aerospace projects include the

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construction of wind tunnels, heater facilities, propulsion test units, combustion chambers, and turbine and rocket test facilities.

Landrum & Brown
Cincinnati, Ohio USA
Lee Brown

Founded in 1949, Landrum & Brown (L&B) is a global leader in airport and aviation planning and the oldest privately owned consultancy dedicated solely to the needs of the commercial aviation community, focusing on environmental and airport planning solutions for today's results-oriented aviation decision makers. Working in a highly competitive consultancy environment, their team of qualified and experienced professionals has established a strong reputation for delivering innovative aviation planning solutions to clients in markets as diverse as North America, Europe, the Middle East, India, Greater China, Asia and Australia.

Lufthansa Systems FlightNav
Glattbrugg, SWITZERLAND
Frank Wigold

Lufthansa Systems GmbH & Co. is one of the world's leading providers of IT services in the airline industry. The company offers its more than 300 airline customers an extensive range of successful, and in many cases, market-leading products for the aviation industry. The innovative IT products and services in this portfolio offer customers a wide range of economic efficiency and competitiveness.

Lufthansa Systems has several offices in Germany and in 16 other countries.

Nu-Approach Ltd.
Yately, Hampshire UNITED KINGDOM
Kenneth Ashton

Nu-Approach assists operators of smaller airfields and aircraft to take advantage of Performance-based navigation (PBN) and Global Navigation Satellite System (GNSS) applications including Approach with Vertical (APV) guidance supported by the European Geostationary Navigation Overlay Service (EGNOS).

Nu-Approach provides independent information and guidance from project specification through tender evaluation, implementation and transition into operation.

Physical Optics Corporation
Torrance, California USA
Omar Faricy

Founded in 1985, Physical Optics Corporation (POC), is a small, women-owned business that is well managed, profitable and growing. The company is supported by a vast technology portfolio that covers: optics, electro-optics, holography, photonics, fiber optics, optical instrumentation, sensor systems, chemical-bio-medical, standoff detection, avionics, information assurance, wireless systems, metrology, renewable energy, surveillance systems, electronic warfare, Intelligence, Surveillance, and Reconnaissance (ISR) and less-lethal solutions.

POC houses some of the most highly advanced and unique research laboratories, as well as engineering, prototyping, development, testing and production facilities. The company complies with all applicable International Traffic in Arms Regulations (ITAR) provisions. Their production and quality programs are certified to ISO 9001:2000, AS9100C, AS9110A and managed under CMMI – ML3. The company has launched six (6) spin-off companies and holds 159 issued patents worldwide, covering over 40 technologies. To date, POC has shipped well over \$300 million in commercial, and government products that have been fielded in 71 Department of Defense (DoD) and Department of Energy (DoE) installations.

Securaplane Technologies, Inc.
Tucson, Arizona USA
Mike Boost

Securaplane is a leading supplier of avionics products for business, commercial, and military aircraft including airborne video cameras, security systems, emergency and main ship batteries, battery chargers, inverters, and wireless control systems. Their products are installed by major original equipment manufacturers including AgustaWestland, Airbus, Boeing, Bombardier, Cessna, Dassault, Embraer, Eurocopter, Gulfstream, Hawker Beechcraft, and Sikorsky. In April 2011, Securaplane was acquired by Meggitt PLC as part of a broader acquisition of Pacific Scientific Aerospace.

Securaplane's headquarters in Tucson, AZ is home to its primary manufacturing and engineering facility. In addition, Securaplane is supported by subassembly work performed in Vietnam and repair & overhaul work in the UK and Singapore through other Meggitt facilities.

Select Controls Inc.
Bohemia, New York USA
Robert Ufer

Select Controls Inc. is an engineering and manufacturing firm specializing in Acceleration Switches, Impact Switches, Tilt Switches and Aircraft Formation Lights. Switches are used in emergency Locating Transmitters (ELTs), Cockpit Voice and Data Recorders and Military Safe/Arm Systems.

Sky Way Consulting, LLC
Derwood, Maryland USA
Spiro Bocvarov

Sky Way Consulting, LLC is a small business founded to advance the practice of research, design, development, integration, and testing of aviation and space systems. The company offers engineering and support services to Government Customers and Industry Partners.

Techair Ltd.
Browns Bay, NEW ZEALAND
John Aplin

Techair is a NZ-CAA approved Part 146 Aircraft Design Organization and Design Delegation Holder (similar to DER/DAR).

Technology Providers, Inc.
Haymarket, Virginia USA
Marvin Hammond

Technology Providers, Inc. provides technical support in the areas of communications to the Department of Defense and associated companies.

WS Technologies Inc.
Kelowna, British Columbia CANADA
Bill Street

Founded in August 2000, the staff of WS Technologies Inc. has almost 50 years of combined experience in developing and producing Cospas-Sarsat emergency beacons including Emergency Position Indicating Radio Beacon (EPIRBs), Emergency Locator Transmitter (ELTs), Personal Locator Beacon (PLBs), Global Positioning System (GPS) equipped beacons, GPS beacon test boxes, and Beacon Testers.

Committed to improving technology and reliability in the Search and Rescue industry, WS Technologies Inc. develops and produces state-of-the-art handheld Beacon Testers, Screen Boxes, and Beacon Monitors. This equipment will help ensure that 406 MHz emergency beacons are operating properly in order to meet the increased testing requirements demanded by the industry. ■

Aeronautical Information and Meteorological Services Data Link

SC-206 met in December and designated their week to Sub-Group (SG) working sessions.

SG1/6, Minimum Aviation System Performance Standards (MASPS), led by Co-Chairs Steve Darr, Dynamic Aerospace, Inc., and Bill Carson, The MITRE Corporation, continued to work on the MASPS by sections for Final Review and Comment (FRAC) release in June 2016. They plan to conduct their next meeting February 10-12 at the Orlando Certification Management Office (CMO-67).

SG4, Minimum Operational Performance Standards (MOPS) for Eddy Dissipation Rate (EDR), Co-Chairs Tammy Farrar, FAA, and Bill Watts, Delta Air Lines, led discussions with the FAA EDR Standards Recommendation Team, whose report is expected in March. The MOPS team is working towards a FRAC release of June 2017.

SG7, Wind Information Guidance, Co-Chairs Ernie Dash, AvMet Applications, and Michael McPartland, MIT/LL, led discussions on the scope of the document to include supporting analytical tasks. The Group continues to address the document for FRAC release in September 2016. ■



SC-206 members in the holiday spirit

- Committee:** SC-206, Aeronautical Information and Meteorological Services Data Link
- Co-Chairs:** Allan Hart, Honeywell International, Inc. and Rocky Stone, United Airlines, Inc.
- Next Meeting:** March 7-11, 2016, at Delta Air Lines, Atlanta, GA

Standards for Air Traffic Data Communications Services

SC-214 met jointly with EUROCAE WG-78, led by Jerome Condis of Airbus, in Paris, France. The Committee finalized resolutions for comments received during the Final Review and Comment (FRAC) period on four documents:

- DO-350A/ED-228A - *Safety and Performance Standard for Baseline 2 ATS Data Communications, Vol 1 and Vol 2*
- DO-351A/ED-229A - *Interoperability Standard For Baseline 2 ATS Data Communications via the ATN, Vol 1 and Vol 2*
- DO-353A/ED-231A - *Interoperability Standard For Baseline 2 ATS Data Communications, ATN Baseline 1 Accommodation*
- DO-352A/ED-230A - *Interoperability Standard For Baseline 2 ATS Data Communications, FANS 1/A Accommodation*

The documents were approved for submission to the RTCA Program Management Committee at their March meeting, and through the EUROCAE Technical Advisory Committee to Council in February for publication.

Except for the Advanced VHF Digital Data Communications



SC-214 at Airbus Headquarters

Minimum Aviation System Performance Standards and Minimum Operational Performance Standards subgroup, both SC-214 and WG-78 will go into dormant state until reactivated by request. ■

- Committee:** SC-214, Standards for Air Traffic Data Communications Services
- Chair:** Chuck Stewart, United Airlines, Inc.
- Next Meeting:** Not Applicable



Rechargeable Lithium Batteries and Battery Systems

SC-225 is continuing their work to update DO-311, *Minimum Operational Performance Standards for Rechargeable Lithium Battery Systems*.

The focus of the Committee is to address feedback from the Program Management Committee (PMC) concerning guidance for installation, testing and validation. SC-225 is evaluating suitable criteria and will request concurrence from the PMC once categories are defined. The Committee was also asked to review the structure of the document to better align with the RTCA Minimum Operational Performance Standards (MOPS) guidelines

and provide more requirements against the testing standards. SC-225 is working toward a completion date of December 2016. ■

Committee: SC-225, Rechargeable Lithium Batteries and Battery Systems
Chair: Richard Nguyen, The Boeing Company
Next Meeting: April 5-7, 2016, at RTCA, Washington, DC

Calendar of Events

FEBRUARY 2016-MAY 2016

February 9

SC-217, Aeronautical Databases
 Neu-Isenburg, Germany | Hosted by Jeppesen

February 9-11

SC-231, TAWS
 Phoenix, AZ | Hosted by ACSS/L-3 Comm

February 16-18

SC-230, Airborne Weather Detection Systems
 Luton, England | Hosted by GKN Aerospace

March 7-11

SC-159, Global Positioning System
 Washington, DC | Hosted by RTCA

March 7-11

SC-206, Aeronautical Information and Meteorological Data Link Services
 Atlanta, GA | Hosted by Delta Air Lines, Inc.

March 8-10

SC-233, Addressing Human Factors/Pilot Interface Issues for Avionics
 Washington, DC | Hosted by RTCA

March 10

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

March 11

SC-186, Automatic Dependent Surveillance-Broadcast
 Washington, DC | Hosted by RTCA

March 15-18

DO-160G Training
 Washington, DC | Hosted by RTCA

March 15-17

SC-147, Traffic Alert & Collision Avoidance System
 Phoenix, AZ | Hosted by ACSS

March 15-17

SC-227, Standards of Navigation Performance
 Washington, DC | Hosted by RTCA

March 16-18

SC-229, 406 MHz Emergency Locator Transmitters (ELTs)
 Washington, DC | Hosted by NBAA

March 21-23

DO-178C Training
 Washington, DC | Hosted by RTCA

March 24

Supplements to DO-178C Training
 Washington, DC | Hosted by RTCA

March 31

SC-135, Environmental Conditions and Test Procedures
 Phoenix, AZ | Hosted by Honeywell International, Inc.

April 5-7

SC-225, Rechargeable Lithium Batteries and Battery Systems
 Washington, DC | Hosted by RTCA

April 12-15

SC-234, Portable Electronic Devices
 Frankfurt, Germany | Hosted by Lufthansa

April 26-27

SC-235, Non-Rechargeable Lithium Batteries
 Sarasota, FL | Hosted by Radiant Power Corp.

April 26-28

SC-223, Aeronautical Mobile Airport Communication System
 Washington, DC | Hosted by RTCA

May 10-12

SC-213, Enhanced Flight Vision Systems & Synthetic Vision Systems
 Bordeaux, France | Hosted by Thales

Upcoming Events

NAC, NextGen Advisory Committee
February 25, 2016
 Atlanta, GA | Hosted by Delta Air Lines, Inc.

TOC, Tactical Operations Committee
March 3, 2016
 Washington, DC | Hosted by RTCA

PMC, Program Management Committee
March 17, 2016
 Washington, DC | Hosted by RTCA

RTCA 2016 Global Aviation Symposium
June 1-2, 2016
 Washington, DC | National Press Club

Visit www.rtca.org for up-to-date information

Unless otherwise specified, all meetings are held at RTCA, 1150 18th St., NW, Suite 910, Washington, DC, 20036. The information in this calendar is deemed to be reliable as of the date of publication, but is not guaranteed and is subject to change. Please visit www.rtca.org for updates. All RTCA Federal advisory committee meetings are open to the public and are free of charge. For additional information, email RTCA at info@rtca.org.

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