

# RTCA DIGEST

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## PMC Tackles a Full Agenda

**R**TCA's Program Management Committee (PMC) approved the establishment of two new Special Committees (SC), the publication of a new document, a change to an existing document and revisions to the Terms of References (TORs) for six Special Committees at its December meeting.

Under the leadership of Chris Hegarty of The MITRE Corporation, the PMC approved the formation of Special Committee 233, Addressing Human Factors/Pilot Interface Issues for Avionics, in response to the FAA's request to develop an

updated version of a document published by the Volpe Center. SC-233 is tasked with creating a document containing a recommended process for evaluating the human factors aspects of avionics, as well as identifying key human factors issues with these systems. The new document is intended to raise the level of awareness about human factors to facilitate the identification and resolution of human factors issues by the individuals who are responsible for design and evaluation of avionics.

The second new Special Committee, SC-234, [continued on Page 2](#)



Program Management Committee members discuss creation of committee covering Portable Electronic Devices (PEDs)

## NTSB Chair to Speak at Symposium Awards Luncheon

**A**cting National Transportation Safety Board (NTSB) Chair, Chris Hart, will be the keynote speaker at the RTCA Global Aviation Symposium Awards Luncheon on Wednesday, June 3, 2015 at the National Press Club in Washington, DC. The Chair's speech will address the aviation community regarding efforts to enhance



safety and improve the aviation system. The luncheon recognizes the contributions and impressive achievements of RTCA Committee volunteers participating in the RTCA consensus process.

For more information about the RTCA Awards Luncheon and the 2015 Symposium, visit the [Symposium page](#). ■

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Portable Electronic Devices (PEDs), will develop a document to supersede the existing DO-294C to provide industry guidance and best practices for determining aircraft PED tolerance through a safety risk assessment (SRA) process.

During the meeting, the PMC also took the following actions:

- **New and Revised Documents** — Approved DO-357, User Guide – Supplement to DO-160G, prepared by SC-135 and; Change 1 to DO-160G, Environmental Conditions and Test Procedures for Airborne Equipment, prepared by SC-135.

- **Revised TORs**— discussed and revised TORs for SC-135, Environmental Testing; SC-186, ADS-B; SC-206, Aeronautical Information Services Data Link; SC-222, Enhanced Aeronautical Mobile-Satellite (R) Service (AMS(R)S); SC-227, Standards of Navigation Performance; and SC-231, Terrain Awareness Warning Systems (TAWS), to reflect new completion dates, update committee co-chairs and Designated Federal Officials, and revise current documents.

The next PMC meeting will be held on March 24. For more information about the PMC or the upcoming meeting, see [the Program Management Committee page](#). ■

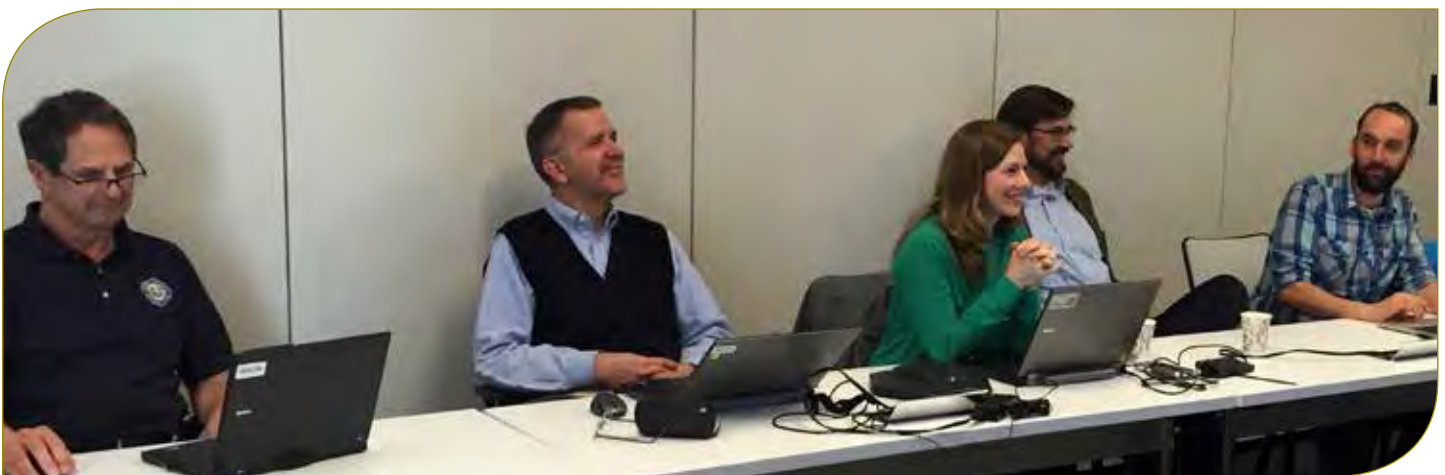
## Automatic Dependant Surveillance-Broadcast (ADS-B)

**S**C-186 met in late January to discuss a range of application and technical requirements. The Committee also welcomed new Co-Chair, Jesse Turner of the Boeing Company, replacing Vinny Capezzuto, formerly of the FAA. Mr. Turner brings an extensive avionics development and implementation background to the Committee and joins Capt. Rocky Stone, United Continental Holdings.

Key topics covered included a review of the Committee's recently revised Terms of Reference, the technical requirements for the Flight Deck-based Interval Management MOPS, Cockpit Assisted Pilot Procedures (CAPP) and Advanced Interval Management (A-IM).

The revised Terms of Reference extended the completion dates for the Flight-deck based Interval Management (FIM) Minimum Operational Performance Standards (MOPS) and DO-328, *Flight-deck based Interval Management (FIM) SPR, Interop, Rev B*. These documents, being developed in parallel, are planned for a Final Review and Comment release in March with the final Committee approval expected in early June. Follow-on activities with planned completion in 2018 to support final scope of A-FIM include the development of A-FIM MOPS and DO-328, Rev B. Revisions to ADS-B MOPS, DO-260C and DO-282C will follow in 2019.

The next meeting will be June 12 at RTCA. ■



# Getting to the Heart of the Matter

By Mark Baker  
President and CEO  
Aircraft Owners and Pilots Association (AOPA)



Mark Baker  
President and CEO

With the clock ticking on the FAA's 2020 ADS-B Out mandate and only a small percentage of the fleet in compliance, we felt we owed it to our members and the whole general aviation community to take an honest and comprehensive look at the barriers that stand between where we are and where we need to be.

AOPA supports full participation in ADS-B Out. The FAA has said that the safety benefits of ADS-B can only be realized through universal participation, and we agree. But getting there means every segment of the general aviation community has to have access to affordable solutions that make sense. And right now, that's just not the case.

Identifying and acknowledging problems is the only way to start solving them. That's why we recently collaborated with 13 other general aviation organizations and type clubs to send a letter to FAA Administrator Michael Huerta that plainly sets out the obstacles to general aviation equipage and very directly asks for his agency's help to resolve them. The large number of signatories from groups that represent the owners and pilots of diverse aircraft, ranging from experimental airplanes to helicopters and from light sport aircraft to jets, is evidence of just how significant a cross-section of the general aviation fleet is struggling to meet the mandate.

Cost is an enormous barrier for the owners of tens of thousands of light GA aircraft. When we took a look at the FAA registry, we identified more than 81,000 certified airplanes valued at \$40,000 or less. Putting equipment that costs a minimum of \$5,000 to purchase and install in an airplane like that just doesn't make sense to many owners, especially when all they get out of it is the right to continue flying in the same airspace they use today.

But continuing to have access to that airspace is important, particularly for people living or basing their aircraft in areas where a Mode C transponder is needed. I hear regularly from AOPA members who tell me they will be doing a lot less flying come January 1, 2020 if the price to equip doesn't come down significantly.

But that's not the only challenge facing GA operators. For the owners of experimental aircraft, there is currently no certified solution available. Without a type certificate, there can be no supplemental type certificate, so these aircraft can-

not comply with the requirements of the mandate even if they install the appropriate equipment.

Owners of many light sport aircraft, new glass-panel aircraft and Part 25 operators are facing the same issue—they simply have no path forward.

If we can't find ways to address these issues and bring these aircraft into compliance, we will see general aviation activity decline. And what will happen to the 1,339 airports located under or within what will be ADS-B ruled airspace? Operations will fall, businesses will suffer, and there could be serious negative economic consequences not only for the airports but also for the communities they serve.

Making it possible and affordable for aircraft owners to equip for ADS-B Out is only part of the equation. We also need ADS-B to deliver on its promises. A Department of Transportation Inspector General's report released last year listed a wide range of issues that must be resolved if ADS-B is to live up to its claims. The issues identified by the IG report include gaps in coverage, technical and training issues, data integrity concerns, cost overruns and

delays, and more. The general aviation industry stands ready to assist the FAA where we can in addressing these matters, but the FAA, too, must act.

We don't believe the barriers to ADS-B implementation and equipage are insurmountable. In fact, we're confident that the tools needed to resolve these challenges exist right now—and that's good because with less than five years remaining to bring the entire fleet into compliance, we can't afford to wait.

That's why, in our letter, we asked the FAA's technical standards office to make working with equipment manufacturers and our organizations its highest priority. We appreciate that the FAA recognizes the equipage challenge, and we are pleased to be part of the Equip 2020 meetings. But more is needed. We've asked the FAA to be a truly active partner in this process and commit its Flight Standards and Technical Operations team to work with stakeholders in identifying cost drivers in the current ADS-B Out technical standards and developing alternative solutions that leverage technology to drive down these cost barriers.

The problems are real and substantial, but they can be solved provided we work together. There's no time to lose. ■

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*Identifying and acknowledging problems is the only way to start solving them.*

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## Spotlight on Volunteers: Consensus-Building Key to Updated TAWS Standards

**S**C-231, [Terrain Awareness and Warning System \(TAWS\)](#), at the request of the FAA, is developing a new Minimum Operations Performance Standard (MOPS) document for TAWS, modernizing standards and guidances published decades ago. Established in May 2014, SC-231 is co-chaired by Yasuo Ishihara of Honeywell and Rick Ridenour of ACSS with Charisse Green serving as the Designated Federal Official (DFO).

SC-231 has been tasked to develop an industry consensus set of TAWS standards and update the Ground Proximity Warning Systems (GPWS) standards, using RTCA's DO-161A, published in 1976, and the Committee's Technical Standard Order (TSO) C-151c, published in the late 1990s. Controlled Flight Into Terrain (CFIT) used to be a significant cause of airline accidents but after TAWS requirements were put into place, there was a significant reduction in these types of accidents.

Shortly after SC-231 was formed, the National Transportation Safety Board (NTSB) requested a review and modification of TAWS requirements when an airplane is configured for landing near an airport, including descending at high rates with rising terrain near an airport. This additional request has been added to the Committee's Terms of Reference (TOR) and will require an additional year of work for SC-231. Publication of the new MOPS for TAWS is now expected in December 2016.

"Rick and Yasuo are providing the type of leadership in the consensus-based Committee process necessary to improve safety," explained Margaret Jenny, RTCA President. The Co-Chairs both bring strong TAWS-related expertise and "real world" experience in working with clients on these products that have been helpful to the Committee process. They share responsibilities equally, both helping to develop agendas, lead the meetings and together, they have worked to

draw on the Committee's expertise.

There has been a strong involvement of the Committee members who are working on various sections of the document. They meet once every three

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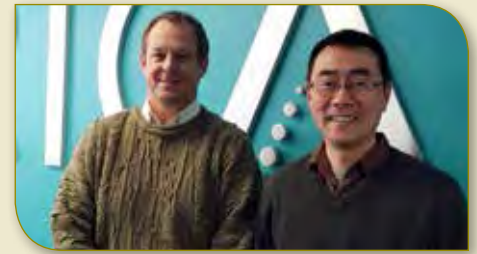
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months and also conduct monthly telecons. SC-231's members represent manufacturers, airline operators and airline regulators. Yasuo stated, "From the very beginning, this Committee has worked well together and we have been able to accomplish consensus among competitors. Rick and I are most grateful for all the time, energy and talent that each person contributes, in spite of everyone's demanding, full-time careers."

Once the TAWS MOPS is completed, it will reduce the current need for manufacturers to apply for deviations with the FAA, a time-consuming and paper-laden effort. The MOPS will also be modernized from RTCA's nearly 40-year old document to reflect today's technologies and provide clearer guidance for TAWS manufacturers. The MOPS will also address the NTSB's request for higher safety levels by strengthening alerting requirements for TAWS near airports.

Regarding SC-231's work, Rick said, "Our concern while working on this document is primarily to improve our already safe airspace, but we are also focused on making sure the standards are achievable for manufacturers and that they work in a potential airplane crisis. One of the current issues we must consider is nuisance alerts, which, if too frequent, can result in the crew ignoring or not fully responding to alerts that indicate real danger."

Yasuo is a Technical Fellow with Honeywell Aerospace Advanced Technology, based in Redmond, WA, where



Rick Ridenour of ACSS and Yasuo Ishihara of Honeywell

he works in research and development of flight safety systems and has developed

numerous products. He has more than 15 years of experience with flight safety systems and has had the opportunity to work with pilots from airlines around the globe to advance flight safety. Yasuo served as Co-Chair of RTCA SC-212, which developed the MOPS for helicopter TAWS airborne equipment, for which he received the RTCA Citation Award. Yasuo is a Senior Member of the American Institute of Aeronautics and Astronautics (AIAA) and a member of the International Society of Air Safety Investigators (ISASI). Yasuo holds a M.S. degree in Human Factors in Aeronautics and Astronautics from the Massachusetts Institute of Technology, and also holds a private pilot's license for fixed-wing and rotary-wing aircraft.

Rick is a Technical Senior Staff Engineer for Aviation Communication and Surveillance Systems (ACSS), based in Phoenix, AZ. His responsibilities include serving as the chief TAWS engineer for ACSS and supporting installation and certification of TAWS products on multiple platforms. One of his responsibilities as a test pilot is testing products in "real world" situations. He is also a Flight Analyst Designated Engineering Representative (DER) for the FAA. Previously, Rick was at Honeywell for 13 years, working in various places including Phoenix, Toulouse, Montreal and Toronto. He served on RTCA SC-186 with ADS-B and actively participated in the development of DO-323. Rick holds a B.S. in Applied Physics from the University of Northern Iowa and is a Certified Flight Instructor. ■

## Committee Considers NTSB Recommendation

**S**C-231, [Terrain Awareness and Warning Systems \(TAWS\)](#), met to continue development of the Minimum Operational Performance Standards (MOPS) for TAWS. The Committee is adapting the current TAWS Minimum Performance Standards from FAA TSO C151c, *Terrain Awareness and Warning Systems*, and RTCA DO-161A, *Minimum Performance Standards – Airborne Ground Proximity Warning Equipment* (last updated in 1976) and updating them based on current technology and experience.

The Committee's Terms of Reference was recently updated to address NTSB recommendation A-14-82 which resulted from the UPS Flight 1354 accident in Birmingham, AL, in 2013. This accident occurred approximately one nautical mile from the end of the runway, and the TAWS alerts occurred relatively late in the accident sequence.

Close to the ground accident scenarios have historically been difficult for TAWS equipment to detect, due in part to the finite accuracy of both the real-time aircraft position estimation and the database representation of the runway, balanced with the need to avoid nuisance alerts during

normal landing maneuvers. The current TSO C151c requirements reflect this limitation, and do not require any alerting for premature descent when the aircraft is within two nautical miles of the airport. The Committee discussed possible areas of improvement for these requirements. The hope is that future systems will be able to take advantage of more accurate runway data and navigation systems that were not available when the TSO was first written.

The next meeting is scheduled for March 24-26 at RTCA. ■



Members of the TAWS Committee meeting in mid-January

## Spotlight on RTCA's Program Coordinator

Many RTCA members are probably already familiar with RTCA staff member Karan Hofmann. Karan began at RTCA in November 2014, where she serves as Program Coordinator, a newly-created position to support the work of the Program Management Committee (PMC) and RTCA's 22 Special Committees (SC).

As RTCA's Program Coordinator, Karan provides many levels of support to committees, from helping to write and edit documents, to acting as secretary when needed, to assisting RTCA's many international visitors. Karan also is responsible for this year's RTCA's awards program and supporting the Annual Awards Luncheon, to be held during the upcoming RTCA Global Aviation Symposium in June.

Karan is a lifelong aviation professional who began pursuing her career in aviation by becoming the first woman Junior ROTC Cadet in her high school. She went on to a career in the U.S. Air Force (USAF), achieving the rank of Lieutenant Colonel and working in the field of meteorology. Her duties included HQ-level aviation weather staff officer, aviation weather instructor, and design and development of weather processing/visualization systems. After retiring from the USAF, Karan worked for Tapestry Solutions, CST Corporation and Northrop Grumman in the areas of transportation, meteorol-

ogy and logistics modeling. She and her husband also founded ScheduLogics, which provides scheduling, planning and work flow software solutions for R&D firms and aviation service companies. Karan holds a B.S. in Geology from the University of Maryland, a B.S. in Meteorology from Pennsylvania State University and a M.S. in Aviation Management from Embry-Riddle Aeronautical University.

"Karan went right to work applying her unique set of skills and experiences,"

next generation of aviation professionals. She is active in the Experimental Aircraft Association (EAA), the Aircraft Owners and Pilots Association (AOPA) and Women in Aviation (WIA), where she served for two years as the Board Chair of the Women-with-Wings Chapter. Karan and her husband, who works on NextGen issues with the Department of Defense,



Karan Hofmann

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*I now realize how much RTCA's work has affected me, both directly and indirectly...*

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stated RTCA President Margaret Jenny. "In a short period of time, she has already made important contributions to our Committees."

Karan is involved in many aviation-related activities outside of RTCA. She has a great love of flying and is an instrument-rated pilot. She has taught Masters-level courses in aviation weather, aviation management and aviation safety for Embry-Riddle and Chapman universities, where she had the opportunity to mentor the

were also involved in helping to evaluate and demonstrate some of the revolutionary glass cockpit avionics.

Karan concludes, "I now realize how much RTCA's work has affected me, both directly and indirectly, in my previous work and as a pilot. I am very excited about being at RTCA and working with such a talented team of people. I especially enjoy working with all of our volunteers – the life blood of RTCA." Karan can be reached at (202) 330-0680 or [khofmann@rtca.org](mailto:khofmann@rtca.org). ■

## RTCA Policy Advisory Committee to Meet

The NextGen Advisory Committee (NAC) will hold a public meeting on February 26 to discuss a number of issues affecting safety, airports, the environment and global harmonization. Chaired by Richard Anderson of Delta Air Lines, Inc., the NAC convenes experts from the aviation community to provide the FAA with recommendations related to NextGen implementation. The Honorable Michael G. Whitaker, Deputy Assistant Administrator, Federal Aviation Administration (FAA) serves as the Designated Federal Official (DFO) for the Committee.

The following topics will be discussed:

- **Atlanta Multiple Runway Operations Implementation Experience:** Benefits of Multiple Runway Operations/

Recategorization at Hartsfield-Jackson Atlanta International Airport.

- **Open Discussion of NextGen Implementation:** An open discussion of what success looks like for NextGen implementation.
- **NextGen Integration Working Group (NIWG):** FAA and Industry Leaders to provide oversight of the monitoring and tracking process, and leadership from each of the four focus areas will provide updates.

For additional information on the upcoming meeting being held at Delta Air Lines facilities in Atlanta, GA and previous recommendations, see [the NextGen Advisory Committee page](#). ■

# Traffic Alert & Collision Avoidance System (TCAS)

SC-147 held its 80<sup>th</sup> meeting at RTCA and continued the development of the Minimal Operational Performance Standards (MOPS) for Aircraft Collision Avoidance System X<sub>A</sub> (ACAS), with the “X” denoting NextGen and the “A” denoting active surveillance, with ACAS X<sub>O</sub> capabilities. ACAS X<sub>A</sub> will be a “drop-in” replacement for TCAS II. The due date for the MOPS is December 2018.

The FAA Program Office (AJM-233) provided a review of 2014 accomplishments and a preview of 2015 objectives for TCAS II, ACAS X<sub>A</sub>/X<sub>O</sub> and ACAS X<sub>U</sub>. In 2014, ACAS X<sub>A</sub>/X<sub>O</sub> activities transitioned to SC-147. Objectives for 2015 include final scope development, formalizing the MOPS framework, completing DO-185B/DO-300 worksheets and finalizing the safety hazard analysis report. The status of on-going activities focused on the analysis of

Run 13 data and forward-tuning in preparation of Run 14.

Reports were received from EUROCAE WG-75, Eurocontrol, SESAR and SC-147 Working Groups (WG). WG1, Surveillance and Tracking, reported preliminary results of initial flight test performance of Extended Hybrid Surveillance implementation. WG2, Threat Resolution, reviewed progress with ACAS X threat logic. It was noted that the ACAS X logic does not enforce a specific length of time between RAs. WG3, Safety, presented an update on the current work on the ACAS X Safety Gap Analysis. The analysis compares TCAS II safety studies to what is required for ACAS X, what credits can be taken and provides a list of remaining safety work to be accomplished.

Future WG meetings have been established, while Plenary meeting dates are still being determined. ■



The Committee volunteers prepare for a full agenda addressing Aircraft Collision Avoidance System for NextGen

## A New Model of Engagement

NATCA's "[NextGen Now](#)" publication highlights the updates on the efforts to modernize the National Airspace System and the worldwide aviation system. Included in this second edition is an editorial from RTCA President Margaret Jenny featuring the work and role of RTCA committee volunteers tackling NextGen initiatives. #NextGenNowUS ■



The RTCA logo features the letters 'RTCA' in a bold, black, sans-serif font. The letter 'A' is stylized with a series of yellow and black dots forming its right side, suggesting a signal or data path.

THE GOLD STANDARD FOR AVIATION SINCE 1935

# TRAINING CENTER

## 2015 COURSE CALENDAR\*



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



March 23-26 (@ WSU/NIAR) | June 8-11 | September 21-24 | December 14-17

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



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



March 16-18 | June 22-24 | September 21-23 | December 1-3

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 the new 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 19 | June 25 | September 24 | December 4

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

# Standards for Air Traffic Data Communications Services

**SC-214** met jointly with EUROCAE WG-78 in Toulouse, France and continued working on the three areas – Dynamic RNP (D-RNP), Advanced Interval Management (A-IM) and ATC Winds data.

Led by Co-Chairs Jerome Condis, Airbus SAS, and Chuck Stewart, United Airlines, Inc., the Committee discussed the benefits of Improved Wind Data in Interval Management Operations. SC-186/WG-51 will deliver requirements for ATC Winds to support Advanced-Interval Management (A-IM) operations along with the A-IM Operational Services Definition on March 31, 2015. The group is investigating whether ATC Winds capability can support Trajectory-Based Operations (TBO), considering assumptions already defined in navigation standards (RNP MASPS from SC-227/WG-85).

Second, the Committee addressed the D-RNP service ConOps, reviewed the Tiger Team results (Operational Services Definition (OSD)) and initiated Aeronautical Telecommunications Network Baseline 2 (ATNB2) proposed amendments. There are still some significant comments on the OSD requiring further investigations, with active support of the D-RNP Tiger Team.

The Committee also addressed A-IM. Given the concurrent definition of A-IM service as planned within SC-186/WG-51 (2016-2017), any data link standards released in early 2016 that would include A-IM provisions will undergo further validation and are expected to be subject to further modifications. ATNB2 Rev A (including A-IM) cannot be considered as the “final”



SC-214 Co-Chairs Jerome Condis, Airbus and Chuck Stewart, United Airlines

convergent standard. The schedule for SC-214 to complete Revision A to ATNB2 standards is very tight (especially considering definition of aircraft automation requirements) and the current schedule of December 2015 may not be achievable.

During the closing Plenary, it was decided to revise the Terms of Reference (TOR) to change Final by Revision for the Baseline 2 documents and assist SC-186/WG-51 when relevant to advance the A-IM OSED definition. The revised TOR will be submitted at the March Program Management Committee meeting for approval.

The Committee then discussed its coordination with ICAO’s Operational Data Link Working Group and Data Communications Infrastructure WG and the need to harmonize the Annex 10 PANS ATM (4444) and GOLD ICAO documents with RTCA’s Baseline 2 (ATNB2) SPR and Interop Standards. The PANS ATM is limited to FANS 1/A and ATNB1, currently operational, and is not a document for future implementation. The GOLD (companion to PBCS Manual) document will implement the ATNB2 message set requirements (Initial/next Revision) in several steps. Discussions are ongoing at ICAO about the removal of Flight Information Services (SARPS) from DOC 9880. These were already removed from RTCA’s ATNB2 Standards. ■



# Airport Security Access Control Systems

**SC-224** met to continue updates to key Sections of the recently issued DO-230D, *Standards for Airport Security Access Control System*. The Committee’s expected completion date is May 2015.

Led by Co-Chairs Christer Wilkinson of AECOM System Solutions and Susan Rohde of the Transportation Security Administration, the Committee focused on three sections to update: Biometrics, Perimeter Intrusion and Cyber Security. Biometrics information added in the technology advances subsection was drawn from white papers as well as information on the use of hand vein patterns from the maritime industry, but not yet active at airports. Non-contact fingerprint readers for access

control that capture a hand-wave near the reader for validation and address hygiene issues were also reviewed. These readers are potentially false-error tolerant, as more than one fingerprint is captured. A recent National Institute of Standards and Technology (NIST) report on advancements in facial recognition technology was reviewed. Two Perimeter Intrusion (PID) tasks are near completion: a survey of airport (PID) installations and a cross-check of document references. New Cybersecurity material will serve as a primer to raise awareness. Guidance will discuss security and IT department responsibilities.

The next meeting is scheduled for March 5 at RTCA. ■

# RTCA 2015 GLOBAL AVIATION SYMPOSIUM

June 3-4, 2015

National Press Club | Washington, DC 20045



**2015 Awards Luncheon  
Keynote Speaker  
Christopher A. Hart  
Acting Chairman, NTSB**

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## 406 MHz Emergency Locator Transmitters (ELTs)

**R**TCA [SC-229](#) and EUROCAE WG-98, Co-Chaired by Tom Pack, ACR Artex, and Philippe Plantin De Hugues BEA, met at RTCA to provide updates to RTCA/DO-204A and EUROCAE/ED-62A.

Philippe Plantin de Hugues gave a presentation on the latest ICAO activities and Dany St-Pierre provided the latest updates from Cospas-Sarsat. Herve Dutruc presented updated data from the Toulouse meeting discussing the Airbus Helicopters accident analysis before the group split into workgroups (WG).

WG-1, led by Philippe Plantin de Hugues and Chris Parfitt, continued their work to provide specific input for the draft document for In-Flight Triggering criteria and to create the Minimum Aviation System Performance Standards (MASPS) document. During the meeting, the key milestones to publish the MASPS were presented to enable them to be referenced in the next issue of ICAO Annex 6 (November 2016). WG-1 continued to work through the questionnaire for the In-Flight Triggering criteria, in which group participants can make comments in between meetings. The comments and answers to the questionnaire are used to provide rationale and input into the MASPS document.

WG-2, led by Chad Stimson, focused on crash survivability and reliability of ELTs in aviation accidents. They continued their work to develop crash safety specifications to provide specific input for the draft document. The group discussed

research findings related to current ELT performance in aviation accidents and the tests that are being performed at NASA Langley Research Center. These tests include crash



safety testing on a vertical drop tower, vibration testing and full-scale crash testing of a helicopter and a series of airplanes. Additional supporting information was provided by industry members with regards to fire/flame resistance of ELTs and difficulties related to interpreting and implementing the current DO-204A/ED-62B.

WG-3, led by Allan Knox, provided an update of their work into second-generation homing activities and the progress they had made so far.

Action items were reviewed and dates for future meetings were agreed with the next meeting scheduled for April 21-23 in Hamburg, Germany. ■



SC-229 Co-Chairs and Secretary, Philippe Plantin de Hugues, BEA; Tom Pack, ACR Electronics; and Stuart Taylor, HR Smith Group of Companies



## Wake Vortex Tiger Team

The RTCA Wake Vortex Tiger Team, chaired by Rocky Stone of United Airlines, Inc., held their fifth meeting in early January. The focus of the group has been to author a White Paper on suggested future standards activities for wake vortex, Air Traffic Management (ATM) and weather applications. The group is striving to gain consensus with suggested standards activities to move these applications forward.

One objective for the group has been to suggest the best way to send weather information to and from aircraft in real-time. Many wake, ATM and weather applications will benefit from having real-time winds. The White Paper will suggest some meteorological information to be added into ADS-B transmissions. These transmissions are done in real-time, with the aircraft position integral to the weather information being reported. Therefore, there is economy in consolidating the position and weather



information onto one data link.

There has been strong participation from both the U.S. and European wake vortex communities on the Tiger Team. Much of the activity and discussion over the last two meetings has been adding Meteorological Information Services (MET) and ATM-related applications and information into the White Paper, which will be delivered to the RTCA Program Management Committee by March. ■



The Tiger Team hard at work

## Aeronautical Mobile Satellite (R) Service

[SC-222](#) met to prepare the final draft Change 4 to DO-210D, *Changes to Classic Aero SATCOM MOPS*, for Final Review and Comment (FRAC). The purpose of the change is to correct several known deficiencies in DO-210D, and to bring certain sections of DO-210D into alignment with the new DO-262B, *Minimum Operational Performance Standards for Avionics Supporting Next Generation Satellite Systems*, Appendix E. The draft document was released for FRAC on January 27 and will last until February 26. Interested parties in commenting should contact Program Director, Jennifer Iversen at [jiversen@rtca.org](mailto:jiversen@rtca.org).

Upon completion of this deliverable, the Committee will begin working toward new Terms of Reference (TOR) items approved by the RTCA Program Management Committee in December 2014. These additional items will include working jointly with EUROCAE WG-82. The TOR will also include work on next generation Iridium Minimum Aviation System Performance Standards and Minimal Operational Performance Standards and possible changes to DO-262B to accommodate the results of the WG-82 collaboration.

The next meeting is scheduled for February 27 at RTCA. ■

# Rechargeable Lithium Batteries and Battery Systems

**S**C-225 is continuing its work to update DO-311, *Minimum Operational Performance Standards for Rechargeable Lithium Battery Systems*, and evaluate impacts of the [NTSB Final Report released in November 2014](#) of the 787 lithium-ion battery incident.

Sections under consideration include:

- A-14-114: Work with aviation industry experts to develop or modify design safety standards for large-format lithium-ion batteries to require that sources of excessive heating, including electrical contact resistance from components and connections, be identified, minimized and documented as part of the design. The standards should include measures for identifying and minimizing potential sources of heating that consider the range of operating temperatures and the most extreme electrical currents that the battery could be expected to experience during repeated charge and discharge cycles.
- A-14-115: Work with aviation industry experts to develop or modify existing safety standards related to the design of permanently installed lithium-ion batteries to require monitoring of individual cell temperature and voltage and recording of exceedances to prevent internal cell damage during operations under the most extreme operating temperatures and currents.
- A-14-116: Once the guidance requested in Safety Recom-

mendation A-14-115 has been issued, require type certification applicants to demonstrate that the battery monitoring system maintains each individual cell within safe temperature limits at the most extreme battery operating temperatures and the heaviest electrical current loads approved for operation.

- A-14-123: Require applicants to discuss key assumptions related to safety-significant failure conditions, their validation and their traceability to requirements and proposed methods of compliance during certification planning meetings for type designs involving special conditions.

Further, the Committee is considering one interim report recommendation containing material of potential impact to the update to DO-311—Interim Report A-14-032: Develop abuse tests that subject a single cell within a permanently installed, rechargeable lithium-ion battery to thermal runaway and demonstrate that the battery installation mitigates all hazardous effects of propagation to other cells and the release of electrolyte, fire or explosive debris outside the battery case. The tests should replicate the battery installation on the aircraft and be conducted under conditions that produce the most severe outcome.

The Committee will meet April 6-10 at RTCA to review the final document to go to the June Program Management Committee meeting for consideration, approval and publication. ■



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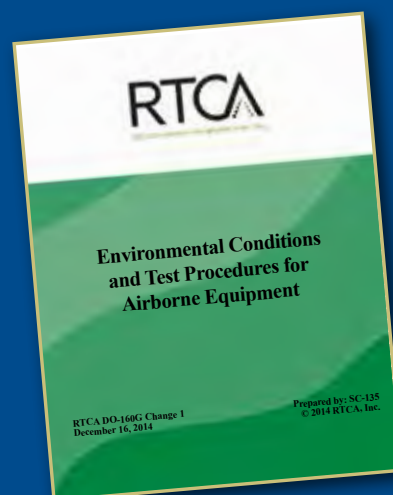
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## JUST RELEASED



*DO-357,  
User Guide:  
Supplement  
to DO-160G*



*DO-160G Change  
1, Environmental  
Conditions and  
Test Procedures  
for Airborne  
Equipment*

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

### **Aeronautics Computing Technique Research Institute (ACTRI)**

Xian, ShannXi CHINA

**Tian Lirong**

ACTRI is a major airborne computer supplier in China. The business includes airborne computer design, qualification, ASIC/SOC design and software design verification. The company is qualified as compliant with ISO9000 and AS9100 quality systems.

### **Asia-Pacific Engineering Consulting Services, LLC**

Charleston, South Carolina USA

**Peter Stonefield**

Asia-Pacific Engineering Consulting Services, LLC (APECS) and their Globally-located Strategic Partners, are a one-stop shop for Engineering Support (Including FAA-DER, STC, & PMA), Domestic and International Business Development, Regulatory Support (FAA, EASA, CAAC and other Regulatory Agencies), Quality Certification Support (AS9100, ISO9001), Spares Provisioning (Components and Piece-Parts), and Marketing & Sales Support Needs for most Commercial and Military Aircraft and Rotorcraft.

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### **Garrecht Ing. Ges. GbR**

Bingen, GERMANY

**Georg Garrecht**

Garrecht Avionik GMBH is a provider of products and services such as aerospace and aeronautics.

In 2003, as a mandate for Mode-S SSR Transponders in Germany became obvious, they started developing small and lightweight Mode-S transponders for use in GA aircraft and gliders. In parallel, the company became an EASA-approved manufacturer (PART 21). Device and company-certification were reached in 2005. In 2010 the company achieved PART 145 maintenance facility approval as well. Thousands of their Mode-S transponders are now in use worldwide. In 2010 the product line was extended with collision warning devices for general aviation. Today their TRX-line of collision warning products as well as the co-developed Power-FLARM products are the most successful devices on the market.

The company currently employs six people with four pilots and one skydiver. With over 12,000 units sold, the company is one of the leading avionics manufacturers in Europe.

### **Hopkins Imaging**

Pleasant Grove, Utah USA

**Richard Hopkins**

Designs and manufactures video and DSP modules for embedded systems.

### **Innovative Solutions & Support**

Exton, Pennsylvania USA

**Forrest Colliver**

Innovative Solutions & Support (IS&S) transforms leading edge technologies from the PC and telecommunications industries into sophisticated, cost-effective solutions for the Commercial Air Transport, Military and Business Aviation Markets. Advanced functionality, enhanced situational awareness, reduced pilot workload and improved

safety are just some of the benefits found in their innovative solutions. Their offerings include Flat Panel Display Systems, Flight Information Computers, Engine and Fuel Instrumentation, Class 3 E-Charts and RVSM solutions to measure and display air data.

### **L2 Consulting Services, Inc.**

Dripping Springs, Texas USA

**Mark Lebovitz**

L2 was created to fill the void between the Original Equipment Manufacturer (OEM) and the Aircraft Operator when addressing the avionics upgrades and system integration requirements of the commercial transport aircraft industry.

With a strong foundation cast in the support of the Commercial, VVIP, and Military aircraft operators, company founder Mr. Lebovitz created L2 to span the divide between the new technologies required by the industry and the challenges faced when integrating to the latest avionics advancements. Very few have the capability or the desire to provide the level of service available from L2 for the Avionics Integration, Design and Supplemental Type Certification needs of the Industry, the Manufacture of any required STC/PMA Kits, and through their on-site support from their Remote Avionics Modification Services (RAMS) team.

L2 takes the new technologies and Line Replaceable Units (LRU) developed by the OEM and integrate them to the aircraft by identifying the integration process required to properly operate the system, the design and manufacture of the required STC/PMA Kits with their installation routed in the least intrusive path, and by providing the skill set(s) to effectively install the new system in the shortest amount of time.

*continued on Page 17*



**Opgal Optronik Industries**

Karmiel, ISRAEL

**Evgeny Anash**

Since 1983, Opgal has provided one of the broadest product lines of innovative thermal imaging and near-infrared illumination camera solutions. The breadth and depth of this product line establishes Opgal as a leading player in the complex and wide-ranging defense, security, industrial and aviation markets.

In the Security market, Opgal enables transportation, city and state governments, industrial and utility customers to detect, recognize and identify security threats 24/7 even in complete darkness and difficult visibility conditions.

For the Industrial industry, Opgal developed the only gas leak detection camera of its kind in the world that

has been certified for use in sensitive and hazardous locations according to American and European standards (ATEX, CSA, UL).

The company was also the first to provide an FAA-approved landing assist and situational awareness system for the avionic industry.

Opgal's technology, based on exploiting minute levels of energy to produce meaningful video data, goes far beyond standard image quality.

**Red Star Aero Services**

St. Elmo, Alabama USA

**Bill Culberson**

Aerospace engineering, manufacturing and certification for Part 23 and Part 25.

**Systems Consultants Services Ltd.**

Reading, Berkshire UNITED KINGDOM

**Stephen Court**

SCS is a long established independent technical consultancy company. They specialize in the government, defence and security markets, both in the UK and internationally.

SCS has, for a number of years, been involved in Airworthiness and Safety work for the UK MOD. Currently, they are working on Lightning II, Scavenger (US Reaper) and Airseeker (US Rivet Joint). In particular for Scavenger, the UK Certification requirements state as part of AMC 1309 that Software should meet the required lifecycle process as determined in RTCA DO-178C and that Complex Electronic Hardware should comply with the requirements of RTCA DO-254 for flight critical items. ■

## Aeronautical Information Services (AIS) Data Link

At its most recent meeting, [SC-206's](#) main objective was to finalize the proposed document, *Minimum Operational Performance Standards (MOPS) for Flight Information Services – Broadcast (FIS-B) with Universal Access Transceiver (UAT)*, and release it for approval during the March Program Management Committee meeting. This new standard will provide the message format and content description for information uplinked to the aircraft display. This document also provides the performance and test requirements for AIS/MET uplink functions with UAT transmissions that will be invoked by FAA's AIR in link-specific TSOs.

The other accomplishments of the meeting, led by Co-Chairs Allan Hart of Honeywell International, Inc. and Rocky Stone of United Airlines, Inc., included an approved new Terms of Reference with modifications to the Minimum Aviation System Performance Standards scope: Guidance for Data Linking

Forecast and Real-Time Wind Information to Aircraft and MOPS for Eddy Dissipation Rate.

Presentations during the meeting included:

- Status on the FAA's SWIM program - Jim Robb, FAA
- Status on AATS Technology - Kevin Niewoehner, Northstar Group, for Robert Klein, FAA
- Open Geospatial Consortium Aviation Updates - Terry Idol, OGC
- Weather Technology in the Cockpit (WTIC) Concept of Operations - Eldridge Frazier, FAA & Rocky Stone, United Airlines
- EFB Policy Updates - Brian Hint, FAA

The next meeting is scheduled for April 13-17 in Hampton, VA, hosted by the National Institute of Aerospace. ■



Committee members discuss the revised Terms of Reference

## Environmental Test

### DO-357, User Guide: Supplement to DO-160G

ISSUED 12-16-14 | PREPARED BY SC-135

This document provides users of DO-160G additional background information for the associated test procedures and requirements in DO-160G. The information includes rationale for requirements, guidance in applying the requirements, commentary, possible trouble shooting techniques and lessons learned from laboratory experience. It is intended to help users understand the objective and rationale behind the requirements, and to help users develop detailed test procedures based on the general test procedures in this document. DO-357 replaces the User Guides previously included in DO-160G and DO-160G Change 1 has been published to remove all User Guides previously included in DO-160G to avoid any confusion.

### DO-160G Change 1, Environmental Conditions and Test Procedures for Airborne Equipment

ISSUED 12-16-14 | PREPARED BY SC-135

Change 1 to DO-160G, *Environmental Conditions and Test Procedures for Airborne Equipment*, addresses different improvements aimed at removing the current User Guide material from DO-160G for Sections, 9, 18, 20, 21, 22 and 26. DO-357, *User Guide: Supplement to DO-160G*, provides an update of the User Guide material for these same Sections and provides new User Guide material for Sections 4, 5, 7, 8, 10, 11, 15, 16, 17, 18 and 23.

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.

## Calendar of Events

FEBRUARY 2015 – MAY 2015

### February 5

**TOC, Tactical Operations Committee**  
Washington, DC | Hosted by RTCA

### February 6

**South America Task Force Industry Day**  
Washington, DC | Hosted by RTCA

### February 18-19

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

### February 26

**NAC, NextGen Advisory Committee**  
Atlanta, GA | Hosted by Delta Air Lines, Inc.

### February 27

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

### March 2-6

**SC-217, Aeronautical Databases**  
Prague, Czech Republic | Hosted by Honeywell International

### March 5

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

### March 16-18

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

### March 16-20

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

### March 17-19

**SC-230, Airborne Weather Detection Systems**  
Washington, DC | Hosted by RTCA

### March 19

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

### March 20

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

### March 23-26

**DO-160G Training**  
Wichita, KS | Hosted by Wichita State University/National Institute Aviation Research

### March 24

**PMC, Program Management Committee**  
Washington, DC | Hosted by RTCA

### March 24-26

**SC-231, TAWS**  
Washington, DC | Hosted by RTCA

### April 13-17

**SC-206, Aeronautical Information Services Data Link**  
Hampton, VA | Hosted by NIA

### April 14-16

**SC-135, Environmental Testing**  
Wichita, KS | Hosted by WSU/NIAR

### April 16

**SC-147, Traffic Alert & Collision Avoidance System**  
Washington, DC | Hosted by RTCA

### April 21-23

**SC-229, 406 MHz Emergency Locator Transmitters (ELTs)**  
Hamburg, Germany | Hosted by Airbus

### May 6-7

**SC-234, Portable Electronic Devices (PEDs)**  
Washington, DC | Hosted by RTCA

## Upcoming Events

### RTCA Annual Symposium

June 3-4, 2015

Washington, DC | National Press Club

### NAC, NextGen Advisory Committee

June 5, 2015

Washington, DC | Hosted by RTCA

Visit [www.rtca.org](http://www.rtca.org) for up-to-date information

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