At the September meeting, the Program Management Committee (PMC) approved a revised standard lithium batteries, two new Unmanned Aircraft System (UAS) white papers, and revisions to the Terms of References (TORs) for five Special Committees (SCs).

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Modernizing Air Traffic Management (ATM) is crucial for the sustainability of European aviation and the forecasted increase in air traffic by 2035. The Single European Sky’s ATM Research project “SESAR” is one of the most ambitious modernization projects launched by the European Union (EU) contributing to the implementation of the Single European Sky. SESAR’s goal is to define, develop and deploy the technological solutions needed to increase the performance of Europe’s ATM system and consists of 3 main phases:

**Definition**
The European ATM Master Plan is the roadmap for driving the European ATM modernization program, executed by the SESAR Joint Undertaking (SJU). It sets out the necessary steps involved for the development and deployment of SESAR Solutions with technologies and operational procedures, linking them to the Single European Sky performance objectives and ensuring global interoperability and consistency with the ICAO Global Air Navigation Plan.

**Development**
The SJU, created in 2008, is responsible for the modernization of the European ATM system by coordinating and concentrating all relevant research and development efforts in the EU. It is a public-private partnership (PPP) between the main public stakeholders (European Union - represented by the European Commission - and Eurocontrol) and industrial European ATM stakeholders.

**Deployment**
The SESAR Deployment Manager (SDM), created in 2014, is responsible for the Management Level of the SESAR deployment governance, in particular for the coordination of the implementation of the EU’s Common Projects, based on SESAR Solutions to be deployed in a synchronized and timely manner across Europe.

SDM is an EU funded industry consortium, composed by and working for the industry. The consortium members, mandated by the European Commission, are major ATM operational stakeholders in Europe. That way Europe’s largest ANSPs, all major airlines and the Airports Grouping, representing the 24 major airports in Europe are represented. This set up gives SDM strength through the knowledge base of its members.

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Let’s make the ATM system in Europe interoperable and efficient on both sides of the Atlantic, while implementing the technologies of the future in a performance driven manner.

Performance driven implementation

A key criterion for SESAR deployment is performance driven operational implementation. With 42 projects already successfully completed and 73 projects to be completed by end 2017, SESAR is not only a major European Project but, more importantly, an operational reality for ATM in Europe.

Through the SESAR Deployment Program, SDM plans, coordinates, synchronizes and delivers operational performance benefits in today’s and future operations of the operational stakeholders. With the financial support of the European Union, the SDM manages 295 projects that are being implemented by 86 partners in 34 countries. 42 have already been completed. All will be delivered by end of 2020. These projects address in particular the key operational areas of Datacom implementation and System Wide Information Management (SWIM) which are core topics to EU-US cooperation.

In total, the portfolio of the SDM on implementation projects today represents a total investment of 2.46 billion euros. When delivered, they will result in 275 million minutes less delay (more than 50% of reduction compared to today) and 10 million tons of CO2 saved (10,000km² of forest) by 2030. These figures demonstrate the ability of SESAR to deliver and the leverage of the planning, monitoring and synchronization tasks of the SDM, rolling out the SJU R&D into operational reality.

Global interoperability is key

We are facing a very different deployment framework in Europe compared to the US. Global interoperability is key for successful implementation and has been ensured from an R&D perspective through the cooperation between SJU and FAA which started in 2010.

When SDM joined the SJU in this cooperation, it took the view from the flight deck, a flight operation perspective:

• Ensuring flights and/or aircraft can operate seamlessly between systems;
• Ensuring the availability of common standards where needed;
• On deployment side, minimizing costs through identifying synergies, sharing results, and in short, working together efficiently.

The SDM is committed to address the importance of global interoperability on the European level to fulfill the high expectations of the deployment stakeholders, especially the airspace users. In the SESAR Deployment Program, a yearly updated unique and agreed upon implementation plan, illustrating how to get ATM modernization organized is clearly addressed and explained that SESAR needs to be executed with the required level of global harmonization and that a lack of interoperability is a major a risk for its successful implementation.

Cooperation is crucial

SDM has been cooperating with the FAA since 2015 on the requirements of our stakeholders with respect to deployment. This includes cooperation of the technical areas of DataComm/datalink implementation, the area of SWIM implementation and on Arrival Management & Time Based Flow Management in both SDM’s ATM modernization programs, SESAR and NextGen.

The team of the SDM is looking forward to the amendment of the Memorandum of Cooperation between the EU and the US, with the extension of the current cooperation with the FAA in ATM research and development to all phases of ATM modernization including deployment. We will work even closer with our colleagues in the US to achieve the best results in interoperability and global harmonization for users of both ATM systems in their daily operation.

For more info visit www.sesar.eu.
NEXTGEN ADVISORY COMMITTEE ADDRESSES NORTHEAST CORRIDOR IMPLEMENTATIONS

The October meeting of the NextGen Advisory Committee featured approval of an interim recommendation aimed at improving today’s operations and setting the path for the future in the Northeast Corridor (Washington, DC/Baltimore, Philadelphia, New York and Boston airports, and associated airspace). This includes operating the full operation, on-time and predictably.

NAC Chair Dave Bronczek, COO and President of FedEx Corporation said, “Our plans should include setting a path that leverages current capabilities while building a system that is truly NextGen.”

The Interim Report covers 24 initiatives in the 18-month time frame, from October 2017 through March 2019, and outlines preliminary information for initiatives occurring in 18-36 months, and those 3 years or greater. The final recommendations will identify creative solutions to implementation challenges such as resource availability, funding, equipage and impacts to local communities.

The Northeast Corridor recommendations include commitments by the FAA as well as the aviation industry - aircraft operators and airports. Industry commitments involve close collaboration with the FAA in conducting outreach to the communities affected by changes in procedures as well as commitments to train operational personnel in support of key collaborative initiatives.

Looking beyond the 18-month time frame, the Chairman stressed the need to explore stretch goals and NextGen implementations that hold promise of significant and bold steps forward. Mr. Bronczek noted, “We must be bold, if we are going to be successful.”

The NAC also received a report from the Joint Analysis Team that identified fuel savings and associated emission reductions from Optimized Profile Descents (OPDs) in Boston and safety and workload benefits from OPDs in Gary, Indiana. The analysis of DataComm, a key NextGen Program, demonstrated promising savings in taxi out time when DataComm-equipped aircraft are rerouted.

The meeting featured a prominent discussion on the challenging issue of aircraft equipage and its impacts on moving forward with advanced, more efficient procedures in the Northeast Corridor and across the U.S. NAC members reviewed an equipage survey that suggested it would be many years until operator equipage was at levels at which NextGen procedures could be used regularly. The Committee discussed concerns about this constraint to NextGen implementation and identified the need for the NAC to further review and address this pressing issue.

This meeting was the final gathering of the NAC during the term of Mr. Michael Huerta as Administrator of the FAA. The NAC was honored that Mr. Huerta attended the meeting in person and offered his remarks. Mr. Huerta, who helped establish the NAC, used the occasion to recognize the excellent work of the Committee on dealing with challenging NextGen issues. Mr. Bronczek and the rest of the NAC thanked Mr. Huerta for his dedication as a civil servant and his recognition and trust in the NAC to use collaboration to move NextGen forward.

For more information, visit the NAC page.
DO-227A, Minimum Operational Performance Standards for Lithium Batteries, was prepared by SC-235 and provides design, testing, and installation guidance for non-rechargeable lithium batteries and battery systems which are permanently installed on aircraft or used in aviation.

DO-311A, Minimum Operational Performance Standards for Rechargeable Lithium Battery and Battery Systems, presented by SC-225, Rechargeable Lithium Batteries and Battery Systems, was not approved. There was strong differing opinion on the thermal runaway test. Consensus could not be reached and a dissenting opinion was formally submitted. After much discussion about various positions and possible solutions, the PMC members decided to turn the matter over to an Ad Hoc to come up with a compromise to get the document publishable.

WP-3, White Paper for Phase Two Command and Control (C2), prepared by SC-228, describes the plan for development, verification and validation of Phase 2 activity that will define both normative performance standards and informative guidance material for UAS C2 Link Systems and their associated top-level constituent subsystems. These papers go beyond point-to-point architectures addressed in Phase 1 to address Beyond-Radio-Line-of-Sight (BRLOS) applications and architectures.

WP-4, White Paper for Phase Two Detect and Avoid (DAA) Minimum Operational Performance Standards (MOPS), also prepared by SC-228, contains the description and plan for development, verification and validation of Phase 2 MOPS for Unmanned Aircraft System (UAS) DAA systems. The standard will specify performance standards useful to designers, manufacturers, installers and users of the equipment. Emphasis for Phase 2 will be development of standards for UAS equipped to conduct extended Beyond-Visual-Line-of-Sight (BVLOS) operations in the National Airspace System (NAS).

The PMC also approved revised TORs for:

- SC-135, Environmental Testing, included work with SC-228 to develop a document that specifies ground based equipment environments and qualification procedures and adjust other sections of DO-160H.
- SC-186, Automatic Dependent Surveillance-Broadcast (ADS-B), changed their Designated Federal Officer (DFO) and requested a delay of delivery dates.
- SC-209, Minimum Operational Performance Standards for ATCRBS/Mode S Transponder, changed their DFO.
- SC-227, Standards of Navigation Performance, will continue to monitor the work of EUROCAE WG-107 (DME/DME), after delivery of their document in December 2017.
- SC-228, Minimum Performance Standards for Unmanned Aircraft Systems, indicated changes based on the two approved white papers.

Additionally, PMC members received updates on FAA reorganization, FAA Actions on previously published documents, the Forum of Aeronautical Software’s (FAS’s) progress, European/EUROCAE Coordination, SC reports, and officially sunset SC-231, TAWS, with the publication of TSO-C151d.

The next PMC meeting is scheduled for December 19 at RTCA.

CALL FOR NOMINATIONS: THE WILLIAM E. JACKSON AWARD

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

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

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

Spread the word to deserving graduates—the deadline is Friday, November 17.
TACTICAL OPERATIONS COMMITTEE APPROVES RECOMMENDATIONS TO IMPROVE AIR TRAFFIC OPERATIONS

The Tactical Operations Committee (TOC) met in late August and considered two issues impacting future operations in the National Airspace System.

The TOC approved a set of recommendations to the FAA that focused on the future PBN Route System in the High Altitude, CONUS Low Altitude and Alaska Low Altitude. These recommendations are intended to further mature the FAA’s Concept of Operations for the PBN Route System.

Additionally, the TOC approved a report focused on information that operators can use to improve flight planning as well as improve routes during flight. The recommendations to Aeronautical Information Management Modernization Segment 3 noted that access to near real-time status information on the availability of airspace, as well as information on air traffic control’s standard operating procedures, would improve operational performance for all operators.

The August meeting was the final one for the TOC’s Designated Federal Officer (DFO), Ms. Lynn Ray. Ms. Ray retired at the end of September after a long and storied career with the Federal Aviation Administration. In 2013, Ms. Ray spearheaded the formation of the TOC and oversaw its work. During these past four years, the TOC has responded to fifteen unique tasks from the FAA, covering issues as diverse as NOTAM modernization, VOR MON, Caribbean operations, Class B airspace, Airport Construction, Graphical TFRs and Impacts of GPS Interference.

Ms. Ray’s leadership will be missed and all stakeholders on the TOC wish her a much deserved and restful retirement.

The TOC is led by Co-Chairs Bart Roberts of JetBlue, and Jeff Woods of the National Air Traffic Controllers Association, and stepping into the role of DFO behind Ms. Ray will be Ms. Jodi McCarthy.

For additional information about the Committee or the upcoming meeting being held at RTCA in November, please visit the TOC webpage.

SAVE THE DATE
JUNE 12 & 13, 2018

RTCA GLOBAL AVIATION SYMPOSIUM
NEW MEMBERS

Aerospace DIY, LLC
Minnetonka, Minnesota USA
Patrick Albersman

Aerospace DIY is an Aerospace Design Consulting company. The mission is to equip Electrical Engineers with the tools and lessons learned to do the job right. They provide detailed discussion with the latest information on in-depth aerospace specific topics and highlight the best practices with the most proven techniques to improve design and meet customer deadlines.

Allied Pilots Association (APA)
Ft. Worth, Texas USA
Ray Duke

The Allied Pilots Association (APA) serves as the certified collective bargaining agent for the 15,000 professional pilots who fly for American Airlines. APA was founded in 1963 and is the largest independent pilots’ union in the world. APA provides a broad range of representation services for its members and devotes more than 20 percent of its dues income to support aviation safety.

Basic Commerce & Industries (BCI)
Moorestown, New Jersey USA
James Olivo

Incorporated in 1981, Basic Commerce and Industries, Inc. was founded with a strong systems engineering base and has a proven track record combining broad engineering credentials with significant operational expertise. BCI currently provides software support to its various government and private industry clients in all phases of systems & computer program design, development, and maintenance for the nation’s space, defense and commercial systems.

While steadily expanding technology and business base, BCI has emerged as a real presence in the information & systems arena. Their growth has been noted in INC. Magazine, Forbes Magazine and by New Jersey Business News as being one of America’s fastest-growing private companies.


Some of BCI’s current and previous clients include the U.S. Navy, U.S. Air Force, U.S. Army, Federal Aviation Administration (FAA), and several private industry clients. Additionally, BCI has provided support to prime contractors such as BAE Systems, Raytheon, Lockheed Martin, and Battelle.

Coalition of Airline Pilots Associations (CAPA)
Washington, District of Columbia USA
MaryAnne DeMarco

The Coalition of Airline Pilots Associations (CAPA) is a not-for-profit trade association representing over 30,000 professional passenger and all-cargo airline pilots at 14 leading commercial airlines including American Airlines (Allied Pilots Association), UPS (Independent Pilots Association), US Airways (US Airline Pilots Association), ABX Air, Horizon Airlines, Silver Airways, Atlas Airlines, Cape Air, Omni Air, Miami Air, Polar Air Cargo, Kalitta Air, Southern Air, Allegiant Air (Teamsters Local 1224), and Republic Airways (Teamsters Local 1224).

CAPA covers industry-wide and carrier-specific issues in both the international and domestic arenas. Their mission is to address safety, security, legislative and regulatory issues affecting its professional flight deck crew members on matters of common interest; and for the safety of the flying public. They work collaboratively and cooperatively with government agencies to reconstruct a more safe and secure operating environment for their members and passengers within the aviation industry; and industry critical to the economic infrastructure of the United States, affecting nearly 10% GDP.

Through their history, CAPA has been active on numerous Department of Transportation (DOT), Department of Homeland Security (DHS), Federal Aviation Administration (FAA), and Transportation Security Administration (TSA) Rulemaking Committees, Working Groups, and other related government and industry sponsored panels, advisory groups, and task forces focused on developing and improving safety and security for decades. In addition, they are recognized across the aviation industry as a strong advocate for safety and security initiatives, specifically focused on improving safe and efficient travel across the U.S. aviation and airspace system.

Consumer Technology Association
Arlington, Virginia USA
Douglas Johnson

The Consumer Technology Association (CTA) is a standards and trade organization for the consumer electronics industry in the United States. CTA works to influence public policy, holds events such as the International CES and SINOCES, conducts market research, and helps its members and regulators implement technical standards.

(continued on page 9)
Derwent Aviation Consulting, Ltd.
Burton on Trent, UNITED KINGDOM
Bill Woon

Derwent Aviation Consulting, Ltd. is composed of a small team of aero engine engineers providing consultancy services. Currently, they are working with design institutes in China on civil aero engine certification requirements.

NCPS Research, LLC
Hartford, Connecticut USA
David Loda

NCPS (Network Centric Product Support) Research is a company that is combining network centric principles and the Internet of Things (IoT) through the fusion of data, global distributed networks and machines to create a systems level product intelligence across space and time. Using Systems Engineering practices with mobile technology to optimize and transform the way industries function, NCPS Research is helping to revolutionize Product Lifecycle Management (PLM) by extending a Digital Thread to and from mobile deployed products which continuously update their Digital Twins of product data and models back at the factory. Today, NCPS Research is focusing its research and development capability on key programs including the NextGen air traffic system and emerging advanced commercial aircraft designs.

R2 Air
Los Altos, California USA
Robert Rose

R2 Air designs, develops and manufactures avionics and communication systems for the commercial aviation industry.

Satcom Direct (SD)
Melbourne, Florida USA
Gregory Carlile

Satcom Direct (SD) is a privately held company founded in 1997. They offer world class services, support, and technology to business and general aviation, military, government, emergency response, media, and others who depend on reliable, global communications.

SD is a technology innovator. They pioneered ‘direct dialing’ service to aircraft in flight, known as the Global One Number® (GON) service. They continue to be a technology innovator, developing numerous industry firsts including the first Voice Over Internet Protocol (VoIP) service for aviation, the first automated flight logs solution, and numerous patents. As a global connectivity provider for aviation, they offer nose-to-tail value-added services, such as flight deck datalink service, accelerated high-speed data, voice and text, AT5 position reporting, mobile applications and unified electronic billing.

UtopiaCompression Corporation
Los Angeles, California USA
Joseph Yadegar

UtopiaCompression Corporation (UC) is a high-tech, small business founded in 2002, providing innovative and mission relevant solutions to U.S. Government agencies and commercial markets. UC’s mission is to improve machine autonomy and convert large amounts of data into usable knowledge for next-generation technologies. UC’s capabilities include algorithmic research, application development and systems integration, and customized support services.

UC conceives, designs, and delivers novel technologies and products focused on pushing the state-of-the-art in the areas of computational vision, autonomous systems, unmanned aircraft Sense and Avoid, wireless communications, airborne networking, medical decision support systems and diagnostics.
SC-206 members met in mid-September at RTCA Headquarters and extended a big thank you to soon-to-be retired Co-Chair Allan Hart for his outstanding leadership and dedication. See the Volunteer Spotlight for more information about Allan and his illustrious career.

Sub Group-4 (SG-4), under the leadership of Co-Chairs Tammy Farrar of the FAA, and Bill Watts of Delta Air Lines, Inc., lead a Final Review and Comment (FRAC) resolution on Guidelines for In Situ Eddy Dissipation Rate (EDR) Algorithm Performance, for presentation to the Program Management Committee in December.

SG-5 is working on revising DO-358, Flight Information Services Broadcast (FIS-B) with Universal Access Minimum Operational Performance Standard (MOPS), expecting a delivery in late 2018.
Allan Hart, Engineering Fellow at Honeywell International, Inc., got his start with RTCA on Special Committee 181, developing Required Navigation Performance (RNP) documents in the early 1990s. At the same time, he headed Honeywell’s Navigation Database Services (NDS), so he was an ideal candidate to lead the SC-181 Sub-Group that eventually developed DO-200A, Standards for Processing Aeronautical Data.

“At the time, I was the manager of NDS, and knew these standards would impact our services,” Allan said. “The documents we’ve developed over the years have helped the industry establish processes and requirements that ensure quality data is delivered to systems used by pilots, AOC, ATM, and others in the industry. When you see organizations such as ICAO referencing or acknowledging this standard, you know the entire world of aviation recognizes its importance.”

Currently, Allan serves as the Co-Chair of SC-206, Aeronautical Information and Meteorological Data Link Services, in addition to volunteering as a member of SC-217, Aeronautical Databases. When asked about the accomplishments that he’s particularly proud of during his tenure with RTCA, foremost was the ability of SC-206 to adapt an old framework for new protocols.

“Allan possesses a unique combination of leadership and technical skills that have enabled him to drive many diverse groups to consensus on some solutions to vexing issues in aviation,” said RTCA President Margaret Jenny. “RTCA and the aviation community will miss him in his retirement.”

When it was first developed in 2005, Allan said SC-206 was unique among the other committees at RTCA because it was developing requirements that standardized services rather than hardware, software, and data. Despite initial challenges, adapting the organization’s writing guidelines and procedures, he says he is proud SC-206 has developed almost a dozen procedural documents since its inception.

That sense of satisfaction has been a large part of Allan’s nearly 40-year career with Honeywell, and more than 25 years volunteering with RTCA. But even more than the opportunity to influence an industry, he says what he has most enjoyed about working with RTCA are the people he has met across the industry and the globe. He especially wanted to acknowledge former RTCA Program Director Hal Moses and current Program Director Karan Hofmann for all their support throughout his years with RTCA. Of Hal, Allan said he was essential in helping him get up-to-speed with RTCA procedures, providing him with much needed insight and wisdom as Allan got his start with RTCA. But while he thanks Hal, Karan, and others for being great mentors, he appreciates them and the others he’s met through RTCA for being friends.

“My best memory will be the friendships I’ve developed over the years, especially with those who work for other organizations besides Honeywell,” Allan said. “These friendships were not only developed by working through procedural challenges, but also through meeting and interacting in some great places throughout the US and Europe.”

The friendships and work that he has developed have not only resonated through RTCA, but also through the entire aviation industry. Through his tireless dedication, he has supported and influenced an entire generation of RTCA members, and it’s this effort that he hopes has the deepest impact on his colleagues and friends as he transitions into retirement.
NEW DOCUMENTS

Batteries
DO-227A, Minimum Operational Performance Standards (MOPS) for Non-Rechargeable Lithium Batteries
Issued 09-21-2017 | Prepared by SC-235
This standard provides design, testing, and installation guidance for non-rechargeable lithium batteries and battery systems which are permanently installed on aircraft or used in aviation. It contains a set of requirements, tests, and evaluation criteria to establish and assure the safe operation of End Items which are powered by non-rechargeable lithium batteries containing lithium metal or lithium alloys.

The intent of this document is to assist equipment designers and manufacturers in the selection of non-rechargeable cells and battery systems whose safety and performance have been demonstrated as appropriate to the aviation environment. It applies to batteries used as the main power source or that are used for back-up or stand-by power. Guidance is also provided on design, safety, handling, and storage of these items.

Unmanned Aircraft Systems
WP-3, Detect and Avoid (DAA) White Paper Phase 2
Issued 09-21-2017 | Prepared by SC-228
This White Paper contains the description and plan for development, verification and validation of Phase 2 Minimum Operational Performance Standards (MOPS) for Unmanned Aircraft System (UAS) Detect and Avoid (DAA) systems. The standards will specify performance standards that should be useful to designers, manufacturers, installers and users of the equipment. Emphasis for Phase 2 will be development of standards for UAS equipped to conduct extended Beyond-Visual-Line-of-Sight (BVLOS) operations in the National Airspace System (NAS).

WP-4, Command and Control (C2) Data Link White Paper Phase 2
Issued 09-21-2017 | Prepared by SC-228
This White Paper contains the description and plan for development, verification and validation of Phase 2 activity which will define both normative performance standards and informative guidance material for UAS Command and Control (C2) Link Systems and their associated top-level constituent subsystems. These activities are focused on extensions to point-to-point architectures addressed in Phase 1 to address Beyond-Radio-Line-of-Sight (BRLOS) applications and architectures. The primary focus as envisaged in the original TOR is on SATCOM architectures. This will include multiple bands of application, to include selected Ku and Ka sub-bands, and possibly C Band allocations. Additionally, standards for network architectures and performance (SATCOM and terrestrial based) may be developed. Finally, updates/refinements to C2 MOPS (Terrestrial) are anticipated to implement changes consistent with requirements from other standards developed during this phase.

Additionally, there is a need to address emerging requirements driven by changes in the UAS market needs and how they impact required C2 performance and implementation limitations. Specifically, work done in Phase 1 (and foundational work by RTCA Special Committee 203) focused on larger aircraft, with operational sizing, anticipated size, weight, and power (SWAP). There is a need to support smaller UAS, operating BRLOS, which have significant SWAP limitations and are anticipated to be deployed in larger numbers than considered previously.
Weather Detection
FS-1, Feasibility Study Weather Radar for Ice Crystal Detection
Issued 09-21-2017 | Prepared by SC-230

In parallel with the US HIWC and European HAIC projects, the European Organization for Civil Aviation Equipment (EUROCAE) Working Group 95 (Long Range Awareness Subgroup), in association with RTCA Special Committee 230, was tasked with demonstrating the maturity and the feasibility of using an X-band radar system for long-range detection of ice crystal conditions.

This feasibility study document details the context of the study and a description of the intended function (situational display of regions ahead of the aircraft that present potential hazards to the aircraft due to ice crystals). Its goals are:

- To determine if a radar ice crystal awareness function is possible using an airborne X-band weather radar system
- To assess the feasibility of such a function
- To provide guidance on the design and validation of long-range ice crystal awareness functions for X-band radar technology.

This document also provides recommendations going forward.
SC-135 met to revise their Terms of Reference (TOR) to accommodate a request from SC-228 to create a new environmental test document.

SC-135 has added the creation of a Ground Station Environmental Test document to its TOR. This document will consider the special conditions needed to prove environmental operation of equipment installed in Ground Stations for UAS operations. The Committee also approved extending the expected publication of DO-160 Revision H from December 2019 until December 2021.

The next meeting for SC-135 will take place in Wichita, KS. Registration will be required to attend.

SC-213 met in a virtual Plenary to review the status of Final Review And Comment (FRAC) process against new document, Minimum Aviation System Performance Standard (MASPS) for Aircraft State Awareness Synthetic Vision Systems.

Progress was made on completing the document; in order to provide sufficient time to address some late comments, the Committee decided to wait until the next meeting to consider approving the document for publication. The document is expected to be approved to send to the Program Management Committee at that time.
RTCA, Inc. has teamed up with The MITRE Aviation Institute to offer high quality and relevant training for the aviation industry in understanding the requirements and parameters for avionics software development necessary to obtain FAA certification.

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

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

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

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

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

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

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

*Unless otherwise noted, all training courses will take place at RTCA Headquarters, located conveniently in downtown Washington, DC. For additional information, please visit www.rtca.org or email training@rtca.org.
DO-160G, ENVIRONMENTAL CONDITIONS AND TEST PROCEDURES FOR AIRBORNE EQUIPMENT, TRAINING COURSE

December 12-15 at RTCA

RTCA, in partnership with Wichita State University’s National Institute for Aviation Research (WSU-NIAR), offers high quality training covering RTCA’s DO-160G, Environmental Conditions and Test Procedures for Airborne Equipment. The course will provide an understanding of the use of DO-160G and how it fits in with the greater picture of requirements, design, certification and TSOs.

Course participants will gain a clear and relevant understanding of the applicable FAA regulations, advisory material, certification procedures, design approaches/trade-offs, inspection and conformity requirements, as well as details of the necessary parts of a test plan, test report, compliance plan and compliance report. A strong focus is placed on the reduction of risk, cost and schedule throughout the design/certification process, by use of targeted design and increased first-pass success on design and testing. In addition to a comprehensive course manual, each training course attendee will receive a copy of RTCA’s DO-160G, supporting material, and will participate in real-world exercises applying the knowledge learned from the class.

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

December 18-20 at RTCA

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

This three-day course will:

• Provide an overview and application of RTCA DO-254, as defined by current FAA and EASA guidance in airborne electronic systems.
• Describe how to apply the DO-254 lifecycle and supporting processes; understand system safety assessments and the design assurance level (DAL); and set up a project correctly through proper planning and standards.
• Present techniques and writing requirements for electronic hardware, and how to optimize requirements for verification processes.
• Describe how to efficiently and effectively verify requirements with simulation and hardware tests.
• Address specific considerations for programmable logic devices (PLDs) such as FPGA/ASIC versus all electronics; commercial off-the-shelf (COTS) components usage; and tool assessment and qualification.

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

SC-216 met in mid-September at RTCA in Washington, DC. They held virtual joint sessions with EUROCAE WG-72. The group is working to revise DO-356, *Airworthiness Security Methods and Considerations*, to harmonize with ED-203 (same title), per inputs from the Aviation Rulemaking Advisory Committee (ARAC) Working Group on Aeronautical Systems Information Security Protection (ASISP). The documents are expected to be completed by early 2018.

**COMMITTEE**
SC-216, Aeronautical Systems Security

**CO-CHAIRS**
Daniel Johnson, Honeywell International, Inc.
David Pierce, General Electric Aviation

**NEXT MEETING**
November 13-17, 2017, at EASA and EUROCONTROL, Brussels, Belgium
INTERNET PROTOCOL SUITE (IPS) AND AEROMACS

Special Committee (SC) 223 met at RTCA Headquarters in Washington, DC to review potential Request for Comment (RFC) standards to bring consensus on the IETP RFP profiles to be included in their next document, *Aviation Profiles for Internet Protocol Suite*. The Committee will meet again in late October at The MITRE Corporation in McLean, VA. Pre-registration will be required to attend.

RECHARGEABLE LITHIUM BATTERIES AND BATTERY SYSTEMS


The focus of the Committee has been to address feedback from the Program Management Committee (PMC) concerning guidance for installation, testing and validation. The Committee was also asked to review the structure of the document to better align with the RTCA MOPS Guidelines and provide more requirements against the testing standards.

The document was presented at the September 2017 Program Management Committee meeting for approval and publication.

SC-225 members extended a big thank you to SC-225 Secretary Stephen Diehl for his continued dedication to see this project through past his formal industry retirement.
AIRPORT SECURITY ACCESS CONTROL SYSTEMS

SC-224 met at RTCA in Washington, DC to finalize Final Review and Comment (FRAC) for DO-230H, *Standards for Airport Security Access Control System*, to update the Credentialing, Access Control Systems, and Communications sections. The document will be presented to the Program Management Committee at its December meeting for final approval and publication.

The next meeting will be in October at RTCA to begin work on DO-230I, *Standards for Airport Security Access Control System*, for delivery in late 2018.
SC-229 met jointly with EUROCAE Working Group 98 at EUROCAE in France.

The joint Committee is completing the revisions to RTCA/DO-204A and EUROCAE/ED-62A to produce a technically equivalent specification for Emergency Locator Transmitters at 406 MHz. At the next Plenary, the joint Committee will consider opening the document for concurrent Final Review and Comment and Open Consultation periods. The final document is expected to be delivered for publication in 2018.

**COMMITTEE**
SC-229, 406 MHz Emergency Locator Transmitters (ELTs)

**CO-CHAIRS**
Tom Pack, ACR Electronics
Philippe Plantin de Hugues, Bureau d’Enquêtes et d’Analyses (BEA)

**NEXT MEETING**
October

October 18-19
Hosted by RTCA
Washington, DC

October 23
SC-233, Addressing Human Factors/Pilot Interface Issues for Avionics
Virtual

October 23-27
SC-223, Internet Protocol Suite (IPS) and AeroMACS
Hosted by The MITRE Corporation
McLean, VA

October 24
SC-224, Airport Security Access Control Systems
Hosted by RTCA
Washington, DC

October 26
SC-209, ATCRBS & Mode S Transponder
Hosted by The Boeing Company
Renton, WA

October 26-27
SC-135, Environmental Testing
Hosted by NIAR
Wichita, Kansas

October 27
SC-159, Navigation Equipment using the Global Navigation Satellite System (GNSS)
Hosted by RTCA
Washington, DC

November

November 2
SC-222, AMS(R)S Virtual

November 8
DAC, Drone Advisory Committee
Hosted by Amazon
Seattle, WA

November 13-17
SC-216, Aeronautical Systems Security
Hosted by EASA and EUROCONTROL
Brussels, Belgium

November 27-December 1
SC-217, Aeronautical Databases
Hosted by Honeywell International, Inc.
Phoenix, AZ

November 28-December 1
SC-236, Standards for Wireless Avionics Intra-Communication System (WAIC) within 4200-4400 MHz
Hosted by EASA
Cologne, Germany

December

December 4-8
SC-206, Aeronautical Information and Meteorological Data Link Services
Hosted by Harris Corporation
Herndon, VA

December 4-8
SC-223, Internet Protocol Suite (IPS) and AeroMACS
Hosted by RTCA
Washington, DC

December 4-8
SC-227, Standards of Navigation Performance
Hosted by RTCA
Washington, DC

December 11-13
DO-178C Training
Hosted by RTCA
Washington, DC

December 11-15
SC-216, Aeronautical Systems Security
Hosted by Embraer
Melbourne, FL

December 12-15
DO-160G Training
Hosted by RTCA
Washington, DC

December 12-15
SC-229, 406 MHz Emergency Locator Transmitters (ELTs)
Hosted by RTCA
Washington, DC

December 14
Supplements to DO-178C Training
Hosted by RTCA
Washington, DC

December 18-20
DO-254 Training
Hosted by RTCA
Washington, DC

December 19
PMC, Program Management Committee
Hosted by RTCA
Washington, DC