A milestone was achieved at the most recent meeting of the Program Management Committee (PMC) with its approval of a new document, DO-362, *Final Phase One Command and Control (C2) Data Link MOPS and V&V (Terrestrial)*, revisions to Terms of References (TORs) for two Special Committees (SCs), a revision to the Minimum Operational Performance Standards (MOPS) and the Minimum Aviation System Performance Standard (MASPS) Drafting Guides, and a Charter for implementation of the Integrated Cockpit Cross Cutting Committee (CCC) were also approved.

DO-362 was prepared by SC-228 and provides performance requirements for a safety-of-flight Command and Non-Payload Communication (CNPC) function that enables an Unmanned Aircraft System (UAS) pilot to safely maneuver the aircraft from the ground.
NEXTGEN—WHAT MUST BE DONE FOR SUCCESS

Completing his two-year term as Chair of the NextGen Advisory Committee (NAC), Richard Anderson, Executive Chairman of the Board for Delta Air Lines, shares what must be done for success.

The RTCA NextGen Advisory Committee (NAC) NextGen Integration Working Group (NIWG) FAA taskings have provided recommendations that can lead to demonstrable improvements in the efficiency of the ATC system. As the NAC undertakes the next projects, the following challenges must be addressed and resolved:

• A simple, quick measurement system for NextGen implementation must be in place for all undertakings. Transparency of data and quick methods to evaluate results are basic requirements. The industry and the FAA must avoid time consuming efforts and complicated negotiations to devise and put in place basic metrics. It is relatively easy to measure the ATC system performance, because arrival rates, departure rates, throughput versus capacity, block time, and EnRoute throughput are the core performance requirements. As the NAC educates Congress by reporting results and communicating its support for work that should be funded, proof of success will be required to garner confidence. The Joint Analysis Team is providing a venue to foster this effort.

• The ultimate goal of the ATC system must be to provide VFR arrival, departure and EnRoute rates in CAT I IFR conditions. No ATC system will solve delays and cancellations caused by thunderstorms, wind shear, snow storms, ice storms, tornadoes, and hurricanes; these sort of weather cancellations are significant, but will not be solved by the NextGen system. Instead, our ATC system should operate the same as a VFR day when the weather conditions are CAT I IFR. If we could accomplish this goal, we will have vastly improved the ATC system’s efficiency. This must be one of the ultimate goals of the FAA and NAC.

• The NAC and the FAA must promptly complete a comprehensive strategy for modernizing the ATC system that includes all components of the end state system. It must include timelines and results that may be expected for all users of the system. The core strategy document must describe all projects, technology implementations, procedural changes, and expected improvements, with an implementation plan; each of these components must be pulled into a comprehensive NextGen strategy document. This effort must take into account the interests of general aviation, commercial carriers, business aviation, cargo operators, airport operators and the professionals at the FAA who run the largest and most successful NAS in the world.

• The original equipment manufacturers (OEMs) and scheduled airlines must catch up with aircraft technology implementation. Some new aircraft delivered today by the OEMs do not meet the Equip 2020 standards; similarly, the Part 121 fleet in the US today must be equipped for advanced RNP, digital ATC communications, and GPS navigation. It will take years for the OEMs and airlines to retrofit the existing fleets, which is required to obtain the benefits of the NextGen systems. The industry has been reluctant to equip, which makes the NextGen strategy document, called for in the above paragraph, essential. The industry must be able to rely upon a firm plan of implementation that will produce reliable benefits.

• Never fail to understand and invest in the technology management tools for the NAS and the decision support tools needed for controllers to implement the NextGen Strategy.

• Continue close, transparent collaboration between the FAA and the aviation industry, with investment priorities being driven by the operators. RTCA has served the collective industry well, as the venue for the open, transparent and defensible consensus process, and the FAA should continue to rely on RTCA as that venue, well into the future.
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 November 30.

Phase One continued...

The PMC approved a revised TOR of SC-227, Standards of Navigation Performance, to make Mike Cramer of The MITRE Corporation the Chair of the Committee, and a revised TOR of SC-228, Minimum Performance Standards for Unmanned Aircraft Systems, to give specific delivery dates for Phase Two deliverables for both Detect and Avoid (DAA) and Command and Control (C2).

The PMC also approved a recommendation to include a new section for a MOPS and MASPS Drafting Guide covering “Aircraft Equipment Information Vulnerabilities”, and to close out the meeting, received an FAA perspective presentation on Global Aeronautical Distress and Safety System from Chris Parfitt.

The next PMC meeting is scheduled...
NEW MEMBERS

**Aerdos**
Ormond Beach, Florida USA
Geeter Kyrazis

Aerdos specializes in image processing, metadata gathering and video analytics to help safeguard personal privacy. The company developed and deployed enterprise solutions for Department of Defence and Intelligence Communities that drastically changed the way forces track and locate threats. They also created enterprise video and imagery solutions for Media & Entertainment customers, including many Fortune 500 companies.

**AIS Airlines GMBH**
Bremen, GERMANY
Richard Minnema

AIS Airlines is based at Lelystad Airport. With their fleet of eight BAE Jetstream 32 turbo-props, they provide flexible service for customers looking for scheduled flights, Wet Lease and full charter capacity.

**Alaska Air Carriers Association**
Anchorage, Alaska USA
Jane Dale

The Alaska Air Carriers Association (AACA) was founded in 1966 to help operators in Southeast Alaska have an organized “voice” in aviation regarding state legislation and worker’s compensation insurance premiums for high risk businesses. The association advocates for passage of wise federal and state regulations that affect their membership, and challenge those regulations that stifle healthy business or threaten safe operations.

**Alaska Airmen Association**
Anchorage, Alaska USA
Adam White

With more licensed pilots per capita than any state in the union, the Airmen includes 2,400 members, one of the largest General Aviation state memberships in the country. Their mission is to promote aviation, enhance safety and support initiatives that benefit pilots and their growing aviation community.

**ASBU for Future GmbH**
Uhlidingen-Muehlhofen, GERMANY
Peter Rudolph

ASBU for Future GmbH is an innovative company that focuses on supporting the aviation industry in managing the implementation of the Aviation System Block Upgrades as described in the Global Air Navigation Plan of the International Civil Aviation Organization (ICAO).

**Aviation Information Sharing & Analysis Center, Inc. (A-ISAC)**
Annapolis Junction, Maryland USA
John Craig

The Aviation Information Sharing and Analysis Center (A-ISAC) is a unique focal point for relevant security information sharing for the aviation sector. The A-ISAC enhances the ability to prepare for threats, vulnerabilities and incidents so that aviation sector firms can best manage their business risks.

**Beyond Aerospace Ltd.**
Kelowna, British Columbia CANADA
Mike Ball

Beyond Aerospace is an early-stage startup working to make Beyond Visual Line of Sight Unmanned Aerial Vehicle (UAV) operations a reality. The company specializes in Aerospace-Grade, Mission-Critical Flight Control Systems and Satellite Connectivity for UAVs. They also provide Software and Airborne Electronic Design Services with expertise in DO-160, DO-178, DO-254 and Special Flight Operating Certificate (SFOC).

**Cigital**
Dulles, Virginia USA
Michael Avari

Cigital is one of the world’s largest application security firms. Services include application security testing, penetration testing, and architecture analysis. Cigital also provides instructor-led security training and products such as SecureAssist, a static analysis tool that acts as an application security spellchecker for developers. Cigital serves numerous Fortune 500 and Fortune 100 companies, including American Express, Aetna, Bank of America, Intuit, JP Morgan Chase, and Avis.

**Dentons Aviation Practice**
McClean, Virginia USA
James Williams

Dentons’ office in Tysons support the defense and technology clients on a broad range of issues affecting national security, such as complying with complex export regulations, dealing with the Committee on Foreign Investment in the United States and addressing classified matters. Additionally, they provide a full range of intellectual property and technology services to protect their clients’ innovations, including patent preparation and prosecution, patent analysis, patent dispute resolution and patent portfolio management. They proudly offer a robust practice focused on aiding clients from, or involved with, the aviation and transportation industries. Their team boasts extensive experience in a wide range of services, including litigation, emergency preparedness and response, regulatory compliance, administrative and enforcement matters, security, National Transportation Safety Board (NTSB) investigations and employee-related issues. Their lawyers handle numerous safety, enforcement and regulatory matters before the Federal Aviation Administration (FAA), the NTSB and other agencies, whether arising from accidents or as independent matters, including many issues involving the Transportation Security Administration and the departments of State, Homeland Security, Justice and Treasury.

**Department of National Defence Canada**
Ottawa, Ontario CANADA
Nancy Gagnon

The Department of National Defence is a Canadian government department responsible for defending Canada’s interests and values at home and abroad. The Department exists to aid the minister in carrying out his responsibilities within the Defence Portfolio, and provides a civilian support system for the Canadian Armed Forces.

**DNB Engineering Inc.**
Fullerton, California USA
Steve Cook

DNB Engineering, Inc. is a full-service
FastPilot, Inc.
Lake in the Hills, Illinois USA
Jim Albers
Fastpilot, Inc. is a software engineering consulting firm supporting embedded and high-reliability software projects specializing in development of Unmanned Aircraft Systems (UAS) and unmanned systems command and control, Architecture and Joint Architecture for Unmanned standards, specifically SAE AS-4 UAS Systems (JAUSS).

Federal Communications Commission (FCC)
Washington, DC USA
Tim Maguire
The Federal Communications Commission (FCC) is an independent agency of the United States government, created by Congressional statute to regulate interstate communications by radio, television, wire, satellite, and cable in all 50 states, the District of Columbia and U.S. territories. The FCC works towards six goals in the areas of broadband, competition, the spectrum, the media, public safety and homeland security.

The FCC was formed by the Communications Act of 1934 to replace the radio regulation functions of the Federal Radio Commission. The FCC took over wire communication regulation from the Interstate Commerce Commission. The FCC’s mandated jurisdiction covers the 50 states, the District of Columbia, and Political divisions of the United States. The FCC also provides varied degrees of cooperation, oversight, and leadership for similar communications bodies in other countries of North America.

Human Solutions, Inc. (HSI)
Washington, DC USA
Mike Prichard
HSI was founded in 1997 as a leading provider of technical services in the aviation industry. Today, HSI is recognized as a dynamic company offering a broad spectrum of customized services in Engineering, Safety and Quality Management System, Human Factors, Air Traffic Systems Support, Program Management and Organizational Development.

Illinois Institute of Technology
Chicago, Illinois USA
Boris Pervan
Illinois Institute of Technology is a private, technology-focused, research university offering undergraduate and graduate degrees in engineering, science, architecture, business, design, human sciences, applied technology, and law.

Intel Corporation
Washington, DC USA
Lindel Barber
Intel Corporation is an American multinational technology company, one of the world’s largest and highest valued semiconductor chip makers and is the inventor of the x86 series of microprocessors, the processors found in most personal computers (PCs). Intel supplies processors for computer system manufacturers such as Apple Inc., Lenovo, HP and Dell. Intel also manufactures motherboard chipsets, network interface controllers and integrated circuits, flash memory, graphics chips, embedded processors and other devices related to communications and computing.

The fact that “intel” is the term for intelligence information also made the name appropriate. Intel was an early developer of SRAM and DRAM memory chips, which represented the majority of its business until 1981. Although Intel created the world’s first commercial microprocessor chip in 1971, it was not until the success of the personal computer (PC) that this became its primary business. During the 1990s, Intel invested heavily in new microprocessor designs fostering the rapid growth of the computer industry. During this period, Intel became the dominant supplier of microprocessors for PCs.

JMA Solutions LLC
Washington, DC USA
Janice Adams
JMA Solutions is an award-winning government consulting firm with over 10 years of experience delivering outstanding customer support for Program Management, Engineering Services and Air Traffic Management.
New Members (continued)

**Kapik, Inc.**
Toronto, Ontario CANADA
Martin Snelgrove
Kapik Integration is a provider of premium mixed-signal design services and Internet Protocol (IP).

**Karya Sistem**
Ankara, TURKEY
Sahi Gurun
Karya Sistem is a systems design company providing services for embedded system design, PCB design, FPGA-based design and software development for a range of industries, including defense electronics and professional AV equipment. Karya Sistem has the ability to support its customers from system specification definition to mass production.

**Matternet, Inc.**
Menlo Park, California USA
Paola Santa
Matternet builds world-class flying vehicles and intelligent control software, integrated into a complete solution for automated aerial logistics.

**MGL Avionics**
Somerset West, Western Cape SOUTH AFRICA
Rainier Lamers
MGL Avionics designs and produces a wide variety of aircraft avionics from sophisticated, highly flexible EFIS systems to airband transceivers.

**Mid-Continent Instruments and Avionics**
Wichita, Kansas USA
Brett Williams
Mid-Continent Instruments and Avionics positioned itself by establishing its True Blue Power® division and the True Blue Power product line. True Blue Power products include Universal Serial Bus (USB) charging ports, inverters, emergency power supplies and advanced lithium-ion batteries. Select products feature A123 Systems’ proprietary Nanophosphate® cell chemistry, including the Federal Aviation Administration’s Technical Standard Orders (FAA TSO) certified TB17 and TB44 Advanced Lithium-ion Batteries — the first lithium-ion engine start batteries for business and commercial aviation to receive this certification.

Mid-Continent Instruments and Avionics has steadily increased its capacity in the repair and overhaul of avionics products, including weather radars, Mode S transponders, emergency locator transmitters (ELTs), and other navigational and communications systems. Mid-Continent has been selected as an Authorized Repair Center for Honeywell Bendix/King, Trig Avionics, Kannad and United Instruments.

Today, Mid-Continent proudly serves 57 countries through two locations: Wichita, Kansas and Van Nuys, California. With the skilled expertise to overhaul nearly 6,000 different products, Mid-Continent operates one of the largest instrument overhaul and exchange programs in the world, supporting a customer base that includes original equipment manufacturers (OEMs), fixed base operators (FBOs), instrument and avionics shops, flight schools and government agencies. The company manufactures more than 20,000 units per year and processes more than 15,000 units in its overhaul/exchange and repair operation, including gyro, altimeters, HSIs and autopilot systems.

Mid-Continent designed products are found in most Cessna-built airplanes, Beechcraft, Cirrus, Diamond, Piper, DAHER-SOCATA, Robin, Sikorsky, Nextant Aerospace, Aviat, Mooney, Maule, Air Tractor, Vulcanaire, Quest, Tecnam, Robinson Helicopter, Airbus Helicopter, Bell Helicopter, and MD Helicopter.

**MV Designlabs**
Cleveland, Ohio USA
Tim Cochrane
MV Designlabs is tech startup focused on prototyping, designing, and building integrated products and systems. The company has worked on a wide variety of projects ranging from high volume designs such as video streaming hardware for BoxCast to a prototype robot lawnmower for Case Western Reserve University.

**N.O.I.S.E. (The National Association to Insure a Sound Controlled Environment)**
Washington, DC USA
Emily Tranter
N.O.I.S.E. is America’s only nation-wide, community based association comprised of local elected officials representing millions of Americans across the country, committed to reducing the impact of aviation noise on local communities.

**Porter Aerospace**
Rockport, Texas USA
Cliff Porter
Porter Aerospace is an aviation engineering company that provides design, certification and test services to the global aviation industry. Specialties include certification and testing of aircraft to show compatibility with PED and T-PED devices.

**Safran Electronics & Defense**
Boulogne-Billancourt, FRANCE
Jean-Claude Goudon
Safran is an international high-technology group and tier-1 supplier of systems and equipment in its core markets of Aerospace, Defense and Security. Safran Group of companies are accredited by recognized aviation authorities (EASA, FAA, CAAC, etc.).

**Saint-Gobain Aerospace PPL**
Ravenna, Ohio USA
Carol Stefano
Saint-Gobain Aerospace PPL makes radomes for commercial and special mission aircraft and helicopters. The company is also a leading supplier for aerospace materials and components, including aircraft composite structures down to critical seals for demanding applications.

**Sensor Systems, Inc.**
Chatsworth, California USA
Frank Webb
Sensor Systems Inc., founded in 1961, designs and manufactures the finest antennas available for commercial, business and military aircraft.

In the aircraft industry, the company’s solid reputation for high quality and reliability has allowed them to become the largest world-wide supplier of Original Equipment Manufacturer (OEM) antennas. During the past five decades, they have developed and continually improved a complete line of antennas.
New Members (continued)

featuring many significant advances in aircraft communication and navigation. Sensor Systems holds over twenty patents and builds more than 200 types of aircraft antennas.

One of the company’s major contributions to the industry is a patented, all-metal, one-piece-cast antenna. This eliminates “P” static and offers high electrical efficiency, greater mechanical strength and longer service life than fiberglass antennas. Another important feature of their products is D.C. grounding to provide lightning protection. Due to these and other features, Sensor Systems’ hermetically sealed antennas are still operating with high reliability and efficiency long after most fiberglass antennas have exhausted their useful life.

Sensor Systems Inc. meets or exceeds all military specifications and Federal Aviation Administration (FAA)/European Aviation Safety Agency (EASA) requirements for standard and custom antenna designs, with quality control procedures certified to International Organization for Standardization (ISO) 9001:2008 and EN/JISQ/AS9100:2009 standards. They also maintain a large stock of spares for fast Aircraft On Ground (AOG) support to commercial airlines and business jet aircraft.

Skylark Drone Research
Stevensville, Maryland USA
Tulinda Larsen

Skylark Drone Research is an economic consulting company providing research, white papers, and studies related to UAV, UAS, drones, Unmanned Traffic Management (UTM) and business development, using drones as a service.

Skylark Drone Research specializes in applying economic principles and modeling to understand the drone market. Economic analysis provides insight into how markets operate, and offers methods for attempting to predict future market behavior in response to events, trends, and cycles.

The company assists policymakers and the industry to choose between alternatives based on systematic analysis, the benefits and costs of initiatives, market potentials for new products and services, and to evaluate funding mechanisms for implementation of policies.

SOAR Oregon
Bend, Oregon USA
John Stevens

SOAR Oregon is a statewide, not for profit Economic Development organization focused on the development of the UAS industry in Oregon. The company was created to foster growth in Oregon’s rapidly evolving UAS industry, a new industry that is at the heart of an economic crossroads that connects multiple industry sectors such as aviation, advanced manufacturing, high tech, software development and education.

SOAR Oregon also supports on-going research projects by promoting Oregon’s three FAA designated UAS Test ranges and facilitates public-private partnerships between education and industry.

TALUS Atomics Corporation DBA TELE-WORX
Grand Prairie, Texas USA
Brian Crowe

TELE-WORX consults in the telecom and data com industries on the marketplace, the competitive landscape and product feature requirements for modern optical networks and for the associated management systems. TELE-WORX is also engaged with technical aspects of interfaces, protocols, functions and architectures described by the prevailing standards for these networks and systems.

TKM, Inc.
Scottsdale, Arizona USA
Kenneth Beckemeyer

TKM Avionics provides reliable, reasonably priced avionics and test equipment. Over 37,000 TKM Inc. replacement radios have been placed into field service to date.

WiMAX Forum
Clackamas, Oregon USA
Alessandra Rocha

The WiMAX Forum® is an industry-led, not-for-profit organization that certifies and promotes the compatibility and interoperability of broadband wireless products based upon IEEE Standard 802.16. The WiMAX Forum’s primary goal is to accelerate the adoption, deployment and expansion of WiMAX, AeroMACS, and WiGRID technologies across the globe while facilitating roaming agreements, sharing best practices within our membership and certifying products. WiMAX Forum and WiGRID Certified® products are interoperable and support broadband fixed, nomadic, portable and mobile services. The WiMAX Forum works closely with service providers and regulators to ensure that WiMAX Forum Certified systems meet customer and government requirements.

Xtreme-EDA Corporation
Ottawa, Ontario CANADA
Chris Raeuber

Xtreme-EDA Corporation provides consulting services in the areas of networking devices and protocols, video and graphics processors, embedded processors, cryptography, DFT, and interconnect protocols for languages, such as SystemVerilog, C++ and SystemC, OpenVera, Specman/e, VHDL, and Verilog. The company also provides training services in the areas of system Verilog and advanced system Verilog for verification professionals; system Verilog assertions; managing research and development projects; Verilog 2001 and Verilog 2001 for HW designers; Verilog for VHDL designers; Verilog verification methodologies; advanced Verilog 2001 coding styles; Specman Elite verification methods; VHDL introduction; VHDL for hardware designers; and advanced VHDL coding styles. In addition, the company, through its subsidiary, ESLX, Inc., provides IC design, project team augmentation and mentoring, technical language training, and verification methodology training services.

Xtreme-EDA Corporation was founded in 2002 and is based in Ottawa, Canada with offices in Vancouver and Montreal, Canada, and Austin, Texas.
SC-206 met in Kansas City, MO and was hosted by the FAA Small Airplane Directorate. SC-206 is working towards a Minimum Operational Performance Standard to identify the Aeronautical Information Services (AIS) and Meteorological (MET) data link services that are envisaged to be implemented within the next decade.

Sub-Group (SG)1/6, Minimum Aviation System Performance Standards (MASPS), under the leadership of Co-Chairs Steve Darr, Dynamic Aerospace, Inc., and Bill Carson, The MITRE Corporation, completed Final Review and Comment (FRAC) resolution. The Plenary approved a final release which will now go to the Program Management Committee for approval in December. The group additionally recommended Inter-Special Committee Requirements Agreements (ISRAs) to establish requirements enabling data link within Minimum Operational Performance Standards (MOPS) being developed by two other SCs.

The Committees other subgroups are working on developing performance standards, receiving continual updates to keep abreast of new products, and getting survey inputs about wind and temperature data.

AERONAUTICAL INFORMATION AND METEOROLOGICAL SERVICES DATA LINK

SC-206 gives the “thumbs up” after a successful meeting

AIRPORT SECURITY ACCESS CONTROL SYSTEMS

SC-224 met at RTCA to continue work on DO-230H, Standards for Airport Security Access Control System, to update the Credentialing, Access Control Systems, and Communications sections. Specific areas reviewed include perimeter security, credential interoperability, credentialing, Rap back, communications infrastructure, and operational guidance plans. The Committee is also keeping abreast of the soon to be published Transportation Security Administration/National Safe Skies Alliance (TSA/NSSA) guidelines to ensure synchronization with RTCA DO-230H. Final Review and Comment (FRAC) release is scheduled for March 2017.

COMMITTEE

Aeronautical Information and Meteorological Services Data Link

CO-CHAIRS

Allan Hart, Honeywell International, Inc.

Rocky Stone, United Airlines, Inc.

NEXT MEETING

December 12-16, 2016, at RTCA, Washington, DC

COMMITTEE

Airport Security Access Control Systems

CO-CHAIRS

Mike Duffy, Transportation Security Administration.

Christer Wilkinson, AECOM Technology Solutions

NEXT MEETING

November 3, 2016, at RTCA, Washington, DC
STAFF SPOTLIGHT: REBECCA MORRISON

After more than a decade working as a Systems Engineer and Technical Project Manager at Rockwell Collins, two things attracted Rebecca Morrison to her new position as Program Director at RTCA. First, Rebecca looked forward to taking on the challenge of being on what she calls “the other side” of RTCA standards, from a beneficiary to a contributor. And second, she looked forward to working with President Margaret Jenny and the RTCA Staff.

“Before I came to RTCA, I used RTCA standards in my job,” said Rebecca. “This position gives me the opportunity to be a part of creating standards, which is so exciting, knowing the next generation of engineers will use these documents to create the next generation of aviation.”

One of the things Rebecca likes best about her new job is the ability to learn new things. “I have always been something of a Jill-of-all-Trades, Master of None. Having the opportunity to facilitate the Special Committees’ deep dives into technology - to define the “what” and not the “how” - gives me the chance to learn more about diverse aspects of avionics from signal interference to human factors.”

Margaret says RTCA is delighted to have Rebecca on board to work closely with the Special Committees. “Rebecca brings academic and practical knowledge to her position as Program Director. Her skill set and experience helps strengthen our organization.”

The nine Special Committees that are currently under Rebecca’s purview cover a wide range from the oldest committee still in existence, SC-135, Environmental Testing, to the newest committee, SC-236, Standards for Wireless Avionics Intra-Communication System (WAIC) within 4200-4400 MHz.

One thing Rebecca did not expect to need in her new role was her formatting skills. “Our committee members are focused on what our documents need to say. My background in liberal arts and technical writing comes in handy. I am constantly remembering old tricks on how to make the word processor behave!”

Prior to her career at Rockwell Collins, Rebecca earned a Master’s of Science in Electrical Engineering from Texas A&M University and two bachelor’s degrees: a Bachelor of Science in Electrical and Computer Engineering from Rutgers University in New Jersey, and Bachelor of Arts in History, with minors in English and Philosophy, from Purdue University in Indiana. Rebecca also hold a Graduate Certificate in Systems Engineering from the Stevens Institute in New Jersey.

With my new position at RTCA, I am given the opportunity to be a part of creating standards…

SAVE THE DATE

JUNE 13 & 14, 2017

RTCA 2017 GLOBAL AVIATION SYMPOSIUM

HYATT REGENCY // CRYSTAL CITY

**INTERNET PROTOCOL SUITE (IPS) AND AEROMACS**

SC-223 met at RTCA to continue its work to define the certification profiles for TCP/UDP/IP/DHCP/Routing/Mobility/Multilink Protocols. During the Plenary, the Committee decided to focus on IPv6 and use the NIST and DoD standards as the basis for the certification profiles moving forward. The protocols are expected to be completed by the end of 2017. At that time, the Committee will then focus on creating the Minimum Operational Performance Standards for the Internet Protocol Suite.
The Command and Control (C2) Data Link Minimum Operational Performance Standards (MOPS) (Terrestrial) provides performance requirements for a safety-of-flight Command and Non-Payload Communication (CNPC) function that enables an Unmanned Aircraft System (UAS) pilot to safely maneuver the aircraft from the ground.

The main focus of this MOPS is the technical standards describing how CNPC Data Link Systems can compatibly share the spectrum that has been allocated for their use, yet remains waveform agnostic (i.e., unspecified). There are no interoperability requirements, as these are internal UAS interfaces. Rather, this MOPS provides required electromagnetic compatibility that permits simultaneous operation of federated designs in common spectrum.

The International Telecommunications Union (ITU) has identified multiple spectrum bands as candidates for use for this C2 Data Link. These include:

- L-Band Terrestrial
- C-Band Terrestrial
- SATCOM in multiple bands

The UAS C2 Data Link MOPS establishes the performance requirements for both L-Band and C-Band terrestrial networks. This will also include recommendations for a Verification and Validation test program.

The completed MOPS contains equipment performance requirements under standard conditions for the following:

- Common characteristics
- The baseline system that was used for verification and validation efforts
- Manufacturer-specific requirements for designs that vary from the baseline system described within

The environment performance section provides requirements for both airborne and ground equipment, since both are needed for the complete link.

As there was no Minimum Aviation System Performance Standard (MASPS) that preceded this MOPS, there are over a dozen appendices that provide assumptions and derived flow-down requirements that would have historically come from a MASPS.

For additional information and to order documents, visit RTCA's store at www.rtca.org/store_list.asp. RTCA Members may download electronic documents at no cost and qualify for a 60% discount on paper documents.
SC-217 met jointly with EUROCAE WG-44 at The Boeing Company in Seattle, Washington. The main objective of this meeting was to work on the revision of DO-201A/ED-77.

The objective is targeted towards data supporting new airborne and ground navigation applications, but it does not aim to standardize the applications themselves. DO-201A/ED-77 will be updated to align with the developments in the navigation domain over the past 15 years in general, and in particular with the Performance Based Navigation principles. The update will consider the requirements of the new ATM application – with inputs from SESAR and NextGen – (e.g. 4D trajectory, Advanced PBN, SWIM, etc.) as well as changes suggested by industry and derived from authorities’ experience feedback. The update will aim at ensuring consistency with ICAO, ARINC and other related EUROCAE and RTCA standards for data processing, in particular data quality (ED-76A/DO-200B, published in 2015). The target date for publication of the revised DO-201A/ED-77 is 2018.

Command and Control (C2) Data Link Minimum Operational Performance Standards (MOPS) (Terrestrial)

DO-362, Command and Control (C2) Data Link Minimum Operational Performance Standards (MOPS) (Terrestrial)

RTCA ONLINE STORE
Your one-stop resource center for documents—many of which serve as a basis for FAA Certification.

For additional information and to order documents, please visit rtca.org.
PORTABLE ELECTRONIC DEVICES

SC-234/WG-99 held its Final Plenary in the late summer, hosted by RTCA in Washington, DC. The group completed their Final Review And Comment (FRAC) Resolution for DO-XYZ/ED-130A, Guidance for the Use of Portable Electronic Devices (PEDs) On Board Aircraft, and DO-307A/ED-239, Aircraft Design and Certification for Portable Electronic Device (PED) Tolerance. Final versions will be forwarded to the Program Management Committee/Council in December for approval.

406 MHZ EMERGENCY LOCATOR TRANSMITTERS (ELTS)

SC-229 met jointly with EUROCAE WG-98 in Lorient, France, hosted by McMurdo Group, a division of Orolia. SC-229 is working to revise DO-204A and align it with the current version of EUROCAE Document ED-62A. Sub-working groups, having completed their assignments to date, made presentations of the current status, and the Committee is moving toward the final stages of preparing the document.

During the meeting, the Committee split into two working sessions to refine the updates to the document. One group focused on aligning the content of ED-62A with DO-204A so that changes could be made to a single document. A smaller group met to revise the introductory section of the joint document. The release of the update to DO-204A and ED-62A will be a technically identical standard. The changes are expected to be complete by the end of 2017.
Safely dealing with electronic devices on board aircraft has been a long, evolving process, ever since concerns were raised about the usage of electric razors onboard planes in the 1950’s. Fast forward through the testing of operating two hundred laptops onboard an empty aircraft fifteen years ago, to today when airlines cannot escape the ubiquitous use of cell phones, and the variety of PEDs, is limited only by the imagination of PED creators. Consolidating all guidance material for usage of PEDs on aircraft has been a massive undertaking for SC-234, under the leadership of Chair Billy Martin, Senior Research Scientist and Director of the Electromagnetic Effects Test Lab with the National Institute for Aviation Research at Wichita State University, and his international counterparts, Robert Kebel of AIRBUS and Stephan Schulte of Lufthansa, Co-Chairs of EUROCAE Working Group (WG)-99.

The journey toward creating a current set of PED Minimum Operational Performance Standards (MOPS) began in October 2013, when the FAA released information for aircraft operators on how to expand passenger use of PEDs safely. After a year and a half evaluating this information in action, the FAA initiated RTCA’s SC-234, Portable Electronic Devices, bringing together electromagnetic effects experts from the aviation industry to include aircraft manufacturers, operators, aircraft system designers, and regulators on a joint committee with WG-99.

“SC-234/WG-99 is a great example of successful collaboration between RTCA and EUROCAE,” said RTCA President Margaret Jenny. “We appreciate the added challenge of international harmonization and we’re impressed with the streamlined result.”

SC-234/WG-99 is a great example of successful collaboration between RTCA and EUROCAE...

Billy said the concerns going in were two-fold: First, the Committee dealt with the “front door,” meaning the information that comes through the antennae to the receiver, and second, the “back door,” which is concerned with radiating a signal and causing interference. Next, Billy said, the Committee dealt with two guiding principles. First, the reality that the flying public demanded the use of PEDs onboard, and second, that the Committee needed to develop MOPS that encompassed the huge variety of these devices.

Stephan said the biggest challenge they faced was creating standards that were general enough to adapt to technology, but specific enough to provide precise and unambiguous guidelines and standards which lead to reproducible, comparable results, regardless of who is creating those results.

“The direction from both groups, RTCA and EUROCAE, was outstanding, as they synchronized between working groups on either side of the ocean,” said Stephan. “It’s the first time that we now have one single document outlining standards that avoids confusion and supports the initial idea of reproducible and comparable results. The maturity of technological development, plus the group’s expertise gained since the first issue of those documents, helped to create a great, generic guideline document. The diversity of group members (airlines, MROs, authorities, airframe and system OEMs) formed a great community with contributions from each side. Both RTCA and EUROCAE provided a forum that allowed for the revision of the document and did a great job in providing a process, all the way to a formal approval.”

By August 2016, SC-234 sent out a MOPS for Final Review And Comment (FRAC).

“This joint committee has worked extremely well together,” said FAA’s Brian Verna, SC-234’s Designated Federal Official (DFO). “In just over a year since its start, this Committee has completed the FRAC process for one new guidance document, and one revision to a minimum operational performance specification document.”

The two documents will be presented to the RTCA PMC and EUROCAE Council in December for approval and release.
SC-228 has had a productive quarter. The two working groups have finished their Phase 1 deliveries for the Minimum Operational Performance Standards (MOPS) for Unmanned Aircraft Systems. Working Group 1, under the leadership of Brandon Suarez of General Atomics Aeronautical Systems and Don Walker and Paul Campbell of the FAA, will be in Final Review And Comment (FRAC) for their two documents, Detect and Avoid MOPS and Radar MOPS. Their documents are due for Program Management Committee (PMC) approval at its December meeting.

Working Group 2 has completed the Command and Control (C2) MOPS for Phase 1 and had their document approved by the PMC at their recent meeting. The newly approved document, DO-362 was available on the RTCA store front within minutes of gaining the PMC approval! The final document is 700 pages with 19 appendices. Working Group 2 met every milestone from their original plan with no schedule slips—a testament to the leadership of John Moore of Rockwell Collins and Steve Van Trees and Lee Nguyen of the FAA.

In addition to the working groups and their documents, the leadership team of SC-228, Paul McDuffee of Insitu, Rick Heinrich of Rockwell Collins, and Steve Van Trees and Kristina Carr of FAA, met several times to discuss the next steps of SC-228. Over the course of the summer they and Kelly Markin of the MITRE Corporation, who led the Phase 2 Terms of Reference (TOR) development team, wrote the Phase 2 TOR, which also was approved at the September PMC. Phase 2 of SC-228 promises to examine additional methods of providing Detect and Avoid capabilities including Ground-based Non-Cooperative Radar MOPS and a revision to the DAA MOPS. The C2 group will expand into Satellite Communications with a revision to the terrestrial C2 MOPS. Deliveries are scheduled from July 2017 through September 2020.

The document identifies battery categories by energy level as well as sub-categories by venting provisions. It also identifies battery types and includes the requirements and test procedures to be performed on rechargeable lithium battery systems. They include general, performance and environmental requirements and tests. The document does not contain design requirements, but does provide installation considerations that may impact the design of the battery system. It also provides installation considerations for the installer.

The focus of the work of the Committee has been to address feedback from the Program Management Committee (PMC) concerning guidance for installation, testing and validation. The Committee is evaluating suitable criteria and will request concurrence from the PMC once categories are defined. SC-225 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 Committee will meet again to resolve comments received and is working towards a completion date of March 2017.

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**AIRBORNE WEATHER DETECTION**

SC-230 recently held a joint meeting with EUROCAE WG-95. They received inputs from several organizations referencing high altitude ice crystals events for their work on a report on the feasibility to standardize In-Flight Ice Crystals Long Range Awareness capabilities by Weather Radar (WXR). The report is due November 2016.
NON-RECHARGEABLE LITHIUM BATTERIES

SC-235 held their fourth Plenary at RTCA in Washington, DC. The Committee is revising DO-227, Minimum Operational Performance Standard for Non-Rechargeable Lithium Batteries Installed on Aircraft, to incorporate technology advancements and lessons learned operating non-rechargeable lithium battery technology and the use of non-rechargeable lithium batteries. The revised guidance will address the design, testing and validation of these batteries and systems. A final deliverable is scheduled to be completed by April 2017.

STANDARDS FOR WIRELESS AVIONICS INTRA-COMMUNICATION SYSTEM (WAIC) WITHIN 4200-4400 MHZ

SC-236 held the first Joint Plenary with EUROCAE WG-96 in Hamburg, Germany. The Committee is working to set up a sub-working group structure that will allow them to meet an aggressive schedule to complete their Minimum Operational Performance Standards (MOPS) in the first half of 2019. Currently four sub-working groups are planned to address issues such as interference, network definition, system level parameters and environmental categorizations. The sub-working groups will meet bi-monthly and report their progress at each Plenary. SC-236 and WG-96 plan to meet four times a year and alternate Europe and the United States.

SC-236 held its initial Plenary in August at RTCA. During this meeting, the group reviewed the TOR and set out a high level schedule and structure to meet their goal to publish a MOPS.
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.

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

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

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

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

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.
CALENDAR OF EVENTS

October

October 4-6
SC-230, Airborne Weather Detection Systems
Hosted by Airbus
Toulouse, FRANCE

October 5
NAC, NextGen Advisory Committee
Hosted by JetBlue
Orlando, FL

October 5-6
SC-222, AMS(R)S
Hosted by RTCA
Washington, DC

October 17-21
SC-159, Global Positioning System
Hosted by RTCA
Washington, DC

October 24-27
Hosted by RTCA
Washington, DC

October 27
SC-135, Environmental Testing
Hosted by FAA
Fort Worth, TX

November

November 1-4
SC-186, Automatic Dependent Surveillance-Broadcast
Hosted by RTCA
Washington, DC

November 3
SC-224, Airport Security Access Control Systems
Hosted by RTCA
Washington, DC

November 7-10
SC-231, TAWS
Hosted by RTCA
Washington, DC

November 8-10
SC-223, Internet Protocol Suite (IPS) and AeroMACS
Hosted by RTCA
Washington, DC

November 15-16
SC-235, Non-Rechargeable Lithium Batteries
Hosted by RTCA
Washington, DC

November 15-17
SC-233, Addressing Human Factors/Pilot Interface Issues for Avionics
Hosted by Textron Aviation
Wichita, KS

November 29-December 1
SC-217, Aeronautical Databases
Hosted by The MITRE Corporation
Bedford, MA

November 29-December 1
SC-225, Rechargeable Lithium Batteries and Battery Systems
Hosted by RTCA
Washington, DC

December

December 6-8
SC-236, Standards for Wireless Avionics Intra-Communication System (WAIC) within 4200-4400 MHz
Hosted by Aerospace Vehicle Systems Institute (AVSI)

December 12-14
DO-178C Training
Hosted by RTCA
Washington, DC

December 12-16
SC-206, Aeronautical Information Services Data Link
Hosted by RTCA
Washington, DC

December 12-16
SC-216, Aeronautical Systems Security
Hosted by RTCA
Washington, DC

December 13-16
SC-229, 406 MHz Emergency Locator Transmitters (ELTs)
Hosted by ACR Electronics
Fort Lauderdale, FL

December 13-16
DO-160G Training: Track A&B
Hosted by RTCA
Washington, DC

December 15
Supplements to DO-178C Training
Hosted by RTCA
Washington, DC

UPCOMING EVENTS

October 27
TOC, Tactical Operations Committee
Hosted by RTCA
Washington, DC

December 15
PMC, Program Management Committee
Hosted by RTCA
Washington, DC