NAC APPROVES KEY NEXTGEN STRATEGY DOCUMENT SUPPORTING NEAR-TERM IMPLEMENTATIONS

In its final meeting of 2016, the NextGen Advisory Committee (NAC) approved a final report on the development of a 15-year plan for deployment of PBN that identifies and prioritizes the tools and technologies that are ground- vs. aircraft-based in 5-year increments. The document compliments the Committee's continued on page 3
Over the course of 2016, thousands of participants in RTCA committees with many unique perspectives, ambitions and objectives, worked alongside the FAA, and found common ground on ways to overcome impediments to building and maintaining the world’s safest, most efficient and secure air transportation system.

In a year marked by divisiveness and uncertainty, the FAA remained focused on its mission to operate and modernize the National Airspace System. Turning to RTCA, the FAA requested industry consensus technical performance standards and guidance along with policy and operational recommendations. And you, the members of RTCA, delivered.

The NextGen Advisory Committee (NAC) brought the FAA and industry together on reporting a common understanding of the benefits being derived by the implementation of high-priority, early NextGen capabilities. The NAC also provided consensus feedback on the FAA’s forward plans and the challenges of community outreach for new procedures.

Recognizing the emerging issues associated with new technologies, the FAA turned to RTCA to establish the Drone Advisory Committee (DAC). Starting strong, the Committee has been identifying recommendations for top issues such as access and federal preemption.

The Special Committees produced the first ever standards for Command and Control and Detect and Avoid for UAS. We updated our GNSS standards, published joint (with EUROCAE) standards documents for digital data communications, as well as standards for Airport Security Access Control Systems, and other critical aircraft systems.

The Tactical Operations Committee (TOC) provided valuable input on procedures, dealing with airport construction, PBN routing, and graphical temporary restrictions. Both SC-159 (GNSS) and the TOC responded quickly to an FAA request to review a proposal from Ligado, commenting on its potential impact on airspace operations and certified avionics.

The staff of RTCA is honored to serve as the trusted venue for forging consensus responses to the challenges given to us by the FAA. Together with the members, we have made powerful progress toward our collective goals of modernizing the air transportation system that meets the needs of airspace users that are increasing in size, complexity and diversity. You identified the challenges and then you came together to solve them.

We wish you a peaceful and prosperous 2017.
near-term NextGen efforts of establishing priorities and the consensus-based strategies for implementing NextGen capabilities.

The PBN Time, Speed, Spacing Task Group Recommendation endorses a 15-year transition to a time-based system to enable higher percentages of PBN operations with the goal of keeping aircraft on an optimal path and achieving visual meteorological conditions (VMC) performances in instrument meteorological conditions (IMC). It also addresses the significant cultural change for controllers, pilots, dispatchers and others involved in the operation of aircraft, along with the critical availability of decision support tools for air traffic controllers.

In his opening comments, NAC Chair Richard Anderson stated that, “the Committee serves as an effective venue for the FAA and industry to collaborate on the investments being made to implement NextGen.” This is being carried out by the joint FAA-Industry NextGen Integration Working Group teams covering the four priority areas of DataComm, Multiple Runway Operations, PBN and Surface, that are tracking 2016 implementation commitments, and collaborating on work for 2017-2019.

The meeting, attended by FAA Administrator Michael Huerta, along with Victoria Wassmer, Deputy Administrator & Chief NextGen Officer, serving as the Designated Federal Official, was held at the JetBlue University facility in Orlando, FL. Continuing the NAC’s laser focus on removing barriers to aircraft operator equipage to utilize NextGen capabilities, the meeting included presentations from American, SkyWest and United Airlines, highlighting their respective plans and progress toward full equipage.

The NAC also endorsed the industry-FAA Joint Analysis Team’s (JAT) findings of the assessment of performance improvements attributable to the implementation of selected NextGen capabilities of the North Texas Metroplex and Denver Established on RNP (EoR) procedures.

The JAT found that new procedures at the North Texas Metroplex served as an enabler for increased Time Based Flow Management forecasting accuracy, provided infrastructure for new tools and improved safety. Arrivals experience slightly increased flight distance within 300nm, but slightly reduced time along with clearly reduced level segments and increased continuous descents, particularly for DFW.

At Denver, the JAT identified that the EoR procedure has proven to be an important enabler for growth of utilization of efficient PBN approaches. To date, EoR has increased utilization of RNP AR approaches by 12%, from 5.8% of arrivals to 6.6% of arrivals. If an additional waiver is granted, EoR is expected to enable an increase up to 7.1% of arrivals executing RNP AR approaches.

For more information on the NAC and the actions from the recent meeting see the NAC Page.
NEW MEMBERS

AECOM Technical Services, Inc.
Phoenix, Arizona USA
Chirster Wilkinson

AECOM Technical Services, Inc. provides professional, technical and management support services to both public and private sector clients. The company is a leader in all the key markets they serve including transportation, facilities, environmental, energy, oil and gas, water, high-rise buildings and government.


American Insurance Association
Washington, DC USA
T. Santos

The American Insurance Association (AIA) is an insurance industry trade association representing about 300 insurance companies that provide property insurance and/or casualty insurance in the United States.

The organization’s activities include lobbying local, state, and federal policymakers on behalf of its members; republishing and analyzing recent legislation and regulatory agency rulemaking to determine and communicate to members, potential impacts on their business operations; engaging in public relations on behalf of the property-casualty insurance industry by issuing press releases, and providing job-posting and job-application services for employers and employees in the property-casualty insurance industry.

Apex Unmanned, LLC
Aurora, Colorado USA
Greg White

The foundation of Apex Unmanned comes from the extensive experience within government rotorcraft and Unmanned Aircraft System application. Apex Unmanned’s primary goals include collaboration with Unmanned Aircraft Systems (UAS) organizations, software developers, public service, and platform manufacturers to help solve integration challenges.

Bolls Aps
Stenloese, DENMARK
Kim Jensen

Bolls Aps is a Supervision and Test Center which offers a unique combination of resources that are not found elsewhere in Denmark. The company offers true one-stop advice - and practical help in the conduct of a very large number of different tests and approvals.

Bolls Supervision and Test Center has in recent years expanded covering areas such as: EMC, Electrical & Machine Safety, Medical device approvals, CE marking, Environmental tests, Quality management Vibration, Laser Safety and Light readings.

For many years, they successfully solved approval tasks for products that initially failed the test or regulatory approval.

Engineered Power USA
Duarte, California USA
Vincent Visco

Engineered Power provides the oilfield industry with innovative power solutions to extreme environments. Engineered Power (EP) produces primary lithium thionyl chloride batteries specifically for oil and gas applications. EP’s rigorous cell testing and intensive product inspections ensure maximum performance, reliability and shelf life.

FLARM Technology AG
Baar, Zug SWITZERLAND
Andrea Schlapbach

FLARM is a traffic awareness and collision avoidance technology for General Aviation, light aircraft, and Unmanned Aerial Vehicles (UAVs). With FLARM installed, you are alerted of both traffic and imminent collisions with other aircraft, so you can act before it is too late.

Over 30,000 manned aircraft and many UAVs are already equipped with FLARM and the number is rapidly increasing. FLARM systems are available from several manufacturers for powered airplanes, helicopters, gliders, and UAVs.

Four Corners Environmental, Inc.
Flagstaff, Arizona USA
Richard Brose

Four Corners specializes in environmental management and consulting, and provides remedial abatement contracting. Four Corners professionals are recognized throughout the southwest for providing specialized environmental consulting services to industrial, commercial and municipal clients for nearly every aspect of environmental management. Four Corners’ professionals maintain professional licenses for asbestos and environmental management, hydrogeologic and engineering geology services and general construction activities in Arizona, Alaska, Nevada, New Mexico, California, Colorado, Wyoming, Utah and Oregon.

Four Corners’ consulting experience includes investigation, permit and report preparation, regulatory liaison services, construction management and expert witness services for the National Environmental Policy Act (NEPA), Occupational Safety and Health Act (OSHA), Resource Conservation and Recovery Act (RCRA), Clean Air Act (CAA), Clean Water Act (CWA), Safe Drinking Water Act (SDWA), Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), Superfund Amendment and Reauthorization Act (SARA), Pollution Prevention Act, Toxic Substances Control Act (TSCA), and the Emergency Planning and Community Right-to-Know Act (EPCRA).

Harco, LLC
Branford, Connecticut USA
Robert Croce

Harco, LLC designs, manufactures, and distributes aerospace air data systems, gas turbine high temperature sensors, on-engine electrical cable assemblies, airframe electrical cable assemblies, and other advanced sensor products. It offers high temperature thermocouples; integrated thermocouple-cable assemblies; custom-designed thermocouple rake assemblies that provide a solution for measuring critical temperature parameters in commercial and military aircraft, and industrial and marine gas turbines applications; hermetically sealed exhaust gas temperature probes; and immersion probes that are used for total tempera-
ture, stagnation, and direct reading applications.

The company also provides rubber-molded connectors and repairable backshells; custom-designed electrical cable assemblies; off-engine cable assemblies ideal for ground-based gas turbine applications; and total air temperature sensors that enable computation of static air temperature and true airspeed. In addition, it offers pitot, pitot static, and pitot/angle-of-attack probes to help the client design the air data system meeting the client configuration and performance needs; air data computers that compute various functions, such as static pressure, total pressure, calibrated airspeed, Mach, SAT, TAS, altitude rate, airspeed rate, and pressure ratio; outside air temperature sensors; resistance temperature detectors; and magnetic speed sensors that are used in gas turbine engines and gearbox assemblies in commercial and military aircraft. The company provides electronic flow sensors used in the avionics cooling system for low flow detection; and overhaul and repair services.

HARCO, LLC was formerly known as Harco Laboratories, Inc. and changed its name to HARCO, LLC in April 2014. The company was founded in 1951 and is based in Branford, Connecticut with a manufacturing facility in Mexico.

Iris Automation is using unique artificial intelligence and deep learning algorithms to create situational awareness for anything in the path of the autonomous vehicle. The Iris Automation technology is both creating onboard 3D maps of its surroundings and tracking anything moving in the sky (like birds, aircraft, helicopters, balloons, etc.).

Joby Aviation
Santa Cruz, California USA
Bill Rains

Joby Aviation specializes in composite airframe design and fabrication, high-fidelity aerodynamic analysis, and high-performance electric motor design and fabrication place it in a unique position to create a new generation of electric personal aircraft.

Korea Institute of Aviation Safety Technology (KIAST)
Incheon, SOUTH KOREA
Hanseul Ryu

Korea Institute of Aviation Safety Technology (KIAST) is a public institute established in 2013 under the Ministry of Land, Infrastructure and Transport.

KIAST was established in accordance with the KIAST Act, tasked with fostering experts in the field of aviation safety technology, and providing aircraft certification, testing, and aviation research. Its mission also covers technical development for aviation accident prevention and ensuring aviation safety.

Leidos
Reston, Virginia USA
Roger Stern

Leidos is an American defense company that provides scientific, engineering, systems integration, and technical services. Leidos works extensively with the United States Department of Defense (DOD), the United States Department of Homeland Security (DHS), and the United States Intelligence Community (IC), including the National Security Agency (NSA), as well as other U.S. government civil agencies and selected commercial markets. In August 2016, the deal to merge with the entirety of Lockheed Martin’s Information Systems & Global Solutions (IS&GS) business came to a close, more than doubling the size of Leidos and its portfolio, and positioning the company as the global defense industry’s largest enterprise in the federal technical solutions sector. As of August 2016, the company currently has 33,000 employees.

 LORD Corporation
Cary, North Carolina USA
Will Austin

LORD Corporation is a diversified technology and manufacturing company developing highly reliable adhesives, coatings, motion management devices, and sensing technologies that significantly reduce risk and improve product performance. For more than 90 years, LORD has worked in collaboration with their customers to provide innovative oil and gas, aerospace, defense, automotive and industrial solutions.

LORD has approximately 3,100 employees in 26 countries and operates 19 manufacturing facilities and 10 Research and Development (R&D) centers worldwide.

NG Aviation SE
Prague, CZECH REPUBLIC
Ondrej Uzovic

NG Aviation SE focuses on the development of unique software and service solutions per the new ICAO and EASA requirements for aviation stakeholders (airports, air navigation service provider, airlines) with the aim to ensure and improve safety in aviation.

PIT-RADWAR S.A.
Warsaw, Mazowiecke POLAND
Tomasz Sadowski

PIT-RADWAR S.A. is one of the largest and most important companies in the Polish defense industry and one of the leading suppliers of equipment in the field of professional electronics for the Polish Armed Forces.

For decades, they conduct research in the field of radar, command and control systems and radio-electronic reconnaissance systems.

Precision Hawk USA, Inc.
Raleigh, North Carolina USA
Diana Cooper

Precision Hawk is an information delivery company that combines unmanned aerial systems, remote sensing technologies and advanced data analytics to improve business operations and day-to-day decision making. Precision Hawk brings value to an emerging market by offering an end-
New Members (continued)

to-end solution for aerial data gathering, processing and analysis to provide actionable information across a wide range of data-intensive civilian industries.

Founded in 2010, the company provides a holistic platform using Unmanned Aerial Vehicles (UAVs) for data collection and analysis software tools to deliver better business intelligence to clients across a wide range of civilian industries. Precision Hawk also owns aerial data software, Data Mapper, satellite imagery provider, TerraServer, and the Low Altitude Traffic and Airspace Safety platform for drones, LATAS.

Reno-Tahoe Airport Authority
Reno, Nevada USA
Marily Mora
The Reno-Tahoe Airport Authority is the owner and operator of the Reno-Tahoe International and Reno-Stead Airports. As the 66th busiest commercial airport in the nation, Reno-Tahoe International Airport (RTIA) serves approximately 4 million passengers per year. Located only 5 minutes from downtown Reno and 40 minutes from some of the finest ski resorts and outdoor recreation in the world, Reno-Tahoe International is the Gateway to Lake Tahoe and the entire region.

Security 101
Taylorsville, Utah USA
Nancy Ford
Security 101 provides electronic security services. These systems consist of video surveillance systems, access control/card key systems, photo identification systems, intrusion detection and visitor management systems.

Sharper Shape, Inc
Palo Alto, California USA
Wendy Wild
Sharper Shape, Inc. develops automatic asset inspection solutions utilizing unmanned aerial vehicles. It offers Next Eagle, a solution that inspects geographically distributed infrastructure, such as long networks and pipelines. The company also provides automated inspection and maintenance planning services for infrastructure asset owners; and actionable plans for financial decision-makers to help with budgeting and resource allocation, as well as for engineering in planning and placing work orders for asset maintenance and vegetation management. It serves powerline, oil and gas, railway, precision agriculture, and forest industries.

Stilwell Baker, Inc.
Lake Oswego, Oregon USA
Barbara Baker
Stilwell Baker engineers and manufactures custom electronic devices, systems, and controls for OEMs in the Industrial, Oil & Gas, Commercial, Government, and Aerospace markets.

The company’s electronic product development offering includes electronic and electro-mechanical engineering, PCB/PCA design, firmware/software development, prototyping, custom enclosures, manufacturing, packaging, certification, regulatory compliance testing, and ongoing product support.

Skymantics
West Melbourne, California USA
Charles Chen
Skymantics is a management and consulting firm that provides advisory services in aviation information technologies. Their team has broad expertise in large scale enterprise networks, information exchange methodologies, and wireless data link technologies with capabilities in research and development, white paper preparation, and business plan support. The company is developing their client base internationally with a focus on validating and standardizing communication interfaces for aviation IT networks.

Timat, Ltd.
Tel Aviv, ISRAEL
Koby Baumann
The company provides services to the airline industry in the areas of infrastructure, logistics engineering, communications systems, navigator systems, command and control systems for airborne platforms and ground facilities.

Over the years, the company accumulated extensive knowledge and expertise in electrical design, system integration and logistical planning for complex avionics systems installations. This experience has established the company as a leading TIMAT, which specializes in the integration of avionics systems, communications systems and navigation systems, airborne command and control.

UMS Skeldar AG
Mohlin, SWITZERLAND
Valentin Salzgeber
UMS SKELDAR, a joint venture between Swiss-based UMS Aero AG and Sweden-based Saab AB (publ.), is a leading international corporation specializing in developing innovative flying robot technologies for fixed-wing aircraft and helicopters.

The company focuses on the production and distribution of small- and medium-sized Remotely Piloted Aircraft Systems (RPAS) on a global scale.

Washington University in Saint Louis
St. Louis, Missouri USA
Raj Jain
Washington University in St. Louis (WashU or WUSTL) is a private research university founded in 1853, and named after George Washington. The university has students and faculty from all 50 U.S. states and more than 120 countries. Twenty-five Nobel laureates have been affiliated with Washington University, nine having done the major part of their pioneering research at the university. The university is ranked 23rd in the world in 2016 by the Academic Ranking of World Universities.

Washington University in Saint Louis
St. Louis, Missouri USA
Raj Jain
Washington University in St. Louis (WashU or WUSTL) is a private research university founded in 1853, and named after George Washington. The university has students and faculty from all 50 U.S. states and more than 120 countries. Twenty-five Nobel laureates have been affiliated with Washington University, nine having done the major part of their pioneering research at the university. The university is ranked 23rd in the world in 2016 by the Academic Ranking of World Universities.
The Tactical Operations Committee (TOC) met and reviewed issues affecting current and future operations in the National Airspace System.

The TOC received updates from its Task Groups (TG) currently working on the Concept of Operations for future Performance Based Navigation Route Structure (PBN RS), as well as Graphical Temporary Flight Restrictions (TFRs). The PBN RS effort is expected to deliver recommendations in March 2017 and the Graphical TFR TG will provide recommendations by January 2017. As part of the update on PBN RS, leaders from the Alaska Air Carriers Association (AACA) provided an overview of aviation in Alaska.

During the meeting, the FAA provided feedback on previously submitted TOC recommendations:

- Northern California community engagement on noise, which was influenced by the Western Regional Task Group recommendations on Northern California
- Progress on improving operations in the Caribbean, which was informed by the Eastern Regional TG recommendations on the Caribbean
- Status of ongoing revisions of the FAA Order JO 7400.2 which was influenced by recommendations on the designation, design and evaluation of Class B Airspace
- Plans of cancellations of redundant circling procedures/lines of minima, driven by recommendations from the National Procedure Assessment Task Group
- Local coordination tools and process during disruptive weather
- Evaluating DoD GPS interference events and assessing impacts, notification processes, etc.
- Processes for evaluation and approval of off-airport obstacles given impacts on arrival/departure procedures
- NY Metro operations and use of PBN/DataComm to improve Severe Weather Avoidance Plan (SWAP) events in NY
- Adaptive use of Special Activity Airspace
- Operator engagement in procedures/noise
- TBFM implementation

Finally, the TOC discussed ideas from the FAA and industry for potential future tasks. The FAA introduced a new task to review the operational impacts of a proposal from Ligado Networks to transmit on the GPS adjacent band. The TOC will provide a response on this in mid-December. Additionally, the FAA is considering tasking the TOC on the sharing of airspace between traditional aviation operators and commercial space.

Industry members identified issues critical for safe and efficient operations in the National Airspace System (NAS). Ideas for potential taskings include:

For additional information about the Committee or upcoming meetings please visit the TOC webpage.
Special Committee 159, which authors standards for the Global Navigation Satellite System (GNSS), met at RTCA Headquarters in the early Fall. Prior to the Plenary, several of the Committee’s Working Groups (WG) met achieving significant progress in preparing standards to address the next generation of GNSS technologies.

WG-2, led by John Studenny of CMC, and Laurent Azoulai from Airbus, completed the update to DO-229D Change 1. The Committee approved the document at the Plenary and the new revision is expected to be released after the December Program Management Committee meeting.

WG-2A, GPS/GLONASS, is in the process of resolving comments offered during its Final Review And Comment (FRAC) period held in late August. The resolution will likely lead to a delay in the final publication of a Minimum Operational Performance Standard (MOPS).

WG-6, GPS/Interference, received a briefing from Ligado Networks concerning their amended proposal for using L-band spectrum adjacent to GPS for wireless connectivity. At the Plenary, WG-6 agreed to provide comments on the new proposal as well as a summary. SC-159 met in special Plenary on December 13 to consider for approval the WG-6 output documents, which subsequently will be transmitted by RTCA to the FAA.

SC-159 is scheduled to release four documents for FRAC in 2017: an update to DO-235B, the L1 Interference Environment Report (WG-6); an update to DO-292, the L5 Interference Environment Report (WG-6); an update to DO-253C, the Ground Based Augmentation System MOPS (WG-4); and an update to DO-246D, the Ground Based Augmentation System ICD (WG-4).
RTCA and EUROCAE officials met in Boston MA, hosted by The MITRE Corporation, to exchange information on activities from 2016 and plans for 2017. This annual meeting allows the organizations to identify areas of mutual cooperation to advance the cause of global aviation interoperability and standards development.

(left to right) RTCA PMC Chair Chris Hegarty, EUROCAE TAC Chair Eric Bouchard, RTCA VP Aviation Technology and Standards Al Secen, RTCA President Margaret Jenny, EUROCAE Secretary General Christian Schleifer-Heingärtner, EUROCAE Technical Program Manager Anna Von Groote, and EUROCAE Technical Program Manager Alexander Engel

SC-186 continues to receive status briefings on various topics including FAA Surveillance and Broadcast Services (SBS) Program, Extended Squitter MOPS/SC 209 Transponder MOPS revisions, and Application technical Requirements.

COMMITTEE
SC-186, Automatic Dependent Surveillance-BroadcastS

CO-CHAIRS
Rocky Stone, United Airlines
Jesse Turner, The Boeing Company

NEXT MEETING
TBD
SC-213 met at RTCA in Washington, DC. After an initial Plenary session, several Working Groups (WG) met to make progress on their document deliveries. The Committee approved an update to their Terms of Reference that will align the deliveries from SC-213 with the expected delivery dates for EUROCAE WG-79. SC-213 is developing the standards jointly with WG-79 for use by both the FAA and EASA in Advisory Circulars.

**ENHANCED FLIGHT VISION SYSTEMS/SYNTHETIC VISION SYSTEMS**

**COMMITTEE**

**CO-CHAIRS**
Tim Etherington, Rockwell Collins, Inc.
Patrick Krohn, Universal Avionics Systems Corporation

**NEXT MEETING**
May 9-12, 2017 at EASA, Cologne, Germany

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 included video, credential interoperability, and Rap back. Final Review And Comment (FRAC) release is scheduled for March 2017.

**AIRPORT SECURITY ACCESS CONTROL SYSTEMS**

**COMMITTEE**
SC-224, Airport Security Access Control Systems

**CO-CHAIRS**
Alan Paterno, Transportation Security Administration
Christer Wilkinson, AECOM Technology Solutions

**NEXT MEETING**
February 2, 2017, at RTCA, Washington, DC
SAVE THE DATE
JUNE 13 & 14, 2017

RTCA 2017 GLOBAL AVIATION SYMPOSIUM
HYATT REGENCY // CRYSTAL CITY, VA

EMAIL SYMPOSIUM@RTCA.ORG FOR SPONSORSHIP OPPORTUNITIES.
SC-225 met at RTCA to continue work on their Final Review And Comment (FRAC) resolution for DO-311, *Minimum Operational Performance Standards for Rechargeable Lithium Battery Systems*.

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 that are 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 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 Minimum Operations Performance Standard (MOPS) Guidelines and provide more requirements against the testing standards.

The Committee is working toward a completion date of April 2017.
Other industries may take note of the news of a child's hoverboard battery causing a fire, or a cell phone battery exploding, concerned about damage and bad press. But to the aviation industry, that same news commands attention, so that the same problems will not result in catastrophic damage onboard an aircraft. This vital concern has never been far from the minds of aircraft and battery manufacturers after several incidents occurred on different aircraft models involving rechargeable and non-rechargeable lithium batteries. These incidents spawned investigations by regulatory and investigative agencies on three continents.

"These events happened and it put the emphasis on ensuring a safe product for aircraft," said Boeing's Richard Nguyen, who is tasked with chairing SC-225, Rechargeable Lithium Batteries and Battery Systems, and creating performance standards for rechargeable lithium batteries.

Standards for rechargeable lithium batteries have been in existence for a number of years, but as technology has advanced and small- to medium-sized battery systems were used more and more for avionics and cabin systems equipment, performance standards needed to be updated, which led to the establishment of SC-225 six years ago.

"The work of SC-225 is critical to maintaining the enviable safety track record of aviation," said RTCA President Margaret Jenny. "We are lucky to have a seasoned professional at its helm."

New battery technology has benefitted the airline industry, as power and life has increased while packaging has decreased, but the potential for malfunction does exist and Richard says he is proud of the work this committee has done.

"RTCA brings together experts from all over and it's this diversified expertise—the regulatory side, the FAA, AIRBUS and Boeing, small aircraft representatives, battery manufacturers, and battery experts—that came up with these standards," said Richard.

"Sometimes you'll see heated discussions and that means safer products for aircraft. Ultimately, everyone wants to have the safest products."

Richard was born in Vietnam and immigrated to the United States in the mid-1970's. He studied Electrical Engineering at the University of Irvine, while working for Hughes Aircraft. After graduation, Richard began his career with Boeing, first as a systems engineer working on flight critical systems, and then as the Systems and Equipment Designated Engineering Representative to the FAA. He also works on essential and non-essential systems including In-flight Entertainment Systems, camera and emergency lighting systems and the use of both rechargeable and non-rechargeable lithium batteries. ■
SC-231 met at RTCA in Washington, DC. The Committee, whose Terms of Reference defines creating a new Minimum Operating Performance Standard (MOPS) for a Terrain Awareness Warning System (TAWS) as a new standard to be used to update the current Technical Standard Order TSO-C151c, has scheduled one more meeting in December to approve the document to deliver to RTCA which will complete their work.

SC-231 opened their draft MOPS for Final Review And Comment and received 177 comments on the material under review with only 2 non-concurs. All comments were addressed during the November plenary with resolutions approved by the Committee for all issues. Some actions were taken to modify diagrams, and the Committee implemented all resolutions.

A final Plenary was held to hear the motion to approve, sending the document to the Program Management Committee (PMC) for approval in March 2017.
SC-233, which is writing a Standard to Address Human Factors/Pilot Interface Issues for Avionics, met at Textron Aviation in Wichita, Kansas. Each Working Group (WG) contributed content to the draft to be reviewed as a single document. Over 600 comments were reviewed and each WG was requested to address the comments and provide a new draft for the document for a second review. During the second review, the Committee addressed nearly 400 documents and updates are expected by the end of the year, to be addressed at the February 2017 Plenary.

The Final Review And Comment (FRAC) period is expected to take place in March 2017 and the Committee is on schedule to deliver their document to the Program Management Committee for approval at its September 2017 meeting.

ENVIRONMENTAL TESTING

SC-135, the Committee responsible for Environmental Test documents, held its Plenary at the FAA in Fort Worth, Texas. SC-135 is working to update DO-160G, as well as revising the current User's Guide for DO-160G, DO-357. During the Plenary, a presentation to update progress on Flammability – the Enclosed Fire Test, was also made.

During the Working Group sessions, change proposals were reviewed for inclusion in DO-160H for Ground Reference Fluctuations, Integrated Modular Avionics (IMA), RF Susceptibility, Explosion, Water, Fluids and Power Inputs. Prior to the next Plenary, Working Groups will meet to discuss change proposals.
SC-235 held their fifth Plenary at RTCA. The group is revising DO-227, *Minimum Operational Performance Standard for Non-Rechargeable Lithium Batteries Installed on Aircraft*, and a final deliverable is scheduled to be completed by April 2017.

SC-217 met jointly with EUROCAE WG-44 at The MITRE Corporation in Bedford, Massachusetts. The main objective was to make progress on the revision of DO-201A/ED-77. Specific topics of discussion included System Wide Information Management (SWIM), NOTAMS, application descriptions, accuracy, and procedure coding.

These documents are being updated to align with the developments in the navigation domain over the past 15 years, and with inclusion of the Performance Based Navigation principles. The update will consider the requirements of the new ATM application, with inputs from SESAR and NextGen, as well as changes suggested by the industry and derived from authorities’ experience feedback. The target date for publication of the DO-201B/ED-77A is 2018.
SC-222, chaired by Chuck LaBerge, met jointly with Working Group (WG)-82, chaired by Armin Schlereth, DFS GmbH, for Final Review And Comment (FRAC) resolution on DO-343A, Minimum Aviation System Performance Standard for AMS(R)S Data and Voice Communications Supporting Required Communications Performance (RCP) and Required Surveillance Performance (RSP) in Procedural Airspace, with system specific attachment from Inmarsat, and DO-262B Change 1, Minimum Operational Performance Standards for Avionics Supporting Next Generation Satellite Systems (NGSS). The documents are expected to be forwarded to the Program Management Committee in March 2017 for approval.

SC-223 met at RTCA to continue its work to define the certification profiles for TCP/UDP/IP/DHCP/Routing/Mobility/Multilink Protocols. The group continued to focus on IPv6, using 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 (MOPS) for the Internet Protocol Suite, possibly as a joint endeavor with EUROCAE’s WG-82. The Plenary also approved a revised Terms of Reference to be presented at the December Program Management Committee Meeting to align the Minimum Operational Performance Standard (MOPS) with ICAO’s OPS Guidance and Technical Manual document release.
2016
Seasons Greetings
From the RTCA Staff
CALENDAR OF EVENTS

December

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

December 13
SC-224, Airport Security Access Control Systems
Hosted by RTCA
Washington, DC

December 13-15
SC-229, 406 MHz Emergency Locator Transmitters (ELTs)
Hosted by ACR Electronics
Fort Lauderdale, FL

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

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

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

January

January 11
SC-222, Aeronautical Mobile-Satellite (R) Service
Virtual

January 25
SC-235, Non-Rechargeable Lithium Batteries
Virtual

February

February 2
SC-224, Airport Security Access Control Systems
Hosted by RTCA
Washington, DC

February 6-10
SC-216, Aeronautical Systems Security
Hosted by Honeywell International
Phoenix, AZ

February 7
SC-225, Rechargeable Lithium Batteries and Battery Systems
Virtual

February 7-9
SC-233, Addressing Human Factors/Pilot Interface Issues for Avionics
Hosted by RTCA
Washington, DC

February 27-March 2
SC-217, Aeronautical Databases
Hosted by Airbus
Toulouse, France

February 28-March 2
SC-223, Internet Protocol Suite (IPS) and AeroMACS
Hosted by RTCA
Washington, DC

March

March 13-17
SC-159, Global Positioning System
Hosted by RTCA
Washington, DC

March 14-16
SC-229, 406 MHz Emergency Locator Transmitters (ELTs)
Hosted by EASA Cologne, Germany

March 21
PMC, Program Management Committee
Hosted by RTCA
Washington, DC

March 27-31
SC-216, Aeronautical Systems Security
Hosted by Eurocontrol
Brussels, Belgium

April

April 27
SC-135, Environmental Testing
Hosted by RTCA
Washington, DC

UPCOMING EVENTS

January 31
DAC, Drone Advisory Committee
Hosted by Reno Stead Airport
Reno, NV

February 22
NAC, NextGen Advisory Committee
Hosted by The MITRE Corporation
McLean, VA

March 2
TOC, Tactical Operations Committee
Hosted by FAA
Oklahoma City, OK

March 21
PMC, Program Management Committee
Hosted by RTCA
Washington, DC