

Aerospace Standards

Newsletter

Volume II, Issue 2

December 2010

SAE International®

Creating globally harmonized standards. Moving industry forward.

Dear Aerospace Standards Volunteers:

As we look back on another challenging year for our industry, I want to take this opportunity to thank all of our volunteers who contribute their time and talents to help create the standards that serve as vital technical documents for our industry. 2010 saw many successes, large and small, and we have much to celebrate.

The global relevance of SAE's Aerospace Standards continues to grow and be recognized as we released approximately **560 new and revised standards** in the past year. Participation on our technical committees by **non-US experts grew another 12%** in 2010 and the number of SAE standards referenced by the industry's regulatory bodies around the world has increased.

This year saw a number of exciting initiatives for the SAE Aerospace Standards Program. Our **Counterfeit Electronic Parts standards** efforts expanded into mechanical parts and materials while reaching out to share our proven successes with other industry sectors. The program's foray into **Integrated Vehicle Health Management (IVHM)** now includes a new technical committee to address such things as a glossary of terms as well as a harmonized approach by our existing committees with IVHM projects. And, we've started valuable new standardization efforts on such topics as **runway lighting** and **underwater locator devices**.

We continued our dedication to improving our standards program by implementing a **revision to the classification of our standards**, based on direction from the Technical Standards Board, which should ease our committees' workload and facilitate access to SAE standards for users. We also held a **Committee Leader Workshop** at SAE International World Headquarters this past June where Aerospace Standard Committee Leaders shared best practices and engaged in a dialog with Aerospace Council Leaders on new initiatives for the program.

In 2011 we will continue growing and improving the world's largest aerospace standards program with a number of initiatives. We will continue to initiate new, globally relevant standards projects to meet industry's needs including standards to address the environmental challenges facing aerospace, standards for new materials and processes, and standards for new ways to facilitate manufacturing and testing. We will be working with the committees to finalize an update and harmonization of all the policies and rules that govern our standards program. And, we will continue exploring ways to improve committee meetings, to better focus our efforts on projects and initiatives of clear relevance to the global aerospace industry, and ways to identify and address emerging industry needs.

Our success will depend on our collective ability to understand and act strategically upon those issues that are fundamental to our continued health as a consensus aerospace standards development organization. We can all be proud of the strides that the SAE Aerospace Standards Development Program made this past year. The Aerospace Council and all the Aerospace Technical Committees, thanks to the participation of the best experts from around the world, are constantly finding ways to ensure that SAE's standards are globally recognized, accepted, and used as key enablers for our industry.

As we continue on our successful SAE standards development journey, my very best to each of you in 2011!

Laura Hitchcock
External Standards Management, Strategy and Policy
The Boeing Company
Aerospace Council Chair, SAE International

Issue Highlights:

New standards categories to go into effect	2
Air Traffic Management Steering Group to take global view of standards.....	3
A-10 Committee to addresses FAA request for portable oxygen concentrator standard	3
New Integrated Health Management Committee established ...	4
Standards on Time-Triggered Protocol, Ethernet to be released in 2011	4
Air Data Working Group holds initial meetings	5
SAE International named IAQG-sanctioned provider of Aerospace Auditor Transition Training.....	5
AS-3 Committee activities highlighted at Avionics, Fiber Optics & Photonics Conference.....	6
G-19 Counterfeit Electronic Parts Committee continues standards revisions.....	7
SAE Aerospace London Office hosts first meeting of IAEG	7
AS-4 moves forward on unmanned systems documents	8
SAE standard provides illumination on laser design	8

World Headquarters, 400 Commonwealth Dr.,
Warrendale, PA 15096 USA; +1.724.776.4841
Europe, 1 York Street, London,
W1U 6PA, United Kingdom; + 44 (0) 207 0341250
www.sae.org

We will be working with the committees to finalize an update and harmonization of all the policies and rules that govern our standards program. And, we will continue exploring ways to improve committee meetings, to better focus our efforts on projects and initiatives of clear relevance to the global aerospace industry, and ways to identify and address emerging industry needs.

New standards categories to go into effect

In an effort to improve its standards classification system, and to reduce confusion for standards users, SAE International is restructuring and simplifying its system.

With the implementation of the new SAE International Standards Classification System, every SAE standard will be published with a classification label and a clear definition of the classification. The change entails the elimination and combination of certain classifications and the addition of others. The categories of "Non-Current," "Amendment" and "Re-Issued" have been eliminated, while a "Stabilized" category has been added.

The new classifications will be available for committees to begin using in late December 2010.

With these changes, SAE takes a step to address the lack of consistency among the many Standards Developing Organizations (SDOs) with respect to the nomenclature used to designate classifications of standards. A recent survey of just eight SDOs identified over 20 different categories of standards. As a result of this vast array of categories, the actual definitions of the many classifications in use are often found to be unclear and confusing to standards users. Following are the definitions of the new SAE standards categories:

- Issued – The first time a technical report is published.
- Revised – An active technical report has been updated and re-published.
- Reaffirmed – A technical report which has been reviewed by the technical committee and determined to be current with no need for immediate revision.
- Stabilized – A technical report that has been 'frozen' at the last active revision level.
- Cancelled – A technical report that is deemed to be 'not fit for use' due to technical reasons or when its technical requirements are totally superseded by another document.

Reasons that a document may be "Stabilized" include if it covers technology, products, or processes which are mature and not likely to change in the foreseeable future; if it covers technology, products, or processes for which a technical expertise no longer resides in the owning committee; or if the committee cannot find users for it.

The following criteria will apply to a status of "Cancelled":

- A Cancelled technical report will carry a clear rationale statement and, if at all possible, will direct users to alternative technical reports.
- A technical report shall not be cancelled based only on administrative reasons such as no identified use, existence of newer technology, or no committee expertise, etc.
- Determination that a document is not fit for use may be made when there is a clear safety issue with continued use, or when there has been a government requirement that can only be accommodated by elimination of the document.

All historical "legacy" technical reports will be grandfathered into the new systems using their existing categories. If you have any questions, please contact your committee's SAE Staff Representative or the SAE Customer Service Department – customerservice@sae.org.

2010 in review *(through Dec 14)*

SAE Document Publication Status	Number Published
Issued	88
Revised	363
Reaffirmed	132
Cancelled	72
Amended	24

To review recently published document titles, visit <http://www.sae.org/standardsdev/aerospace/newastds> "Recently Published SAE Standards—Aerospace"

Committee registration fees to change in 2011

Periodically, it becomes necessary for SAE to change fees in order to maintain the level of service expected by our standards writing committees. The registration fee structure for aerospace standards committees has remained the same for more than 15 years. Beginning on January 1, 2011, the registration fee for all aerospace standards committee meetings will be increased by \$10. Thank you for understanding that this change will enable the organization to continue to provide the level of service expected by aerospace standards committees in the coming year. If you have any questions or suggestions, please contact your SAE Staff Representative.

Air Traffic Management Steering Group to take global view of standards

SAE's **Industry ATM Steering Group**, whose charter was approved in September, will undertake a global assessment of existing ATM (air traffic management) standards – as well as standards currently in development – in order to identify gaps, overlaps or duplication in those activities.

Created in response to factors such as new technologies, wider information-sharing ability, and the increasing integration of ground and air functions, this steering group will review standards on ATM systems, subsystems and platforms that recognize the changing roles of airborne and ground systems. The group will provide observation reports to standards development organizations, including the SAE Aerospace Council.

"Our goal is to be an observer," says **Rick Heinrich, ATM Steering Group Chair**. "Through this group, global representatives will be able to take a top-down view of what's being done, and identify any problems or overlaps. We'll look at all the standards, and see if anything has been missed."

Although the group itself will not develop standards, it will assess whether the standards being developed are harmonized to support seamless global operations. The group will initially develop a "roadmap" of in-process standards and a tool that tracks the coordination and alignment of standards.

"More information on ATM is being shared than ever before," Heinrich says. "Our group can play a key role in the discussion about how to prioritize that information and how to present it"

The group's most recent meeting was in October during the Air Traffic Control Association's annual conference. Quarterly meetings are planned for 2011. For more information about the Industry ATM Steering Group, contact Laura Feix at lfeix@sae.org, or 1-724-799-9198.

A-10 Committee to addresses FAA request for portable oxygen concentrator standard

SAE has received a request from the Federal Aviation Administration (FAA) to develop a new aerospace standard (AS) on portable oxygen concentrators (POC) for use on aircraft. The standard, which will be developed by SAE's **A-10 Aircraft Oxygen Equipment Committee**, will specify minimum performance requirements for POCs intended to be used onboard air carrier aircraft.

The FAA's John Petrakis spoke at the A-10 committee meeting in October. Five POC manufacturers also attended this meeting. Currently, manufacturers of portable oxygen concentrators, which are used by individuals who need supplemental oxygen to increase their oxygen content, have to submit these devices to the FAA for approval.

Upon development of the SAE aerospace standard, the FAA will create a Technical Standards Order (TSO), using the AS for reference. This will ultimately allow passengers to use any such device meeting the requirements of the standard on aircraft.

SAE International®

The Standard for Aerospace Innovation

SAE International knows that it is people who advance technology. Since 1916 it has worked hand-in-hand with the aerospace community to find solutions to its most common problems through such globally adopted technical documents as Aerospace Standards (AS), Aerospace Material Specifications (AMS), Aerospace Industry Reports (AIR), and Aerospace Recommended Practices (ARP)—becoming the world's largest, most respected aerospace standards development organization.

While its rich standards development history enables SAE International to offer an array of capabilities to serve industry's growing need for future harmonized solutions, a full suite of learning resources – including lifelong engineering education, technical publishing, and events – work to ensure the pipeline of future engineering talent and keep today's practitioners at the forefront of professional growth.

www.sae.org



071546

Integrated Health Management Committee formed

A new committee, **HM-1 Integrated Vehicle Health Management**, was formally established in November. This committee will develop standards related to aerospace Integrated Vehicle Health Management (IVHM).

The committee has already attracted 47 members from industry, governmental agencies, research bodies, and other organizations. Chaired by **Michael Roemer**, the committee will address the integration of health management systems at both the platform and fleet levels, and provide standardization to support the realization of IVHM through common definitions, parameters, and taxonomy.

The committee's first formal meeting will be April 11-13, 2011 in conjunction with the **E-32 Aerospace Propulsion Systems Health Management Committee** meeting in San Francisco.

The committee is part of SAE's IVHM initiative, which also includes the **IVHM Steering Group** (which was instrumental in getting the standards committee started) and existing aerospace health management standardization activities. SAE's IVHM activities were promoted at Prognostics and Health Management Society's conference in October.

Further focus on IVHM activities will occur via an IVHM technology track at SAE's AeroTech Congress in Toulouse next October. This track will be chaired by **Dr. Richard Greaves, Chair of the IVHM Steering Group**.

Standards on Time-Triggered Protocol, Ethernet to be released in 2011

The **AS-2D Time Triggered Systems and Architecture Subcommittee** (of the **AS-2 Embedded Computing Systems Committee**) focuses on system integration using time-triggered networks and architecture. Chaired by **Mirko Jakovljevic**, this subcommittee is working on two standards, which are expected to be released in 2011.

Time-triggered networks, designed to simplify the design of complex integrated systems, enable the design of less complex software-centric systems at lower lifecycle cost. Time-triggered architectures take advantage of time-triggered networks to help reduce electronics platform complexity and design and integration.

Expected to be released in the first quarter of 2011, AS6003, *TTP Communication Protocol*, will simplify the design of advanced integrated systems (such as flight power generation and engine controls) using time-triggered protocol (TTP). Later in the year, the standard will be expanded with the publication of AS6003/1, *MIL-1553 Physical Layer for TTP* and AS6003/2, *RS-485 Physical Layer for TTP*. These will standardize physical layers for different harsh environments in aerospace and defense applications.

AS6802, *Time-Triggered Ethernet (TTEthernet)* describes a set of powerful services to meet the requirements of reliable, hard real-time data delivery in advanced integrated systems. With TTEthernet, critical control systems, audio/video systems, and standard LAN applications can safely coexist in one Ethernet network.

Expected to be released by the end of 2011, this standard defines new Quality of Service (QoS) enhancements to the standard IEEE802.3 and guarantees strictly deterministic computing and networking performance for advanced Ethernet-based integrated systems.

New committee chairs

- **Pat Oakes**, Glenair, AE-8C1, Connectors Committee
- **George Slenski**, Slenski Consulting Inc., AE-8A, Systems Installation Committee
- **Alan Fletcher**, WPAFB, Aerospace Materials Systems Group
- **Mark Shea**, General Atomics, A-5, Aerospace Landing Gear Systems Committee
- **Nat Phillips**, ITW Hobart Ground Power, AGE-2C, Vehicle Maintenance & Aircraft Servicing Committee
- **Brian Weber**, Naval Air Systems Command, Airframe Control Bearings Steering Group
- **Susan Ardito**, ExxonMobil Aviation, E-34, Propulsion Lubricants
- **Mike Roemer**, Impact Technologies, HM-1 Integrated Vehicle Health Management
- **Sarah Skinner**, Selex Galileo, G-19C1 Counterfeit Electronics Parts Continuous Improvement

Air Data Working Group holds initial meetings

The **A-4 Aircraft Instrument Committee's Air Data Working Group** is up and running with more than 20 members participating. The group has held one meeting via WebEx and was tentatively scheduled to hold another meeting in December.

The Air Data Working Group will review existing standards and explore the possibility of developing new standards. Specifically, the group will review standards related to pitot static systems and instruments (such as pitot tubes, mach meters, altimeters, overspeed warning instruments, stall warning equipment, and vertical velocity instruments that measure rate-of climb).

The group will also review AS392C, *Altimeter, Pressure Actuated Sensitive Type*, in response to a request from the FAA for its update of Technical Standard Order C10.

The A-4 committee is responsible for mechanical, electromechanical, and electronic cockpit instrumentation standards applicable to civil aircraft with emphasis on minimum performance standards intended for reference in FAA Technical Standard Orders (TSOs) and European Technical Standard Orders (ETSOs).

Lee Vetsch of Honeywell is chair of the Air Data Working Group. The group would welcome any new participants with expertise in the area of air data. Contact Keely Andrews at kandrews@sae.org to learn how you can be involved.

SAE International named IAQG-sanctioned provider of Aerospace Auditor Transition Training

This past October, SAE International was named by the International Aerospace Quality Group (IAQG) as an officially sanctioned provider of Aerospace Auditor Transition Training (AATT).

"We are pleased to earn the distinction of being an approved provider of Aerospace Auditor Transition Training," **Kevin Perry, Ed.D., Managing Director, Professional Development, SAE International**, said. "This helps to add to the already-strong stable of training courses that SAE International offers to the aerospace, automotive and commercial vehicle industries."

SAE International will offer the IAQG Sanctioned Aerospace Auditor Transition Training classes at the SAE International World Headquarters, located outside of Pittsburgh, Pa. Classes will also be held in Los Angeles. If your organization requires training for a group of individuals, SAE International's Corporate Learning Solutions can accommodate your training needs by bringing the class to your location.

The instructor-led component of this seminar is a four-day class that includes how to audit to the AS9100 series standards using the process-based approach of the newly revised AS9101D. Along with the training in this instructor-led component, there is a continual evaluation of the trainees paying particular attention to his/her active participation, role play, and case study exercises. The fourth day includes online final examinations (which will require a laptop computer) and an interview.

This course is also certified by RABQSA International and meets the classroom training requirements of the IAQG Sanctioned Aerospace Auditor Transition Training for AS9100:2009. RABQSA is one of the leading personnel and training certification body. RABQSA was created in 2004 from the acquisition of the personnel certification activities of United States of America-based Registrar Accreditation Board (RAB) by Australia-based Quality Society of Australasia (QSA).

For more information or to register for the class, visit <http://www.sae.org/pdevent/C1034>.

Consensus Based Standards and More from SAE

In addition to its world renowned consensus based and globally adopted technical standards SAE provides a full complement of standards capabilities:

- Consensus Standards
- Committee Management
- Standards Consortium Administration
- Database Creation and Management
- Accreditation and Certification

AS-3 Committee activities highlighted at Avionics, Fiber Optics & Photonics Conference

ARP5602, *A Guideline for Aerospace Platform Fiber Optic Training and Awareness Education*, was published in September. This document was developed by the **AS-3, Fiber Optics and Applied Photonics Committee**, its **AS-3B Supportability Subcommittee** and the **AS-3B2 Fiber Optic System Design and Education Task Group**. ARP 5602 establishes training guidelines for all personnel involved in the manufacturing, installation, support, integration and testing of fiber optic systems.

The **AS-3 Fiber Optics and Applied Photonics Committee** currently has a number of projects in development.

- The **AS-3A1WDM LAN Task Group** continues work on a family of documents for the next generation of airborne fiber optic systems.
- The committee is exploring the possibility of reactivating the AS-3A2 RF/Analog Task Group.
- The **AS-3C1 Single Mode Task Group** continues work on defining the requirements for the next generation of fiber optic system components.
- **The Fiber Optic Sensors Task Group** continues work on cutting edge sensor technology.

Additionally, the **AS-3D Processes Group** has worked on three documents that deal with fiber optic link loss budgets. AS5750A, *Loss Budget Specification for Fiber Optic Links* was published in July. Two documents, AIR6113, *Guidelines for Design of Digital Fiber Optic Link Loss Budget Methodology* and AS5603A, *Digital Fiber Optic Link Loss Budget Methodology for Aerospace Platforms*, will be submitted for ballot soon.

AS-3 Chair Christopher Winslow and **ASD Chair David Zika** spoke about AS-3 activities at the Avionics, Fiber Optics and Photonics Conference in September, 2010.

The AS-3 committee's next meeting will be April 11-14 in Kissimmee, Florida.

“My Standards Tracking,” new SAE member benefit

Anyone who uses SAE Standards will be interested in a new benefit launching soon for SAE Members only. “My Standards Tracking” will provide members with the ability to request email alerts with updates for selected documents. Standards for both the aerospace and ground vehicle sectors are included in this feature, and members can select individual documents or all documents by technical committee.

Once you select your SAE Standards, you will be kept informed of the status and know immediately when your documents are being updated. Email alerts will be sent for the following scenarios:

Revised – Email Alert: At your request, SAE would like to notify you that a revision, for example, AMS2750D has begun. If you would like to get involved in drafting this revision, please contact SAE Customer Service at CustomerService@sae.org

Final Ballot – Email Alert: At your request, SAE would like to notify you that the final ballot, for example, AMS2750D has begun. This document is nearing publication. A final email alert will be sent to you when it is published.

Published – Email Alert: At your request, SAE would like to notify you that, for example, AMS2750D has been published. To purchase this document, go to <http://standards.sae.org/ams2750d/>

New Project – Email Alert: At your request, SAE would like to notify you that a project, for example, AMS2750D has begun. For details on this document, go to <http://standards.sae.org/ams2750d/>

SAE Members will be able to add the “My Standards Tracking” link through EngineerXchange™. Watch for the announcement when this new SAE Member benefit is officially launched.

G-19 Counterfeit Electronic Parts Committee continues standards revisions

There is a flurry of activity from numerous subcommittees of the **G-19 Counterfeit Electronic Parts Committee**.

Work on a revision to SAE AS5553, *Counterfeit Electronic Parts: Avoidance, Detection, Mitigation and Disposition*, by the **Continuous Improvement Subcommittee** is progressing. This standard provides uniform requirements, practices, and methods to mitigate the risks of receiving and installing counterfeit electronic parts.

Adopted by NASA and the U.S. Department of Defense, this standard is also being used by many organizations globally. The Continuous Improvement Subcommittee is updating the standard and adding global references to reflect its international usage.

Other current G-19 subcommittee projects are:

- The **Test Laboratory Standards Development Subcommittee** has ten Task Groups, each examining various test verification methods. Each group will contribute their portion to a test standard expected within a year.
- The **Distributor Risk Characterization Subcommittee** is nearing completion of an Aerospace Recommended Practice (ARP) document. This will be a worksheet with a series of questions that produces a rating that can be used in the selection of suppliers.
- The **Distributor Subcommittee** is finalizing draft of AS6081 (*Counterfeit Electronic Parts: Avoidance Protocol, Distributors*), a standard that will be used in the certification of distributors.
- The **Standards Compliance Verification Subcommittee** has begun work on developing processes for certification to the G-19 committee's three main standards.

SAE Aerospace London Office hosts first meeting of IAEG

The International Aerospace Environmental Group (IAEG) held its first face-to-face meeting on September 9-10, 2010 at SAE's Aerospace Standards London office. Comprised of companies providing civil or military aerospace products and services, IAEG is a cooperative group whose purpose is to promote common interests by implementing initiatives that will drive improvements in environmental performance in operations within the civil and military aerospace industry.

SAE International is working with this group to provide a platform for the launch of its activities and to facilitate the activities as they address the aerospace industry. The group also met in Washington, D.C. from November 30- December 1, 2010.

The main objectives of the IAEG are to harmonize and promote industry-wide common environmental requirements and standards; to coordinate relevant initiatives and activities with industry stakeholders and appropriate regulatory/governmental agencies; and to identify industry best practices for exchange within the industry.

Standards Development Leader and Partner

SAE has become the world's largest standards development organization by partnering with industry for nearly 100 years to discover solutions to its common problems. Today, it works with companies – and other SDO's around the world—to create and harmonize standards for the advancement of the global aerospace industry.

- AeroSpace and Defence Industries Association of Europe (ASD)
- Society of Japanese Aerospace Companies (SJAC)
- NATO Standardization Agency (NSA)
- European Organization for Civil Aviation Equipment (EUROCAE)
- International Air Transport Association (IATA)
- National Center for Advanced Materials Performance (NCAMP)
- Federal Aviation Administration (FAA)
- European Aviation Safety Agency (EASA)
- International Civil Aviation Organization (ICAO).



AS-4 moves forward on unmanned systems documents

Recent months have seen the publication of new and revised standards, as well as ongoing work on the development of future standards, by the **AS-4 Unmanned Systems Committee**.

The committee's **AS-4C Information Modeling and Definition Subcommittee** published a new document, AS6062, *JAUS Mission Spooling Service Set* in July. Revisions to AS5684A, *JAUS Service Interface Definition Language*, and AS5710A, *JAUS Core Service Set*, were also published in July and August, respectively. The following documents are currently in development:

- AS6040 JAUS HMI Service Set
- AS6057 JAUS Manipulator Service Set
- AS6060 JAUS Environment Sensing Service Set
- AS6009 JAUS Mobility Service Set
- AS6063 JAUS USV Service Set
- AS6091 JAUS Unmanned Ground Vehicle Service Set
- AS6111 JAUS Unmanned Underwater Vehicle Service Set
- AS6132 JAUS Payload Interface Service Set

Additionally, the **AS-4A Architecture Framework Subcommittee** has recently started work on the next revision of AIR5665, *Architecture Framework for Unmanned Systems (AFUS)*.

Earlier in 2010, the new JAUS standards were again used in the Association of Unmanned Vehicle Systems student competitions, and AS-4 representatives helped officiate these events.

Online meetings keep schedules on track

Sometimes, face-to-face meetings just aren't possible. Yet, schedules need to move forward. Some SAE aerospace standards development committees have found that to help them stay on track, despite not being able to get the committee together in person, virtual meeting technology can help.

Illness recently prevented the **AS-2C, Architecture Analysis & Design Language Committee** from meeting this past October. Using WebEx, however, the committee was able to meet its fall timetable to ensure its document publishing schedule.

While virtual meetings help to get tasks accomplished without having to leave the office, especially when time is of the essence, one committee in particular can attest to the effectiveness of online meetings. **G-19, the Counterfeit Electronic Parts Committee**, has held all of their meetings via WebEx—never having held face-to-face meetings.

In today's busy world, with committee volunteers from throughout the world, getting all committee members together can be challenging. Online/video conferencing offers a viable alternative to traditional in-person committee meetings in helping to keep the important work of standards development moving forward.

If you or your committee are interested in using virtual meeting technology, contact your aerospace standards specialist who can make arrangements and provide the tools required for all involved to be able to log in to the meeting and participate.

SAE standard provides illumination on laser design

ARP5598, *Unauthorized Laser Illuminations: Pilot Operational Procedures* has received attention around the world, according to one of its main authors, Bill Connor, Ph.D., a retired airline pilot who has been studying the issue of cockpit laser illuminations for many years. He reports that the document has been well-received by the FAA and the International Federation of Airline Pilots Association, which is distributing it around the world.

Captain Connor is Vice Chairman of the G-10 Aerospace Behavioral Engineering Technology Committee, and Chairman of the G-10T Laser Operational Safety Hazards Subcommittee that was responsible for developing ARP 5598.

The document offers a brief overview of the flight hazards associated with laser exposures and identifies areas which require research in order to fully understand their effects on pilot performance. It also introduces recommended practices which can mitigate effects on the eyes of pilots who encounter lasers during flight operations.

continued on next page

continued from previous page

Depending on the intensity of the light, the proximity to the laser, and the location of the laser appearance in the pilot's field of view, there is a range of visual effects that pilots can experience. Cockpit laser illuminations can cause flash blindness effects for more than a minute, according to Connor, who has been illuminated several times. "It's like a flash bulb going off in front of your face," he said.

Loss of sight, orientation, and equilibrium obviously pose problems, even at altitude. "But when you're at 1500 feet and coming down at 160 knots, the last thing you want to do is lose your vision, especially when you don't know when you're going to get it back," Connor said.

ARP 5598 notes that some airlines have prepared procedures to deal with laser illumination events. But there are no abnormal or emergency procedures developed for the industry as a whole. These procedures should address the human factors issues associated with flight crewmember verification of flight display instruments during visual impairments and assist personnel in maintaining control of the aircraft, according to ARP 5598.

ARP 5598 also promotes the idea of an education campaign for the general public about the dangers of lasers. Connor has spoken on the issues at many venues. In addition to discussing ARP 5598, he shows an educational video titled "Aircraft Laser Illumination Awareness for the Aviation Community," developed by Dr. Leon McLin, Air Force Research Laboratory, and sponsored by the FAA, the U.S. Department of Defense, and other entities.

Research on this topic is ongoing, and may be incorporated into a future update or extension of ARP 5598.

This article is an edited version of an article from Aerospace Engineering and Manufacturing Online, 13-Nov-2010



A laser illumination in the cockpit "is like a flash bulb going off in front of your face," said retired pilot and **SAE G-10 Committee Vice Chairman Bill Connor**.

Standards committee leaders meet at SAE for workshop

SAE International hosted 30 aerospace standards committee leaders, including systems group and committee chairs/vice chairs, at its World Headquarters Conference Center in Warrendale, PA on June 22-23. The workshop, focusing on standards committee leadership development and the sharing of best practices, provided attendees with the opportunity to network, share ideas, and problem-solve. Participants also had the opportunity to interact with some **SAE Aerospace Council** members including **Andy Pickard** (Rolls Royce), **Greg Saunders** (U.S. Department of Defense) and Council chair **Laura Hitchcock** (The Boeing Company).

Breakout sessions covered committee leadership, the document development process, balloting, and new document categories. Attendees also enjoyed a picnic at nearby Knob Hill Park. The next workshop is planned for June 19-20, 2012.



A long history of setting the standard

It's one of those things that is rarely thought about, yet touches lives on a daily basis.

Each morning as you put your key in your vehicle's ignition, turn it, and head off down the road—SAE standards have been implemented. As you board a plane and stow your carry-on baggage and slide into your seat, SAE standards are used. And, when you climb into the cab of your industrial-grade tractor to begin a day's work of farming, again, SAE standards are there.

No matter the mode of transportation or use—car, SUV, pickup truck, tractor, two-seater airplane, or jumbo jet—SAE standards are at the heart of your vehicle.

SAE standards have made vehicles safer, more reliable, more comfortable, and more cost-effective for manufacturers and consumers. In fact, in the U.S., SAE standards are referenced by many government regulations—a marriage of government safety and environmental efforts and current top technical industry solutions.

“SAE standards are relevant because they are created and developed by the professionals who design and create the vehicles themselves,” said **Jack Pokrzywa, Manager, Ground Vehicle Standards**. “If it moves on- or off-road, we've had our hands—literally and figuratively—on virtually every part of it.”

Ed Manns, Manager, Aerospace Standards, said SAE has been a critical player in the development of the aerospace industry almost since the day that Orville and Wilbur Wright made their famous flight in Kitty Hawk.

“The aerospace mobility engineers who sit on our committees put a life's accumulation of talent and education into creating standards that benefit not only manufacturers but anyone who has ever stepped on an airplane,” Manns said. “This has been recognized by the leaders of our industry for decades. Our membership rolls are very impressive, including some of the best and brightest aviation minds of the past and present.”

The types of standards developed by SAE International are as varied as the personalities of the people who have helped to develop them. And, the relevance of those standards is crucial for industry and consumers alike. Some recent automotive standards include communications between plug-in vehicles and the utility grid; guidelines for electric vehicle safety; and recommended practice for measuring the exhaust emissions and fuel economy of hybrid-electric vehicles.

“Standards must change to meet technological changes,” Pokrzywa said. “SAE plays a critical role in meeting these challenges, and it's a role that SAE developers take very seriously.”

Manns noted that, on the aerospace side, SAE created a standard to thwart the growing problem of counterfeit electronic parts. The standard calls for maximized availability of authentic parts, procurement of parts from reliable sources, assuring authenticity and conformance of parts, and control of parts identified as counterfeit.

According to a study by the U.S. Department of Commerce Bureau of Industry & Security, the number of counterfeit incidents reported by 387 participants climbed from 3868 in 2005 to 9356 incidents in 2008, an increase of more than 140%. About 9% of the companies documented cases related to government applications. Sobering statistics, and SAE is there to help find solutions.

These are just a few examples of the thousands of technical standards that SAE develops and maintains.

So, the next time you step onto an airplane or into a car or piece of heavy equipment, take a moment to think about the SAE technical committee members and the SAE standards that have helped to make that vehicle better and safer. In the future, as you plug in your hybrid vehicle, SAE standards will be there, too.

And, rest assured that Ed Manns, Jack Pokrzywa, and the entire SAE standards team will continue the tradition—the crucial tradition—of leading the mobility engineering industry in standards development.

David L. Schutt, SAE Chief Executive Officer; this article is an edited version of an article from Automotive Engineering International Online, 16-Sep-2010

Volunteer recognition: Document Sponsors (July – December 2010)

The SAE Standards Development Program thanks its Document Sponsors. These individuals have served not only as active committee members but have dedicated their time and talent in guiding the development of standards documents from the preparation of all drafts through balloting and publication.

Thank you.

Max Anner
James Babinski Thomson Aerospace and Defense
Daniel Backus Har-Conn Chrome Co
Heather Beaton Bombardier
Edward Beauchamp
Doyle Bell Boeing Co
Stan Biernat Moog Inc
Bernard Blum
Fred Boshoven
Tim Boysen Hamilton Sundstrand
Gary Brown Carpenter Technology Corp
Owe Carlsson Alcoa Fastening Systems
Roger Christianson Hydraflow Inc
Kenneth Clark Magnesium Elektron
Kevin Coderre
Sarah Condie Autonomous Solutions Inc
Arthur Cortellucci Avox Systems Inc
Bobby Crumb Lockheed Martin Corp
May Danhash
Bruce Delsing Boeing Commercial Airplanes
Walter Deutscher Airbus
Jon Devereaux NASA
Edward Duncan Continental Airlines Inc
Thomas Dwenger Goodyear Tire & Rubber Co
Dennis Evans Pratt & Whitney
Barry Feltham
Alan Fletcher WPAFB
Clint Forrest ES3 Inc
Lee Gearhart Moog Inc
Jonathan Golding Spectrum Technologies USA Inc
Dale Gordon AeroFit Inc
Christine Graham NHBB Inc
Ron Grzeskiewicz ATI Allvac
Ronald Hahn
Darrin Hansen Boeing Commercial Airplanes
Daniel Harres
Bryan Harrington Deutsch Defense Aerospace
Bohdan Hasiuk Defense Supply Center Philadelphia
Larry Heisey
Gordon Hendry Boeing Aircraft Co
Ernie Hill Carpenter Technology Corp
Robert Hodder
Dominic Hyde
Peter Keenan Airbus Operations Ltd
Bill Keller PRC-DeSoto International Inc
Danny Kent
Diane Kleinschmidt Naval Air Warfare Center
Guy Kochick GE Aircraft Engines
Manuel Koucouthakis Honeywell Aerospace
Gary Landry Pratt & Whitney
Michael Lawler SPS Technologies
Colin Leach Pratt & Whitney Canada
Jacques Leroux Dow Chemical Canada ULC
Norbert Luks DLR
Puliyur Madhavan Pall Corp
Richard McClung Hamilton Sundstrand
Scott McCurdy B/E Aerospace
Alan Miklos Glenair
John Moore Harlan Global Mfg
George Nelson Elgiloy Specialty Metals
Michael Niedzinski Alcan Aerospace
Patrick Oakes Glenair International
Nilesh Patel
Alfred Patterson Lockheed Martin Aeronautics Co
Michael Peck Dynamold Inc
Michael Peppas PDS Technical Services
Luke Perkins QinetiQ
Ronnie Peterson
Richard Porter RTI International
John Posta Delta Air Lines Inc
John Rankowski Boeing Co
Daniel Reeves Magparts
Manfred Runkel
Gabriel Sampson Averest Inc
Dennis Scharer Ervin Industries Inc
Alan Schofield Greene Tweed & Co
Chris Schofield Hydraflow Inc
Anil Shah Cessna Aircraft Co
Yogendra Sheoran Honeywell Int'l Inc
Dennis Smith Tyco Electronics Corp
Brian Sova Boeing
Robert Steffen Raytheon Precision Manufacturing
Tom Stoneham Lockheed Martin Aeronautics Co
Robert Tonkin Cummins Inc
Raymond Tribelhorn SAE Aerospace Bulk Billing
Arnaud Tronche AUBERT & DUVAL
Thomas Tsareff
Brian Uhlhorn Lockheed Martin
Hans Van der Velden
Brian Weber Naval Air Systems Command
Kevin Williams Federal Aviation Administration
Jeffrey Wit AFRL
William Woodward Ursa Navigation Solutions Inc

Volunteer Spotlight: **SAE Aerospace Awards**

2010 Technical Standards Board Outstanding Contribution Award

This award recognizes individuals for outstanding service in the technical committee activities of the Society. This includes valuable contributions to the work of SAE technical committees, unusual leadership in the activities of an SAE technical committee, significant contributions as a representative of the Society to the accomplishments of technical committees of other organizations or of government agencies, and outstanding contributions to SAE technical committee work. It is administered by the SAE Technical Standards Board (TSB).

Bobby H. Crumb, Lockheed Martin (AE-8 Aerospace Electrical/Electronic Distribution Systems Steering Group)

Michael J. Hackert, NAVAIR (AS-3 Fiber Optics and Applied Photonics Committee)

Michelle T. Pierce, Lockheed Martin (G-14 Americas Aerospace Quality Standards Committee)

Robert P. Smith, The Boeing Company (G-10 Aerospace Behavioral Engineering Technology Steering Group)

2010 SAE Aerospace Chair Award

Sponsored by the SAE Aerospace Executive Committee, this award recognizes outstanding leadership demonstrated by chairs of committees under the Aerospace Council and Air and Space Group. It may be presented in recognition of performance over an extended period of time, or for a singular accomplishment. This award was presented at the S-15 meeting held October 19-20, 2010 in Indianapolis, Indiana.



Mark Steele,

Honeywell International Inc., Chair,
S-15 Gas Turbine Performance Simulation
Nomenclature and Interfaces Committee

Marvin Whitlock Award

This award recognizes an individual for significant technical contributions related to the operational availability of aircraft. Operational availability includes areas such as repair design, tooling, maintenance practices, logistics, inspection, modification and safety. The award commemorates the late Marvin Whitlock, former Senior Vice President of Maintenance and a member of the Board of Directors at United Airlines. The award is funded through the SAE Foundation. This award will be presented at the 2011 SAE AeroTech Conference in Toulouse, France.

Justin R. Greener, The Boeing Company

Clarence L. (Kelly) Johnson Aerospace Vehicle Design and Development Award

This award recognizes individuals who have distinguished themselves by making significant contributions during their career in the innovative design and development of advanced aircraft and/or spacecraft. It perpetuates recognition of Clarence L. (Kelly) Johnson's accomplishments and inspiration as the aeronautical genius who created Lockheed's famed Skunk Works and who played a leading role in the design and development of more than 40 of the world's most advanced aircraft. The award is made possible through a fund established by the Lockheed Advanced Development Company. This award will be presented at the 2011 SAE AeroTech Conference in Toulouse, France.

Ramesh K. Agarwal, Washington University St. Louis

Upcoming technical committee meetings

Current as of publication. For updates/changes and meetings beyond April 2011, go to <http://www.sae.org/standards/> and the "Aerospace Technical Committee Meeting Schedule" link.

Jan 17-20	AS-1 Aircraft Systems and Systems Integration Committees Palmdale, CA, USA
Jan 18-19	AMEC Surface Enhancement Committee Meeting Monterey, CA, USA
Jan 18-19	Registration Management Committee (RMC) Meeting San Diego, CA, USA
Jan 18-20	Aircraft Seat Committee New Orleans, LA, USA
Jan 19-21	AMEC, Aerospace Metals Engineering Committee Meeting Pacific Grove, CA, USA
Jan 19-20	G-20 Airport Lighting Ft. Lauderdale, FL, USA
Jan 20	RMC Other Party Assessor Workshop San Diego, CA, USA
Jan 24-28	S-18 Safety Assessment For Airborne Systems & Equipment Hollywood, FL, USA
Jan 24-27	AS-2C Architecture Analysis & Design Language Hollywood, FL, USA
Jan 24-27	AS-2D Time Triggered Systems and Architecture Committee Hollywood, FL, USA
Jan 26-28	AE-2 Lightning Committee Hollywood, FL, USA
Jan 31- Feb 3	A-4 Aircraft Instruments Melbourne, FL, USA
Jan 31- Feb 4	CACRC- Commercial Aircraft Composite Repair Committee Atlanta, GA, USA
Mar 1-2	AE-8 Executive Steering Group San Antonio, TX, USA
Mar 1-3	E-36, Electronic Engine Controls New Orleans, LA, USA
Mar 1-3	S-16, Turbine Engine Inlet Flow Distortion Sedona, AZ, USA
Mar 7-9	G-3, Aerospace Couplings, Fittings, Hose & Tubing Assemblies Phoenix, AZ, USA
Mar 22-23	AMEC, Aerospace Metals Engineering Committee Meeting Fort Worth, TX, USA
Mar 28-31	AMS Metals Group Committee Meetings Indian Rocks (Clearwater), FL, USA
Mar 29-30	Aerospace Council Wichita, KS, USA
Apr 4-6	AMS CE, Elastomers and AMS P, Polymeric & Composite Materials Committee Meetings Daytona Beach, FL, USA
Apr 4-7	G-14 AAQSC, AAQG, RMC and Team Meetings Ft Worth, TX, USA
Apr 4-6	E-25, General Standards for Aerospace and Propulsion Systems Daytona Beach, FL, USA
Apr 6-8	E-33, In-Flight Propulsion Measurement Nashville, TN, USA
Apr 11-13	AGE-2 Air Cargo & Aircraft Ground Equipment & Systems Committee New Orleans, LA, USA
Apr 11-14	Avionic Systems Group (AS-1, AS-2, AS-3, AS-4) Kissimmee, FL, USA
Apr 11-13	E-34, Propulsion Lubricants Dublin, Ireland
Apr 12-14	A-5 Aerospace Landing Gear Systems Committee Seville, Spain
Apr 12-14	ACBG Airframe Control Bearings Group San Francisco, CA, USA
Apr 12-14	E-32, Aerospace Propulsion Systems Health Management San Francisco, CA, USA
Apr 12-14	S-9 Cabin Safety Provisions Committee Seattle, WA, USA
Apr 14	AMS M, Aerospace Greases Committee Meeting Dublin, Ireland
Apr 26-28	AE-8A Systems Installation and AE-8D Wire and Cable Committees San Antonio, TX, USA

New! Corporate Sponsorship of SAE Standards Technical Committee Meetings

**Build your company's brand – target very specific technology niches –
support standards development**

SAE is the world's largest aerospace standards development organization. Its consensus based program is the forum through which the global industry collaborates on and sets expectations for vehicle reliability, quality, safety, efficiency, and compliance.

Thousands of engineers from companies throughout the supply chain and around the world serve on some 250 SAE technical committees developing, revising, and keeping current more than 8,400 technical standards—standards that address the full spectrum of aerospace business from design, integrate, build and operate to such critical issues ranging from fuel to weather.

Whether your organization is involved in SAE standards activities or not, you can put your company's name directly in front of those that create industry's standards—while they are creating them—by purchasing one of many sponsorship opportunities now offered around SAE Aerospace Standards Technical Committee Meetings.

For sponsorship levels and opportunities available contact:

SAE Sales 1.724.772.4078 or Aerospace Standards 1.724.772.7161
On the web, go to www.sae.org/standards and "Technical Committee Meeting Schedule"



SAE International

P100653

Acknowledgement: 2010 Corporate Support

SAE International wishes to acknowledge those companies who contributed to the funding of this year's SAE Standards Development Program. Thank you for helping write the future of the aerospace industry.

Thank you.

AC Technology
Adel Wiggins Group
Aero Mag 2000 Yul, Inc.
Aerofit, Inc.
Air BP Lubricants
Alcoa Fastening Systems
Amphenol Fiber Systems International
AMSAFE Aviation
Carpenter Technology Corp
Cessna Aircraft Company
Crissair, Inc.
Cryotech Deicing Technology
Deft Inc.
DeWAL Industries
DME Corporation
Electronics, Inc.
Emhart Fastening Technologies
European Aviation Safety Agency
Faber Enterprises, Inc.
Federal Aviation Administration
GE Aircraft Engines
Glenair, Inc.
Global Ground Support
Greene, Tweed & Company
Hamilton Sundstrand Aerospace
Heroux Devtek, Inc.
Honeywell
IPECO, Inc.
Israel Aircraft Industries, Ltd.
J & M Products, Inc.
JBT Aerotech
Judd Wire, Inc.
Leach International North America
Lockheed Martin Aeronautics Company

Material Science Technology, Inc.
Meggitt Aircraft Braking Systems
Mi-Tech Metals, Inc.
Moog Inc.
N*ICE Aircraft Services & Support GmbH
NASCO Aircraft Brake, Inc.
National Utilities Company/NUCO
Nexans
Northrop Grumman Corporation
Pacific Scientific Company
Pall Aeropower Corporation
Parker-Hannifin Corporation
PPG Aerospace
Polymod Technologies, Inc.
Pratt & Whitney Corporation
Rainier Rubber Company
Rockwell Collins
Rolls-Royce
Safe Flight Instrument Corporation
Sargent Controls & Aerospace
Satco, Inc.
Souriau Corp
Switlik Parachute Company, Inc.
Teledyne Microelectronics
Tensolite Company
The Boeing Company
The Lee Company
Thomas & Betts Corporation
Tiodize Company, Inc.
Transport Canada
Trelleborg Sealing Solutions US, Inc.
Tri-Star Electronics International, Inc.
Wesco Aircraft Hardware Corp
Woodward Governor Company

SAE 2011 **AeroTech** Congress & Exhibition

October 18-21, 2011
Centre de Congrès Pierre Baudis
Toulouse, France

www.sae.org/aerotech



P101046

SAE International

Gain a competitive advantage. Impact your bottom line. Invest in standards.

Standards. The workhorse documents that commonize practices, processes, and products throughout the aerospace industry are also paramount to the advancement of technology. Standards documents are more than the practices of today. They account for history and anticipate the future of technology, regulation, and business. The direct benefits of standards are simple in concept but extraordinary in their global impact toward ever-safer, cleaner, more efficient worldwide transportation.

Technical standards enable and enhance:

- consistent and clear expectations for product performance and reliability
- regulatory compliance
- consistent product quality
- compatibility and interoperability
- more efficient procurement

Standardization also:

- lowers trade barriers
- lowers purchasing costs
- decreases design time
- promotes innovation
- increases new technology speed to market

Because industry can rely on standards for globally harmonized solutions to common issues, individual companies can devote more time and resources to advance their proprietary technology. In this way, standards help foster competition, which advances the collective technology of industry and in turn, creates the need for new and revised standards. This has been the cycle for nearly a century of aerospace standards solutions.

And, at the heart of those solutions is SAE International, the world's largest, most respected aerospace standards development organization (SDO). From design to build, operate, and maintain, SAE International works hand-in-hand with the global aerospace community to advance industry.

While participation in the standards development process helps the advancement of the industry it can also contribute to the advancement of your company and personal career.

Corporate Benefits

- Input into the direction of the standards
- Competitive intelligence through advance knowledge of standard direction
- Advance warning of pending regulations and influence over the technical basis of the regulation
- Product liability protections
- Strong relationships with customers and suppliers
- Association with the leading society for advancing mobility technology

Individual Benefits

- Professional development from working contact with peers
- Peer recognition for advancing your industry's sectors technologies
- Excellent networking and learning opportunities from product developers/users around the world
- Discover emerging technologies
- Contribute to the industry's body of technical knowledge

To learn more about SAE Technical Standards Development—and for a schedule of Technical Committee meetings—visit us on the web at www.sae.org/standardsdev

Become a better you. Volunteer for an SAE Standards Development Committee.

SAE Aerospace Council Organization Chart



Match your expertise with the many SAE Technical Standards Development Committees that are writing the common engineering requirements for the advancement of the aerospace industry.

