IEEE STANDARDS BEARER

IEEE STANDARDS

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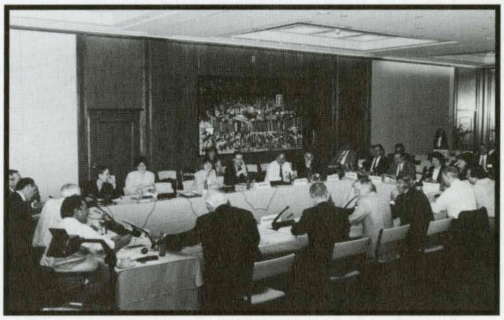
October 1995

IEEE President Thomas Cain speaking at Geneva forum

WHAT'S INSIDE.....

IEEE

Standards Board Meetings in Geneva Strengthen International Ties



At the invitation of the International Electrotechnical Commission (IEC), the IEEE Standards Board traveled to Geneva, Switzerland, to hold its June 11–14 series of meetings. The meetings in Geneva gave IEEE Standards Board members, and special guests IEEE President Thomas Cain and President-Elect Wally Read, the opportunity to share their experiences and expectations with IEC, the International Organization for Standardization (ISO), and the International Telecommunications Union (ITU), all headquartered in Geneva. The European setting also provided a new perspective from which Board members could consider the global challenges ahead for any standardization program.

Finding Common Ground

All the committee meetings were well attended. While it was business as usual for some, the New Opportunities in Standards Committee (NosCom) in particular derived unique benefits from the Geneva location. At the request of NosCom Chair Ivor Knight, Aharon Amit, Director of Special Operations of IEC, attended the meeting. Amit discussed IEC's Technology Trends Assessment program so that NosCom could determine what similarities exist between it and IEEE's Emerging Practices in Technology program. IEC's program has established three different types of publications: pre-standards documents; documents including notes or a "method of measurement threshold" that might be of use to working groups developing standards; and new work items (roughly equivalent to new projects in IEEE) that have become deadlocked in a working group because they offer more than one solution. His informal presentation evoked a free discussion of the challenges of making "pre-standards" material available for dissemination to meet industry needs and requirements in a timely fashion.

Establishing New Relationships

The International Standards Committee (IntCom), chaired by Ben Johnson, held lively debates on a variety of issues, ranging from discussion of the benefits of establishing formal liaison with other organizations at various levels, to improving and clarifying our procedures for adoption of standards from other organizations. IntCom includes a number of members who are active participants in IEC, among them Ingo Rüsch (also a member of the IEEE Standards Board), President of the German National Committee of the IEC; and Anne Bosma, Secretary of IEC's Switchgear and Controlgear Technical Committee (TC 17). Rüsch volunteered to provide a German National Committee review of the latest draft of the *IEC Synchronization Guide.* Bosma reported that the IEC Central Office would be responding to an initiative to establish Category A liaison for the IEEE Power Engineering Society Switchgear Committee with IEC TC 17. ("Category A" liaison allows organizations to make effective contributions to and participate actively in the technical

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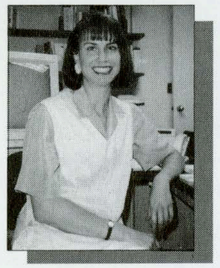

Letter from the editor's desk

Dear Readers:

When I first began editing this newsletter back in 1992, we planned themes for every issue of the *IEEE Standards Bearer.* Sometimes we were able to follow through with them, and other times it became tougher—when you only have a few pages to work with and many announcements to run, the theme can pretty easily get lost or swallowed whole. Yet one theme endured and seemed to appear in almost every issue—that of international participation in standards.

There are good reasons for its endurance. In the past few years we've seen a revolution in the approach to standardization, in the societies and working groups as well as in the Standards Board. Our members are aware of the need to coordinate efforts, to harmonize existing documents, and to develop standards that can be used in a global environment. Some groups have been thinking this way for years, others are only just beginning. But the direction of the trend is clear and unmistakable.

Several articles in this issue coincide with this ever-present theme. The Standards Board meetings in Geneva, Switzerland, provided an opportunity for representatives of several international organizations to get together to discuss their goals as well as their similarities and differences. At a Power Engineering Society discussion panel, as reported by Anne O'Neill in her column, experts came together to talk about ways to achieve international coordination and harmonization. And the VHDL work discussed by Jean Mermet, the engineer featured in our standards profile, is an example of an IEEE standard that is known and recognized all over the world.

These are important standards events and activities, and we hope to see many more of them. There is a further challenge, however, beyond all of these—that of establishing meaningful links with our members in over 150 countries. Regardless of where they live and work, our members and others who can contribute to standards development must be encouraged to participate in the process, not only for the sake of standardization in IEEE, but also to ensure that technically sound, useful standards are established wherever they are needed and through whatever channels are appropriate.

Regards,

Kristin Dittmann

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Need an Answer? Check IEEE Standards FAQs

One of the most common features of the Internet and the World Wide Web (WWW) is an FAQ, or frequently asked questions list. FAQs answer the most common questions asked about a particular subject, serving as a comprehensive source of practical information. FAQs are typically presented in a Q & A format.

As part of the expansion and upgrade of its WWW site, the IEEE Standards Department has introduced an entire series of FAQs about various elements of standards development. The IEEE Standards FAQs provide answers to questions about many aspects of the standards process. More FAQs are expected to be added later this fall.

Some of the subjects covered by the IEEE Standards FAQs include information on acronyms, buzzwords, standards, the standards development process, unique standards committees, special standards products and programs, and ordering information.

The IEEE Standards WWW site can be reached at: http://stdsbbs.ieee.org/. The Standards Department is also anxious to hear your feedback on these FAQs. Contact Mary Lynne Nielsen at (908) 562-3827 or m.nielsen@ieee.org with your comments and ideas.

Take note of the new www address: http://stdsbbs.ieee.org/

STANDARDS
IEEE
BEARER

The IEEE Standards Bearer is published quarterly by the IEEE Standards Department. **Vice President of Standards,** E. G. "Al" Kiener; **Publisher,** Donald C. Fleckenstein; **Managing Director,** Andrew Salem; **Staff Director,** Judith Gorman; **Technical Program Director,** Karen DeChino; **Editor-in-Chief,** Kristin Dittmann; **Design/Production,** Esaleta Corbin; **Printing,** Karen McCabe; **Copy Editor,** Rochelle Stern; **Contributors,** Bruce Barrow; Rulon Fronk. If you would like to contribute articles to the *IEEE Standards Bearer,* please write to the *IEEE Standards Bearer,* 445 Hoes Lane, PO Box 1331, Piscataway, NJ 08855-1331, USA. Third class postage paid at Piscataway, NJ. ISSN 08960-1425.

Technology Leading the Way to Change—A Panel of Standards Leaders

On June 13, 1995, the IEEE hosted a forum on "The Future Challenges of Standards" in Geneva, Switzerland, with Lawrence Eicher representing the International Organization for Standardization (ISO); Anthony Raeburn representing the International Electrotechnical Commission (IEC); Theodor Irmer representing the International Telecommunications Union (ITU); and Andrew Salem representing the IEEE. The forum allowed members of these organizations to discuss their views of the future of standardization and the issues facing their respective organizations.

Clockwise from top: *Theodor Irmer, Anthony Raeburn, and Lawrence Eicher*

To begin the forum, IEEE President Tom Cain provided a succinct overview of the IEEE; standards volunteer John Rankine, who, along with Donald Fleckenstein and President-Elect Wally Read, was responsible for bringing the panel together, introduced the panel members and welcomed the distinguished guests. Guests included IEC President Dr. Hans Gissel, President-Elect Bernard X. Falk, and Treasurer Mathias R. Fünfschilling.

Each panelist provided his own thoughts on the primary issues of concern, the forces affecting standards organizations, and the actions needed to meet the challenges of the future. Not surprisingly, much synergy was found along the way.

Streamlining the Process

Dr. Lawrence Eicher, Secretary General of ISO, explained that his organization is being challenged by the need of rapidly developing technologies—particularly in the areas of information technology and communications—to move faster, and become more market-oriented and less bureaucratic. ISO has taken steps, by using the total quality management approach (familiar to users of ISO 9000), to document all processes and has succeeded in improving productivity. ISO has decreased the standards development period from 78 months in 1984 to 53 in 1994, even though standards in general have been getting longer. Now the organization is taking a process re-engineering approach to standards development, which will lead to further improvements.

Sharing Resources

Dr. Theodor Irmer, Director of Standards Activities for ITU, projected that radical advances in technology, as well as the rapidly changing telecommunications environment, will be primary forces of change in the standardization process for ITU and others. The digital revolution has brought new opportunities and solutions to old problems, "paving the road toward global networks," and leading to a "technological convergence" of new services, including wired and wireless telecommunications and broadcasting. All this is developing against a regulatory environment in transition, which faces, among other obstacles, conflicts between regional and global interests. Irmer suggested that coping with all these changes will require making a transition toward market-oriented standardization and prioritization—standardizing as much as possible, but only so far as necessary. Further, he stated that standards organizations must learn to share the scarce resources that are available, particularly the experts and the time required to do the work, and reallocate work to other organizations where appropriate.

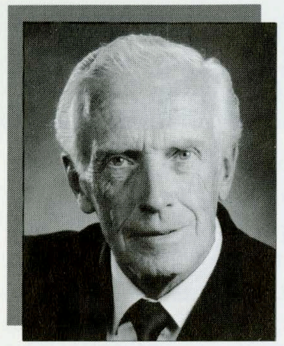
Supporting Early Development

For Anthony Raeburn, General Secretary of IEC, technology also demands the strongest consideration from standards organizations, particularly in the area of anticipating new technology needs. Raeburn believes that we need mechanisms to support, from the earliest stages, the development of terminology, measurement methods, and other fundamental aspects of standardization. He also noted that we must recognize that new technologies offer opportunities for multidisciplinary working methods. In recognition of these demands, IEC has authorized a President's Advisory Committee on Future Technology (PACT), which has set out to advise IEC on how to fulfill industry's future needs. IEC is very interested in the results of the Technology Trends Assessment program, which is designed to make information available that might fill some gaps in early standardization. IEC is also aware that publicly available documents must somehow get into the system without damaging other work, and in a way that does not favor one industry over another.

Changing the Way We Think

The last speaker, Andrew Salem, Managing Director of IEEE Standards, pointed out that changing the way we think about the standardization process may be more difficult than applying the technology that can automate it. He observed that most of us are still beholden to a paper-based process—even the sophisticated tools people use to generate drafts are really geared toward driving a printer, not structuring information in reusable ways. The key is to teach people to use the technology that is available to do all that it can do; to accomplish this, we must move our thinking away from the limitations of paper. The primary purpose of the SPAsystem™ is to automate the entire standards process and provide a complete database of IEEE standards, not just electronic files of printed documents. This concept presents multiple challenges to the IEEE as an organization, and challenges to other standards organizations as well. Salem stressed that the IEEE will work in cooperation, not in competition, with other standards organizations to share its experiences and expertise as this system develops. ◆

SPAsystem is a trademark of the Institute of Electrical and Electronic Engineers, Inc.



Message From The Chair

by E. G. "Al" Kiener

There is a lot of business to attend to in an organization of over 300 000 members worldwide. I have traveled so frequently in the last eight months of my term that my wife Clara is beginning to wonder who this stranger is who comes home occasionally, dumps a suitcase full of dirty clothes in the laundry room, and announces yet another trip to who knows where. Needless to say, my frequent flyer account is very healthy!

My travels in August took me to Australia and New Zealand to participate in the Technical Activities Board (TAB) colloquium and the Executive Board meetings. The core organizer was the former Vice President of the Publication Board, Pete Morley, who should be commended for a successful colloquium. There are approximately 5000 IEEE members in seven sections in Australia, and nearly 800 members in two sections in New Zealand. Every one of these sections was visited by IEEE officers and TAB colloquia participants. I personally visited six sections.

Most of the section leaders requested presentations with standards as an item of discussion, so I was able to discuss our standards operations and organization, the SPAsystem™, and our international activities. I established a large number of contacts with industry representatives and local universities as well as with section leaders, and found our IEEE members in these sections receptive to the SPAsystem and interested in our international activities. Although they have their own country-specific standards, modeled after IEC, IEEE is well known in these sections for its extensive library of standards. Clearly, the cross-adoption programs and harmonization of our standards with those of others are areas where much progress can be made.

Many readers will recall that our last issue (July 1995) included three reorganization proposals for the IEEE volunteer organization structure. The Standards Board Advisory Committee held a meeting on July 29 to consider the comments we received and to discuss the scenarios. After considerable discussion, the Advisory Committee concluded that all three scenarios contained some very serious flaws; therefore, our formal response on behalf of the Standards Board was in opposition to all the proposals, and we recommended staying with the existing structure. We would, of course, be willing to consider any other proposals that may be brought forward. Other major boards have expressed concerns as well. By the time this column is published, the six vice presidents of all the major boards will have attended a meeting to try to come to some resolution on this subject. It now seems apparent that either a compromise proposal that can be accepted by all the boards must be designed by the end of the year or there will be no change. We will, of course, keep you fully informed on this important issue.

Finally, I would like to congratulate Standards Board member Bruce McClung on being named the 1995 recipient of the Charles Proteus Steinmetz Medal. This is a major IEEE field award for outstanding performance in Standards Activities. I have known Bruce for many years and know personally of his activities in Industry Applications Society standards work, the National Electrical Code®, and electrical safe working practices. I can think of no one more deserving of this major award. Congratulations, Bruce! ◆

Going Metric

by Bruce Barrow

As readers of the July 1995 *IEEE Standards Bearer* know, the Standards Board has adopted a plan for converting IEEE standards to a metric basis. The plan comprises three stages—(I) as of January 1, 1996, IEEE standards being proposed for approval must *include* metric; (II) two years later, proposed standards must show metric data in *preferred* place; and (III) after January 1, 2000, they must be exclusively metric. Standards Coordinating Committee 14, as part of its review process, will work with the standards-developing committees to meet these goals.

Most current IEEE standards already meet the requirements of Stage II, but in any case where a working group foresees a problem with the schedule mandated by the Board, SCC14 needs to be brought in early. The reason is that any significant work requires consideration by the working group responsible for the standard.

Imagine, for example, the list of things you wouldn't touch with a 10-foot pole. You wouldn't touch them with a 3-meter pole either, even if the said "metric pole" is a few centimeters shorter than the good old English one. That is such an easy and noncontroversial conversion that it just might pass the muster with the Standards Review Committee (RevCom) as an acceptable editorial change.

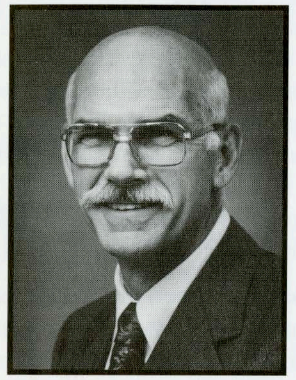
But now imagine a standard that contains a safety provision calling for a physical barrier to keep persons at least 10 feet away from a high-voltage conductor. In Stage I, we can specify "10 ft (3.048 m)." In Stage II, we might call out "3.048 m (10 ft)," although that is certainly not a very neat way to write a standard. By Stage III, users of the standard would obviously like to see a neat, uncluttered "3 meters," but only the authors of the standard can decide that 3 m provides the same margin of safety that 10 ft did in the original.

So, if you think you see a problem coming, send an early draft to William Brenner, the Chair of the SCC14 review subcommittee. The address is National Institute of Building Sciences, 1201 L Street N.W., Suite 400, Washington, DC 20005. You can also call me at (703) 883-1393. ◆

Bruce Barrow is Chair of SCC14, Standards Coordinating Committee on Quantities, Units, and Letter Symbols.

Congratulations

Awards Spotlight



L. Bruce McClung was the unanimous first choice for the 1995 Charles Proteus Steinmetz field award for technical and administrative leadership in the development of standards in the electrical and electronics field.

McClung is a Fellow of the IEEE. In the field of standards, McClung is most noted for his leadership in defining, documenting, and standardizing electrical safe work practices that provide protection for personnel against electric shock hazard and electric arc/flash hazard.

McClung, currently a Standards Board member, also served on the IEEE Standards Board from 1986 to 1991. He participates as the IEEE principal voting member on the 1995 NFPA 70 National Electrical Code. He serves as Chair of Part 2, "Electrical Safe Work Practices," on the NEC. Currently the IEEE-IAS Chair, he served in the same capacity from 1986 to 1991.

McClung and his wife, Sue, reside in Charleston, WV. He is the father of four children. ◆

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Standards Medallion

The following are IEEE Standards Medallion recipients listed in conjunction with the meeting at which the award was presented. **Lorraine C. Kevra** at a recent PASC meeting; **James M. Daly** at the May I&CPS conference; **Hugh Denny** at the August EMC International Symposium; and **P. "Lu" Kolarik** at the October Switchgear Committee meeting. ◆

The IEEE Standards Board formally congratulates the officers as well as their working groups on the publication of their standard or collection.

Herman M. Schneider, Chair: *4-1995,* IEEE Standard Techniques for High-Voltage Testing

David Train, Chair: *62-1995,* IEEE Guide for Diagnostic Field Testing of Electric Power Apparatus—Part I: Oil Filled Power Transformers, Regulators, and Reactors

George Tarbutton, Chair; **Paul House,** Technical Editor; **Bill Land,** Technical Contributor; **Erwin Smiley,** Technical Reviewer; **Hazel Perry,** Technical Reviewer; **Bob Rafferty,** Technical Reviewer: *515.1-1995,* IEEE Recommended Practice for the Testing, Design, Installation, and Maintenance of Electrical Resistance Heat Tracing for Commercial Applications

Anne K. Geraci, Leader; **Paul C. Wilson,** Co-leader: *610.10-1994,* IEEE Standard Glossary of Computer Hardware Terminology

William P. Lidinsky, Chair; **Alan Chambers,** Vice Chair: *802.1H-1995,* IEEE Standards for Local and Metropolitan Area Networks: Recommended Practice for Media Access Control (MAC) Bridging on Ethernet Version 2.0 in IEEE 802 Local Area Networks

Geoffrey O. Thompson, Chair; **Peter Tarrant** and **Howard Frazier,** Task Force Chairs; **Paul Sherer** and **Howard Johnson,** Technical Editors; **Colin Mick,** Comment Editor: *802.3u-1995,* IEEE Standards for Local and Metropolitan Area Networks: Supplement to Carrier Sense Multiple Access with Collision Detection (CSMA/CD) Access Method and Physical Layer Specifications: Media Access Control (MAC) Parameters, Physical Layer, Medium Attachment Units, and Repeater for 100 Mb/s Operation

James F. Mollenauer, Chair; **Jörg Ottensmeyer,** Technical Editor: *802.6j-1995,* IEEE Standards for Local and Metropolitan Area Networks: Supplement to Distributed Queue Dual Bus (DQDB) Access Method and Physical Layer Specifications: Connection-Oriented Service on a Distributed Queue Dual Bus (DQDB) Subnetwork of a Metropolitan Area Network (MAN)

Pat Thaler, Chair; **William G. Lane,** Technical Editor: *802.12-1995,* IEEE Standards for Local and Metropolitan Area Networks: Demand Priority Access Method, Physical Layer and Repeater Specification for 100 Mb/s Operation

Bill Gibson, Chair: *957-1995,* IEEE Guide for Cleaning Insulators

Kevin Lewis, Chair; **Fritz Schultz,** Technical Editor; **Charles Severance,** Secretary; **Donna Fisher,** Document Coordinator; **Allen Hankinson,** Past Chair: *1003.0-1995,* IEEE Guide to the POSIX Open System Environment (OSE)

Robert R. Beavers, Chair; **James A. McDowall,** Task Force Leader: *1106-1995,* IEEE Recommended Practice for Installation, Maintenance, Testing, and Replacement of Vented Nickel-Cadmium Batteries for Stationary Applications

J. Charles Smith, Chair; **Gil Hensley,** Secretary; **Larry Ray,** Technical Editor: *1159-1995,* IEEE Recommended Practice for Monitoring Electric Power Quality

James T. Carlo, Chair; **Robert A. Donnan,** Editor-in-Chief: *8802-5 : 1995* (ISO/IEC) [ANSI/IEEE 802.5-1995], Information technology—Telecommunications and information exchange between systems—Local and metropolitan area networks—Specific requirements—Part 5: Token ring access method and physical layer specifications

Douglas Dawson, Chair: *C37.90.2-1995,* IEEE Standard for Withstand Capability of Relay Systems to Radiated Electromagnetic Interference from Transceivers

F. E. Elliott, Chair: *C57.19.100-1995,* IEEE Guide for Application of Power Apparatus Bushings

Thomas Traub, Chair: *C57.131-1995,* IEEE Standard Requirements for Load Tap Changers

William Alexander, Coordinator: *C136.4-1995,* American National Standard for Roadway Lighting Equipment—Series Sockets and Series-Socket Receptacles; *C136.5-1995,* Film Cutouts; *C136.11-1995,* Multiple Sockets; and *C136.12-1995,* Mercury Lamps—Guide for Selection

Collection

Edwin L. Bronaugh and **Donald N. Heirman,** Special Contributors: *Electromagnetic Compatibility Standards Collection,* 1995 Edition ◆

The IEEE Standards Companion

IEEE Standards has just published *The IEEE Standards Companion,* a new free document that offers practical guidance on the stages and tasks involved in standards development. It is a useful companion booklet to the official rules and policies of IEEE Standards, such as the *IEEE Standards Board Bylaws* and the *IEEE Standards Operations Manual.*

The IEEE Standards Companion discusses the standards process—the method by which a fully developed, officially approved standard is created. It also explains standards development in a friendly manner and offers practical suggestions. Featured material includes sample correspondence, guidance on handling negative ballots, tips on submitting the PAR, and methods for handling interpretation requests.

To receive your free copy, please contact Terry deCourcelle at (908) 562-3807 or t.decourcelle@ieee.org.

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Lessons Learned:
Technical Cooperation between IEEE and IEC

by Anne O'Neill

At a panel discussion during the 1995 Winter Power Meeting in New York City, seven Power Engineering Society (PES) members who are active in the International Electrotechnical Commission (IEC) spoke on how to gain the maximum benefit from coordinating standards work between IEEE and IEC. Success, according to these experienced panelists, is the result of thorough planning, active participation, and broad-minded thinking. Here's what some of them had to say.

Be an Active Participant

One model of cooperation is having an IEEE standard proposed as an IEC new work item (NWI). In this model, as described by Terry McComb, a leading technical expert to IEC from Canada, an IEEE working group chair is appointed as convenor of an IEC working group. This was the case for power-frequency electric fields standards IEC 833: 1987 and IEEE Std 644-1994. Because the same person oversaw the standard-development process in both organizations, the finished IEC and IEEE standards were substantially the same. A current revision under way in IEEE may turn out to be the basis for the next IEC revision.

In the area of Power Systems Instrumentation and Measurement (PSIM), McComb warmly acknowledged the considerable contributions of IEEE members to IEC. These members carried forward technical assessments between IEEE and IEC working groups. Each organization has been able to leverage the standards work of the other as digital recorder standards have been drafted and revised over the last decade. McComb noted that, "Neither designating names for coordination, nor sending documents to individuals who are too busy to read them, achieves coordination. Coordination is achieved by having knowledgeable individuals participate fully in the work."

Plan for the Milestones

In the IEC, the document development and distribution process follows a strict timetable. Both an IEC Technical Committee Chair, the late Joe Van Name, and an IEC Technical Committee Secretary, Anne Bosma, emphasized this point. With data provided by a technical committee secretary, the IEC central office tracks milestones towards completion. A justification and new timetable must be prepared in order to continue a project that is delayed.

Van Name also emphatically urged countries to understand that the Committee Draft (CD) stage is the last opportunity for technical changes to be made. Countries that wait until the Draft International Standard (DIS) stage to thoroughly read the draft are restricted to making editorial comments. Other procedural differences panelists noted were greater IEC latitude in consensus judgments and simpler methods for handling negative comments.

Joe Koepfinger, a technical advisor to the US on surge-protective devices, advised listeners, "Unlike in the IEEE working group, IEC participants need to be ready and willing to produce technical information and proposals in writing prior to working group meetings for adequate consideration by the other members of the group. If they are unable to adequately convince their working group members, they should be willing to compromise, or request an opportunity to submit more written material substantiating their position."

Think Globally

Bill Schmunk, a US expert on high-voltage fuses who has served on IEC working groups, concluded by noting that lack of working group member support is the primary reason the majority of his fellow IEEE standards writers do not have a global concept. "Most corporations and companies that send people to IEEE meetings do not realize the critical importance of domestic and international product standards that are modern and comprehensive. They do not train and support representatives beyond strictly parochial concerns. IEEE comments that are submitted only by mail and not reinforced in person, as sometimes happens, lose much effectiveness. As a past president of IEC expressed, 'He who is absent is always wrong.'" ◆

Geneva Meetings

(continued from front cover page)

work of IEC committees or subcommittees.) Richard Holleman, a member of IntCom and the IEEE Standards Board, reported that the IEEE French Section was willing to take an active role in establishing a liaison with the European Telecommunications Standards Institute (ETSI) based on their interest in information technology standards. A letter will be sent to IEEE societies to see if there is interest in establishing such a liaison.

President Cain and President-Elect Read participated in many of the meetings and in informal discussions with members and guests. During the week, key IEEE staff members took the opportunity to meet separately with ISO and IEC staff to discuss publication and distribution methods. These discussions led to the establishment of some new practices as well as a new understanding of the processes and goals of each other's organizations.

The standards committee meetings were followed by a forum on "The Future Challenges of Standards," held with leaders of IEC, ISO, ITU, and IEEE (see related article, page 3). This forum, arranged with the assistance of standards volunteers John Rankine and Don Fleckenstein, was a highlight for all who attended. After the presentations there was a question-and-answer session, in which the possibility of reallocating work among different standards developers (raised by Dr. Theodor Irmer of ITU) and the impact of publicly available documents (raised by Anthony Raeburn of IEC) were key points of interest. Many Board members met with panel members and other guests afterwards for further informal discussions about the issues.

The meetings in Geneva concluded on June 14 with the Standards Board meeting. IEEE President-Elect Wally Read, standards volunteers John Rankine and Don Fleckenstein were thanked for their efforts in establishing contact with the appropriate members of the various international organizations involved. Vice President E. G. "Al" Kiener, after declaring the meetings a success, expressed his belief that this event "will surely go down as a milestone in our history." ◆

STANDARDS ON THE CUTTING EDGE

Seismic Qualification—
Setting New Standards

by Rulon Fronk

On February 9, 1971, an earthquake measuring 6.6 on the Richter scale hit the Los Angeles area. In its wake, major substations were left decimated. After months of repairs and millions of dollars in expenditures, the last substation knocked out finally returned to service. Prior to this earthquake, most utilities had no seismic requirements for equipment or, at best, included very simplistic statements in their specifications. This earthquake was the electric utility's wake-up call that seismicity must be given serious consideration in the design of substations, particularly in the design of electrical equipment.

Following that earthquake, utilities threw out the old specification clauses and began formulating new seismic electrical equipment criteria. The utilities' initial attempts at seismic qualification were as tentative as a baby's first steps. Because utility equipment seismic qualification experts were nonexistent, engineers experienced in general seismicity and dynamics were pressed into duty to tackle the problem of how to make equipment seismically rugged. The early generations of seismic criteria were very general, a "one size fits all" tactic. One specification clause was used for almost all electrical equipment.

With the passage of time and a number of additional earthquakes, it became clear that one size does not fit all. Because each type of equipment is different structurally, specifically regarding its fragility and the way it acts dynamically, each type must have its own unique set of requirements. For these reasons, the requirements for a transformer must be different from the disconnect switches and so on.

(continued on back cover)

Recent IEEE Standards Publications

INDUSTRY APPLICATIONS

515.1-1995 IEEE Recommended Practice for the Testing, Design, Installation, and Maintenance of Electrical Resistance Heat Tracing for Commercial Applications (ISBN 1-55937-536-1) [SH94300-NYH] $57.00

INFORMATION TECHNOLOGY

610.10-1994 IEEE Standard Glossary of Computer Hardware Terminology (ISBN 1-55937-492-6) [SH94250-NYH] $52.00

802.1H-1995 IEEE Standards for Local and Metropolitan Area Networks: Recommended Practice for Media Access Control (MAC) Bridging on Ethernet Version 2.0 in IEEE 802 Local Area Networks (ISBN 1-55937-541-8) [SH94305-NYH] $49.00

802.3u-1995 IEEE Standards for Local and Metropolitan Area Networks: Supplement to Carrier Sense Multiple Access with Collision Detection (CSMA/CD) Access Method and Physical Layer Specifications: Media Access Control (MAC) Parameters, Physical Layer, Medium Attachment Units, and Repeater for 100 Mb/s Operation (ISBN 1-55937-542-6) [SH94306-NYH] $87.00

802.6j-1995 IEEE Standards for Local and Metropolitan Area Networks: Supplement to Distributed Queue Dual Bus (DQDB) Access Method and Physical Layer Specifications: Connection-Oriented Service on a Distributed Queue Dual Bus (DQDB) Subnetwork of a Metropolitan Area Network (MAN) (ISBN 1-55937-545-0) [SH94320-NYH] $50.00

802.12-1995 IEEE Standards for Local and Metropolitan Area Networks: Demand Priority Access Method, Physical Layer and Repeater Specification for 100 Mb/s Operation (ISBN 1-55937-544-2) [SH94319-NYH] $87.00

8802-3 : 1995 (ISO/IEC) [ANSI/IEEE Std 802.3-1995] Information technology—Telecommunications and information exchange between systems—Local and metropolitan area networks—Specific requirements—Part 3: Carrier sense multiple access with collision detection (CSMA/CD) access method and physical layer specifications (includes 802.3j, 802.3k, 802.3l, 802.3p, 802.3q, and 802.3t) (ISBN 1-55937- 555-8) [SH94330-NYH] $135.00

8802-5 : 1995 (ISO/IEC) [ANSI/IEEE Std 802.5-1995] Information technology—Telecommunications and information exchange between systems—Local and metropolitan area networks—Specific requirements—Part 5: Token ring access method and physical layer specifications (ISBN 1-55937-540-X) [SH94304-NYH] $85.00

1003.0-1995 IEEE Guide to the POSIX Open System Environment (OSE) (ISBN 1-55937-531-0) [SH94295-NYH] $82.00

14536 : 1995 (ISO/IEC) [ANSI/IEEE Std 896.5, 1995 Edition] Information technology—Microprocessor systems—Futurebus+™, Profile B (Military) (contains IEEE Std 896.5-1993 *and* IEEE Std 896.5a-1994) (ISBN 1-55937-539-6) [SH94303-NYH] $70.00

POWER ENGINEERING

4-1995 IEEE Standard Techniques for High-Voltage Testing (ISBN 1-55937-532-9) [SH94296-NYH] $64.00

62-1995 IEEE Guide for Diagnostic Field Testing of Electric Power Apparatus—Part 1: Oil Filled Power Transformers, Regulators, and Reactors (ISBN 1-55937-529-9) [SH94293-NYH] $53.00

957-1995 IEEE Guide for Cleaning Insulators (ISBN 1-55937-519-1) [SH94282-NYH] $52.00

1106-1995 IEEE Recommended Practice for Installation, Maintenance, Testing, and Replacement of Vented Nickel-Cadmium Batteries for Stationary Applications (ISBN 1-55937-547-7) [SH94322-NYH] $51.00

1159-1995 IEEE Recommended Practice for Monitoring Electric Power Quality (ISBN 1-55937-549-3) [SH94324-NYH] $54.00

C37.90.2-1995 IEEE Standard for Withstand Capability of Relay Systems to Radiated Electromagnetic Interference from Transceivers (ISBN 1-55937-534-5) [SH94298-NYH] $45.00

C57.19.100-1995 IEEE Guide for Application of Power Apparatus Bushings (ISBN 1-55937-538-8) [SH94302-NYH] $53.00

C57.131-1995 IEEE Standard Requirements for Load Tap Changers (ISBN 1-55937-535-3) [SH94299-NYH] $49.00

C136.4-1995 American National Standard for Roadway Lighting Equipment—Series Sockets and Series-Socket Receptacles (ISBN 1-55937-548-5) [SH94323-NYH] $35.00

C136.5-1995 American National Standard for Roadway Lighting Equipment—Film Cutouts (ISBN 1-55937-551-5) [SH94326-NYH] $35.00

C136.11-1995 American National Standard for Roadway Lighting Equipment—Multiple Sockets (ISBN 1-55937-550-7) [SH94325-NYH] $35.00

C136.12-1995 American National Standard for Roadway Lighting Equipment—Mercury Lamps—Guide for Selection (ISBN 1-55937-552-3) [SH94327-NYH] $35.00

COLLECTIONS

Electric Machinery Standards Collection, 1995 Edition (ISBN 1-55937-533-7) [SH94279-NYH] $158.00; IEEE Member Price: $119.00

Electromagnetic Compatibility Standards Collection, 1995 Edition (ISBN 1-55937-554-X) [SH94329-NYH] $*Not available at press time.*

STANDARDS PRESS

Fast Ethernet: Dawn of a New Network by Howard W. Johnson (ISBN 0-13-352643-7) [SP1095-NYH] $52.00 (A Prentice Hall publication)

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IEEE STANDARDS BOARD ACTIONS

September 21, 1995 **Piscataway, New Jersey**

APPROVED PARs FOR NEW STANDARDS

P802.1p (C/LM) Standard for Local and Metropolitan Area Networks—Supplement to Media Access Control (MAC) Bridges: Traffic Class Expediting and Dynamic Multicast Filtering

P802.2h (C/LM) Standard for Local and Metropolitan Area Networks—Supplement to Logical Link Control: Optional Toleration of Duplicate Information Transfer Format Protocol Data Units (I PDUs)

P802.9e (C/LM) Standard for Local and Metropolitan Area Networks—Supplement to Integrated Services (IS) LAN Interface at the Medium Access Control (MAC) and Physical (PHY) Layers: Asynchronous Transfer Mode (ATM) Cell Bearer Mode

P802.9f (C/LM) Standard for Local and Metropolitan Area Networks—Supplement to Integrated Services (IS) LAN Interface at the Medium Access Control (MAC) and Physical (PHY) Layers: Remote Terminal Line Power for Integrated Services Terminal Equipment (ISTE)

P802.12a (C/LM) Standard for Local and Metropolitan Area Networks—Supplement to Demand-Priority Access Method, Physical Layer and Repeater Specifications for 100 Mb/s Operation: Operation at Greater Than 100 Mb/s

P802.12b (C/LM) Standard for Local and Metropolitan Area Networks—Supplement to Demand-Priority Access Method, Physical Layer and Repeater Specifications for 100 Mb/s Operation: Two-Pair Balanced Cable Physical Medium Dependent (2-TP PMD), Medium Dependent Interface (MDI), and Link Specifications

P802.12c (C/LM) Standard for Local and Metropolitan Area Networks—Supplement to Demand-Priority Access Method, Physical Layer and Repeater Specifications for 100 Mb/s Operation: Full Duplex Operation

P802.12d (C/LM) Standard for Local and Metropolitan Area Networks—Supplement to Demand-Priority Access Method, Physical Layer and Repeater Specifications for 100 Mb/s Operation: Redundant Links

P1003.1m (C/PA) Standard for Information Technology—Portable Operating System Interface (POSIX®) Part 1: System Application Program Interface (API)—Amendment x: Checkpoint/Restart Interfaces [C Language]

P1003.1p (C/PA) Standard for Information Technology—Portable Operating System Interface (POSIX®)—Part 1: System Application Program Interface (API) Amendment x: Resource Limit Interface [C Language]

P1428 (PE/IC) Guide for Installation Methods for Fiber Optic Cables in Electric Power Generating Stations and in Industrial Facilities

P1436 (SCC32) Standard for Ground Based Transportation Collision Avoidance Radar

P1445 (SCC20) Standard for Digital Test Interchange Format (DTIF)

P1446 (SCC20) Standard for Ada-Based Test Program Development (Ada TPD) (Supersedes IEEE Std 1226.1-1993 and IEEE Std 1226.2-1993)

P1596.7 (C/MM) Standard for a High-Speed Memory Interface (SyncLink)

PC37.081a (PE/SWG) Supplement to IEEE Guide for Synthetic Fault Testing of AC High-Voltage Circuit Breakers Rated on a Symmetrical Current Basis

PC57.12.34 (P1447) (PE/TR) Standard for Requirements for Three-Phase Pad-Mounted Distribution Transformers up to 25 KVA and 38 kV

PC57.134 (P1444) (PE/TR) Guide for the Determination of Hottest Spot Temperature in Dry Type Transformers

REVISED PARs

P167A.1 (COM/T&A) Standard Facsimile Test Chart—Bi-Level (Black and White)

P167A.2 (COM/T&A) Standard Facsimile Test Chart—High Contrast (Gray Scale)

P167A.3 (COM/T&A) Standard Facsimile Test Chart—Color

P576 (IA/PCI) Recommended Practice for Installation, Termination and Testing of Insulated Power Cable as Used in Industrial and Commercial Applications

P620 (PE/EM) Guide for the Construction of Thermal Limit Curves for Squirrel Cage Induction Machines

P1003.1a (C/PA) Standard for Information Technology—Portable Operating System Interface (POSIX®)—Part 1: System Application Program Interface (API)—Amendment n: System API Extensions [C Language]

P1026 (PE/IC) Recommended Practice for Test Methods for Determination of Compatibility of Materials with Conductive Polymeric Insulation Shield and Jackets

P1028 (C/SE) Standard for Software Review Processes

P1076.3 (C/DA) Standard for VHDL Synthesis Packages

P1076.4 (C/DA) Standard for VITAL Application Specific Integrated Circuit (ASIC) Modeling Specification

P1278.3 (C/DIS) Recommended Practice for Distributed Interactive Simulation-Exercise Management and Feedback

P1343 (PE/IC) Guide for Testing the Insulation of Shielded Power Cable Systems in the Field

P1498 (C/SE) Standard for Information Technology—Software Life Cycle Processes—Software Development: Acquirer-Supplier Agreement

PC37.20.4 (PE/SWG) Standard for Indoor AC Medium Voltage Switches for Use in Metal-Enclosed Switchgear

PARs FOR STANDARDS REVISIONS

P241 (IA/PSE) Recommended Practice for Electrical Power Systems in Commercial Buildings

P716 (SCC20) Standard for Abbreviated Test Language for All Systems (ATLAS)

P1029.1 (C/DA) Standard for VHDL Waveform and Vector Exchange (WAVES) to Support Design and Test Verification

P1313.2 (PE/TC) Guide for the Application of Insulation Coordination

PC57.15 (PE/TR) Standard Requirements, Terminology, and Test Code for Step-Voltage Regulators

PC57.12.44 (PE/TR) Standard Requirements for Secondary Network Protectors

PC57.133 (PE/TR) Guide for Short-Circuit Testing of Distribution and Power Transformers

PC62.92.1 (PE/SPD) Guide for the Application of Neutral Grounding in Electrical Utility Systems, Part 1—Introduction

WITHDRAWN PARS

P16 (VT/LT) Electric Control Apparatus for Land Transportation Vehicles

P96 (SCC4) General Principles for Rating Electric Apparatus for Short-Term, Intermittent, or Varying Duty

P109 (IM/HF&IM) Signal Generators

P148 (MTT) Standard for Waveguide and Waveguide Component Measurements

P181 (IM/WM&A) Standard on Pulse Measurement and Analysis by Objective Techniques

P194 (IM/WM&A) Standard Pulse Terms and Definitions

P200 (SCC11) Reference Designations for Parts and Equipment

P201 (BT/A&V Tech) Standard Definitions of Terms Relating to Television

P205 (BT/A&V Tech) Standard for Measurement of Luminance Signal Levels

P206 (BT/A&V Tech) Standard Methods of Measuring Differential Phase and Gain in Video Transmission Facilities

P428 (IA/IPC) Standard Definitions and Requirements for Thyristor AC Power Controllers

P444 (IA/IPC) Standard Practices and Requirements for Thyristor Converters for Motor Drives; Part 1: Converter DC Motor Armature Supplies

P458 (SCC10) Electrical and Electronics Engineering Abbreviations

P474 (IM/HF&IM) Standard Specifications and Test Methods for Fixed and Variable Attenuators, DC–40 GHz

P505 (PE/ED&PG) Standard Nomenclature for Generating Station Electric Power Systems

P513 (PE/TR) Seismic Guide for Power Transformers and Reactors

P606 (BT) Measurement of Colorimetry and Transfer Characteristics (Gamma) in TV Camera Systems

P629 (IA) Semiconductor Power Rectifiers

P630 (IA/ID) DC Motor Protection in Drive Systems

P632 (PE/SWG) Switchgear Insulating Materials and Systems

P639 (MAG) Hybrid Transformers

P679 (IA/LndT) Safe Headway Standards

P685 (IA/MinInd) Underground Mining Power Distribution Centers

P772 (DEI) Electrical Performance Composite Insulators

P795 (IA/MinInd) Surface Mines

P802.1 (C/CC) Local Area Networks: Architecture and Overview

P802.5l (C/CC) Maintenance of Token Ring Standard

P802.6a (C/CC) Standard for Multiple Port Bridging for Metropolitan Area Networks

P804a (PE/ED&PG) Recommended Practice for Data Management in Power Plants and Related Facilities

P807 (PE/ED&PG) Recommended Practice for System Identification in Hydro Power Plants and Related Facilities

P818 (PE/SWG) Format/Overcurrent Protection Device TC Curves

P822 (PE/ED&PG) Recording Structured Narratives in PGS

P832 (PE/TR) Partial Discharge Instrument Transformers (Corona)

P840 (CPMT) Discrete Passive Components Terms

P849 (C/TT) Handler-Tester Interface Signals

P903 (IA/ES) Energy Monitoring and Control Systems

P915 (SCC11) Electrical and Electronic Diagrams

P917 (SCC11) Graphic Symbols for Use on Equipment

P931 (ED) X-ray Lithography System Full-Field Exposure

P944 (PE/ED&PG) Recommended Practice for the Application and Testing of Uninterruptible Power Supplies for Power Generating Stations

P954 (PE/TR) High Temperature Hydrocarbon Liquid

P956 (PE/PSC) Achieving Electromagnetic Compatibility

P974 (PE/PSC) Audio Channels Used for Power Systems Telecontrol

P975 (BT) CATV Terminology

P976 (BT) TV Special Effect Terms

P981 (SCC20) Standard for Instrument System Protocol for Use with IEEE Std 888

P985 (VT) Rail Transit Intra System EMC

P988 (PE/ED&PG) Control and Data Networks

P995.2 (IA/ID) Recommended Practice for Efficiency Determination of AC Adjustable Speed Drives, Part 2, Self Commutated Inverter Induction Motor Drives

P1022 (UFFC) Acousto-Optic Devices

P1077 (C/DA) Design Management

P1092 (BT) Measurement of Weighted Error Rates in Digital Television Luminance Signals

P1108 (PE/PSE) Electric Power Load Management Terms

P1124 (PE/T&D) Guide for Analysis and Definition of DC Side Harmonic Performance of HVDC Transmission Systems

P1148 (PE/ED&PG) Cathodic Protection of Power Plant Equipment and Structures/ Recommended Practice

P1163 (C/DA) Interface for IEEE Standard 1076-1987 to Computer Aided Design and Manufacturing (CAD/CAM) Tools

P1165 (C/DA) Recommended Practice for the Interrelationships Between IEEE Std 1076 VHDL and EIA RS44 EDIF

P1176 (SCC26) Fibre Optic Sensor Types and Classifications According to Operating Modes and Applications

P1179 (MTT) Standard for Improved Waveguide Flanges

P1183 (EMB) Medical Device Software Development/ Maintenance Standard

P1199 (SCC30) Analog Hardware Descriptive Language

P1201.2 (C/PA) Recommended Practice for User Interfaces—User Portability/Driveability

P1222 (PE/PSC) Standard for All Dielectric Self-Supporting Fiber Optic Cable

PC37.04g (PE/SWG) Service Capability Duty Requirements Subsection 5.10.3.3.1

ABBREVIATIONS

AES/GA	Aerospace & Electronics Systems/Gyro Accelerometer Panel
BT	Broadcast Technology
BT/A&V Tech	Broadcast Technology/Audio & Visual Techniques
C/CC	*See C/LM*
C/DA	Computer/Design Automation
C/DIS	Computer/Distributed Interactive Simulation
C/LM	Computer/LAN MAN
C/MM	Computer/Microprocessors and Microcomputers
C/PA	Computer/Portable Applications
CPMT	Components, Hybrids & Manufacturing Technology
C/SE	Computer/Software Engineering
C/TT	Computer/Test Technology
COM/T&A	Communications/Transmission & Access
DEI	Dielectrics & Electrical Insulation
ED	Electronic Devices
EMB	Engineering in Medicine & Biology
EMC/SC	Electromagnetic Compatibility/Standards Committee
IA/ES	Industry Applications/Energy Systems
IA/ID	IA/Industrial Drives
IA/IPC	IA/Industrial Power Converter
IA/LndT	IA/Land Transportation
IA/MinInd	IA/Mining Industry
IA/PCI	IA/Petroleum & Chemical Industry
IA/PSE	IA/Power Systems Engineering
IM/HF&IM	Instrumentation and Measurement/High Frequency Instrumentation & Measurement
IM/WM&A	Instrumentation and Measurement/ Waveform Measurement & Analysis
MAG	Magnetics
MTT	Microwave Theory and Techniques
PE/ED&PG	Power Engineering/Energy Development & Power Generation
PE/EM	PE/Electric Machinery
PE/IC	PE/Insulated Conductors
PE/NPE	PE/Nuclear Power Engineering
PE/PSC	PE/Power System Communications
PE/PSE	PE/Power System Engineering
PE/SPD	PE/Surge-Protective Devices
PE/SUB	PE/Substations
PE/SWG	PE/Switchgear
PE/TC	PE/Technical Council
PE/T&D	PE/Transmission & Distribution
PE/TR	PE/Transformers
SCC4	Standards Coordinating Committee 4 (Electrical Insulation)
SCC10	Standards Coordinating Committee 10 (Terms and Definitions)
SCC11	Standards Coordinating Committee 11 (Graphic Symbols & Designations)
SCC20	Standards Coordinating Committee 20 (Abbreviated Test Language for All Systems [ATLAS])
SCC26	Standards Coordinating Committee 26 (Photonics)
SCC29	Standards Coordinating Committee 29 (Stationary Batteries)
SCC30	Standards Coordinating Committee 30 (Analog Hardware Descriptive Language)
SCC31	Standards Coordinating Committee 31 (Automatic Meter Reading & Energy Management)
SCC32	Standards Coordinating Committee 32 (Intelligent Vehicle-Highway Systems)
UFFC	Ultrasonics, Ferroelectrics, and Frequency Control
VT/LT	Vehicular Technology/Land Transportation

PC37.077 (PE/SWG) Requirement for Current Transformers for use With AC-High-Voltage Circuit Breakers

PC37.30i (PE/SWG) Definitions for Circuit Switchers

PC37.36b (PE/SWG) Guide to Current Interruption with Horn-Gap Air Switches

PC37.38 (PE/SWG) Standard for Switching Ratings and Design Tests for Gas Insulated Switches

PC37.60a (PE/SWG) Partial Discharge Tests

PC57.12.00l (PE/TR) Standard General Requirements for Liquid Immersed Distribution, Power and Regulating Transformers, Section 8

PC57.12.90d (PE/TR) Standard Test Code for Liquid Immersed Distribution, Power and Regulating Transformers

PC57.13.4 (PE/TR) Detection of Partial Discharge and Measurement of Apparent Charge Within Instrument Transformers

PC57.21a (PE/TR) Shunt Reactor Dielectric Tests, Sections 8.2 and 12.2 of C57.21

PC57.99 (PE/TR) Loading Current Limiting Reactors

PC57.100 (PE/TR) Standard Test Procedure for Thermal Evaluation of Oil-Immersed Distribution and Power Transformers

PC57.112 (PE/TR) Control of Transformer Sound

PC57.127 (PE/TR) Guide for the Detection of Acoustic Emissions From Partial Discharges in Oil Immersed Power Transformers

PC57.128 (PE/TR) Fire Prevention and Protection Guide for Liquid-Filled Power Transformers

PY32.9 (SCC11) Graphic Symbols for Electrical Wiring and Layout Diagrams Used in Architecture and Building Construction

NEW STANDARDS

***802.9a** (C/LM) Standard for Integrated Services LAN: Integrated Services (IS) LAN IEEE 802.9, Isochronous Services with Carrier Sense Multiple Access with Collision Detection (CSMA/CD) Media Access Control (MAC) Service

***802.9d** (C/LM) Supplement to IEEE 802.9, Integrated Services Local Area Network: Protocol Implementation Conformance Statement (PICS)

802.10g (C/LM) Standard for Secure Data Exchange (SDE) Security Label

1074.1 (C/SE) Guide for Developing Software Life Cycle Processes

1232 (SCC20) Standard for Artificial Intelligence and Expert System Tie to Automatic Test Equipment (AI-ESTATE)

1275.4 (C/BA) Standard for Boot (Initialization Configuration) Firmware—IEEE Std 896 (Futurebus+™) Bus

1278.2 (C/DIS) Standard for Distributed Interactive Simulation—Communication Services and Profiles

1355 (C/BA) Standard for Heterogeneous InterConnect (HIC), (Low Cost, Low Latency, Scalable, Serial Interconnect for Parallel System Construction)

1390 (SCC31) Standard for Utility Telemetry Service Architecture for Switched Telephone Network

1498 (C/SE) Trial-Use Standard for Information Technology—Software Life Cycle Processes—Software Development: Acquirer-Supplier Agreement

***1596.4** (C/MM) Standard for High Bandwidth Memory Interface, Based on SCI Signaling Technology (RamLink)

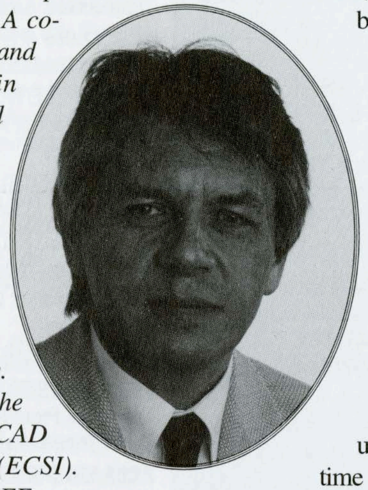
REVISED STANDARDS

167A.1 (COM/T&A) Standard Facsimile Test Charts—Bi-Level (Black and White)

(continued on page 10)

STANDARDS Profile

IEEE standards developer Jean Mermet has been participating in standards development in the hardware description languages field since 1975. A co-chair of the VHDL Design and Analysis Group (VASC) in conjunction with IEEE Std 1076-1993, Mermet is the Directeur de Recherche (Research director) at the Centre National de la Recherche Scientifique (National Center of Scientific Research) at Grenoble University in Gieres, France. He also serves part time as the director of the European CAD Standardization Initiative (ECSI). Mermet was awarded the IEEE Meritorious Service Award in 1994 for his participation in VHDL in Europe.



JEAN MERMET

Q: What's your favorite standard, and why?

A: VHDL [IEEE Std 1076-1993, IEEE Standard VHDL Language Reference Manual]. My answer is not a surprise since most of my technical work since 1966 has been on hardware description languages (HDLs). VHDL seemed to me, from the beginning of the IEEE standardization process, the only candidate HDL standard able to progressively incorporate all the technology advances achieved during the last three decades in the domain of languages for electronic systems design. VHDL, which was initially based on the Ada computer language, was well suited to the European culture in high-level formal languages. The tremendous success met by VHDL in Europe since that time has proven my initial guess.

Q: What's the best aspect of standards development work?

A: The necessity to reach consensus! When the best specialists on a given topic meet, they bring so many brilliant, but contradictory, ideas to the process that consensus seems to belong to the category of miracles. But after hours of (animated) discussions, after a few months (or years), suddenly the standard is there. Because it is a compromise, nobody likes it and everybody immediately starts working on improvements. The standardization process is a perfect model of democracy.

Q: What's the most difficult aspect of standards development work?

A: The necessity to reach consensus! And the most painful is the validation work done by volunteers who give their leisure time to this thankless task. They deserve our gratitude.

Q: Do you believe that international interests are well represented in IEEE standards?

A: The frame is excellent. The situation can be improved. IEEE is totally open to international individual participation, but the large majority of American members leads naturally to a large majority of standardization meetings taking place in the United States. Like a vicious circle, this process in turn reduces non-American attendance. We have seen in the DASC [Design Automation Standards Committee of the IEEE Computer Society] that this is not an unsolvable problem; more and more meetings now take place in Europe and tomorrow probably in Asia.

Q: When I'm not doing standards, I like to...

A: Play music with my two sons, try to solve mathematics puzzles, or drive on race tracks at unreasonable speeds.

Q: My most memorable standards meeting was...

A: The first VHDL meeting I attended, in 1987. It was at IBM at Rochester, Minnesota, and I went to Rochester, New York. But I missed only the first half day, and I immediately gained some sympathy from my new American colleagues. ◆

Standards Actions

(continued from page 9)

252 (PE/EM) Test Procedure for Polyphase Induction Motors Having Liquid in the Magnetic Gap

484 (SCC29) Recommended Practice for Installation Design and Installation of Vented Lead-Acid Batteries for Stationary Applications

647 (AES/GA) Standard Specification Format Guide and Test Procedure for Single-Axis Laser Gyros

665 (PE/NPE) Guide for Generating Station Grounding

802.3m (C/CC) Maintenance Rev. 2 to IEEE Std 802.3

802.3n (C/CC) Maintenance Rev. 3 to IEEE Std 802.3

802.3s (C/CC) Maintenance Rev. 4 to IEEE Std 802.3

1074 (C/SE) Standard for Developing Software Life Cycle Processes

1278.1 (C/DIS) Standard for Distributed Interactive Simulation-Application Protocols

C37.35 (PE/SWG) Guide for the Application, Installation, Operation, and Maintenance of High-Voltage Air Disconnecting and Interrupting Switches

C57.12.20 (PE/TR) Standard for Overhead Distribution Transformers, 500 kVA and Smaller; High Voltage, 34 500 Volts and Below; Low Voltage, 7970/13 800 Y Volts and Below

REAFFIRMED STANDARDS

140 (EMC/SC) Recommended Practice for the Minimization of Interference from Radio-Frequency Heating Equipment

837 (PE/SUB) Standard for Qualifying Permanent Connections Used in Substation Grounding

C37.13 (PE/SWG) Standard for Low-Voltage AC Power Circuit Breakers Used in Enclosures

WITHDRAWN STANDARDS

692-1986 (PE/ED&PG) IEEE Standard Criteria for Security Systems for Nuclear Power Generating Stations

944-1986 (PE/ED&PG) IEEE Application and Testing of Uninterruptible Power Supplies for Power Generating Stations

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WANTED— NATIONAL LEADERS FOR GRAPHIC SYMBOLS COMMITTEES

The IEEE Standards Coordinating Committee 11 (SCC11), Graphic Symbols & Designations, is seeking interested candidates for the Chair position. SCC11 oversees all IEEE standards in the area of graphic symbols and designations. For further information, please contact Kathy Doty at (908) 562-3809 or k.doty@ieee.org.

The US National Committee to IEC SC 3C, Graphical Symbols for Use on Equipment, needs a Technical Advisor (TA). Forward résumé and credentials to Don Heirman, Manager of SC 3C, by fax at (908) 530-5695.

CALENDAR OF EVENTS

October

8–12 Industry Applications Society (IAS) annual meeting
Lake Buena Vista, FL
contact—Ed Lobnitz
(407) 841-9050

9–13 World Standards Week
Washington, DC & Arlington, VA
contact—Marilyn Hernandez
(212) 642-4915 or
mhernand@ansi.org

15–20 Portable Applications Standards Committee (PASC) meeting
(Computer Society)
St. Petersburg, FL
contact—Ellen Bodalski
(202) 371-1013

15, 18 20 US TAG for ISO/IEC JTC1/SC22/WG15
St. Petersburg, FL
contact—Barry Needham, Chair, US TAG for JTC1/SC22/WG15, Amdahl Corp., 1250 East Arques Ave., M/S 316, Sunnyvale, CA 94088; (408) 992-2527

16–19 National Electrical Safety Code® (NESC®) Subcommittee meetings

16 Subcommittee 7—Underground Lines

17–18 Subcommittee 3—Electric Supply Stations

17–18 Subcommittee 5—Overhead Lines—Strength and Loading

18–19 Subcommittee 1—Coordination
Piscataway, NJ
contact—Sue Vogel
(908) 562-3817; fax (908) 562-1571; e-mail: s.vogel@ieee.org

16–20 Surge-Protective Devices Committee meeting
(Power Engineering Society)
Toronto, Canada
contact—K. B. Stump
(404) 740-3852; fax (404) 740-3397

19–20 Design Automation Standards Committee (DASC) meeting
(Computer Society)
Newton, MA
contact—Paul Menchini
(919) 990-9506; fax (919) 990-9507; e-mail: mench@mench.com

23–25 C136 Roadway Lighting Accredited Standards Committee meeting
San Diego, CA
contact—Rosemary Tennis
(908) 562-3811; fax (908) 562-1571; r.tennis@ieee.org

November

3 *Deadline for draft and PAR submission for December Standards Board meeting*

5–8 Transformers Committee meeting (Power Engineering Society)
Boston MA
contact—J. H. Harlow (813) 544-2326; fax (813) 546-0121

5–8 Insulated Conductors Committee meeting
(Power Engineering Society)
St. Petersburg Beach, FL
contact—L. J. Hiivala
(416) 467-4158; fax (416) 421-4779

6–10 LAN MAN Standards Committee meeting (Computer Society)
Montreal, Canada
contact—Classic Consulting
(604) 527-1045; fax (604) 527-1046
72630.107@compuserve.com

10–12 Non-ionizing Radiation Standards Coordinating Committee 28 meeting
Palm Springs, CA
contact—John Parisi
(908) 562-3814

December

10–12 Standards Board and Committee meetings
Monterrey, Mexico
contact—Terry deCourcelle
(908) 562-3807; fax (908) 562-1571; t.decourcelle@ieee.org

January 1996

7, 10 US TAG for ISO/IEC JTC1/SC22/WG15
Albuquerque, NM
contact—Barry Needham, Chair, US TAG for JTC/SC22/WG15, Amdahl Corp., 1250 East Arques Ave., M/S 316, Sunnyvale, CA 94088; (408) 992-2527

8 US TAG for ISO/IEC JTC1/SC26
Albuquerque, NM
contact—Clyde Camp, Chair US TAG for JTC1/SC26, Texas Instruments, Inc., 2313 Merimac Drive, Plano, TX 75075
(214) 995-0407

15–20 Portable Applications Standards Committee (PASC) meeting
(Computer Society)
Albuquerque, NM
contact—Ellen Bodalski
(202) 371-1013; fax (202) 728-0884; ebodalsk@computer.com

16–19 Medical Information Bus (MIB) *and* MEDIX Committee meeting
(Engineering in Medicine and Biology Society)
San Diego, CA
contact—Bob Kennelly
(516) 567-5656

February

2 *Deadline for draft and PAR submission for March Standards Board meeting*

5–7 US TAG for ISO/IEC JTC1/SC7
location to be determined
contact—Leonard Tripp, Chair, US TAG for SC7, Boeing Commercial Airplane, MS 6H-TW, PO Box 3707, Seattle WA 98124
(206) 237-5240

For additional information and an up-to-date Calendar of Events, check our web site at http://stdsbbs.ieee.org/

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Seismic Qualification

(continued from page 7)

Presently, IEEE P693, Draft Recommended Practices for Seismic Design of Substations, is being entirely revised to incorporate the latest design developments. IEEE P693 addresses all aspects of the seismic design of substations. It achieves this by either providing requirements directly or providing a reference document. Qualification of electrical equipment is provided directly within IEEE P693. Seismic design requirements for non-equipment, such as A-frames, buildings, and racks, are provided by referring to other documents, mainly the American Society of Civil Engineers (ASCE) Substation Guide, which is presently being developed as a "sister" document to IEEE P693. This has been a case of two organizations—IEEE and ASCE—working jointly, with each emphasizing its strengths to complement the other.

The current revision of IEEE Std 693 is equipment specific, meaning that each type of equipment will be provided with its own uniquely designed set of requirements. For example, since many of the requirements that are applicable to transformers do not apply to a disconnect switch, each must have its own unique set of requirements.

The following are some of the criteria used in establishing equipment qualification requirements:

- ***Fragility***. Equipment that is inherently rugged need not be subjected to a very rigorous qualification, while fragile equipment normally needs a more rigorous approach.

- ***Criticality.*** The qualification method needs to recognize the criticality of the equipment. For example, a transformer or a circuit breaker, which is critical to the function of a substation, must be more reliable than a battery charger.

- ***Alternatives***. There needs to be enough flexibility in the standard so that the utility can select the appropriate "level of ruggedness." At the same time, utilities want some degree of uniformity within their system. Also, the fewer the levels, the more opportunities to amortize the cost of the equipment. The P693 committee has decided that three "levels of ruggedness" provide the balance between flexibility, uniformity, and cost. In general terms, the three levels are: 1) nominal requirements (low seismic activity expected); 2) moderate ruggedness; and 3) high ruggedness.

The following are some of the considerations utilities must evaluate when deciding which level is appropriate: 1) the expected magnitude of an earthquake at the substation; 2) the criticality of the substation as it pertains to the utility's total system; 3) the speed at which equipment can be replaced; 4) safety considerations; 5) the possibility and acceptability of bypassing the equipment should the equipment fail; and 6) the overall reliability of the system. For these reasons, zone maps are provided as an aid to guide the utility in selecting the appropriate level, not as a requirement. The utility must evaluate the site and all the other considerations to determine which level is appropriate.

The P693 committee hopes that through standardization, the cost of qualification will be reduced by the use of common criteria and the present confusion to manufacturers will be minimized. At this moment, each utility's criteria are different despite the common bottom line—they all want rugged equipment that will reasonably survive earthquakes. As a result of each utility having its own unique criteria, each utility must pay for its unique requirements. How much better it would be if the cost of qualification were shared with other utilities. The results of P693 affords one of those rare opportunities where everyone wins. The utilities win because the cost of qualification can be reduced by amortizing the cost over all the buyers. The manufacturers win because they will have standards and order where chaos, for now, rules. ◆

Rulon Fronk is the Chair of IEEE P693. The draft standard is available from the IEEE Operations Center at 1-800-678-4333 or (908) 981-0060 (outside USA).

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