

IEEE Standards Coordinating Committee 14

Quantities, Units, and Letter Symbols

Annual Report for 2014

1. Scope

SCC14 studies questions regarding quantities, units, and systems of measurement, with particular emphasis on the International System of Units (SI), and it prepares recommendations and standards on those matters. It is responsible for providing current information on quantities and units to all organizations preparing IEEE standards, and for assisting all IEEE organizational units, as requested, in implementing IEEE Policy 9.16, Metric Policy.

It is also responsible for the development of standards in the areas of metric practice and letter symbols, for ensuring consistency in these areas in standards that are issued by IEEE, and for providing current information on letter symbols and metric practice to all organizations preparing IEEE standards.

SCC14 works with the committees responsible for generating IEEE standards to help them meet the requirements of the Standards Board Implementation Plan for IEEE Policy 9.16. As part of the coordination process, it reviews requests for individual exceptions and reports its recommendations to the Standards Board.

2. Membership

The membership roster for SCC14 is attached.

Standards are prepared and maintained in the following six sub-committees, which are responsible for standards as indicated:

- 14.1 Metric Practice (Std 945; IEEE/ASTM SI 10)
- 14.2 Definitions (Std 270)
- 14.3 Unit Symbols (Std 260.1, Std 1541)
- 14.4 Quantity Symbols, electrical science and engineering (Std 280)
- 14.5 Quantity Symbols, acoustics (Std 260.4)
- 14.6 Mathematical Symbols (Std 260.3)

There are also three subcommittees that focus on coordination with other organizations:

14-Int Coordinates with IEC and ISO on matters of mutual interest; supports the U.S. Technical Advisory Committee for IEC TC 25 and the U.S. Advisory Group to ISO/TC 12

14-Rev Reviews proposed IEEE standards and submits comments as part of the mandatory SCC14 coordination before they are submitted to RevCom

14-Leg Follows proposed legislative and regulatory actions that affect metrication, both nationally and internationally

3. Activity Report

Objectives and Goals for 2013/14

No standards under the auspices of this committee are due for revision due to the recently extended standards cycle. Dr. Bruce Barrow is planning to submit a PAR to revise IEEE Std 945. Mr. James Frysinger is considering submission of a PAR for the revision of IEEE Std 1541. *This matter is still under consideration.*

Objectives and Goals for 2014/15

Dr. Bruce Barrow is chair of the 945 Working Group. He is working on a PAR and we have recruited a couple of people from the Acoustical Society of America to work with him on it.

IEEE Staff Support Requirements

Michael Kipness provides administrative support to ensure that SCC14 standards development work conforms with approved IEEE standards practice, and serves as staff liaison between the Standards Board and SCC14.

Don Messina is principal liaison concerning standards publication.

Sue Vogel provides staff liaison with ASTM as required by the joint sponsorship of IEEE/ASTM SI 10.

Summary of Other Activities

SCC14 continues to maintain its close liaison with its counterparts in ISO and IEC. The US Technical Advisor for TC 25 and representative on ISO TC 12 (Dr. Ambler Thompson, NIST), and the US Technical Advisor for IEC/TC 1 (Prof. Ralph Showers) are members of SCC14. Dr. Thompson is also a member of the Consultative Committee on Units of the General Conference of Weights and Measures.

Mr. James R. Frysinger has been appointed as Deputy Technical Advisor for the U.S. Technical Advisory Groups to ISO/TC 12 and to IEC/TC 25, and as “Expert” for the U.S. to all working groups (WGs) within the latter. He has also been appointed as TA for the U.S. Technical Advisory Group to IEC/TC 1 and as an “Expert” for the U.S. on IEC/TC 1 WG 100. Additionally, he is listed as “expert” on the ISO/IEC Joint Working Group for the updating of the ISO/IEC 80000 series.

James R. Frysinger, Chair of SCC14, maintains two websites for the committee -- (<http://grouper.ieee.org/groups/si10/index.html>, and <http://grouper.ieee.org/groups/260/1/>) with a portion of each that is open to the public. The former site includes the ASTM members of the IEEE/ASTM Committee for Maintaining SI 10.

ASTM and IEEE/SCC14 are starting to gear up for the next revision of IEEE/ASTM SI 10, *American National Standard for Metric Practice*, which is due in 2015. SCC14 has put forth its team of participants, who will work with a matching team from ASTM. The chair and vice chair will be ASTM members and the Secretary will be an IEEE member.

Issues before SCC14

SCC14 continues to monitor and comment on matters in parallel to the U.S. TAGs for ISO/TC 12, IEC/TC 25, and IEC/TC 1. Periodically requests for interpretation of IEEE/ASTM SI 10 are received and responded to.

The recent change to 10 year standard cycles has greatly reduced the workload for this year and the next few for SCC14. In the next few years consideration will be given to revising standards early to spread out their due dates.

A request for public comment on labeling issues was published by the FTC in the Federal Register just prior to this meeting. This was discussed in detail during our annual meeting and an ad-hoc committee was formed to submit a comment from IEEE/SCC14. That comment was duly crafted and submitted.

An effort to rebuild a team for coordination votes on IEEE standards continues.

4. Budget and expenses

IEEE/SCC14 has no budget, no funds, nor expenses not covered by out-of-pocket funds from its volunteer members. Those expenses relate to travel, meals, internet services needed for participation, and similar personal expenses. NIST has, in the past, kindly funded use of mass-telephonic means (*e.g.*, Adobe's Connect) of holding remote meetings with participants who have not physically attended meetings. NIST and IEEE-USA have provided meeting space in the past, when physical meetings were the norm.

5. Meeting Schedule

The committee met last on 2014 April 29 primarily by telephonic and web-meeting means, with the key station at NIST Headquarters in Gaithersburg MD and funded by them. The next meeting is tentatively scheduled for late April of 2015.

This will also likely be a teleconference or perhaps a video conference or web conference. Between meetings the committee and its subcommittees work by means of electronic and telephonic correspondence.

6. Attachments

The minutes from the last meeting and the SCC14 roster are attached.

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2014 August 14

IEEE Standards Coordinating Committee 14 (Quantities, Units, and Letter Symbols)
2014 April 29 Meeting Minutes

Attending: Gordon Aubrecht, Bruce Barrow, Elizabeth Gentry, James Frysinger, Stan Jakuba, Howard Ressel, Terry Scott, Ambler Thompson, Lorelle Young

The meeting was called to order at 13:32.

1. Adoption of agenda

Moved, seconded.

2. Secretary's minutes of last meeting

Were distributed online, reading waived.

3. Approval of minutes of meeting of 2013 March 27

Minutes approved unanimously

4. Chairman's report

IEEE training presentation on patents (annual requirement)

No questions, assumed done thoroughly.

Annual report on 2013 August 07 (copy provided); next due 2014 September

Unanimously accepted.

Financial Report submitted; next due 2015 March 31

It has been submitted saying we have no money.

Chair reappointed 2014 January 04

Summary Status of standards – These will be discussed as needed in the subcommittee reports.

See the provided spreadsheet for details.

– *IEEE expiration dates*

2018: 260.3, 260.4, 270, 280, 945, 1541

2020: 260.1, SI 10

– *ANSI expiration dates in 2013*

260.4, 945, 1541

– *withdrawn*

P80000

No standards above require IEEE approval until 2018; ANSI does have earlier deadlines (referring to SI-10). It will have to be changed if we decide to let the five-year deadline pass. We could choose to revise the standard. The onus is on IEEE to remove the ANSI designation (American National Standard) if we let it pass. IEEE has departed from ANSI procedure in going to a ten-year renewal cycle; the Board refused to allow us to change any word in a standard we adopt.

This change goes back to IEEE and IEC not to change any wording. We could adopt as IEEE with changes to the wording as long as we can do a PAR. (ASTM is also still on the five-year cycle.)

5. Reports of subcommittees

SCC14.1 – **Barrow** — Revision of SI-10 due 2020 by IEEE rules.

Barrow says there hasn't been any contact with ANSI. A question is what has to be revised. Has a new definition of SI. We can start a revision process, even if we change only the date. Frysinger does not see any reason for a revision. We leave this in the hands of Barrow to pursue; ANSI is supposed to chair this revision.

SCC14.2 – IEEE Std 270-2006): **Aubrecht** — reaffirmed 2012 December 05, expires 2022

Nothing needs doing.

SCC14.3 – IEEE Std 260.1-2004: **Frysinger** — expires 2020; ANSI expiration in 2015
IEEE Std 1541: **Frysinger** — expires 2018; ANSI expiration in 2013

Some things in 1541 need revision—prefixes for binary multiples, for example, but there is no pressing deadline.

SCC14.4 – Quantity symbols (Std 280-1985): **Barrow** — PAR extended through 2013; tied to P80000; std expires 2018. Now that P80000 has been withdrawn, what shall we do?
IEEE Recommended Practice for Preferred Metric Units for Use in Electrical and Electronics Science and Technology (Std 945): **Barrow** — Revision in progress.

We withdrew P80000. What needs to be done about 280? It expires in 2018. Barrow will look at this and see what will happen after he clarifies SI-10.

945 is alive and Barrow is working on the revision. All of SCC 14 are comembers. Those who do pay attention and respond will be called the working group. Aubrecht raised two points: 4.1 is not weight; we might want to consider concentration. Jakuba added a comment to the email. Members are strongly to become part of the working group. Frysinger distributed a redline version immediately prior to the meeting.

SCC14.5 – Acoustics (Std 260.4-1996, reaff. 2008): **Ehrlich** — expires 2018; ANSI expiration in 2013

Stan has not been heard from. Thompson suggested contacting the Acoustical Society of American (perhaps Susan Blaser). If they want a standard, they may need to appoint someone else. Thompson will proceed with finding if they want to continue.

SCC14.6 – IEEE Std 260.3-1993): **Aubrecht** — reaffirmed 2012 August 30, expires 2022

Nothing needs doing.

SCC14.7 – International System of Quantities: **Thompson** — PAR80000 approved 2009 March; withdrawn 2013.

We should close this subcommittee.

SCC14-Int – International report: **Thompson**
— IEC TC25, ISO TC12, IEC/TC 1
— CCU

Thompson went to Berlin. After Andres Tor died, they tried to replace Sweden as convener. The Germans are having a conference at DIN. The PTB also showed up, Joachim Ulrich is PTB president, as well as president of the CCU. PTB is interested in the international system of quantities because of the redefinition of the units. They are concerned about us ramming things through the system as the new kilogram vote happened in 2011. They are putting significant resources into the effort.

The DIN website will have everything about the ISO parts. The IEC parts will be run a different way. There was discussion of how Frysinger gets greater access. The 80000-3 series appointed Paul Giroux. We want to post the working drafts on the IEEE SCC website.

There is a conference next month in Frankfurt that Frysinger and Thompson might be able to attend by web.

There was a problem with the 80000-3 medical drafts; other medical organizations decided to cooperate in this effort. This is a really active conflict of interest going on.

There is a renewed interest in ontology (study of the nature of being, becoming, existence, or reality, as well as the basic categories of being and their relations). The Malaysian jet was communication with various elements; computers need to be able to recognize these things. We need to get stuff to where the correctness of the concept is assured. We have a very specific idea of quantity, but this is tricky to communicate to computers. We will be watching with interest in this endeavor.

We don't all use the same system of units, and these entities must seamlessly be able to convert.

Frysinger got involved with this in IEEE 1616 (the black box under the car seat). All go back to standard quantities.

SCC14-Rev – Review: **Barrow** — Volunteers needed!!!

There is too much for Barrow alone to cover; he needs help. Barrow has not been able to get into the standards due to all the changes in the IEEE procedures. Scott said that the reviewers had no idea of SI at all. This is frustrating, because the IEEE is not doing the tutorial. Scott and Ressel volunteered to assist Barrow. Frysinger said IEEE's Michael Kipness will help as he is our liaison.

SCC14-Leg – Legislative
— NIST report: **Gentry**

Gentry will send a copy of the written report after her oral report. High points: Nothing has changed in NIST's organizational charts since last year (after major changes). They have a student intern, Jessica Drayal, who is helping them digitize archival publications. Clark Cooney is joining the group from Oregon.

Much work is outreach. Many events are going forward this summer. They are working with DC schools in June to integrate the next generation science standards. They will do a metric estimation game. They are participating in the NIST summer school for middle school science teachers, financed by a grant. Teachers are brought from around the country and introduced to some NIST activities.

The video game Minecraft is popular. NIST gave a challenge in this game to make a video to show the importance of SI units.

There is a new graphic cartoon video NIST created to be shown at the science and engineering symposium in Washington last week. They are doing further editing on that.

NIST distributes many teacher kits.

The government shutdown happened at "Metric Week," when most kits are distributed These were handled late.

FPLA: FTC is asking for public comment because they may make exceptions to the legislation. This could support voluntary metric labeling. They're looking for people's opinions based on evidence. There is a form on the FTC website with ability to upload files. The deadline is 21 May 2014. It was likely to want to hear that consumers are accepting of metric-only units. FTC could decide to permit metric labeling, and that would eliminate the necessity of legislating this point. NIST is finding no person in Congress to support this.

Barrow suggested also that the committee also take a position. Gentry is happy with the suggestion.

There was extensive discussion of the possibility of misunderstanding micrograms. The problem is that μ can't easily be transmitted electronically (not in ASCII 127). The solution is "u" while FDA insists on "mc" as a solution.

There is an effort to eliminate customary units as people misinterpret units for OTC medicine (tsp vs mL). There have been nearly fatal accidents.

49 states have adopted (New York is waiting for the FPLA) the UPLR. It's a model law that increases uniformity among the states.

The uniform unit pricing regulation has had poor adoption. Only a handful adopted or some form of it. This is to stop frustrating value comparison. A working group is developing a best practices guide (started in 2012, coordinated by David Sofchek in Gentry's office) with many different stakeholders. It will go through the NIST review process; it will be posted on the NIST website. It will give best practices on how a metric label should look. It will be beta-tested on some groups.

The Hawaii HB 36 wants to make metric official by 2018. It will be carried into the next legislative session. There are many international visitors to Hawaii.

— USMA report: **Young**

Young reported that 50 cases of medicine mistakes were received and they are trying to do something to fix this problem. Young suggested that they should include the measuring device with the medicine.

Young put forward the work of Paul Trusten in getting doses in milliliters.

Common core does not know the metric system exists. Many teachers do not know also. Kids are confused by units because both customary units and metric are taught. The *We the People* petition was answered by NIST. NIST didn't even do justice to the metric system in its response.

Young said that we are behind in international comparison partly due to this lack of metric. Stan said it is not only in K-12, also in college!

6. Other old business

None.

7. New business

All: Request for Public Comment on FPLA. Comments from SCC14? Deadline May 21.

<https://www.federalregister.gov/articles/2014/03/19/2014-06066/rules-regulations-statements-of-general-policy-or-interpretation-and-exemptions-under-the-fair>

We should take a position on this FPLA. The committee needs to make a task group to craft a response. Bruce made three points: 1. We ought to permit metric-only labeling. 2. The draft FPLA makes mention of metric SI; we should suggest it be called metric instead. (The Federal Register deems the term metric means SI.) There is antiquated language in the draft. 3. The words weight or mass are used together. "Weight in a synonym for mass," said Barrow.

Barrow made a motion to form a ad hoc writing committee. Aubrecht seconded. Gentry noted she needs to be on the fringes. The National Conference on Weights and Measures is working on a position paper as well. Aubrecht, Barrow, Frysinger (who will sign it), Jacuba, and Ressel, with a copy to Gentry. The first draft needs to be available in 10 days. Barrow will give the link to the document.

Frysinger: Who will be the next Chair of SCC14?

Frysinger may be thinking of resigning.

8. Review of action items: **Aubrecht**

Barrow: SI-10 and ANSI; 280 when possible; and working on 945 945.

The ad hoc working group for the letter needs to report before the 21 May 2014 deadline.

Frysinger will attempt to remote link to the Frankfurt meeting of JWG 1.

9. Date for 2015 meeting — March in Gaithersburg? Tele/Web/Videoconference?

The meeting will take place in the latter half of April 2015.

The meeting adjourned at 15:13.

Roster for IEEE/SCC14

SCC 14 includes several subcommittees. Those are:

| Designation | Name | Duties |
|--------------------|------------------------------------|---|
| SCC 14.1 | Maintenance of SI 10 | Represent IEEE on the Joint IEEE/ASTM Committee for Maintaining SI 10 |
| SCC 14.2 | Definitions | Std 270 |
| SCC 14.3 | Unit Symbols | Std 260.1, Std 1541 |
| SCC 14.4 | Quantity Symbols | Std 280 |
| SCC 14.5 | Acoustics | Std 260.4 |
| SCC 14.6 | Mathematical Symbols | Std 260.3 |
| SCC 14.7 | International System of Quantities | P80000 |
| SCC 14-Int | International | Sit on US TAG to ISO TC12/IEC TC25 |
| SCC 14-Rev | Review | Cast Coordination ballots on new and revised standards |
| SCC 14-Leg | Legislative | Monitor and report on legislative matters of interest |

SCC 14 members, with subcommittee memberships, are:

Roster of SCC 14 members

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|--|---|
| William W. Aird, P.E., CEM | Classification: User SA Member: Y |
| Gordon J. Aubrecht Ohio State University, Physics Department | Classification: Academic SA Member: Y 14.7; 14-Int |
| Bruce B. Barrow Retired | Classification: General Interest SA Member: Y Chair 14.1; 14.7; 14-Int; Chair 14-Rev |
| William Brenner NIBS | Classification: User SA Member: N |
| Dennis Brownridge The Orme School | Classification: Academic SA Member: N |

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| <p>Albert Censullo ACS Nomenclature, Terminology and Symbols Committee Prof. Emeritus, Dept. of Chemistry and Biochemistry California Polytechnical State University</p> | <p>Classification: Academic SA Member: N</p> |
| <p>Stanley L. Ehrlich Stan Ehrlich Associates</p> | <p>Classification: User SA Member: Y Chair 14.5</p> |
| <p>James R. Frysinger, LCAMS LCDR, USN-Ret. College of Charleston, Dept. of Physics-Ret. Metric MethodsSM</p> | <p>Classification: Academic SA Member: Y 14.1; Chair 14.3; 14.7; 14-Int; 14-Rev</p> |
| <p>Elizabeth Gentry Metric Coordinator, Laws and Metric Group Weights and Measures Division, NIST</p> | <p>Classification: Government SA Member: N</p> |
| <p>Louis A. Herstein</p> | <p>Classification: User SA Member: N</p> |
| <p>Donald W. Hillger CIRA</p> | <p>Classification: Government SA Member: N</p> |
| <p>Stan I. Jakuba SIJ Associates</p> | <p>Classification: User User SA Member: N</p> |
| <p>B. P. Leonard Dept. of Mechanical Engineering</p> | <p>Classification: Academic SA Member: N</p> |
| <p>Jack M. Loudon</p> | <p>Classification: General Interest SA Member: Y</p> |
| <p>David Martinsen Senior Scientist American Chemical Society</p> | <p>Classification: User SA Member:</p> |

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|--|---|
| Arthur O. McCoubrey | Classification: General Interest SA Member: Y |
| Edward F. Mikowski, Jr. Vice President, Technology Strategy and Standard Electronic Industries Alliance | Classification: User SA Member: N |
| Daleep Mohla DCM Electrical Consulting Services, Inc | Classification: General Interest SA Member: Y |
| John Nichols Asst. Prof., Dept. of Construction Sciences Texas A&M University | Classification: Academic SA Member: N |
| Allan D. Pierce ASA | Classification: Academic SA Member: N |
| Bill Potts, FBCS, CMS WFP Consulting | Classification: User SA Member: N 14.1 |
| Howard Ressel, P.E. NY State Dept. of Transportation, Region 4 | Classification: General Interest SA Member: N 14.1; 14-Int |
| Anne-Marie Sahazizian Hydro One Inc | Classification: General Interest SA Member: Y 14.7 |
| John T. Scott Retired | Classification: General Interest SA Member: N 14.1; 14.7; 14-Int; 14-Rev |
| Ralph M. Showers Dept. of Electrical Engineering University of Pennsylvania | Classification: User SA Member: Y 14-Int |
| Barry N. Taylor NIST | Classification: Government SA Member: Y 14.7; 14-Int |

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|--|--|
| <p>Ambler Thompson NIST Div. 215</p> | <p>Classification: Government SA Member: Y 14.1; Chair 14.4; Chair 14.7; Chair 14-Int</p> |
| <p>Paul Trusten, R.Ph. Vice President and Public Relations Director U.S. Metric Association, Inc.</p> | <p>Classification: User SA Member: N 14.1</p> |
| <p>Sue Vogel Manager, IEEE-SA Committee Services; National Electrical Safety Code</p> | <p>Classification: SA Member:</p> |
| <p>Lorelle Young President, USMA</p> | <p>Classification: General Interest SA Member: Y Chair 14-Leg</p> |
| <p>Matthew Zotter</p> | <p>Classification: SA Member: N</p> |
| <p>Allen J. Zuckerwar NASA Langley Research Center</p> | <p>Classification: Government SA Member: Y</p> |