



**INTERNATIONAL
COMMITTEE *on*
ELECTROMAGNETIC
SAFETY**

**SUBCOMMITTEE 3
SAFETY LEVELS WITH RESPECT TO HUMAN EXPOSURE, 0 to 3 kHz**

**26th Meeting
Omni Shoreham Hotel
Ambassador Ballroom
Washington, DC
Friday, June 18, 2004**

MEETING MINUTES

Members Present

Eleanor Adair
Franz Adlkofer
Bill Ash
David Baron
Howard Bassen
Ralf Bodemann
Aviva Brecher
Roger Coghill

Jim Daly
John D'Andrea
John DeFrank
Ken Gettman
Donald Haes, Jr.
Daniel Hicks
Roy Hubbard
Dr. Sheila Johnston

John Leonowich
Robert Needy
Ronald Petersen
Ken Proctor
J. Patrick Reilly
Arthur Varanelli
Marvin Ziskin

Members – Excused Absences

William Bailey
Richard Barker
Pascale Bellier
David Black
Philip Chadwick
Linda de Jager
Thanh Dovan

David George
Daniel Goulet
Martin Hernandez
Louis Heynick
Kent Jaffa
Jolanta Karpowicz
Joe Koepfinger
Dr. James McNamee

Steve Pittman
Robert Podhrasky
Asher Sheppard
Don Umbdenstock
Eric van Rongen
Femme-Michelle Wagenaar
Louis Williams, Jr.

Members Absent (consecutive unexcused absences)

John Bergeron (4)	Veronica Ivans (1)	Brad Roberts (3)
Charles Boeggeman (4)	E. Karabetsos (1)	Walter Rogers (2)
Dan Bracken (1)	Charles Kim (1)	Ervin Root (1)
Robert Carberry (3)	Niels Kuster (4)	Jon Sirugo (3)
Kazuhiko Chikamoto (2)	Janet Lathrop (1)	David Sliney (3)
Robert Curtis (2)	W. G. Lotz (3)	Mays Swicord (1)
Steinar Dale (5)	Patrick Mason (3)	Richard Tell (1)
Guglielmo d'Inzeo (1)	Robert McCourt (4)	Art Thansandote (1)
A. Y. Duvdevany (1)	Tom McManus (1)	György Thuróczy (2)
David Fichtenberg (3)	James Merritt (4)	Cleveland Watkins (5)
Om Gandhi (4)	Dr. Michael Murphy (3)	Jamaal Whitmore (1)
Georges Goldberg (4)	John Osepchuk (1)	Donald Zipse (1)
Michael Herz (4)	William Paul (1)	

Guests Present

Karen Dyberg
Bob Hanna*
Kathy Kahlil*

* Requested membership on SC 3

1. CALL TO ORDER

Since the Co-Chairs, Philip Chadwick & Thanh Dovan, were unable to attend, the meeting was called to order at 1:15 PM by the Acting Chair, Ralf Bodemann.

2. SELF INTRODUCTIONS & ATTENDANCE ROSTER

The Chair requested that all attendees introduce themselves and state their affiliation.

The SC 3 Membership Roster in the Attendance folder was circulated for members present to initial to indicate attendance at the meeting and to update their listing on the roster, particularly to make sure that their e-mail address was included and correct and to add their IEEE membership number and grade. Guests were requested to either provide a business card in the folder or to provide mailing information on the attendance sheet in the folder. Guests were also requested to indicate if they wanted to become a member of SC 3.

3. OPENING REMARKS

The Acting Chair, Ralf Bodemann, provided some general information to the attendees. Eleanor Adair will take the Meeting Minutes on behalf of the SC3's Secretary, Jim Daly.

4. APPROVAL OF AGENDA

A motion to approve the Agenda was made by Art Varanelli and seconded by Marv Ziskin. The Agenda was unanimously approved, see Attachment #1.

5. APPROVAL OF 12/12/03 MINUTES

A motion to approve the Minutes of the December 12, 2003 meeting was made by Ken Gettman and seconded by John Leonowich. The Minutes were unanimously approved.

6. CHAIRMAN'S REPORT

Acting Chair, Ralf Bodemann, gave many thanks to Kent and Pat for the two Short Courses, both of which were well done and well received. Bodemann also reported about the 11th meeting of the IRPA (International Radiation Protection Association) in Madrid from May 24-28 where he gave a talk on ICES. He showed two slides of his presentation regarding the C95.6 standard, see Attachment #2.

7. SECRETARY'S REPORT

Eleanor Adair (Acting Secretary) gave the report. The attendance policy for continued membership in SC 3 was restated. Members will be removed from the roster after missing two (2) consecutive meetings unless an excused absence is requested. The reason(s) for absences from SC 3 meetings will be accepted by e-mail, phone, or in writing to the Secretary or the Chair. Before removing members, the Secretary will contact the individual and request, either by e-mail or in writing, their intentions for continued membership. If no response is received, the individual will be removed from the membership roster.

Since the previous meeting, the following changes have occurred in the membership of SC 3:

- | | |
|---|--|
| 7.1 New member added at last meeting: | Don Umbdenstock |
| 7.2 New members added since the last meeting: | Dan Bracken
David George
Professor d'Inzeo
Jolanta Karpowicz
Charles Kim |

7.3 Thomas Jahn has replaced Dave Sawdon for IBM.

7.4 Resignations: Kelly Gibney
Wayne Hammer

7.5 Unable to attend due to family emergency William Bailey

7.6 No members were removed from the roster since the last meeting for failing to comply with the attendance policy.

Twenty-three members requested an excused absence from this meeting.

See Attachment #3 for the current SC 3 roster. Prior to this meeting there were 85 members of SC 3 plus 8 corresponding members.

7.7 The Acting Secretary reported on some material sent to her by Thanh Dovan in preparation for this meeting.

7.7.1 Short Course on C95.6 and future plans: Kent Jaffa and Pat Reilly are the presenters for the Short Course. To date, there have been 2 very successful courses. The first was held on March 9, 2004 at the Canadian Electrical Association Meeting in Canada and was not only very successful but also profitable. On June 16, 2004, a full day's course was held at the Marriott Wardman Park Hotel in Washington, DC. There were approximately 25 registrants, 4 of whom registered on site. The two presenters were in top form and presented the details of the C95.6 standard in a detailed and intelligent manner. Especially interesting was a presentation by Kent on a variety of low frequency sources that abound in the environment. All agreed that the course was a great success and several attendees asked if the course might be given again at some other site (e.g., San Antonio in December and Dublin, Ireland in June, 2005.)

7.7.2 Publicity for SC-3: Pat Reilly, who spoke to several groups in Australia last fall also has a paper in Health Physics. Arthur Varanelli offered to put a SC-3 page on the ICES website for information about SC-3 activities. Ralf Bodemann, Vice Chairman of ICES, submitted abstracts and made presentations at the IRPA/ICNIRP meetings in Sevilla and Madrid, Spain. These featured the C95.6 standard. Pat Reilly has completed his chapter for the Dosimetry Handbook project and this is available on their website at EMFdosimetry.org

7.7.3 Topics for the proposed Application Guide: Thanh Dovan chairs the committee. Measurements from the SC-1 draft will be utilized and working assignments are now set. Thanh will collect data on E and H fields with respect to maximum exposures. A draft outline is needed. Sources include 3 papers by NIST, the German database on the application of devices, and the NRPB database. Volunteers were solicited as members of the Applications Working group.

7.7.4 Interpretations Working group: Bob Curtis will chair this WG. The rules for setting up the committee must be followed – these rules are contained in the ICES Policies and Procedures document, available from R. Petersen. It is important that the makeup of the committee be representative of the SC-3 makeup. The WG must ballot any responses to

requests for interpretation that are submitted through the Secretary of the Standards Board and must report the results to SC-3.

- 7.7.5 Working Group Report on the Long-Term Effects Statement: Tom McManus (Chair) sent a short statement and the group has a draft that is on hold. Tom must poll all members of the group for a decision to be sent to SC-3. If the WG concludes that, for the present, the statement in C95.6 is sufficient, the WG should be disbanded.
- 7.7.6 Updates on International Standards activities: There is a new German pacemaker standard. CENELEC is working on exposure vs product standards. The ICNIRP standard has now been adopted by many countries. The EU is using the ICNIRP general public limits to comply with product standards. New Zealand adopted ICNIRP. NRPB is in flux but will probably adopt ICNIRP. The Canadian ELF WG, under Art Thansandote, is looking into the relevant literature and may possibly generate an ELF standard.

The Secretary's report was accepted.

8. ICES SCC-28 EXCOM REPORT

Ron Petersen, Chair of ICES SCC 28, reported on recent developments within ICES. The current SCC28 and SCC34 will be combined into a single international committee that will give oversight over the 5 Subcommittees from SCC28 and 3 Subcommittees from SCC-34. These SCCs may be called Technical Committees (TCs) but they will operate just as they do now. ICES will become an umbrella organization [SCC-39] that will manage all standards activities. There is a good match between SCC-34, developing product standards, and SCC-28, developing exposure standards. In future there may be another SCC that develops environmental standards. More information on this ICES reorganization will be presented at the ICES meeting on Sunday morning. Petersen also reported that there is a continuing increase in international membership in ICES. It used to be that the world regarded the IEEE committees as "United States Electrical Engineering people", but this is not the case any more. One third of the ICES members are from outside the United States and represent 21 countries. Both Ralf Bodemann and Tom McManus attend meetings in Europe and elsewhere. As our roving ambassadors, they invite talented people to apply for membership in ICES and thereby do us a great service. Finally, Petersen reported that the SASB meets next week and he will be present. The agenda includes the Pinnae Amendment to the C95.1 (1999) standard, which has been balloted, approved by ICES, and recirculated. Also on the agenda is a new PAR for the C95.7 Recommended Practice for a RF Safety Program that is being balloted by SC-2. Petersen will report on the changes in the SASB operations at the ICES meeting on Sunday

9. IEEE C95.6 SHORT COURSE ADMINISTRATION

Arthur Varanelli and Ron Petersen reported. Art Varanelli (ICES Treasurer) reported that the Short Course held on 16 June at the Marriott Hotel was well received and many people asked about future courses. The course notes were complete and very useful. The course given in Canada in March made a small profit and the June course broke even. This means that we will have some surplus funds for future courses. Ron Petersen reported that he had attended the March course and that it was also very

good. He hopes that in the future we will be able to provide copies of the C95.6 standard to course attendees at a reduced price.

10. IEEE C95.6 SHORT COURSE PROGRESS

Pat Reilly reported on the progress in some detail. He stated that the objective is to promote the acceptance of the IEEE C95.6 standard and noted that both Australia and Canada are looking to adopt it. He drew some comparisons between the ICES and ICNIRP ELF standards. The ICNIRP standard is being adopted in the EU and elsewhere in the world. He pointed out that there is a difference of 100 or more between some of the levels in the two standards. For example, ICNIRP uses safety factors of 10 and 50, while C95.6 uses 0 and 3 for the two tiers. This implies that ICNIRP is more conservative than ICES, but the safety factors are applied at much higher levels than the ICES levels, which are more conservative. He suggested that a Short Course on C95.6 be given in connection with the ICES meetings in Dublin next year, but he also noted that PacifiCorp does not support Kent's activities so he takes vacation days to give the Short Course. Aviva Brecher asked that the outline of the course be posted on the ICES website, to which Art Varanelli agreed. Action Item: Pat Reilly will forward the outline to Art Varanelli. Ralf Bodemann gave the committee's thanks to Pat for his great contributions to writing the standard and promoting it so vigorously. (Applause). Action Item: Adair is to contact Kent Jaffa concerning Short Courses in San Antonio and Dublin.

11. APPLICATION GUIDE WORKING GROUP

The Chair reported that Dan Bracken has agreed to help out on the Application Guide. Thanh Doan serves as Chair but there is little or no activity so far. The Subcommittee needs to start on this project now. The first step should be an outline of the Guide.

Ed Yandek has volunteered to participate in this Working Group.

Pat Reilly reported that he had made a list of 12 topics for consideration. These include:

- Measurement techniques for demonstrating compliance
- Measurement techniques and calculation techniques for the basic restriction
- Application of anatomical models – a simple ellipsoid now may be more complex later
- Interpretation of specifics when the H field is not uniform
- How to deal with workers in power generating situations – maximum protection for ungrounded people with an ungrounded object
- Environmental limits for a static E field
- The basic restrictions for hands, feet, ankles need to be looked at and specified
- Compatibility with draft contact current
- Compliance with induced currents
- Chronic low level effects on the CNS. The spinal cord is not a problem, but the brain is.
- Monitoring a chronic exposure effects study.

See Attachment #4 for additional details.

The Chair suggested that Pat contact SC-1 chair Howard Bassen as there appears to be some overlap with their new project C95.3a. Any duplication of work should be avoided.

12. IEEE C95.6 INTERPRETATIONS WORKING GROUP

Ron Petersen, Working Group Chair, reported that in order for the Interpretations Working Group to be properly constituted and the members knowledgeable about specific procedures prescribed by the IEEE, the ICES Policies and Procedures document should be posted on the ICES website.

Aviva Brecher mentioned the EPRI meetings to be held in March and suggested that members of SC-3 join them for a joint meeting and training. Co-Chairs could be Jaffa, Reilly, and Curtis. DB/dt questions could be answered by Pat or Kent, for example on MRI procedures.

13. WORKING GROUP REPORT ON LONG TERM EFFECTS STATEMENT

Tom McManus, Working Group Chair, was not present. Bodemann reported that he had written to Tom in an attempt to resolve the question of how to proceed. He received no response. Thanh Dovan wrote that the demand for this statement is less than it was earlier and suggested that the statement in the Standard is all right for now. He urged that this WG be disbanded. Art Varanelli agreed and moved that this Working Group be disbanded and that the members of the WG be polled on this question. Marv Ziskin stated that the public is still concerned about possible long-term effects of exposure to these fields. Mays Swicord noted that there are now many long-term animal studies that show no deleterious effects. A formal vote was not taken but a show of hands indicated that the sense of those present was to disband the Working Group. Bodemann said that the WG consisted of 3 people: himself, Tom McManus, and Eric van Rongen. Pat Reilly asked if SC-3 needs a Working Group to keep up with future effects or events, or modifications in the standard. Petersen noted that the C95.6 standard is now 1.5 years old and must be reaffirmed or revised within the next 3.5 years. Bodemann will submit this information to Tom and Eric and ask for their guidance.

14. UPDATE ON INTERNATIONAL STANDARDS ACTIVITY

Ralf Bodemann reported in place of Tom McManus and stated that the mandate for ICES was 0 Hz to 300 GHz. He then presented some slides that are included as Attachment 5. The slides included a description of the work required under this mandate, some of which were:

- Detailed risk assessment and guidance
- Methodology
- Measurements and application – EC recommendations for the public must be considered
- Formal progress reports
- Cooperation with other bodies, i.e., ICNIRP, WHO, CENELEC (Chadwick)
- Coordination with other international bodies, i.e., ICES

Thanh Dovan sent word that the ARPANSA ELF draft document, from a working group chaired by Prof. Andrew Wood, would be completed by the end of the year. It will then be released for public comment. ICES or SC-3 may wish to establish a process by which they can make comments and suggestions to assist ARPANSA on this document. Mays Swicord remarked that Ken Joyner may be working on this standard and urged that Phil Chadwick be selected to handle the document when it is released. Art Thansandote noted again the Canadian initiative on the Federal Provincial Protection for

ELF studies. The Working Group in charge is yet to determine which way to go on this matter. Prof. Ikehata mentioned that there is no current activity on standards in Japan.

15. OTHER OLD BUSINESS

There was no old business.

16. NEW BUSINESS

As Aviva Brecher requested, an outline of the Short Course will be posted on the ICES website.

17. NEXT MEETING

The next meeting of SCC-28 and the subcommittees will be in San Antonio, TX at the Doubletree Hotel near the airport. The dates for SC and ICES meetings are Thursday, 2 December through Sunday noon, 5 December 2004. If a Short Course is given, it will be scheduled for Wednesday, 1 December, all day.

18. ADJOURNMENT – The Chair adjourned the meeting at 4:30 pm following a motion by Marv Ziskin and a second by Roy Hubbard.

Respectfully submitted,

Jim Daly

Jim Daly, Secretary
Subcommittee 3 of IEEE/ICES SCC 28

Attachments No. 1 - 5