



INTERNATIONAL COMMITTEE *on* ELECTROMAGNETIC SAFETY

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Annual Report: 2003 – 2004

Executive Summary:

The membership of the International Committee on Electromagnetic Safety (ICES), SCC-28, stands at 116 with 44 members from outside of the US representing 22 countries. With the leadership of Dr. Tom McManus, Membership Chairman and Dr. Michael Murphy, Chairman of International Liaison, ICES SCC-28 continues to become more international. During the period covered by this report, ICES/ SCC-28 held two meetings. The first was held in San Antonio, TX in December, 2003, and the second in Washington, DC in June 2004, in conjunction with the annual meeting of the Bioelectromagnetics Society (BEMS). Many non-US attendees at BEMS also were guests at the ICES meetings, thereby strengthening our potential for international growth.

An International Workshop on Thermal Physiology with Applications to Standards for Electromagnetic Safety (originally proposed by ICNIRP as a joint ICNIRP/ICES workshop in November 2000), will be held as a joint ICES/COST 281 workshop in September 2004 at INERIS, outside of Paris. A two-day COST 281 Dosimetry Workshop, which will be well-attended by members of ICES, will precede the Thermal Physiology Workshop.

Continuing activities with the World Health Organization EMF Project are aimed at exploring paths toward the international harmonization of standards for the safe use of electromagnetic energy. The increased international membership in ICES provides us with greater influence as we engage the international community.

The authorization in 2000 by the IEEE Standards Board of the proposal that SCC-28 be renamed the International Committee on Electromagnetic Safety (ICES) has proved to be a giant forward step toward an international forum for broad consensus in the setting of safety standards across the frequencies 0 to 300 GHz. During this past few years, ICES, its committees, and products have become far better known around the world and we expect this trend to continue.

Action has been taken to combine ICES/SCC-28 and SCC-34 into a single committee (SCC-39), named ICES, with an AdCom/Governing Board to direct the committee activities and fund-raising efforts. SCC-28 and SCC-34 will become technical committees (TC95 and TC34) of the new committee and will continue to operate as they do now. Additional technical committees, e.g., for environmental standards, are contemplated.

Other highlights during the year include:

- a) Amendment 1 of IEEE C95.1-1991 (1999 edition) entitled “IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz – Amendment 1: Specific Absorption Rate (SAR) Limits for the Pinna,” was approved at the June 2004 SASB meeting. (Approval of the amendment has been appealed – the hearing will be held during the December 2004 SASB meetings.)
- b) A new draft standard “IEEE Recommended Practice for Radio Frequency Safety Programs” was approved by Subcommittee 2 in early 2004. A new PAR for this project was approved at the June SASB meeting – the project number was changed from P1466 to PC95.7 to identify it as a member of the C95 series. A balloting group is now being formed and sponsor balloting is expected to commence before December. This document provides the elements of an RF safety program that will be useful to those implementing the IEEE C95.1-1991/1999 standard and its revision.
- c) The eighth draft of the revision of IEEE C95.1-1991 (1999 edition) was balloted by Subcommittee 4 (SC-4) during April and May. The requisite 75% response was achieved and more than 75% of the balloting group approved the draft (SC-4 follows the same procedures required for sponsor ballot, i.e., invitation to ballot, 75% response, at least 75% approval after recirculation, etc.). The balloted draft was discussed at the June meeting and the 289 comments received with the ballots are being addressed. A new draft has been prepared for discussion at the September 2004 meeting of the Editorial Committee. Following that, a recirculation ballot will be conducted. It is expected that sponsor balloting will commence early in 2005.
- d) A joint ICES/COST-281 (European Cooperation in the Field of Scientific and Technological Research: Action 281) Thermal Physiology Workshop is being held at INERIS (Institut National de l’Environnement Industriel et des Risques), outside of Paris, in September, 2004. This workshop will have significant relevance for Subcommittee 4 activities.
- e) Two well-received short-courses were held to introduce the new C95.6-2002 standard (IEEE Standard for Safety Levels with Respect to Human Exposure to Electromagnetic Fields, 0 to 3 kHz). The first was held in conjunction with the Canadian Electrical Association (CEA) Subcommittee on EMF Workshop in Ottawa, Canada in March; the second was held in Washington DC in June. Both were well-attended and the feedback was very positive. A third short-course is planned to be held in conjunction with the December ICES meetings in San

Antonio, TX, and a fourth in Dublin, Ireland in conjunction with the June 2005 ICES and Bioelectromagnetics Society meetings.

The Executive Committee (ExCom) met in San Antonio and Washington DC and four times by teleconference during the past 12 months. In addition, informal meetings of ExCom members are held frequently as appropriate. The ICES ExCom plans and arranges the two main meetings per year of the parent committee, ICES/SCC-28, and its subcommittees. It approves (or rejects) applications for membership in ICES. Dr. Ralf Bodemann, of Siemens AG in Germany, who serves as ICES Vice Chairman, has become the ICES roving ambassador to EC/EU countries and has given several presentations in support of ICES and the IEEE open, consensus process in standards setting. Dr. Michael Murphy serves as ICES liaison to the Bioelectromagnetics Society (BEMS) and attended meetings of the BEMS Board of Directors in June of 2004.

There are still several issues that must be addressed by ExCom. These include matters of fundraising, interaction with the media, enhancement of the international ICES image, and recruitment of new ICES members. The ICES Chairman presented detailed material about ICES on several occasions this past year, including presentations at the Asia Pacific EMF Conference in Bangkok, Thailand in January. Several other members of the ExCom and subcommittee chairmen also represented ICES or presented detailed material about ICES at a number of international meetings. (See Annex B for details.)

As reported last year, a special event, organized by the Chairs of SC-4 and supported by the U.S. Air Force, took place on June 23, 2002 in Quebec City in conjunction with the 24th Annual Meeting of the Bioelectromagnetics Society. Chaired by Dr. Michael Murphy, this was a U.S. Air Force Laboratory Workshop, "Setting a Science-Based Standard for Safe Human Exposure to RF Electromagnetic Fields: A Tribute to Dr. Eleanor R. Adair". The full-day program included synopses of 14 White Papers prepared by members of the SC-4 Revision Working Group as the scientific foundation for the revision of the IEEE C95.1-1991 standard. Twelve of these papers were published in a special supplement (Supplement 6, 2003) to *Bioelectromagnetics*, the official journal of the Bioelectromagnetics Society.

Dr. Adair, Chairman of ICES for more than 2 years, and who stepped down as Chairman in December, is replaced by Ron Petersen. Petersen continues to rely on ExCom members and other experts for much material related to the extensive work of this oversight committee and its subcommittees. We are extremely proud of the dedication and extremely hard work of hundreds of volunteers in the ICES subcommittees. Most of these individuals hold full-time jobs and, to a large extent, pay in time and money for the privilege of serving on ICES subcommittees and attending our meetings. We in ICES believe that our products are the best in the world and salute our volunteers for the tremendous effort they have contributed under the aegis of the IEEE.

Detailed Report

1. Scope

The present scope of IEEE ICES is:

“Development of standards for the safe use of electromagnetic energy in the range of 0 Hz to 300 GHz relative to the potential hazards of exposure of man, volatile materials, and explosive devices to such energy. It is not intended to include infrared, visible, ultraviolet, or ionizing radiation. The committee will coordinate with other committees whose scopes are contiguous with ICES.”

The scope remains unchanged.

2. Membership and Organization:

The leaders of ICES/SCC-28 and its subcommittees are listed below; the present roster of ICES/SCC-28 is listed in Annex A. Several members of ICES have been inactive and their continuing status is currently being addressed by the Membership Committee. In terms of stakeholders, the membership continues to be well balanced. However, a continuing lack of representation from groups aligned with the wireless industry still remains, which we hope to correct in the future. About 50% of the ICES membership are IEEE members, with a fewer number of SA members. This is to be expected and defended in view of the interdisciplinary nature of our membership. ICES is grateful for their voluntary contributions under conditions where it would be an unreasonable imposition to require IEEE membership. However, we do require the leaders (e.g., Committee and Subcommittee Chairs, Co-chairs) to be IEEE members.

The ICES mailing list now approaches 400, including the many observers in the Subcommittees. Three years ago, we gave up our long-standing practice of sending hard copies of our extensive documents through the mail to our global mailing list. We now make use of electronic communication of all our documents through e-mail and the Internet. The IEEE ICES Website contains both open and private sites, not only for ICES/SCC-28, but also for ICES Subcommittees. For example, Subcommittee 4 makes all agendas, meeting minutes, white papers, RF research database, draft standard documents, and many special reports available to all, with certain proprietary or working documents available only to members of the Subcommittee on a private section of the site. The ICES SC-4 literature database, comprising more than 1800 titles, now appears on the WHO website and is accessible to all. Many ICES and Subcommittee members bring laptop computers, loaded with ICES files, to our meetings so they can project slides and tables, take personal minutes, edit documents, refer to vital files, etc.

ICES/SCC-28 Leadership

Office	Name	Affiliation
Chairman	Ronald C Petersen	R. C. Petersen Associates, LLC
Vice Chairman	Dr. Ralf Bodemann	
Past Chairman/Executive Secretary	Dr. Eleanor Adair	Independent Consultant
Chairman Emeritus	Dr. John Osepchuk	Full Spectrum Consulting
Treasurer	Arthur Varanelli	Raytheon Company
Chairman, International Liaison Committee	Dr. Michael Murphy	Air Force Research Laboratory
Chairman, Membership Committee	Dr. Tom McManus	Independent Consultant
Chairman, SC-1	Howard Bassen	US FDA Center for Devices and Rad. Health
Chairman, SC-2	Richard Tell	Richard A Tell Associates, Inc.
Co-Chairman, SC-3	Dr. Phillip Chadwick	Microwave Consultants Ltd.
Co-Chairman, SC-3	Thanh Dovan	SPI PowerNet Pty. Ltd.
Co-Chairman, SC-4	Dr. C-K Chou	Motorola Research
Co-Chairman, SC-4	Dr. John D'Andrea	Naval Research Center
Co-Chairman, SC-5	G. A. (Drew) Koban	Naval Surface Warfare Ctr.
Co-Chairman, SC-5	Robert Needy	Naval Surface Warfare Ctr.

The key aspect in our membership growth is the emphasis on non-U.S. members. We now have members from the United Kingdom (7), Australia (4), Canada (4), Italy (3), Switzerland (3), Finland (3), Greece (3), Netherlands (2), Ireland (2), and 1 each from Bulgaria, China, France, Germany, Hungary Israel, Japan, New Zealand, Poland, Slovenia, South Africa, Sweden, and Thailand. The following new members were added to ICES since the last Annual Report:

Name	Affiliation	Country
David Baron	Holiday EMF Measurements, Inc	US
Guglielmo d'Inzeo	La Sapienza University of Rome	IT
Masatero Ikehata	Railway Technical Research Institute	JP
Efthymios Karabetsos	Greek Atomic Energy Commission	GR
Dariusz Leszczynski	STUK-Rad and Nuclear Rad Lab	FI
Nisakorn Manatrakul	Thailand Ministry of Public Health	TH
Paolo Ravazzani	Italian Nat Res Council	IT
Stanislaw Szmigielski	Mil Inst of Hygiene and Epidemiology	PL
Gyorgy Thuroczy	Nat Res Inst for Radiobiology	HU
Joe Wiart	France Telecom R&D	FR

Many ICES members and others from outside the U.S. are participating members of the Subcommittees. Under the leadership of Drs. McManus and Murphy, we are

confident that ICES will keep pace with the general trend of the IEEE towards global consistency.

3. Goals and Objectives (2003-2004)

The objectives (in italics), stated in the 2002 – 2003 Annual Report are compared below with the actual achievements during the year 2003 – 2004.

A. ICES/SCC-28 and ICES EXCOM:

- *Bring SCC-34 on board as the second Standards Coordinating Committee under the ICES umbrella.*
 - In May, 2003, this objective was initiated with Bill Ash, the ICES staff liaison, by the ICES Chairman Dr. Eleanor Adair and ICES Executive Secretary Mr. Ron Petersen. Appropriate documentation prepared by Former Chairman Dr. John Osepchuk was supplied as a basis for a dialogue on this matter. Mr. Ash discussed this proposal with several relevant IEEE personnel and responded to ICES with several questions related to the evolvement of ICES as an umbrella committee over SCC-28, SCC-34 and any new committees of similar scope. The ICES EXCOM discussed this development in a teleconference and the Former Chairman agreed to supply additional materials to Mr. Ash so that this activity could proceed. Members of the ExCom met with IEEE staff in February, 2004 to discuss the issue further and seek guidance on how to proceed. The current ICES Chairman, Mr. Ron Petersen, met with the SASB SCC Ad Hoc Committee to discuss the reorganization, where it was agreed that the most expeditious method would be to combine SCC-28 and SCC-34 into a new SCC – SCC-39 (called ICES). This was discussed by the ICES ExCom and it was agreed to move forward and establish the new SCC. The ICES Chairman presented the proposal to the SASB in June where a motion to move forward was approved. The ExCom is now in the process of better defining the scope of the new committee and notifying the affected IEEE Societies and Councils whose scopes of activity are related to the program of work to be covered by the proposed SCC. The goal is to complete the process before the December SASB meeting.
- *Initiate fundraising, with the guidance of the IEEE staff, so that critical travel, support for special projects and meetings, support for visiting scientists and experts, and other critical needs can be met.*
 - Fundraising is linked to bringing SCC-34 under the ICES umbrella; the two objectives go hand in hand. Four members of ICES ExCom met with IEEE staff in February, 2004, at the IEEE Operations Center in Piscataway, to discuss this issue and bringing SCC-34 under the ICES umbrella. Guidance was provided on how to proceed with a fundraising program. It was determined that the first step should be to reorganize the committees and establish an Administrative Committee (AdCom). Once

that has been completed members of the ICES AdCom could work with IEEE staff to develop a fundraising program.

- *Continue international expansion led by Drs. McManus and Murphy. Introduce new leadership with emphasis on non-U.S. and younger members. Revise and update rosters.*
 - As reported above, international expansion continues successfully. The Vice Chairman of ICES, Dr. Ralf Bodemann, has been extremely active in European meetings, presenting talks concerning the IEEE ICES open, consensus process and the standards generated by ICES Subcommittees. He has also sent letters and ICES brochures to a broad spectrum of EU governmental and industrial institutions to further their knowledge about the IEEE C95 standards. His enthusiasm and dedication to ICES continues to increase and we foresee a major role for him in the leadership of ICES. The committee and subcommittee rosters have all been updated (see Annex A). Some information for some new members is missing but that is being addressed.
- *Institute a new policy of annual or semi-annual citations of merit for volunteers who have made substantial contributions to ICES projects.*
 - Although formal ICES citations or award certificates have not yet been created, several individuals were awarded the IEEE SA Standards Medallion for their substantial and unique contributions to the ICES efforts the past few years and the current Chairman, Ron Petersen, was awarded the IEEE SA International Standards Award. During the December 2003 ICES meetings, the IEEE SA Standards Medallion was awarded to Mr. Kent Jaffa, Chairman of ICES SC-3 for shepherding the new C95.6 ELF standard through to adoption. Dr. Tom McManus was awarded the IEEE Standards Medallion for his outstanding work as Membership Committee Chairman for recruiting key scientists from around the world and furthering ICES recognition internationally. Dr. Michael Murphy (Chairman of the ICES International Liaison Committee) was awarded the IEEE SA Standards Medallion for his outstanding work in furthering international recognition of ICES through his participation and support of international EMF symposia. (See Annex B for summary of International Liaison Committee activities.)
- *Strengthen liaisons with ICNIRP, IEC, WHO, COST 281, etc. Carry out closed leadership meeting with ICNIRP in late 2003. Plan joint Thermal Physiology Workshop.*
 - A preliminary joint ICNIRP/ICES Thermal Workshop scheduled for October 2001 in Geneva was cancelled and rescheduled for March 2002 and cancelled again. Instead of proceeding with a joint ICES/ICNIRP workshop, ICES will co-sponsor a Thermal Physiology Workshop with COST-281 (European Cooperation in the Field of Scientific and Technological Research: Action 281). This workshop will be held at

INERIS (Institut National de l'Environnement Industriel et des Risques), outside of Paris, in September, 2004. The workshop will have significant relevance for Subcommittee 4 activities. Several members of ICES will also participate in a COST-281 Dosimetry Workshop the two days preceding the Thermal Physiology Workshop.

- Attempts to meet with ICNIRP members to discuss harmonization have been unsuccessful for diverse reasons. ICNIRP has recently been reconstituted, however, and the ICES ExCom is optimistic that the “new” ICNIRP will be receptive to working with ICES toward international harmonization.
- Several ICES members have participated in a number of WHO Workshops in 2003 and 2004; these workshops have primarily concerned the implementation of the Precautionary Principle in the generation and implementation of EMF standards, as well as WHO efforts to achieve standards harmonization worldwide. (See Annex B for details.)
 - Liaisons between ICES and IEC continue to be strong; the Chairman of ICES also Chairs IEC TC106.
- *Arrange for winter meetings of ICES and Subcommittees in December, 2003; arrange for the June, 2004 meetings in conjunction with the June meeting of the Bioelectromagnetics Society in Washington, DC. Arrange for winter meetings of ICES and Subcommittees in December, 2004.*
 - The winter meetings of ICES and its subcommittees were held in December, 2003, at the Doubletree hotel in San Antonio, TX and the June, 2004 meetings were held in advance of the Bioelectromagnetics Society meetings in Washington, DC. The December meetings were successful, had a good turnout, and the costs were reasonable. Compared with the December meeting rates, the Washington, DC meetings were very expensive in terms of meeting rooms, audiovisual services and lodging. The meeting arrangements were made by the Executive Manager of the Bioelectromagnetics Society, and included a 20% management fee on top of the other fees, taxes and service charges. The ExCom decided to continue to hold the June meetings in conjunction with the Bioelectromagnetics Society but the arrangements, including hotel selection, will be carried out by ICES.
 - Arrangements have been made for the winter ICES and Subcommittee meetings at the Doubletree Hotel near the San Antonio Airport during the first week of December. Government rates will be honored by the hotel and other charges are modest. A full-day short course on the new C95.6-2002 standard, given by several of the prime architects of the standard and organized by the new SC-3 Chairs will follow the ICES meetings.
 - The Bioelectromagnetics Society (BEMS) is holding the June 2005 meeting at a university outside of Dublin, Ireland and ICES will also meet in Dublin immediately following the BEMS meeting. ICES will meet at

the government facilities in Dublin Castle. The ICES meeting arrangements are being made through Dr. Tom McManus and Bob Hanna (Department of Communications, Marine & Natural Resources). A full-day short course on the new IEEE C95.6-2002 standard is proposed following the ICES meetings.

- *Ballot the revision of C95.1.*
 - The revision of IEEE C95.1, “IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz,” is being balloted by Subcommittee 4, following IEEE-SA rules for sponsor balloting. The initial ballot was carried out in the spring was successful with a response rate that exceeded 75% and an approval rate of more than 75% of those who voted. A total of 289 comments were received with the ballots. The Editorial Committee is meeting the first week of September to resolve the comments and prepare a revised draft. A recirculation ballot will be conducted in October and if the approval rate is still greater than 75%, the draft will be submitted to the parent committee for sponsor ballot.
 - Balloting on Amendment 1 to IEEE C95.1, “IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz – Amendment 1: Specific Absorption Rate (SAR) Limits for the Pinna,” was successful and the amendment was approved by the SASB at the June meeting. The approval has been appealed – the appeal will be heard during the December SASB meetings in New York.
- *Pursue the project on publicizing ICES and C95.1 standards in the literature, with the assistance of Karen McCabe of the IEEE staff.*
 - Some general white papers are being drafted for publication in *Health Physics*, the official journal of the Health Physics Society. These include a paper on the process by which ICES subcommittees generate standards documents, and another paper on the special character of the new C95.6 standard recently approved by ICES. The IEEE Committee on Man and radiation (COMAR) has also prepared a Technical Information Statement (TIS) describing the process by which ICES subcommittees generate standards documents; the TIS is now undergoing review. Twelve papers, including one on the history of ICES and a description of the IEEE process, were published in a special supplement (Supplement 6, 2003) to *Bioelectromagnetics*, the official journal of the Bioelectromagnetics Society. These peer-reviewed papers summarize the results of the literature evaluation carried out by members of Subcommittee 4 (and by others). Shorter summaries are included in Annex B of the draft revision of IEEE C95.1. In the future, we will be working with Karen McCabe, who has drafted a strategy for publicizing the work of ICES.

- *Reassess the plans for an electronic newsletter in recognition of ICES objectives.*
- *Reassess the methods of dealing with requests for interpretation of standards documents and the role of IEEE staff.*

— The last two goals have been put on hold pending completion of the restructuring of ICES. However, no new requests for interpretation of IEEE C95.1-1999 have been received this year. With the publication of IEEE C95.6-2002, the possibility of requests for interpretation of this new standard is not trivial. The new Co-Chairs of SC-3 have set up an appropriate Interpretations Working Group with a Chair and 5-10 representative members so that any requests for interpretation can be handled expeditiously.

B. SC-1 (Techniques, Procedures, Instrumentation and Computation)

- *Develop a draft recommended practice addressing measurements below 100 kHz – PC95.3.1.*

— SC-1 has held four meetings for this new effort under the Chairmanship of Howard Bassen, one in Washington DC in the fall of 2002, one at the ICES and Subcommittee meetings in Maui in June 2003, one at FDA/CDRH in Rockville, MD in March, 2004, and the fourth at the ICES meetings in Washington, DC. Progress on this effort has been substantial, including general discussions, preparation of an outline, and appointing section editors. Several major clauses have been completed; the PAR was approved at the December 2003 SASB meeting.

C. SC-2 (Terminology, Units of Measurements and Hazard Communication)

- *Complete and ballot recommended practice on RF safety programs – PC95.7.*

— This document, which outlines a comprehensive work safety program at several levels, has been approved by Subcommittee 2 and is now being prepared for ICES sponsor ballot. A new PAR was approved at the June, 2004 SASB meeting, which included a project number change (from P1466 to PC95.7) to bring it into line with the family of ICES standards. The IEEE Balloting Center is now in the process of establishing a balloting group through the invitation process. The invitation closes in September, sponsor balloting is expected to commence before December. This standard is referenced in the draft revision of the C95.1 standard and the original draft of PC95.7 has been elaborated to serve the needs of C95.1.

D. SC-3 (Safety Levels with Respect to Human Exposure, 0-3 kHz)

- *Develop and hold several short courses on the new IEEE C95.6-2002 standard.*
 - Two full day, well-received short courses on the new C95.6-2002 standard were presented in 2004 by several of the prime architects of the standard and organized by the new SC-3 Chairs. The first was held in conjunction with the Canadian Electrical Association (CEA) Subcommittee on EMF workshop in Ottawa, Canada in March; the second was held in Washington DC in June. Both were well-attended. A third short-course is planned in conjunction with the December ICES meetings in San Antonio, TX, and a fourth in Dublin, Ireland in conjunction with the June 2005 ICES and Bioelectromagnetics Society meetings. A registration fee is charged to cover costs of the meeting facilities, lunch, refreshments, handout material and expenses and honoraria for the speakers.

E. SC-4 (Safety Levels with Respect to Human Exposure, 3 kHz - 300 GHz)

- *Continue literature reviews, designate cutoff date, and conduct subcommittee balloting on the draft revision of IEEE C95.1-1991 (1999 edition).*
 - Under the able Chairmanship of Dr. C.K. Chou and Dr. John D'Andrea, this subcommittee has made substantial progress on the revision of IEEE C95.1 this year. There are now more than 1800 titles in the RF literature database (Listing #29). The literature cutoff date has been set to December 2003. Draft 1.8 of the revision was completed in April, 2004 and balloted by SC-4 in May. Ballot resolution is now in progress and a recirculation ballot is expected before December. If successful, the draft will be submitted to ICES for sponsor ballot this year.

Re-ballot Amendment 1 to C95.1-1991

Amendment 1 to C95.1 (to address SAR in the pinnae) was approved in 2002 in a sponsor ballot carried out by ICES. The amendment was not submitted to RevCom at the time because it was felt that the new material is included in the draft revision of C95.1. The original PAR was withdrawn and shortly thereafter it was decided to move forward with the amendment because of its importance to SCC-34. A new ballot was conducted by the IEEE-SA Balloting Center in April, 2004, and the amendment was approved at the June meeting of the SASB. However, approval has been appealed – the appeal hearing will take place during the December SASB meetings in New York City.

F. SC-5 (Safety Levels with Respect to Electro-Explosive Devices)

- *Review plans for future activity including statement on fuel ignition hazard myth.*
 - SC-5, under the Chairmanship of John DeFrank and Drew Koban, has completed a draft statement on the myth of fuel ignition hazard associated

with the use of cellphones in gasoline stations. The statement served as the basis for the COMAR article “Cellphones Pose no Gas Station Hazard” published in the April 2004 issue of *IEEE Spectrum*. Because of other commitments, John De Frank has stepped down as Co-chairman of SC-5. He has been replaced by Robert Needy, a long-time contributor on SC-5.

4. Goals and Objectives 2004 – 2005

A. ICES/SCC28 (and ICES EXCOM)

Complete the restructuring of ICES; establish an AdCom to administer ICES activities, including fundraising. – 1st Q 2005.

Initiate fundraising, with the guidance of the IEEE staff, so that critical travel, support for special projects and meetings, support for visiting scientists and experts, and other critical needs can be met – 2nd Q 2005.

Continue international expansion led by Drs. McManus and Murphy. Introduce new leadership with emphasis on non- U.S. and younger members – ongoing.

Institute a new policy of annual or semi-annual citations of merit for volunteers who have made substantial contributions to ICES projects – 1st Q 2005.

Continue to strengthen liaisons with ICNIRP, IEC, WHO, COST 281, TABD, etc. – ongoing

Attempt to carry out a third closed leadership meeting with ICNIRP, possibly during the June 2005 meetings in Dublin – 2nd Q 2005.

Complete arrangements for summer meetings of ICES and Subcommittees, in conjunction with the June 2005 meetings of the Bioelectromagnetics Society in Dublin, Ireland, – 4th Q 2004

Initiate sponsor balloting of the revision of C95.1 “Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz” – 2nd Q 2005.

Pursue the project on publicizing ICES and C95.1 standards in the literature, with the assistance of Karen McCabe of the IEEE staff – 2nd Q 2005.

Reassess the plans for an electronic newsletter in recognition of ICES objectives – 2nd Q 2005.

Reassess the methods of dealing with requests for interpretation of standards documents and the role of IEEE staff – 2nd Q 2005.

Update the ICES website, provide FTP service for subcommittee activities – 1st Q, 2005

B. SC-1

Complete 1st draft of new project “Recommended Practice for Measurements and Computations with Respect to Human Exposure to Electric and Magnetic Fields, 0 to 100 kHz” – 3rd Q 2005.

C. SC-2

Complete sponsor balloting on PC95.7 “Recommended Practice for Radiofrequency Safety Programs,” – 2nd Q 2005.

Complete draft of commonly used terms – 2nd Q 2005

D. SC-3

Conduct additional short courses on the C95.6 standard – ongoing.

Develop a guide for the application of the new C95.6 standard – 3rd Q 2005.

E. SC-4

Complete subcommittee balloting on revision of C95.1 – 4th Q 2004.

Complete draft of the revision of C95.1 for sponsor ballot – 4th Q 2004.

Complete sponsor balloting of the revision of C95.1 – 2nd Q 2005

Publish revision of C95.1 – 4th Q 2005

F. SC-5

Review plans for future activities related to electro-explosive devices – ongoing.

5. IEEE Staff

In April, 2003 a new IEEE Staff Liaison, Bill Ash, was assigned to us and we wish for an enduring relationship with him. Bill, with his intimate understanding of the IEEE process and his technical background, is providing an extremely important service to ICES. We are pleased to have the support of the staff of IEEE Standards Activities, especially through Judy Gorman, Sue Vogel, Linda Gargiulo, Karen McCabe, Jerry Walker, Karen Kenny, Susan Tatiner, Bill Ash, and the IEEE Project Editors, including Yvette Ho Sang and Noelle Humenick. We appreciate the input from the staff during the meeting held at IEEE Headquarters in February 2004. After the restructuring of ICES is completed we need to meet with IEEE staff on fundraising, on greater international outreach for ICES, and on means by which we may communicate with the media without jeopardizing IEEE interests

Meeting Schedule

A. 2003/2004

- April 2003, Rosslyn, VA (SC-4 Revision Working Group – 7th Meeting)
- June 2003, Maui, HI (SCC-28, SC-1, SC-2, SC-3, SC-4, SC-5)
- September 2003, Washington, DC (Members of the ExCom and SC-4 met with the Federal Interagency RF Advisory Working Group in an informational exchange meeting)
- September 2003, Rosslyn, VA (SC-4 Revision Working Group – 8th Meeting)
- December 2003, San Antonio, TX (SCC-28, SC-2, SC-3, SC-4, SC-5)
- January 2004, Ft. Lauderdale, FL (SC-4 Editorial Committee)
- June 2004, Washington, DC (SCC-28, SC-1, SC-2, SC-3, SC-4, SC-5)
- September 2004, Rosslyn, VA (SC4 Editorial Committee)
- September 2004, Paris, France (ICES/COST 281 Thermal Physiology Workshop)
- December 2004, San Antonio, TX (SCC-28, SC-1, SC-2, SC-3, SC-4, SC-5)

B. 2005

- June 2005, Dublin, Ireland (ICES – TC 95, SC-1, SC-2, SC-3, SC-4, SC-5; TC-34)
- December 2005, location TBD, (ICES – TC 95, SC-1, SC-2, SC-3, SC-4, SC-5)
- Ad hoc SC4 Ballot Resolution Group meetings will be held as needed.

7. Other Activities

Members of ICES/SCC-28 are continually involved in a wide spectrum of activities that relate to standards setting including research, education, and drafting of regulations. Members participate in the governmental activities in many nations, as well. These include the FCC and FDA in the U.S. and the EU/EC in Europe. We participate in the broad activities of the WHO and its EMF Project as well as the European EBEA, and with various other meetings around the world. In the future, ICES will be represented at a number of international meetings including “Mobile Communication & Health. Medical, Biological and Social Problems,” Moscow, Russia, 20-23 September 2004, “3rd International Workshop on Biological Effects of Electromagnetic Fields,” Kos Greece, 4-8 October 2004, “Do Current International Guidelines Provide Sufficient Protection Against EMF Exposure?,” Ljubljana, Slovenia, 8-9 November 2004, and “Molecular and Cellular Mechanisms of Biological Effects of EMF, UNESCO/WHO Seminar,” Yerevan, Armenia, 2-5 March, 2005. (See Annex B.)

8. Treasurer's report

The Treasurer's report is presented as a Balance Sheet in the Attachment.

This report was prepared and submitted by:

Ron Petersen
Chairman, ICES/SCC-28
August 29, 2004

ANNEX A

Membership

Table A.1 –ICES Membership (August, 2004), Main Committee

	LAST NAME	FIRST NAME	MI	AFFILIATION	COUNTRY	INT CAT
1	Adair	Eleanor	R.	Independent Consultant	US	GI
2	Altman	Melvyn	R.	FDA/CDRH	US	GI (G)
3	Ammann	Max	J	Dublin Institute of Technology	IE	GI (A)
4	Anderson	Vitas		TVNZ Australia Pty Ltd.	AU	GI (A)
5	Aslan	Edward		L-3 Microwave NARDA.	US	P
6	Balzano	Quirino		Independent Consultant	US	GI
7	Baron	David		Holiday Industries EMF Measurement	US	P
8	Bassen	Howard		FDA/CDRH	US	GI (G)
9	Bavin	John		Consumers Energy	US	P
10	Bergeron	John	A.	Independent Consultant	US	GI
11	Black	David	R	Suite 6, Gillies Clinic	NZ	GI
12	Blick	Dennis	W.	Independent Consultant	US	GI
13	Bodemann	Ralf		Siemens AG	DE	P
14	Brecher	Aviva		DOT/RSPA Volpe Ctr.	US	U
15	Bushberg	Jerrold	T.	Dir. Health Physics	US	GI(A)
16	Chadwick	Philip		MCL	UK	U
17	Chesnick	Scott		National Heart Lung Blood Institute	US	U
18	Chiang	Huai		Zhejiang Medical University	CN	GI
19	Chiusano	Stephen		Lawrence Livermore Nat'l Lab.	US	U
20	Chou	C.K.		Motorola, Inc.	US	P
21	Cleveland	Robert	F.	FCC, Office of Eng. & Technology	US	GI (G)
22	Coghill	Roger	W.	Coghill Research Labs	UK	GI
23	Cohen	Jules		Jules Cohen P.E.	US	U
24	Curtis	Robert	A.	OSHA - USDOL	US	U
25	Daly	James	M.	General Cable	US	P
26	D'Andrea	John	A.	Naval Health Research Ctr.	US	GI (G)
27	de jager	Linda		School of Health Technology	ZA	GI (A)
28	DeFrank	John	J.	USACHPPM	US	U
29	DeLorge	John	O.	Independent Consultant	US	GI
30	Dini	David		Underwriters Laboratory	US	U
31	d'Inzeo	Guglielmo		La Sapienza University of Rome	IT	GI (A)

	LAST NAME	FIRST NAME	MI	AFFILIATION	COUNTRY	INT CAT
32	Dovan	Thanh		SPI PowerNet Pty. Ltd.	AU	P
33	Durrenberger	Gregor		ETH	CH	GI (A)
34	Erdreich	Linda	S.	Exponent	US	U
35	Fastman	Stewart	M.	American Insurers	US	GI
36	Feero	William	E.	Independent Consultant	US	U
37	Foster	Kenneth	R.	Univ. of Pennsylvania	US	GI (A)
38	Gajsek	Peter		Institute of Public Health	SI	U
39	Gandhi	Prof. Om	P.	Univ. of Utah, Dept. of Elec. Eng.	US	GI (A)
40	Gardner	Robert	C.	MOD D S&F Pol	UK	U
41	George	David	L.	Unisys Corp.	US	GI
42	Grandolfo	Martino		Laboratorio di Fisica	IT	GI (G)
43	Guy	Arthur	W.	Bioelectromagnetics Consulting	US	GI
44	Hadlock	Dr. Dennis	E.	Geo Centers Inc.	US	U
45	Haes, Jr.	Donald	L.	Consultant	US	U
46	Halkiotis	Konstantinos		Greek Atomic Energy Commission	GR	GI (G)
47	Hare	Ed		American Radio Relay League	US	GI
48	Hatfield	James	B	Hatfield & Dawson	US	U
49	Heirman	Donald	N.	Don HEIRMAN Consultants	US	GI
50	Heroux	Paul		McGill University	CA	GI (G)
51	Heynick	Louis	N.	Independent Consultant	US	GI
52	Ikehata	Masatero		Railway Technical Research Institut	JP	GI (A)
53	Israel	Michel		National Centre of Hygiene	BL	GI
54	Ivans	Veronica		Medtronic Inc.	US	U
55	Jaffa	Kent	C.	Pacificorp	US	P
56	Johnston	Sheila		Independent Consultant	UK	GI
57	Joyner	Ken	H.	Motorola Australia Pty Ltd.	AU	P
58	Kandel	Shaiela		SOREQ NRC	IL	GI (G)
59	Karabetsos	Efthymios		Greek Atomic Energy Commission	GR	GI (G)
60	King	James	J.	Department of the Navy	US	U
61	Klauenberg	B. Jon		USAF	US	GI
62	Koban	George	A.	Naval Surface Warfare Center	US	U
63	Koepfinger	Joseph	L.	Consultant	US	GI
64	Kuster	Niels		IT'IS	CH	GI (A)
65	LaMastra	Anthony		American Iron & Steel Inst.	US	U
66	Lang	Sakari		Nokia Research Ctr.	FI	P
67	Leonowich	John	A.	Battelle Pacific NW Nat. Lab	US	U
68	Leszczynski	Dariusz		STUK-Radiation & Nuclear Rad La	FI	GI (G)
69	Lin	James	C.	University of Illinois	US	GI (A)

	LAST NAME	FIRST NAME	MI	AFFILIATION	COUNTRY	INT CAT
70	Maletskos	C.J.		National Council for Rad.	US	GI
71	Manatrakul	Nisakorn		Ministry of Public Health	TH	GI (G)
72	Mason	Patrick	A.	USAF/AFRL/HEDR	US	GI (G)
73	Maurer	Stewart		RF & ELF Consultant	US	U
74	McCourt	Robert	W.	PSE&G	US	P
75	McManus	Tom		Dept of Comm., Marine and Nat Re	IE	GI
76	McNamee	James	P.	Health Canada	CA	GI (G)
77	Meltz	Martin	L.	Ctr. for Env. Rad. Tox.	US	GI (A)
78	Monahan	John	C.	FDA/CDRH	US	GI (G)
79	Montgomery	Noel	D.	Air Force Research Laboratory	US	U
80	Moore	Michael	R.	Oak Ridge National Lab	US	U
81	Mukhopadhyay	Amitabha		Con Edison	US	P
82	Murphy	Michael	R.	Air Force Research Laboratory	US	GI (G)
83	Osepchuk	John	M.	Full Spectrum Consulting	US	GI
84	Pakhomov	Andrei	G.	McKesson Bio Services	US	GI (G)
85	Paul	William	F.	Int. Brotherhood of Elect. Workers	US	P
86	Persson	Bertil	R.	Lund University	SE	GI (A)
87	Petersen	Ronald	C.	R C Petersen Associates	US	GI
88	Ravazzani	Paolo		Italian National Research Council	IT	GI (G)
89	Reilly	J. Patrick		Metatec Associates	US	GI
90	Repacholi	Michael	H.	World Health Organization	CH	GI
91	Roberts	Brad	J.	US Army CHPPM	US	U
92	Root	Ervin	D.	Alliant Energy	US	P
93	Samaras	Theodoros		Aristotle University of Thessaloniki	GR	GI (A)
94	Santomaa	Veli	A	Independent Consultant	FI	P
95	Scanlon	William	G.	Center for Comm. Eng	UK	GI (A)
96	Schwan	Herman	P.	Independent Consultant	US	GI
97	Sheppard	Asher	R.	Asher Sheppard Consulting	US	GI
98	Sirugo	Jon	H	Southern California Edison	US	P
99	Stolwijk	Jan A.	J.	Yale University	US	GI (A)
100	Swicord	Mays	L.	Motorola	US	P
101	Szmigielski	Stanislaw		Military Inst. of Hygiene and Epi.		GI (G)
102	Tang, MD	Rosa	M	UTMB Galveston Texas	US	GI (A)
103	Tattersall	John		DSTL	UK	U
104	Tell	Richard	A.	Richard Tell Assoc. Inc.	US	GI
105	Tenforde	Thomas	S.	Battelle Pacific NW Lab.	US	GI
106	Thansandote	Art		Health Canada	CA	GI (G)
107	Thuroczy	Gyorgy		Nat Research Inst of Radiobiology	HU	GI

	LAST NAME	FIRST NAME	MI	AFFILIATION	COUNTRY	INT CAT
108	Utteridge	Tammy		Inst of Med. & Veterinary Science	AU	GI (G)
109	van Rongen	Eric		Health Council of the Netherlands	NL	GI (G)
110	Varanelli	Arthur	G.	Raytheon Company	US	P
111	Wagenaar	Femme-Michelle		PhoneVision International	NL	GI
112	Watkins	Robert	T.	Mass Dept of Public Health	US	U
113	Wuart	Joe		France Telecom R & D	FR	P
114	Williams, Jr.	Louis	A.	Louis A. Williams Jr. & Associates	US	GI
115	Zipse	Donald	W.	Zipse Electrical Eng., Inc.	US	GI
116	Ziskin, MD	Marvin	C.	Temple Univ. Medical School	US	GI (A)

GI General Interest

GI (A) General Interest – Academic

GI (G) General Interest – Government

P Producer

U User

Table A.2 – SC-1 (Techniques, Procedures, Instrumentation and Computation)

	LAST NAME	FIRST NAME	MI	AFFILIATION	COUNTRY
1	Adair	Eleanor	R.	Independent Consultant	US
2	Anderson	Vitas		TVNZ Australia Pty Ltd.	AU
3	Aslan	Edward		L-3 Microwave NARDA.	US
4	Babij	Tadeusz	M.	Florida International University	US
5	Balzano	Quirino		Independent Consultant	US
6	Baron	David		AIHA Representative	US
7	Bassen	Howard		FDA/CDRH	US
8	Bergeron	John	A.	Independent Consultant	US
9	Bodemann	Ralf		Siemens AG	DE
10	Brecher	Aviva		DOT/RSPA Volpe Ctr.	US
11	Chan	Kwok	W	FCC Laboratory	US
12	Chou	C.K.		Motorola, Inc.	US
13	Cleveland	Robert	F.	FCC, Office of Eng. & Tech.	US
14	Cohen	Jules		Jules Cohen P.E.	US
15	Cox	Diane		US Navy, NHRC	
16	Curtis	Robert	A.	OSHA - USDOL	US
17	Dovan	Thanh		SPI PowerNet Pty. Ltd.	AU
18	Fastman	Stewart	M.	American Insurers	US
19	Feero	William	E.	Independent Consultant	US
20	Frazier	William	F	Laurence Behr Associates, Inc.	US
21	Gandhi	Prof. Om	P.	Univ. of Utah, Dept. of Elec. Eng.	US
22	Guy	Arthur	W.	Bioelectromagnetics Consulting	US
23	Hammer	Wayne	C.	SPAWAR Systems Ctr.	US
24	Hare	Ed		American Radio Relay League	US
25	Hatfield	James	B	Hatfield & Dawson	US
26	Hubbard	Roy		Technology Services International	ZA
27	Hurt	William	D.	USAF	US
28	Iskra	Steve		Telstra Corp	
29	Ivans	Veronica		Medtronic Inc.	US
30	Johnston	Sheila		Independent Consultant	UK
31	Khalil	Kathy		SPAWARSYSCEN Charleston	US

	LAST NAME	FIRST NAME	MI	AFFILIATION	COUNTRY
32	Kim	Jin Suk		ETRI	KR
33	Kumbier	Werner		Narda Safety Test Solutions	DE
34	Kuster	Niels		IT'IS	CH
35	Leonowich	John	A.	Battelle Pacific NW Nat. Lab	US
36	Lotz	Gregory		NIOSH	US
37	Luebbers	Raymond		Remcom Inc.	US
38	MacLean	Kathy		APREL Laboratories-SSI	CA
39	Mantipty	Ed		FCC/OET	US
40	Maurer	Stewart		RF & ELF Consultant	US
41	Misakian	Martin		Nat. Inst. of Standards & Tech.	US
42	Moore	Michael	R.	Oak Ridge National Lab	US
43	Needy	Robert		Naval Surface Warfare Ctr.	US
44	Olsen	Richard	G.	Independent Consultant	US
45	Osepchuk	John	M.	Full Spectrum Consulting	US
46	Persson	Bertil	R.	Lund University	SE
47	Petersen	Ronald	C.	R C Petersen Associates	US
48	Roberts	Brad	J.	US Army CHPPM	US
49	Rogers	Walt		Veridian Eng/RFR Branch	US
50	Rowley	Jack		Telstra Research Labs	AU
51	Santomaa	Veli	A	Independent Consultant	FI
52	Schueller	Michael		Mannesmann Mobilfunk Gmbh	DE
53	Seabury	David		Chase Systems Inc.	US
54	Tell	Richard	A.	Richard Tell Assoc. Inc.	US
55	Thansandote	Art		Health Canada	CA
56	Umbdenstock	Donald	J.	Sensormatic Electronics Corp.	US
57	Varanelli	Arthur	G.	Raytheon Company	US
58	Watanabe	Soichi		CRL, Ministry of Telecomm.	JP
59	Watkins	Cleveland	F.	Independent Consultant	US
60	Williams, Jr.	Louis	A.	Louis A. Williams Jr. & Associates	US
61	Woods	Richard	W.	Sensormatic Electronics	US
62	Zirix	John		Microwave Department	US
63	Zollman	Peter		Vodafone Group R&D	UK

Table A.3 – SC-2 (Terminology, Units of Measurements and Hazard Communication)

	LAST NAME	FIRST NAME	MI	AFFILIATION	COUNTRY
1.	Adair	Eleanor	R.	Independent Consultant	US
2.	Anderson	Vitas		TVNZ Australia Pty Ltd	AU
3.	Aslan	Edward		L-3 Microwave NARDA.	US
4.	Baron	David		AIHA Representative	US
5.	Bassen	Howard		FDA/CDRH	US
6.	Bellier	Pascale		Health Canada	CA
7.	Biby	Richard	P.	Crown Castle International	US
8.	Black	David	R	Suite 6, Gillies Clinic	NZ
9.	Bodemann	Ralf		Siemens AG	DE
10.	Boyer	Jim		Lawrence Livermore National Labs	US
11.	Brecher	Aviva		DOT/RSPA Volpe Ctr.	US
12.	Bushberg	Jerrold	T.	Dir. Health Physics	US
13.	Charlow	Kevin	J	NISE	US
14.	Chou	C.K.		Motorola, Inc.	US
15.	Cleveland	Robert	F.	FCC, Office of Eng. & Technology	US
16.	Coghill	Roger	W.	Coghill Research Labs	UK
17.	Cohen	Jules		Jules Cohen P.E.	US
18.	Conover	David		NIOSH Contractor	US
19.	Curtis	Robert	A.	OSHA - USDOL	US
20.	D'Andrea	John	A.	Naval Health Research Ctr.	US
21.	DeFrank	John	J.	USACHPPM	US
22.	Erdreich	Linda	S.	Exponent	US
23.	Everist	Donald	G	Cohen, Dipell and Everist	US
24.	Fahy-Elwood	Alice		Consultant	US
25.	Gajda	Greg		Health Canada	CA
26.	Gettman	Ken		National Elect Manufacture. Assoc.	US
27.	Guy	Arthur	W.	Bioelectromagnetics Consulting	US
28.	Haes, Jr.	Donald	L.	Consultant	US
29.	Hammer	Wayne	C.	SPAWAR Systems Ctr. Charleston	US
30.	Hare	Ed		American Radio Relay League	US
31.	Hatfield	James	B	Hatfield & Dawson	US
32.	Heynick	Louis	N.	Independent Consultant	US

	LAST NAME	FIRST NAME		AFFILIATION	COUNTRY
33.	Hubbard	Roy		Tech Services International	ZA
34.	Ivans	Veronica		Medtronic Inc.	US
35.	Johnson	Robert	E.	L-3 Microwave NARDA	US
36.	Johnston	Sheila		Independent Consultant	UK
37.	Joyner	Ken	H.	Motorola Australia Pty Ltd.	AU
38.	Kantner	Kimberly		AT&T	US
39.	Khalil	Kathy		SPAWARSSYSCEN Charleston	US
40.	Kierl	Bill		Motorola	US
41.	Klauenberg	B. Jon		USAF	US
42.	Koban	George	A.	Naval Surface Warfare Center	US
43.	Kumbier	Werner		Narda Safety Test Solutions	DE
44.	Kuster	Niels		IT'IS	CH
45.	Lathrop	Janet		Resource Strategies, Inc	US
46.	Leonowich	John	A.	Battelle Pacific NW Nat. Lab	US
47.	MacLean	Kathy	M	APREL Laboratories	CA
48.	Mantipty	Ed		FCC/OET	US
49.	Maurer	Stewart		RF & ELF Consultant	US
50.	Meltz	Martin	L.	Dept of Radiation Oncology	US
51.	Mercer	Christopher		Vodacom Pty Ltd	ZA
52.	Minnecci	Gerry		NJ Turnpike Authority	US
53.	Murphy	Michael	R.	Air Force Research Laboratory	US
54.	Nappert	Hughes		Industry Canada	CA
55.	Needy	Robert		Naval Surface Warfare Ctr.	US
56.	Norman	Larry		Pike Electric	
57.	Olsen	Richard	G.	Independent Consultant	US
58.	Osepchuk	John	M.	Full Spectrum Consulting	US
59.	Persson	Bertil	R.	Lund University	SE
60.	Petersen	Ronald	C.	R C Petersen Associates	US
61.	Proctor	Ken	R.	US Army	US
62.	Roberts	Brad	J.	US Army CHPPM	US
63.	Rogers	Walt		Veridian Eng/RFR Branch	US
64.	Rowley	Jack		Telstra Research Labs	AU
65.	Scanlon	William	G.	Center for Comm. Eng	UK
66.	Seabury	David		Chase Systems Inc.	US
67.	Smith	Matthew		Dade Moeller & Associates	US

	LAST NAME	FIRST NAME		AFFILIATION	COUNTRY
68.	Strickland	Richard		RF Safety Solutions	US
69.	Tell	Richard	A.	Richard Tell Assoc. Inc.	US
70.	Testagrossa	Paul	A	Lucent Technologies Inc.	US
71.	Thansandote	Art		Health Canada	CA
72.	Ulcek	Jerry		FCC	US
73.	Vanetta-Richard	Anne		Lucent Technologies Inc	US
74.	Varanelli	Arthur	G.	Raytheon Company	US
75.	Wagenaar	Femme-Michelle		PhoneVision International	NL
76.	Williams, Jr.	Louis	A.	Louis A. Williams Jr. & Associates	US
77.	Ziskin, MD	Marvin	C.	Temple Univ. Medical School	US

Table A.4 – SC-3 (Safety Levels with Respect to Human Exposure, 0-3 kHz)

	LAST NAME	FIRST NAME	MI	AFFILIATION	COUNTRY
1.	Adair	Eleanor	R.	Independent Consultant	US
2.	Adlkofer	Franz		VerUm Foundation	DE
3.	Bailey	William	H.	Exponent Inc.	US
4.	Barker	J. Richard		General Cable	US
5.	Baron	David		AIHA Representative	US
6.	Bassen	Howard		FDA/CDRH	US
7.	Bavin	John		Consumers Energy	US
8.	Bellier	Pascale		Health Canada	CA
9.	Bergeron	John	A.	Independent Consultant	US
10.	Black	David	R	Suite 6, Gillies Clinic	NZ
11.	Bodemann	Ralf		Siemens AG	DE
12.	Boeggeman	Charles	J.	PECO Energy Co.	US
13.	Brecher	Aviva		DOT/RSPA Volpe Ctr.	US
14.	Carberry	Robert	E.	Northeast Utilities	US
15.	Chadwick	Philip		MCL	UK
16.	Chikamoto	Kazuhiko		Japan Nus Co. Ltd. (JANUS)	JP
17.	Coghill	Roger	W.	Coghill Research Labs	UK
18.	Curtis	Robert	A.	OSHA - USDOL	US
19.	Dale	Steiner	J.	ABB Power T&D Company	US
20.	Daly	James	M.	General Cable	US
21.	D'Andrea	John	A.	Naval Health Research Ctr.	US
22.	de jager	Linda		School of Health Technology	ZA
23.	DeFrank	John	J.	USACHPPM	US
24.	d'Inzeo	Gugliemo		La Sapienza University of Rome	IT
25.	Dovan	Thanh		SPI PowerNet Pty. Ltd.	AU
26.	Feero	William	E.	Independent Consultant	US
27.	Fichtenberg	David	S	State of Washington, Med Asst Ad	US
28.	Gandhi	Prof. Om	P.	Univ. of Utah, Dept. of Elec. Eng.	US
29.	Gettman	Ken		National Electrical Man Assoc.	US
30.	Gibney	Kelly	B	Retired	CA
31.	Goldberg	Georges		Advisory Comm. on Elect Comp	CH
32.	Goulet	Daniel		Hydro-Quebec	CA

	LAST NAME	FIRST NAME	MI	AFFILIATION	COUNTRY
33.	Haes, Jr.	Donald	L.	Consultant	US
34.	Hammer	Wayne	C.	SPAWAR Systems Ctr. Charleston	US
35.	Hernandez	Martin	A.	Florida Power & Light Co.	US
36.	Herz	Michael	C.	Pacific Gas & Electric Co.	US
37.	Heynick	Louis	N.	Independent Consultant	US
38.	Hicks	Danny	O.	South Carolina Electric & Gas Co.	US
39.	Hubbard	Roy		Technology Services Intl (TSI)	ZA
40.	Ikehata	Masatero		Railway Technical Research Institute	JP
41.	Ivans	Veronica		Medtronic Inc.	US
42.	Jaffa	Kent	C.	Pacificorp	US
43.	Johnston	Sheila		Independent Consultant	UK
44.	Karabetsos	Efthymios		Greek Atomic Energy Commission	GR
45.	Kautz	Richard	W.	Ford	US
46.	Koepfinger	Joseph	L.	Consultant	US
47.	Kuster	Niels		IT'IS	CH
48.	Lathrop	Janet		Resource Strategies, Inc	US
49.	Leonowich	John	A.	Battelle Pacific NW Nat. Lab	US
50.	Leszczynski	Dariusz		STUK-Radiation & Nuclear Rad Lab	FI
51.	Manatrakul	Nisakorn		Ministry of Public Health	TH
52.	Lotz	Gregory		NIOSH	US
53.	Mason	Patrick	A.	USAF/AFRL/HEDR	US
54.	McCourt	Robert	W.	PSE&G	US
55.	McManus	Tom		Dept of Comm., Marine and Nat Res	IE
56.	McNamee	James	P.	Health Canada	CA
57.	Merritt	James	H.	USAF Research Lab	US
58.	Murphy	Michael	R.	Air Force Research Laboratory	US
59.	Needy	Robert		Naval Surface Warfare Ctr.	US
60.	Osepchuk	John	M.	Full Spectrum Consulting	US
61.	Paul	William	F.	Int. Brotherhood of Elect. Workers	US
62.	Petersen	Ronald	C.	R C Petersen Associates	US
63.	Pittman	Steve		Potlach Pulp and Paperboard	US
64.	Podhrasky	Robert	J.	Garrett Metal Detectors	US
65.	Polson	Peter		Ausa Research	US
66.	Proctor	Ken	R.	US Army	US
67.	Ravazzani	Paolo		Italian National Research Council	IT

	LAST NAME	FIRST NAME	MI	AFFILIATION	COUNTRY
68.	Reilly	J. Patrick		Metatec Associates	US
69.	Roberts	Brad	J.	US Army CHPPM	US
70.	Rogers	Walter		AFRL (Veridian)	US
71.	Root	Ervin	D.	Alliant Energy	US
72.	Samaras	Theodoros		Aristotle University of Thessaloniki	GR
73.	Sawdon	Dave		IBM Global Services	UK
74.	Sheppard	Asher	R.	Asher Sheppard Consulting	US
75.	Sirugo	Jon	H	Southern California Edison	US
76.	Slesin	Louis		Microwave News	US
77.	Sliney	David		US Army CHPPM	US
78.	Swicord	Mays	L.	Motorola	US
79.	Szmigielski	Stanislaw		Military Institute of Hygiene and Epi.	
80.	Tell	Richard	A.	Richard Tell Assoc. Inc.	US
81.	Thansandote	Art		Health Canada	CA
82.	Thuroczy	Gyorgy		Nat Research Inst of Radiobiology	HU
83.	van Rongen	Eric		Health Council of the Netherlands	NL
84.	Varanelli	Arthur	G.	Raytheon Company	US
85.	Wagenaar	Femme-Michelle		PhoneVision International	NL
86.	Watkins	Cleveland	F.		US
87.	Wuart	Joe		France Telecom R & D	FR
88.	Williams, Jr.	Louis	A.	Louis A. Williams Jr. & Associates	US
89.	Woods	Richard	W.	Sensormatic Electronics	US
90.	Yandek	Edward	M.	GE Lighting	US
91.	Zipse	Donald	W.	Zipse Electrical Eng., Inc.	US
92.	Ziskin	Marvin	C.	Temple Univ. Medical School	US

Table A.5 – SC-4 (Safety Levels with Respect to Human Exposure, 3 kHz-300 GHz)

	LAST NAME	FIRST NAME	MI	AFFILIATION	COUNTRY
1	Adair	Eleanor	R.	Independent Consultant	US
2	Allen	Stuart	G.	Nat'l Rad. Protection Board	UK
3	Altman	Melvyn	R.	FDA/CDRH	US
4	Ammann	Max	J	Dublin Institute of Technology	IE
5	Anderson	Vitas		TVNZ Australia Pty Ltd.	AU
6	Aslan	Edward		L-3 Microwave NARDA.	US
7	Babij	Tadeusz	M.	Florida International University	US
8	Bailey	William	H.	Exponent Inc.	US
9	Baron	David		AIHA Representative	US
10	Bassen	Howard		FDA/CDRH	US
11	Bellier	Pascale		Health Canada	CA
12	Bergeron	John	A.	Independent Consultant	US
13	Black	David	R	Suite 6, Gillies Clinic	NZ
14	Blick	Dennis	W.	AFRL/HEDR (Veridian)	US
15	Bodemann	Ralf		Siemens AG	DE
16	Brecher	Aviva		DOT/RSPA Volpe Ctr.	US
17	Bushberg	Jerrold	T.	Dir. Health Physics	US
18	Chadwick	Philip		MCL	UK
19	Chesnick	Scott		National Heart Lung Blood Institute	US
20	Chiang	Huai		Zhejiang Medical University	CN
21	Chikamoto	Kazuhiko		Japan NUS Co, Ltd	JP
22	Chou	C.K.		Motorola, Inc.	US
23	Cleveland	Robert	F.	FCC, Office of Eng. & Technology	US
24	Cobb	Brenda		Air Force Res Labs	US
25	Coghill	Roger		Coghill Res Labs	UK
26	Cohen	Jules		Jules Cohen P.E.	US
27	Curtis	Robert	A.	OSHA - USDOL	US
28	Cyr	Howard	W	FDA/CDRH	US
29	D'Andrea	John	A.	Naval Health Research Ctr.	US
30	de jager	Linda		School of Health Technology	ZA
31	DeFrank	John	J.	USACHPPM	US

	LAST NAME	FIRST NAME	MI	AFFILIATION	COUNTRY
32	deLorge	John	O	Ind Consultant	US
33	Dini	David		Underwriters Laboratory	US
34	d'Inzeo	Gugliemo		La Sapienza University of Rome	IT
35	Dovan	Thanh		SPI PowerNet Pty. Ltd.	AU
36	Durrenberger	Gregor		ETH	CH
37	Elder	Joe	A	Motorola	US
38	Erdreich	Linda	S.	Exponent	US
39	Fahy-Elwood	Alice	K	Ind Consultant	US
40	Fastman	Stewart	M.	American Insurers	US
41	Fichtenberg	David	S	State of Washington, Med Asst Ad	US
42	Foster	Kenneth	R.	Univ. of Pennsylvania	US
43	Futch	James		Florida Dept. of Health	US
44	Gajsek	Peter		Inst of Public Health	SI
45	Gandhi	Prof. Om	P.	Univ. of Utah, Dept. of Elec. Eng.	US
46	Gardner	Robert	C.	MOD D S&F Pol	UK
47	George	David	L.	Unisys Corp.	US
48	Gettman	Ken		National Electrical Manufacture Assoc.	US
49	Goldberg	Georges		Advisory Comm. on EMC	CH
50	Haes, Jr.	Donald	L.	Consultant	US
51	Halkiotis	Konstantinos		Greek Atomic Energy Commission	GR
52	Hammer	Wayne	C.	SPAWAR Systems Ctr. Charleston	US
53	Hatfield	James	B	Hatfield & Dawson	US
54	Healer	Janet		NTIA	US
55	Heirman	Donald	N.	Don HEIRMAN Consultants	US
56	Heroux	Paul		McGill University	CA
57	Heynick	Louis	N.	Independent Consultant	US
58	Hubbard	Roy		Tech Services International (TSI)	ZA
59	Hurt	William	D.	USAF	US
60	Ikehata	Masatero		Railway Technical Research Institute	JP
61	Ilieva	Michael	D		
62	Israel	Michel		National Centre of Hygiene	BL
63	Ivans	Veronica		Medtronic Inc.	US
64	Johnston	Sheila		Independent Consultant	UK
65	Joyner	Ken	H.	Motorola Australia Pty Ltd.	AU
66	Kandel	Shaiela		SOREQ NRC	IL

	LAST NAME	FIRST NAME	MI	AFFILIATION	COUNTRY
67	Kantner	Kimberly		AT&T	US
68	Karabetsos	Efthymios		Greek Atomic Energy Commission	GR
69	Kean	John		BTS IEEE	US
70	Klauenberg	B. Jon		USAF	US
71	Koepfinger	Joseph	L.	Consultant	US
72	Lang	Sakari		Nokia Research Ctr.	FI
73	Leonowich	John	A.	Battelle Pacific NW Nat. Lab	US
74	Leszczynski	Dariusz		STUK-Radiation & Nuclear Rad Lab	FI
75	Lin	James	C.	University of Illinois	US
76	Lotz	Gregory		NIOSH	US
77	Maletskos	Costas	J	National Council for Rad.	US
78	Mantiply	Ed		FCC/OET	US
79	Manatrakul	Nisakorn		Ministry of Public Health	TH
80	Mason	Patrick	A.	USAF/AFRL/HEDR	US
81	Maurer	Stewart		RF & ELF Consultant	US
82	McKenzie	Raymond	J	Telstra Research Laboratories	AU
83	McManus	Tom		Dept of Comm., Marine and Nat Res	IE
84	McNamee	James	P.	Health Canada	CA
85	Meltz	Martin	L.	Dept of Radiation Oncology	US
86	Montgomery	Noel	D.	Air Force Research Laboratory	US
87	Moore	Michael	R.	Oak Ridge National Lab	US
88	Morrissey	Joe		Motorola	US
89	Murphy	Michael	R.	Air Force Research Laboratory	US
90	Needy	Robert		Naval Surface Warfare Ctr.	US
91	Osepchuk	John	M.	Full Spectrum Consulting	US
92	Pakhomov	Andrei	G.	McKesson Bio Services	US
93	Persson	Bertil	R.	Lund University	SE
94	Petersen	Ronald	C.	R C Petersen Associates	US
95	Polson	Peter		Ausa Research	US
96	Proctor	Kenneth	R	US Army HQ CECOM	US
97	Ravazzani	Paolo		Italian National Research Council	IT
98	Reilly	J. Patrick		Metatec Associates	US
99	Roberts	Brad	J.	US Army CHPPM	US
100	Rogers	Walter	R	Veridian Engineering	US
101	Ruscio	Bruce		Joint Programs Office, MMR	US

	LAST NAME	FIRST NAME	MI	AFFILIATION	COUNTRY
102	Rybak	Terence		General Motors Proving Grnd.	US
103	Samaras	Theodoros		Aristotle University of Thessaloniki	GR
104	Santomaa	Veli	A	Independent Consultant	FI
105	Scanlon	William	G.	Center for Comm. Eng	UK
106	Schwan	Herman	P.	Independent Consultant	US
107	Sheppard	Asher	R.	Asher Sheppard Consulting	US
108	Sliney	David	H	US Army-CHPPM	US
109	Stolwijk	Jan A.	J.	Yale University	US
110	Swicord	Mays	L.	Motorola	US
111	Szmigielski	Stanislaw		Military Institute of Hygiene and Epi.	
112	Tattersall	John		DSTL	UK
113	Tell	Richard	A.	Richard Tell Assoc. Inc.	US
114	Tenforde	Thomas	S.	Battelle Pacific NW Lab.	US
115	Thansandote	Art		Health Canada	CA
116	Thuroczy	Gyorgy		Nat Research Inst of Radiobiology	HU
117	Tofani	Santi		Servizio Di Fisica Sanitaria	IT
118	Utteridge	Tammy		Inst of Med & Veterinary Science	AU
119	van Rongen	Eric		Health Council of the Netherlands	NL
120	Varanelli	Arthur	G.	Raytheon Company	US
121	Wachtel	Howard		University of Colorado	US
122	Wagenaar	Femme-Michelle		PhoneVision International	NL
123	Weller	Robert	D.	Hammett & Edison, Inc.	US
124	Whitmore	Jamaal	A	US navy Bur Med & Surgery	US
125	Williams, Jr.	Louis	A.	Louis A. Williams Jr. & Associates	US
126	Wuart	Joe		France Telecom R & D	FR
127	Woods	Richard	W.	Sensormatic Electronics	US
128	Zipse	Donald	W.	Zipse Electrical Eng., Inc.	US
129	Ziskin	Marvin	C.	Temple Univ. Medical School	US

Table A.6 – SC-5 (Safety Levels with Respect to Electro-Explosive Devices)

	FIRST NAME	LAST NAME	MI	AFFILIATION	COUNTRY
1.	Adair	Eleanor	R.	Independent Consultant	US
2.	Babij	Tadeusz	M.	Florida International University	US
3.	Balzano	Quirino		Independent Consultant	US
4.	Bean	John		Naval Surface Warfare Center	US
5.	Colville	Frank		U.S. Army CHPPM	US
6.	DeFrank	John	J.	USACHPPM	US
7.	Hammer	Wayne	C.	SPAWAR Systems Ctr. Charleston	US
8.	Harmon	Ray		EG&G	US
9.	Hatfield	James	B	Hatfield & Dawson	US
10.	Joyner	Ken	H.	Motorola Australia Pty Ltd.	AU
11.	Koban	George	A.	Naval Surface Warfare Center	US
12.	Leidel	David		Halliburton Energy Services	US
13.	Petersen	Ronald	C.	R C Petersen Associates	US
14.	Roberts	Brad		CHPPM	US
15.	Stuart	James		Franklin Applied Physics	US
16.	Thompson	Ramie		Franklin Applied Physics	US

ANNEX B

International Liaison Report June 2003- June 2004

1. Goals of the International Liaison Committee

- Ensure that ICES is represented at international meetings that impact EMF Standards
- Participation by ICES officers and members at international EMF meetings
- Special symposia/workshops organized by or for ICES
- Platform presentations on ICES
- Distribute ICES Brochures
- Personally solicit ICES participation from non-US scientists
- Inform ICES membership of upcoming meetings that impact EMF Standards
- Arrange presentations on International Standards issues at ICES Meetings
- Work with the Membership Committee to increase the number and breath of international participation in ICES

2. Special ICES Edition of the journal *Bioelectromagnetics* published

- Based on an international symposium held in Quebec City in 2002 titled “Setting a Science-Based Standard for Safe Human Exposure to RF Electromagnetic Fields: A Tribute to Dr. Eleanor R. Adair,” a special edition of the international journal *Bioelectromagnetics* (Page 1- 213, Supplement 6, 2003) was published. This publication featured 12 papers on the scientific foundation of the ICES standard C95.1. It was sponsored by the US Air Force Research Laboratory.

3. Meetings During the Past Year

A. Maui 20-27 June 03

- Full meeting of ICES and Subcommittees
- Air Force Workshop – Health and Safety Standards for Pulsed RFR
- Annual Meeting of the Bioelectromagnetics Society
- High ICES representation and participation

B. 6th International Congress of the European Bioelectromagnetics Association (EBEA), Budapest, Hungary, 13-15 Nov 2003

- Organized by ICES Member Gyorgy Thuroczy, Hungary
- ICES represented by M. Murphy in poster presentation

- C. WHO EMF Project: 8th International Advisory Committee Meeting and Research Agenda Meeting, Geneva, 9-13 June 2003.**
- ICES represented by Ralf Bodeman, ICES Vice-Chair
- D. ElectroMed 2003 - Non-Thermal EMF Effects for Medical & Biological Applications, San Antonio, Texas, 11-13 June 2003.**
- Organized by Michael Murphy, ICES International Liaison
 - Focused on new technologies requiring EMF standards
- E. International Conference on Non-Ionizing Radiation: EMF and Our Health, Oct, Selangor, Malaysia, 20-23 Oct 2003.**
- Emphasized Standards Guidelines and experiences of local countries.
- F. WHO Regional Meeting on EMF Health and Standards Harmonization, Guilin, China, 13-17 Oct 2003** International Standards Harmonization was a main topic
- The WHO “Framework for Standards Harmonization” was finalized
 - ICES represented by Dr. C. K. Chou, Co-Chair ICES SC-4
- G. WHO and U.S. Air Force Asia Pacific EMF Tutorial and Conference, Bangkok, Thailand, 25-30 Jan 2004**
- Presentations on ICES by Ron Peterson, ICES Chair
 - Co- Organized by Michael Murphy, ICES International Liaison and other ICES members
 - SC-4 Co-chair, C-K Chou presented an update on the C95.1-1991 revision
 - Tutorial: Introduction to EMF Health Issues – 200 regional participants
 - Regional Concerns on EMF Health Issues
 - Research on EMF Biological Effects and Dosimetry
 - Electromagnetic Interference on Medical Devices
 - Standards Harmonization: The WHO Framework
 - Regional and International EMF Standards
 - A Model for Standards Regulation & Compliance
 - Public Policy and Acceptability/Risk Communication
- H. Methodology in Bioelectromagnetic Experimental Investigations, School of Bioelectromagnetism, Erice, Sicily, 21-17 April 2004.**
- I. Influence of RF Fields on the Expression of Stress Proteins, Helsinki, Finland, 28-29 April, 2004.**
- ICES member, Dr. Marty Meltz, served as rapporteur
- J. ICNIRP Fifth International Non-Ionizing Radiation Workshop, Seville, Spain, 20-22 May 2004.**

K. International Radiation Protection Agency Congress, Madrid, Spain, 23-28 May 2004.

- Presentation on ICES by Ralf Bodeman, Vice-chair ICES

L. WHO EMF Project International Advisory Committee, Istanbul, Turkey, 7-8 June 2004.

- ICES represented by Dr. Tom McManus, Membership Chair and Dr. Michael Murphy, International Liaison.

M. WHO Workshop, Sensitivity of Children to EMF Exposure, Istanbul, Turkey, 9-10 June 2004.

- ICES represented by Dr. Tom McManus, Membership Chair
- ICES member, Dr. Joe Elder, presented a paper on children's issues

N. Washington, D. C. 17 - 24 June 03

- Full meeting of ICES and Subcommittees
- Air Force Workshop – Advanced dosimetry for EMF exposure estimation
- Annual Meeting of the Bioelectromagnetics Society
- Heavy ICES representation and participation

O. 2004 Joint Workshop on Mobile Telephones and Health, FCC Headquarters, Washington, DC, 28-29 June 2004.

- SC-4 Co-chair presented an update on the C95.1 revision
- Several other ICES members also gave presentations

4. Upcoming Meetings

- COST 281 Workshop RF EMF Exposure Assessment and Dosimetry, Paris, France, 20-21 September 2004.
- ICES/COST281 Joint Workshop on Thermophysiology, Paris, France, 20-21 September 2004.
 - Organized by Dr. Eleanor Adair, Executive Secretary and Past Chair, ICES.
- Mobile Communication & Health. Medical, Biological and Social Problems, Moscow, Russia, 20-23 September 2004.
- 3rd International Workshop on Biological Effects of Electromagnetic Fields, Kos Greece, 4-8 October 2004.
- Do Current International Guidelines Provide Sufficient Protection Against EMF Exposure? Ljubljana, Slovenia, 8-9 November 2004.
- ICES Full Meetings, San Antonio, TX, 2-5 December, 2004
- Molecular and Cellular Mechanisms of Biological Effects of EMF, UNESCO/WHO Seminar, Yerevan, Armenia, 2-5 March, 2005.

- Dublin, Ireland 16-24 June 2005
 - ICES Full Meetings
 - Air Force EMF Workshop
 - Bioelectromagnetics Society Annual Meeting
 - Short course (C95.6) – (planned)

5. International Contacts for RF Standards Reinforced in the Last Year

- Dr. Bob Hanna (Ireland)
- Dr. Vitas Anderson (Australia)
- Ms. Shaiela Kandel (Israel)
- Ms. Nisakorn Manatrakul (Thailand)
- Dr. Camela Marino (Italy)
- Dr. Chiyoji Ohkubo (Japan)
- Dr. Sheila Johnson (UK)
- Dr. Phil Chadwick (UK)
- Dr. E. Van Rongen (Netherlands)
- Dr. Rene de Seze (France)
- Dr. Peter Gajsek (Slovenia)
- Dr. Art Thansandote (Canada)
- Dr. Gyorgy Thuroczy (Hungary)

6. International Speakers at ICES Meetings

A. Maui

- Dr. Vitas Anderson, Australia, spoke on “The Development of Guidelines for Assessing the Safety Impact of Metallic Implants in Personnel Exposed to Radiofrequency Fields.”
- Dr. Ralf Bodemann (Germany) spoke on recent activities in Europe affecting EMF standards.

B. San Antonio

- Dr. Dariusz Leszczynski (Finland) spoke on the “Use of High-Throughput Screening Techniques to Determine Biological Effects of Mobile Phone Radiation.”
- Dr. Nikolai K. Chemeris’ (Russia) talk on recent EMF research in Russia (cancelled due to medical emergency)

C. Washington D. C.

- Nisakorn Manatrakul (Thailand) spoke on EMF Concerns and Standards in Thailand