--- Early Announcement ---

One-day Short Course

on

Understanding and Applying

Human Exposure Safety Levels in Electric and Magnetic Fields (0 to 3 kHz)

Based on IEEE Standard C95.6 - 2002

“Safety Levels with Respect to Human Exposure to Electromagnetic Fields, 0 - 3 kHz”

23 June 2005

Dublin Castle*

(Held in conjunction with the June 2005 IEEE/ICES Meetings, 24-27 June 2005)

Who Should Attend

Environmental, Health & Safety and Industrial Hygiene Professionals, Bio-electromagnetic Researchers; Engineers, Planners, Designers and Operators from Electric Utilities and Electrical Manufacturers; Staffs from Government, Military, Local and Federal Regulatory Agencies and Schools; and Interested Individuals and Organizations concerned with human safety & exposure to electric and magnetic fields.

What You Can Learn

- Standard development process including biological mechanisms.
- Scientific rationale and how exposure limits are developed in the IEEE C95.6 Standard (0-3 kHz)†
- Basic Restrictions and Maximum Permissible Exposure for electric & magnetic fields and currents.
- Applications to controlled/uncontrolled environments, non-sinusoidal and transient waveforms, and realistic cases.
- Comparison of IEEE/ICES Standard and ICNIRP Guidelines - with possible invited guest presenter from ICNIRP (pending ICNIRP final arrangement).
- And more from open forum discussions.

Expert Presenters


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* Dublin Castle is situated in the very heart of Dublin City, on the south side of the River Liffey, off Dame Street, en route from Trinity College to Christchurch Cathedral.

† A copy of IEEE C95.6 will be provided to participants.
### Tentative Program*

**Tutorial (Short Course), IEEE C95.6**

23 June 2005

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<td>0900 – 0930 h</td>
<td>Registration</td>
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<td>0930 – 0945 h</td>
<td>(A) Welcome, Opening Remarks</td>
<td>Petersen</td>
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<td>0945 – 1015 h</td>
<td>(B) Introduction</td>
<td>Jaffa</td>
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<td>1015 – 1045 h</td>
<td>(C) Electrostimulation principles</td>
<td>Reilly</td>
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<td>1045 – 1115 h</td>
<td>(D) Basic Restrictions &amp; MPEs (Part D.1)</td>
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<td>1115 – 1130 h</td>
<td>Coffee Break</td>
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<td>1130 – 1200 h</td>
<td>(D) Continuation (D.2 &amp; D.3)</td>
<td>Reilly</td>
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<td>1200 – 1230 h</td>
<td>(E) Contact current restrictions</td>
<td>Jaffa</td>
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<td>1230 – 1300 h</td>
<td>(F) Spatial &amp; temporal properties</td>
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<td>1300 – 1400 h</td>
<td>Lunch</td>
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<td>1400 – 1430 h</td>
<td>(G) EMF environment</td>
<td>Jaffa</td>
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<td>1430 – 1515 h</td>
<td>(H) Compare IEEE &amp; ICNIRP</td>
<td>Jaffa/Reilly</td>
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<td>1530 – 1600 h</td>
<td>(I) Compare IEEE &amp; ICNIRP (Continued)</td>
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<td>1600</td>
<td>Closing remarks</td>
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*Schedule subject to change pending final arrangements*
Registration
for the
IEEE C95.6 Standard Short Course –
23 June 2005
Dublin Castle, Dublin, Ireland

Return this form with payment to: Arthur G. Varanelli
(Make checks payable to the IEEE) Raytheon Company
47 Foundry Avenue
Waltham, MA 02453
Tel: 781 642 2410
Fax: 781 642 2422

Please use a separate form for each registration. A 225 euro ($300 USD)* registration fee will be
charged per participant to cover costs (including a copy of IEEE Std C95.6-2002). There will be
no cancellation registration refund after 10 June, 2005 because of course financial commitments.
Spaces for this one-day Short Course may be limited and are available on first-come first served
basis.

Name:_________________________________________________________________

Business Address:________________________________________________________

Daytime telephone number: _________ ____E-Mail Address_____________________

Indicate method of payment of registration fee:  Check_____ Cash_____ 

Credit Card _____

For Credit Card Payment of registration fee:

Which Credit Card? (VISA, MasterCard, etc.)___________________________________

Account number:__________________________________________________________

Expiration Date: ________

Print name as it appears on card:_____________________________________________

Signature: ________________________________________________________________

*The registration fee for members of the Irish Government Departments is 125 euro.
Expert Presenters

**J Patrick Reilly:** The Johns Hopkins University, Applied Physics Laboratory, Laurel, MD, and Metatec Associates, Silver Spring, MD. Principal Author of IEEE Std C95.6.

J. Patrick Reilly received the BEE degree in Electrical Engineering from the University of Detroit in 1962, and the MSE degree in Electrical Engineering and Applied Science from the George Washington University in 1966. He joined the Johns Hopkins University Applied Physics Laboratory in 1962, where he performed research and supervised various projects related to radar, sonar, infrared systems, and electrical and acoustic influences on environmental and biological systems. He began his career in bioelectricity in the early 1970s at the Applied Physics Laboratory in connection with environmental studies related to electric power and its generation. He is president of Metatec Associates, which he founded in 1986, and where he does research and consulting related to bioelectric phenomena, bioelectric devices, and electrical and electromagnetic safety. He is the author or co-author of over 125 publications, including one book on radar, and two on bioelectric phenomena and electrical safety. His latest book is Applied Bioelectricity: from Electrical Stimulation to Electropathology, which was published by Springer in 1998. He was elected as a Fellow of the Institute of Electrical and Electronic Engineers (IEEE) in 1998 "for furthering the state of knowledge concerning human reactions to electric current and electromagnetic fields, with applications to medical devices, human hazards, and safety standards." He was principal author of IEEE Standard C95.6, published by the IEEE's International Committee on Electromagnetic Safety (ICES) in 2002, and known as: The IEEE Standard for Safety Levels with Respect to Human Exposure to Electromagnetic Fields, 0 to 3 kHz. He has been an invited speaker in numerous international forums on diverse aspects of Bioelectricity. He has designed and presented several short courses covering various aspects of electrical and electromagnetic safety.

**Kent Jaffa:** Principal Engineer, PacifiCorp, Salt Lake City, UT. Chairman of ICES Subcommittee 3 (1998 – 2003)

Kent holds a BSEE from the University of Utah and a MSEE from Carnegie-Mellon University. He began his career at Westinghouse Electric in 1975 in their Research and Development Department and in 1977 joined Utah Power and Light which has become PacifiCorp, a Scottish Power Company. He is a Senior Member of IEEE and received the IEEE Standards Medallion in 2003 for outstanding achievement. He has been involved in low frequency electromagnetics for numerous years including being a member of IEEE ICES Subcommittee 3 since its beginning and being its chair from 1998 to 2002 during the major development and approval of C95.6-2002. He is a past chairman of the IEEE Power Engineering Society’s AC Fields Working Group and a long-time member of their Corona and Field Effects Subcommittee. He has been a member of the Edison Electric Institute’s EMF Task Force and Steering Committees and participated in the US EMF RAPID Program’s symposia as an observer providing input on breakout session reports. He was a member of the California Department of Health Services Stakeholders Advisory Committee and has served as an expert technical reviewer for the State of Maryland’s Department of Natural Resources. He has consulted for the Brazilian Ministry of Mines and Energy and the Energy Supply Association of Australia. He has published papers, letters or provided peer review on electromagnetics for the IEEE Power Engineering Society’s Journal, Bioelectromagnetics, Health Physics and the Journal of Epidemiology. Besides his work in electromagnetics, he has experience in power system engineering areas of transient analysis, lightning design, transmission line and substation design, safety analysis and transmission planning.
About ICES

With roots dating back to 1960, the Institute of Electrical and Electronics Engineers (IEEE)\(^\dagger\) International Committee on Electromagnetic Safety (ICES) represents the largest worldwide volunteer effort of stakeholders in the safe use of electromagnetic energy.

The scope of 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 humans, volatile materials, and explosive devices to such energy. Such standards will be based on established effects and will include safety levels for human exposure to electric, magnetic and electromagnetic fields, including induced currents from such fields, methods for the assessment of human exposure to such fields, standards for products that emit electromagnetic energy by design or as a by-product of their operation, and environmental limits.”

The development of internationally recognized voluntary standards, through an open consensus process, has long been a major effort of the IEEE. In 1960, IEEE (then the Institute of Radio Engineers) co-sponsored the first US radio frequency (RF) safety standard (C95.1-1966). Later, C95.1-1982 was the first national standard in which field limits were derived from the frequency-dependent dosimetric quantity specific absorption rate (SAR). Dosimetry and a threshold SAR of 4 W/kg are now the bases for most of the world’s RF safety standards and guidelines, including those of ICNIRP, NATO, and NRPB. IEEE standards are “living” documents that continue to be refined through the efforts of the committee and working group members.

As of March 2005, ICES TC95 membership stands at 118 representing 24 different countries. The current membership is as follows:

### AUSTRALIA
- Vitas Anderson
- Thanh Dovan
- Ken Joyner
- Tammy Utteridge

### BULGARIA
- Michel Israel

### CANADA
- Pascale Bellier
- Paul Heroux
- James McNamee
- Art Thansandote

### CHINA
- Huai Chiang

### FINLAND
- Sakari Lang
- Dariusz Leszczynski
- Veli Santomaa

### FRANCE
- Joe Wiart

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- Efthymios Karabetsos
- Theodoros Samaras

### HUNGARY
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### IRELAND
- Max Ammann
- Bob Hanna
- Tom McManus

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- Shaiaela Kandell

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- Done-sik Yoo

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- Femme-Michelle Wagenaar

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- Leon duToit

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- Niels Kuster
- Michael Repacholi

### SLOVENIA
- Peter Gajsek

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- Roger Coghill
- Robert Gardiner
- Sheila Johnston
- Ray Kemp
- William Scanlon
- John Tattersall

### UNITED STATES
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- Melvyn Altman
- Edward Asian
- Quirino Balzano
- David Baron
- Howard Bassen
- John Bavin
- John Bergeron
- Dennis Blick
- Aviva Brecher
- Jerrold Bushberg
- Scott Chesnick
- Stephen Chiusano
- C-K. Chou
- Robert Cleveland
- Jules Cohen
- Robert Curtis
- James Daly
- Ed Hare
- John D’Andrea

\(^\dagger\) The IEEE is today the world’s largest technical professional society, with more than 365,000 members in over 150 countries.
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