A Publication of the Institute
of Electrical and Electronics Engineers

IEEE

NUCLEAR & PLASMA SCIENCES SOCIETY

Nuclear & Plasma Sciences
SOCIETY NEWS

Number 1 • March 2004

CONFERENCES

IEEE INTERNATIONAL CONFERENCE ON PLASMA SCIENCE

An Invitation To ICOPS 2004 In Baltimore, Maryland
Visit our website at http://www.ieee.org/icops2004

We wish to cordially invite you to the 31st IEEE International Conference on Plasma Science to be held in Baltimore, MD, June 28 through July 1, 2004. The conference, held at the Hyatt Regency on the Inner Harbor in Baltimore, Maryland, will feature an exciting technical program with up-to-date reports on new developments in plasma science and engineering.

Information regarding abstract submittal, conference registration, hotel registration, and minicourse registration can all be found on the web site www.ieee.org/icops2004.

Plasma science covers a broad spectrum of topics and a wide range of applications. This conference will offer a balanced technical program with representation from all of these research areas including:

- Basic Processes in Fully and Partially Ionized Plasmas
- Microwave Generation and Plasma Interaction
- Charged Particle Beams and Sources
- High Energy Density Plasmas and Their Interactions
- Industrial, Commercial, and Medical Applications of Plasmas
- Plasma Diagnostics
- Pulsed Power and Other Plasma Applications

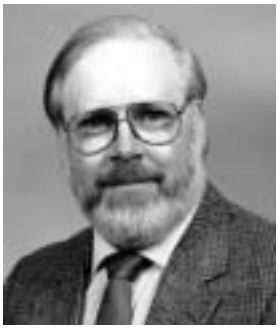
Researchers from the world over will be presenting results of their work. The conference will have seven plenary talks of general interest to the plasma physics community given by recognized leaders in their fields. Contributions from plenary and invited talks will be published in a Special Issue of the IEEE Transactions on Plasma Science. In addition to the annual ICOPS banquet and PSAC award, the conference will host a two-day mini-course on "Non-Thermal Medical/Biological Applications of Ionized Gases and Electromagnetic Fields" (see below for further details) and a job placement center for persons interested in employment throughout various areas of plasma science.

The Hyatt Regency-Baltimore overlooks the Baltimore Inner Harbor and boasts meeting facilities ideally suited for moving between poster and oral talks, all the while providing ample room for interactions with col-

continued on page 3

Robert J. Commisso
Chair,
ICOPS 2004

Robert K. Parker
Co-Chair,
ICOPS 2004



Paul F. Ottinger
Treasurer,
ICOPS 2004

Joseph W. Schumer
Local Organizing
Chair, ICOPS 2004

TABLE OF CONTENTS

IEEE NUCLEAR AND PLASMA SCIENCES SOCIETY NEWS

is published three times per year by The Institute of Electrical and Electronics Engineers, Inc., 445 Hoes Lane, Piscataway, NJ 08855.

NEWSLETTER EDITOR:
W. Kenneth Dawson
TRIUMF, 4004 Wesbrook Mall
Vancouver, British Columbia
Canada, V6T-2A3.
Tel: +1 604 222 7455: Fax: +1 604 222 7307.
E-mail: k.dawson@ieee.org

ASSISTANT NEWSLETTER EDITOR:
Alberta Dawson-Larsen
Stanford Linear Accelerator Center
P.O. Box 4939, Stanford, CA 94039
Tel: +1 650 926 2748
Fax: +1 650 926 5124
E-mail: amlarsen@slac.stanford.edu

EDITOR EMERITUS:
John F. Osborn
507 Elmhurst Circle
Sacramento, CA 95825
Tel: +1 916 641 1627
Fax: +1 916 641 2625

IEEE MAGAZINES AND NEWSLETTERS:
Robert Smrek, *Production Manager*
Paul Doto, *Newsletters*
Contributors to this issue include, in alphabetical order: Igor Alexeff, Sandra Biedron, Magnus Dahlbom, Paul Dressendorfer, Teresa Farris, Harold Flescher, Jay Forster, Mike Giesselmann, Steve Gitomer, Steve Gold, Erik Heijne, Phil Heitzenroeder, Ed Hoffman, Andrew Holmes-Siedle, Ralph James, Ron Jaszczak, Albe Larsen, Jane Lehr, Charles Neumeyer, Pat O'Shea, Vern Price, Ron Scrimpf, Joe Schumer, Joe Srour, Alan Todd, Peter Winokur, Craig Woody.

Publicity releases for forthcoming meetings, items of interest from local chapters, committee reports, announcements, awards, or other materials requiring society publicity or relevant to NPSS should be submitted to the Newsletter Editor by April 16, 2004.

CONTRIBUTED ARTICLES
News articles are actively solicited from contributing editors, particularly related to important R&D activities, significant industrial applications, early reports on technical break-throughs, accomplishments at the big laboratories and similar subjects.

The various Transactions, of course, deal with formal treatment in depth of technical subjects. News articles should have an element of general interest or contribute to a general understanding of technical problems or fields of technical interest or could be assessments of important ongoing technical endeavors.

Advice on possible authors or offers of such articles are invited by the editor.

Committee Chairpersons, Liaison Representatives, and other Ad Com members are particularly reminded that reports, award announcements, or observations on society interests are needed and should be submitted where possible before the copy deadline of April 16, 2004.

CONFERENCES (cont'd)

leagues. The hotel is within walking distance of many attractions such as the Baltimore Aquarium, the Maryland Science Center, Camden Yards, and many fine shops and restaurants. For more information on the Baltimore area, please visit their web site at www.baltimore.org. The conference location is also only a 30 to 40 minute drive from the nation's capital, Washington, DC and Annapolis, the state capital of Maryland. As conference dates merge with the Independence Day weekend, a limited number of rooms have been reserved at the conference rate for those wishing to take part in the elaborate 4th of July festivities in Baltimore, Annapolis, and Washington, DC.

The conference organizers, including committee members, session organizers, and conference planners, encourage you to attend this meeting. We will work hard to ensure that the technical program will be rewarding and that your stay in the Baltimore/Washington area will be especially enjoyable. For more details, please visit the conference website at www.ieee.org/icops2004.

Deadlines

Abstracts: January 30, 2004
Student Travel Grant Application: March 12, 2004
Pre-Registration: May 21, 2004
Mini-Course Registration: May 21, 2004

ICOPS 2004 Technical Program

The technical program will consist of invited and contributed papers from the areas listed below. For complete information on session organizers and abstract submission procedures, please visit the conference website (www.ieee.org/icops2004). A number of plenary talks of general interest to attendees will complement this diverse technical program. The invited and plenary talks will be published in a Special Issue of the IEEE Transactions on Plasma Science.

Technical Area #1 - Basic Processes in Fully and Partially Ionized Plasmas
- 1.1 Basic Phenomena
- 1.2 Space Plasmas
- 1.3 Partially Ionized Gases
- 1.4 Computational Plasma Physics
- 1.5 Dusty Plasmas

Technical Area #2 - Microwave Generation and Plasma Interaction
- 2.1 Intense Beam Microwave Generation
- 2.2 Fast-Wave Devices
- 2.3 Slow Wave Devices
- 2.4 Vacuum Microelectronics
- 2.5 Microwave Systems
- 2.6 Microwave Plasmas

Technical Area # 3 - Charged Particle Beams and Sources
- 3.1 Plasma, Ion, and Electron Sources
- 3.2 Intense Electron and Ion Beams

Technical Area #4 - High Energy Density Plasmas and their Interactions
- 4.1 Laser Produced Plasmas
- 4.2 Inertial Confinement Fusion
- 4.3 Laser-Driven and Plasma-Based Accelerators
- 4.4 Magnetic Fusion Energy, Alternate Concepts
- 4.5 Fast Z-pinches, X-ray Lasers, and Dense Plasma Focus
- 4.6 High Energy Density Hydrodynamics and Equation of State

Technical Area #5 - Industrial, Commercial and Medical Applications of Plasmas
- 5.1 Non-Equilibrium Plasma Processing
- 5.2 Thermal Plasma Chemistry and Processing
- 5.3 Plasma Thrusters
- 5.4 Plasmas for Lighting
- 5.5 Flat Panel Displays
- 5.6 Medical, Biological, Environmental Applications

Technical Area #6 - Plasma Diagnostics
- 6.1 Diagnostics of Processing Plasmas
- 6.2 High Density/Pulsed Plasma Diagnostics

Technical Area #7 - Pulsed Power and other Plasma Applications
- 7.1 Pulsed-Power Applications of Plasmas
- 7.2 Vacuum Power Conditioning and otherEmerging Concepts

ICOPS 2004

Politician's creed

These are my principles - if you don't like them, I have others.

Groucho Marx

Life after death

Having committed political suicide, the conservative party is now living to regret it.

Chris Patten

Brief encounter

Marriage is the unsuccessful attempt to make something lasting of an incident.

Albert Einstein

ICOPS 2004 Minicourse

A two-day mini-course on Non-Thermal Medical/Biological Applications of Ionized Gases and Electromagnetic Fields has been organized by Drs. Mounir Laroussi and Karl H. Schoenbach of Old Dominion University and will consist of lectures from various experts in this rapidly evolving field. The mini-course will be held at the Hyatt Regency-Baltimore Hotel on Thursday and Friday, July 1-2, 2004. To register for the mini-course, see the "Conference Registration Form" on our website. Please register before the May 21, 2004 deadline to assure a sufficient number of registrants for holding the mini-course. After the May 21, 2004 deadline, contact Dr. Laroussi for information concerning seat availability.

Course Objective: Recent advances in the generation of non-thermal atmospheric pressure gas discharges and high-power, sub-microsecond, pulsed electric fields have opened the door to a wide variety of non-thermal medical and biological applications. Given the multidisciplinary character of this topic, the proposed mini-course encompasses the full range of applications in biomedical engineering, environmental engineering, biofouling prevention, sterilization, biological and chemical warfare agents' mitigation, food preservation, biological cell manipulation, and medical diagnostics. One of the main benefits of the course is to stimulate cross-fertilization between the university, healthcare, and industrial sectors. Professionals with backgrounds in Physics, Engineering, Biology, and Medicine will learn new emerging technologies, which directly impact their knowledge base and professional skills. Graduate students coming from different academic backgrounds (science, engineering, medicine) will learn and discover promising research fields open to innovative contributions.

The mini-course will address two technology-enabling research activities:

The interaction of gaseous discharges with the cells of microorganisms and its applications in the medical, food, and environmental fields, and

The effects of pulsed electric fields on biological matter and their industrial and medical applications.

Well-respected experts, active in the cutting edge areas of research mentioned above will introduce the attendees to their emerging technologies, present in-depth reviews, and discuss the present state-of-the-art in their respective topics.

Dr. Mounir Laroussi
Old Dominion University
(757) 683-2416
E-Mail: mlarouss@odu.edu

ICOPS 2004 Companion Activities

A variety of commercial tours and activities are available in the Baltimore, Washington DC, and Annapolis areas to serve as a focal point for companions to see the wonderful sights of the area, to meet and relax with friends, or to enjoy shopping opportunities in the Baltimore Harbor. There will be someone available at the Conference Registration Desk to assist individuals and groups interested in visiting the local attractions.

The Hyatt Regency-Baltimore Hotel overlooks the Baltimore Inner Harbor and is within walking distance of many attractions such as the Baltimore Aquarium, the Maryland Science Center, Camden Yards, the Power Plant, the Pride of Baltimore Clipper ship, the USS Constellation Museum, and many fine shops and restaurants. A wonderful zoo is only a 20-minute drive from the hotel. While the Baltimore Orioles baseball team is out of town that week, there is a very enjoyable and informative stadium tour available including a visit to the dugout, bullpen, press box, and other typically off-limits portions of Camden Yard. Other points of interest in Baltimore include Fort McHenry, the Babe Ruth Birthplace and Museum, and the B&O Railroad Museum. For more information on the Baltimore area, please visit their web site at http://www.baltimore.org/. The conference location is also only a 30 to 40 minute drive from the nation's capital, Washington, DC and Annapolis, the state capital of Maryland. As conference dates merge with the Independence Day weekend, a limited number of rooms have been reserved at the conference rate for those wishing to take part in the elaborate 4th of July festivities in Baltimore, Annapolis, and Washington, DC.

General Information

Information regarding abstract submittal, conference registration, hotel registration, and minicourse registration can all be found on the website www.ieee.org/icops2004. For questions regarding the technical program, please contact Bob Commisso [Naval Research Laboratory, commisso@suzie.nrl.navy.mil, (202) 404-4359]. For questions regarding conference or hotel registration, please contact Mark Goldfarb, Palisades Convention Management, mgoldfarb@pcm411.com, (212) 460-8090.

2004 NSREC PLANS UNDERWAY

The 2004 IEEE Nuclear and Space Radiation Effects Conference (NSREC) will be held July 19-23, 2004 in Atlanta, Georgia, at the Renaissance/Waverly Hotel. The conference features a Technical Program consisting of ten sessions of contributed papers that describe the latest observations and research results in radiation effects, a Short Course focusing on hardness assurance and photonics challenges for space systems that will be presented on July 19, a Radiation Effects Data Workshop, and an Industrial Exhibit. The Technical Program includes oral and poster sessions. There will also be special events for companions in a parallel social program. This is the 25th anniversary of the IEEE NSREC Short Course. Supporters of the Conference include the Defense Threat Reduction Agency, Sandia National Laboratories, Air Force Research Laboratory, the Jet Propulsion Laboratory, and NASA Goddard SFC.

Technical Program

Papers to be presented at this meeting will describe the effects of space or nuclear radiation on electronic or photonic devices, circuits, sensors, materials and systems, as well as semiconductor processing technology and techniques for producing radiation-tolerant devices and integrated circuits. A new session has been added this year on radiation-hardening by design, which is of continuing interest for space and defense systems. The conference will be attended by engineers, scientists and managers who are concerned with radiation effects. International participation in the conference is strongly encouraged.

Specific topics for technical papers that will be presented at this conference include the following:

Basic Mechanisms of Radiation Effects in Electronic Materials and Devices

- Ionizing radiation effects
- Displacement damage effects
- Radiation effects on materials
- Single-event charge collectionphenomena and mechanisms
- Processing-induced radiation effects
- Radiation transport, energy deposition and dosimetry

Radiation Effects on Electronic and Photonic Devices and Circuits

- MOS, bipolar and advanced technologies
- SOI and SOS technologies
- Optoelectronic and optical devices, and optical systems
- Novel devices structures, such as MEMS
- Single-event effects
- Modeling of devices, circuits and systems
- Methods for hardened design and manufacturing
- Radiation effects at cryogenic temperatures
- Particle detectors and associated electronics at high-energy accelerators

Space, Atmospheric and Terrestrial Radiation Effects

- Characterization and modeling of radiation environments
- Space weather effects
- Spacecraft charging

Hardness Assurance Technology and Radiation Testing

- Testing techniques and guidelines
- Hardness assurance methodology
- Dosimetry

Radiation Effects on Commercial Space Systems

New Developments of Interest to the Radiation Effects Community

Radiation Effects Data Workshop

The Radiation Effects Data Workshop is a forum for papers on radiation effects data on electronic devices and systems. Workshop papers are intended to provide radiation response data to scientists and engineers who use electronic devices in a radiation environment, and for designers of radiation-hardened or radiation-tolerant systems. Papers describing new simulation facilities are also welcomed.

Paper Submittal

Information on the submission of summaries to the 2004 NSREC for either the Technical Sessions or the Data Workshop can be found at www.nsrec.com. The deadline for submitting summaries was February 6, 2004, and final selection of papers will be made in March. A limited number of late-news papers will be considered for the conference, but must be submitted by May 31. Late-news papers must clearly show why they are newsworthy, as well as technically significant.

From one who knew

It is well that war is so terrible; else we should grow too fond of it.

Robert E. Lee

No Russian roulette

Take calculated risks. That is quite different from being rash.

George Patton

Guessing game

Good scientists study the most important problems they think they can solve.

Martin Rees

Papers accepted for the conference are eligible for publication in the December issue of the IEEE Transactions on Nuclear Science, subject to an additional review cycle after the conference. Papers presented at the Workshop will be published in a special IEEE publication following the conference that is not subject to an additional peer review.

Short Course

Attendees will have the opportunity to participate in a one-day Short Course on Monday, July 19. This one-day Short Course will address two very important topics and their related challenges for present and future space systems: **hardness assurance and photonics**. Essentially all present and envisioned space systems include photonic elements and subsystems, with key examples being solar arrays, optical sources and detectors, and optical fibers. To make use of current and emerging photonic components, designers must have knowledge of their radiation response and any associated limitations. Three speakers in the 2004 NSREC Short Course will address the key effects of radiation on and the challenges for photonics in space. Their comprehensive talks will include optical sources, detectors and imagers, fibers, solar cells, and photonic subsystems. The second major topic at the 2004 Short Course is space-system hardness assurance. Assuring the radiation hardness of those systems involves many detailed technical considerations. One lecturer will provide an overview of those hardness assurance techniques at the system level. Related challenges and potential solutions will also be considered. Another speaker will focus on the details of hardness assurance for electronic components. This Short Course will provide participants with a unique and cohesive set of talks on technical approaches and challenges for designers, radiation effects engineers, components specialists, and other technical and management personnel involved in developing space systems.

In the first session of the Short Course, Allan Johnston of the Jet Propulsion Laboratory will address various basic and applied aspects of space radiation effects on photonics. He will discuss effects on optical sources, optical fibers, and photonic subsystems. Included in his optical sources presentation will be material properties, effects on light-emitting and laser diodes, advanced devices, and annealing behavior. His discussion of optical fibers will address absorption effects, fiber testing approaches, and fiber selection for space systems. He will conclude with consideration of radiation effects on several photonic subsystems for space applications, including optical links, optical transmitters and receivers, and optical communication systems.

The second session, presented by Terry Lomheim of the Aerospace Corporation, will discuss radiation effects on visible and infrared detectors and arrays. For visible imagers, he will describe today's leading technologies, followed by consideration of the key effects of the space radiation environment. He will include displacement damage effects, ionizing radiation effects, and radiation-induced noise in visible arrays, followed by an overview of array hardening approaches and technology trends. Dr. Lomheim will then address similar topics for infrared detectors, with emphasis placed on the effects of total ionizing dose, displacement damage, and ionization-induced noise in detector arrays.

Session three will be presented by Rob Walters of the Naval Research Laboratory, who will address basic and applied aspects of radiation effects on solar cells. He will discuss their device physics and the mechanisms of radiation-induced degradation. He will also provide an overview of leading solar cell technologies of interest for present and future applications. Dr. Walters will describe the modeling techniques used to predict solar-cell degradation in space, including the EQFLUX and SAVANT codes. Solar-cell simulation testing approaches will be discussed, including test facilities and particle choices. He will conclude with an overview of design concepts for hardened solar arrays, including array sizing and end-of-life performance considerations.

The fourth session will be presented by Gary Lum of Lockheed Martin, who will present a comprehensive review of hardness assurance for space systems. He will include a description of the space radiation environment and an overview of the key effects of that environment on electronics. System hardening approaches will also be addressed, such as part selection, shielding, and software techniques. Radiation testing considerations will be described at the part, unit, and subsystem levels. He will discuss key hardness-assurance analysis and modeling techniques.

Management of hardness assurance will be then considered, followed by a discussion of emerging issues and challenges and their potential solutions for hardened space systems.

In the final session, Ron Pease of RLP Research will lecture on electronic piece-part hardness assurance for space systems. He will include definitions of key concepts and terminology and an historical overview of the evolution of and methods for parts hardness assurance. Key hardness assurance documentation for engineering users will be identified. He will then present a detailed description of the currently employed approach. Parts qualification, lot acceptance, and radiation lot acceptance testing will be addressed as well as the associated exceptions and limitations in practice. Various parts hardness assurance challenges for space systems will be discussed and recommendations will be given.

Industrial Exhibit

An Industrial Exhibit will be included as part of the Conference. The exhibit will be held on Tuesday and Wednesday. It will include exhibits from 35-40 exhibitors that represent companies or agencies involved in manufacturing electronic devices or systems for applications in space or nuclear environments, modeling and analysis of radiation effects at the device and system level, and radiation testing.

Local Arrangements

The main social event for the Conference will be a banquet, scheduled for Wednesday evening in downtown Atlanta, featuring an authentic southern barbeque at a historic rail depot, a visit to the World of Coca-Cola™, and strolling through Underground Atlanta. It will be open to attendees and their immediate families. The World of Coca-Cola™ will be reserved exclusively for the conference during the evening, allowing attendees and family members the opportunity to see this great family-friendly facility in a relaxed atmosphere.

Companion events will include a luncheon/shopping trip to the Miami Circle area of Buckhead on Tuesday, and a luncheon and tour of historic Jonesboro, Georgia, in which many locations and events that helped inspire "Gone with the Wind" will be visited and recounted on Thursday.

Atlanta

World-class restaurants, festive nightlife, five major league sports teams and an abundance of cultural attractions and events make Atlanta the center for entertainment in the South. Its diverse restaurants feature cuisine from around the globe prepared by world-renowned chefs. Buckhead, Midtown, and Virginia-Highlands are among the most popular neighborhoods for Atlanta nightlife. From Atlanta's role in the Civil War to the celebration of the 1996 Centennial Olympic Games, Atlanta's historical attractions promise a visit filled with education and entertainment. Atlanta's convenience for travel, wide range of attractions, and southern hospitality make it enjoyable for tourists year-round. For more information on all Atlanta has to offer, visit the Atlanta Convention and Visitors Bureau's Web site at www.atlanta.net.

Conference Committee

General Chair: Dan Fleetwood
Vanderbilt University, (615) 322-2498
Technical Program: Jim Pickel
PRT, Inc., (760) 451-2256
Local Arrangements: Jim Kinnison
John Hopkins/Applied Physics Lab, (240) 228-6169
Short Course: Joe Srour
The Aerospace Corporation, (310) 336-2565
Publicity: Teresa Farris
Aeroflex Colorado Springs, (719) 594-8035
Finance: Robert Reed
NASA Goddard SFC, (301) 286-2153
Awards: David Beutler
Sandia National Laboratories, (505) 845-7068
Industrial Exhibits: David Meshel
Northrop Grumman, (301) 454-9238
Guest Editor: Lewis Cohn
Defense Threat Reduction Agency, (703) 325-1156

Visual arts

What they [cable news networks] mainly offer is not journalism but pictures of journalists trying to do their work.

Robert Fulford

Scotch law?

Saints should always be judged guilty until they are proved innocent.

George Orwell

2004 IEEE NUCLEAR SCIENCE SYMPOSIUM and MEDICAL IMAGING CONFERENCE

including The Symposium on Nuclear Power Systemsand The 14th International Workshop on Room Temperature Semiconductor X- and Gamma-Ray Detectors

Rome, Italy, October 16-22, 2004

DEADLINE FOR ABSTRACT SUBMISSION: May 17, 2004

Conference web site: www.nss-mic.org/2004

So there!

Maybe somebody needs to explain to me why they say something, but I don't feel like I owe anybody an explanation.

George W. Bush

Dear Colleagues,

The Nuclear Science Symposium (NSS), Medical Imaging Conference (MIC), Symposium on Nuclear Power Systems (SNPS) and 14th International Workshop on Room Temperature Semiconductor X- and Gamma- Ray Detectors (RTSD) will be held for the first time in Italy, in the prestigious city of Rome, on October 16-22, 2004. This Conference represents a unique opportunity for scientists and engineers from all over the world to participate and present their original work in a variety of subjects related to nuclear science and medical imaging.

The Nuclear Science Symposium offers an outstanding occasion for scientists and engineers interested or actively working in the field of nuclear science, radiation instrumentation, software and their applications to meet and network with colleagues from around the world.

The Medical Imaging Conference is one of the most productive international scientific meetings on the physics, engineering, and mathematical aspects of nuclear medicine based imaging. In addition, significant contributions in X-ray and other imaging modalities involving ionizing radiation are an emerging area of the MIC.

The Symposium on Nuclear Power Systems will again be held in conjunction with the Nuclear Science Symposium. The technical paper sessions on nuclear power systems cover subjects of current major interest to the operation of nuclear power stations and supporting services and suppliers.

The Room Temperature Semiconductor X- and Gamma-Ray Detectors workshop represents the largest forum of scientists and engineers working to develop new solid-state radiation detectors and imaging arrays. The training program for early state researchers offers a great opportunity to increase knowledge and professional skills.

The venue of the Conference is the Ergife Palace Hotel, one of the largest exhibition and conference centers in Europe. Its complex is unique, combining one of the largest hotels in Italy with extensive exhibition facilities on the same site. It provides a relaxed atmosphere far from the hustle and stress of the city, making the conference activities pleasant and time effective. The Ergife Palace Hotel is located in a residential area of the capital city in a key position near S. Pietro Cathedral and within a short distance from the historical center of Rome. It is only 4 kilometers from the main Ring Road, and 26 kilometers from Fiumicino's Leonardo da Vinci International Airport. It is within walking distance of the subway ('Metro') station. Regular bus services provide connections with all of the important cultural sites and commercial centers in Rome. Taxi services are constantly available to guests and a shuttle service is provided by the hotel on demand. I look forward to meeting you in the splendid city of Rome and wish you a pleasant and fruitful stay.

Alberto Del Guerra
General Chairman
E-mail: IEEE-Rome2004@df.unipi.it
Phone: +39 050 2214942
Fax: +39 050 2214333
Department of Physics "E. Fermi"
University of Pisa
Via F. Buonarroti, 2
I-56127 Pisa, Italy

Call for Papers
2004 Symposium on Nuclear Power Systems (SNPS)

Rome, Italy, October 21, 2004

The 2004 Symposium on Nuclear Power Systems (SNPS) will again be held in conjunction with the Nuclear Science Symposium and Medical Imaging Conference. The technical paper sessions on nuclear power systems cover subjects currently of major interest to the operation of nuclear power stations and supporting services and suppliers, including:

- Upgrading digital technology for reactor protection, I&C, and other systems
- Reliability-based maintenance and plant modernization
- New aspects on equipment qualifications
- A special annual overview report of major importance to nuclear power utilities
- A panel session of major importance to operating NPGS
- And more

Please send an abstract (11.5 x 10 cm, block) and a summary of maximum two pages by May 15, 2004 to Jay Forster, SNPS Program Chairman, GE Nuclear Energy, M/C 334, 175 Curtner Ave., San Jose, CA 95125; Phone: +1 408 925-5090; Fax: +1 408- 925-2923; E-mail: jay.forster@gene.ge.com

Jay Forster
SNPS Program Chairman

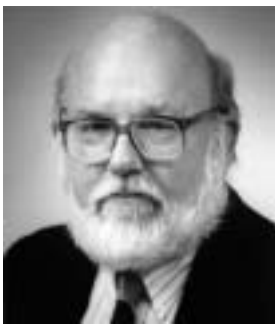
NPSS GENERAL BUSINESS

PRESIDENT'S REPORT

It looks as though the financial crisis at IEEE is finally under reasonable control. The problem was generated by the good financial climate of the late 1990's. A large fraction of IEEE's reserves was invested in the stock market, and budgets were based on the premise that we could depend on this investment income. When the market tanked, IEEE had long-term obligations and a culture of operation that was too expensive for its income.IEEE handled the shortfall by taking control of the reserves, which had been generated by the societies and had traditionally been used to enhance the quality of the individual society and insure against any operational shortfall. The IEEE tax on our society 2000-2003 was approximately 2.3 million dollars. Fortunately, we are a well run society and we had 2.7 million in reserves in 2000. The tax was paid from our operating income and the reserves, which reduced our reserves to 1.7 million. This year our budget indicates we will be adding a small amount to our reserves. In addition, I have been asked to be on a TAB committee to develop guidelines for funding new initiatives for developing our societies. This indicates that IEEE is expecting a surplus in the coming years.

For a little more than a year the IEEE has been trying deal with a troublesome problem that goes against the grain of a society, which has the dissemination of new scientific knowledge as one of its core values. The problem involves the nations in the so-called axis of evil, Cuba, Iraq, Iran, Libya and North Korea. We are not allowed to have members from these countries. In addition, we can only accept contributed papers from these countries if they require no editing or changes required by a reviewer These changes constitute added value to the paper, which is commerce with those countries, which is illegal. This seems to be a free speech issue. However, IEEE is dealing with the issue carefully to avoid problems with their status as a nonprofit entity. IEEE has applyied for an exception and the bureaucrats are moving very slowly on making any determination on this application. IEEE as an organization must be careful on this issue, but as individuals, you have the right to complain to your senator or member of congress about this.

Ed Hoffman, the NPSS President, can be reached at the UCLA School of Medicine, 10833 Le Conte Avenue, B2-096 CHS, Los Angeles, CA 90095-6948; Phone: +1 310 825-8851; Fax: +1 310 825-4517; E-mail: ieee_ejh@mednet.ucla.edu



Edward J. Hoffman
NPSS President

SECRETARY'S REPORT

Portland, OR, 25 October 2003

Alberta Dawson Larsen
NPSS Secretary

The voice of experience

A new broom sweeps clean but an old one knows the corners.

English saying

The Annual Meeting of the NPSS AdCom was held on Saturday, 25 October 2003 at the Columbia River DoubleTree Hotel, Portland, OR. Guests included Scott Metzler, guest associate editor for TNS MIC papers, Uwe Bratzler, NSS Program Chair, and Tony Lavietes, 2004 NSS/MIC treasurer.

Ed Lampo once again requests more attention to timely conference closings. Conference chairs and treasurers note! An abbreviated schedule: return loans within two weeks of the conference end date; close checking accounts within a month; in no more than three months, get report to Ed for final closing. Any outstanding bills can be paid directly from the NPSS account at IEEE. There remain 365.5K$ outstanding in loans to conferences.

We will have a small net increase in income this year, but we can also expect a hit of about 500K$ from IEEE, since their budget has not achieved balance, as it was projected to this year.

IEEE hired an external firm to look at the Institute operating procedures. There needs to be improvement in the sense of trust among the entities. Do IEEE's problems date from 1999-2001? Ed suggested that the problems initiated with the stock market fall and IEEE's fiscal model was based on a 14% return on investments. The stock market crash killed the IEEE reserves. The financial model has been changed to a "pay as you go" model. Next year IEEE will operate fully under that new model (and ed. note, maybe our reserves will bleed less or not at all). HQ has cut staff costs, which are about 18% of the operating budget. The stock market drop affected many businesses as well as individuals, not just IEEE and AdCom. Changes in business practices are widespread.

Ed noted that usually we get a "bonus" on our transactions if the page counts are within 5% of projected. In 2003, journals that are under the page count by 10% are still eligible for the bonus.

Ed Hoffman, our president, announced that the newly elected AdCom members are Steven Gold (Plasma Sciences), Allan Johnston (Radiation Effects), Jane Lehr (Pulsed Power); and Charles Neumeyer (Fusion). Ed thanked Richard Callis (Fusion); Ken Galloway (Radiation Effects); Osamu Ishihara (Plasma Sciences), and Edl Schamiloglu (Pulsed Power) for their contributions during their terms as elected AdCom members.

Ed has appointed Dick Lanza of MIT as the Energy Policy liaison, and Ben Tsui of Johns Hopkins as the medical liaison. Ron Jaszczak will be the new Fellow Candidate Evaluations committee chair.

The five-year society review had some minor criticisms, primarily related to the succession of editors for our journals and Newsletter. Many special-edition editors just serve for one issue, which is too little. Other editors hold their posts for too long and there is no clear training and succession mechanism. This will be addressed at the March 2004 retreat. TPS also needs strengthening as it doesn't do well in the citations indices. Peter Clout, the chair of SPARC, noted that the review will go to TAB at the November directors' meeting series. He recused himself on our review and stood, instead, for NPSS. Peter notes that it is not necessary to implement changes based on the SPARC report. These are recommendations, not requirements.

Ed also reported that Steve Derenzo, chair for the 2003 Short Courses, feels that we should have a committee to handle educational issues including short courses, and this might also include ABET contacts. This will be discussed at our retreat. Peter Clout suggested that we look at opportunities to do more with our short courses such as providing web-based presentations.

Hal Flescher, the Division IV director, explained IEEE's infrastructure costs to show why there have been big "taxes" on societies in the past few years. He noted that IEEE has a much broader range of activities than other societies. Of IEEE's 350,000 members, only 210,000 or about 60% belong to a society, so ~140,000 members have other reasons for being IEEE members. These include regional and educational activities, standards, and for US members, IEEE-USA. Societies, standards, and to a very small degree, sections, are money-making entities. There has been an evolution of funding receipt and distribution within IEEE. Initially, all earnings came to IEEE and they doled funds out to the societies. Then, in the 1980s, because the societies objected to this financial system,

since earnings were from their intellectual property (IP), the distribution was changed and societies got the money earned from their efforts. Nonincome-producing entities were given funds to run their operations, but societies kept their income and interest on their money, and sections that earned money from things such as regional and sectional trade shows, and conferences also kept the income from such endeavors.

Income earned on the IEEE General Fund reserves used to pay for infrastructure, but with the stock market crash, those reserves went to zero. This was aggravated by the fact that the Board of Directors chose to run deficit, rather than balanced, budgets. This did have some good value in the electronics publishing area (but, secy's. note, wasted lots in branding efforts, centenary medals and costly locations for meetings). Money belonged to the societies, sections, and regions that earned it. IEEE expected, over the years, a substantial return on its general reserves. In Europe technical organizations can only spend earnings, never capital funds. Because of the board structure, with 32 members, 11 from TAB and 11 from RAB, and 10 others, RAB has a lot of power even though it is a largely non-earning entity. TAB or RAB can prevent changes to the constitution and bylaws.

The IEEE income stream is about $250 million a year from dues (25-35 million); standards (3 million); conferences and publications (about 210 million); and society dues, regional conferences and events, Proceedings of the IEEE (the balance). In recent years, the greatest growth in membership has come from reduced fee members from regions with lower member dues, retirees and students. It is necessary to make membership a breakeven proposition, if not money making. For NPS, about 20-30% of expenses are for infrastructure. While societies are having a hard time accepting these costs and the need for funds to pay for infrastructure, these costs are driven by us – not by IEEE staff. They represent the services we need and use. IEEE also provides added benefit, simply by the use of the name and logo, advertising opportunities and so forth. They also offer services at market cost for conferences.

The current issues before the IEEE Board include possible changes in the governance structure (Why 10 regions? Why 10 divisions? And so on). Parallel changes are needed in TAB, which is also unwieldy. Change doesn't happen because there are too many volunteers with a vested interest in the status quo. An organizational reorganization retreat held a few years back has yet to produce results, although Hal thinks that changes are starting to happen slowly. There will also be changes in publications – which should be kept and which should be phased out, based on citations and other parameters such as electronic hits.

There is also a problem that some societies, such as ours, are run in a very responsible, business-like way, but others are inept. There has been an increase in the number of societies on the TAB watch list. FINCOM is working with these societies to help them learn about budgets, G&A and so forth.

Technical Committee Reports

Computer Applications in Nuclear and Plasma Sciences chair, Christian Boulin, reported that the last Real Time conference CD was mailed. Papers are in review for publication. There are four new CANPS committee members, two from Europe and two from the U.S. The last conference, despite excellent planning, had only 100 participants, due in large part to the SARS epidemic. The committee is talking with ICALEPCS about possibly collocating in future as there is considerable overlap in interest areas, but not in attendees. ICALEPCS this year was held in Korea and had 260 attendees, 150 of whom were from Asia. The analysis of the attendee survey from the Montreal conference indicates strongly that RT is needed. They are pushing for a 2005 conference in the U.S. and a 2007 conference in Europe. They will improve their web site.

Phil Heitzenroeder, Fusion Technology chair, reported that the 2003 21st SFE with Rich Callis as chair was an excellent meeting with an outstanding program organized by Jim Luxon. Over 200 abstracts were submitted, and 171 papers were given. There were visa problems for Chinese, Indian and Russian delegates who were ultimately unable to come. Only 3 attendees came from these regions, while 25 papers had been accepted. They had planned on an attendance of about 130. The increase led to added sessions and increased income above the fixed costs.

Discussions are ongoing between the Fusion TC and the Plasma Sciences and Applications ExCom for collocation with ICOPS in the future. There are also discussions with ANS regarding collocation with TOFE, which your secretary, former elected fusion AdCom member and fusion TC chair strongly recommends against. Let's keep this conference in the NPSS community!

Recreation

Physics is what physicists do when the working day is over.

Igor Tamm

The errors of our ways

Human blunders usually do more to shape history than human wickedness.

A.J.P Taylor

Maybe then!

It is a very sad thing that nowadays there is so little useless information.

Oscar Wilde

Perspective

A single death is a tragedy, a million deaths is a statistic.

Joseph Stalin

Richard Callis reported in greater detail about SFE. Papers are coming in for the conference record. All but two abstracts were received electronically, and they expect the same for papers. All but two of 60 oral papers also used LCD projection.

Ron Keyser is still trying to reconstitute the NIDCom committee. Standards Association membership is needed to vote on the standards. AdCom has agreed to pay association dues for appropriate people.

Ron Jaszczak noted that the NMIS committee met to discuss the 2007 NSS/MIC meeting. To date there is no site selection committee, but at an open meeting on October 24 there was an 8:6 vote to hold the meeting off-shore, with Hawaii the preferred site.

Habib Zaidi of the Geneva University Hospital, Geneva, Switzerland received the NMIS Young Investigator Award.

Magnus Dahlbom of UCLA School of Medicine will replace Ron as NMIS TC chair in January. AdCom would never have been the same without Ron, but he remains as Fellows Evaluation chair.

Bruce Brown reported that PAC01 and PAC03 are closing. PAC05, chaired by Norbert Holtkamp of SNS will be held in Knoxville, TN. His committees are in place and will meet in January 2004. There are concerns, not specified, about Knoxville, so extra care will be given to details. PAC07, in Albuquerque, will be held contiguously with PPPS, the joint ICOPS/Pulsed Power meeting. Stan Shriber will be the PAC07 general chair and Los Alamos will continue to provide assistance, even though Stan has recently moved to Michigan State.

The committee continues to recruit senior members and to support/encourage Fellow applications. Patrick O'Shea noted that it is important for IEEE to maintain its relationship with PAC.

Mark Rader reported for Tom Hussey, Plasma Sciences and Applications chair, who was unable to attend due to the PSAC ExCom meeting on Sunday. ExCom also met during the ICOPS meeting on Jeju Island, Korea. The conference was impacted by the SARS epidemic. Attendees from several parts of Asia were unable to attend, but many students skewed the normal percentage of student attendees and significantly reduced income. There were a significant number of papers on plasma manufacturing, which is a much more active field in Asia than in the US or Europe.

The 2004 conference will be held in the Baltimore Inner Harbor in late June. Future conferences: 2005 – Monterey, CA; 2006 – Traverse City, MI; 2007 – PPPS – Albuquerque; 2008 – proposal for a meeting in Germany.

A committee chaired by Christine Coverdale will review PSAC's constitution and bylaws.

The problems in Korea may not be relevant to other foreign meetings. The program quality was excellent, the Koreans were good hosts, and ExCom will look at the 'forensics.' While this was very successful as a technology conference, there are cultural issues to be explored. Will people who couldn't go to Korea come back to this conference? Surveys have been distributed. In Baltimore they will ask in greater detail about the Korean experience.

The Pulsed Power conference, held in Dallas this year, was also impacted by SARS and visa issues, according to Bob Reinovsky, Pulsed Power TC chair.

The 2005 PP meeting will be in Monterey, contiguous with the ICOPS conference. The 2007 conference will be integrated with ICOPS as the PPPS in Albuquerque, and it is suggested that AdCom meet between the PPPS and PAC, on June 23. Pulsed Power continues conversations with the Beams and Megagauss conferences. They expect action from the Megagauss people for a combined meeting under PPST.

The TC has three new members; they are working to formalize committee rotation.

Dennis Brown reported for Ron Schrimpf, Radiation Effects TC chair, that the fall RESG meeting will be held in Florida to look at a meeting site for 2006, and at the spring meeting they will look at the proposed site for 2007, with the idea of getting meeting site selection onto a three-year, rather than two-year schedule, to increase site possibilities as the conference grows in size.

The 2004 conference will be in Atlanta, with Dan Fleetwood of Vanderbilt as chair. They will add a session on Radiation Hardening by Design. Future Conferences: 2005 – Seattle, Fred Sexton, chair; 2006 – site TBD, Janet Bartlett, chair; 2007 – site TBD, Lloyd Massengill, chair.

A special issue of TNS provided a 40-year overview of the field.

Ron Keyser, RISC chair, reported that contracts for 2005 have been signed and the committee is in place. The Lyon conference is near closing and we will owe about 185K Euros

representing added VAT (2/3rds), extra expenses (1/6th), and 1/6th to defaulted grants promised but not delivered by several European organizations.

Questions were raised about financial issues related to the 2004 NSS/MIC in Rome. There is a US treasurer, the budget is being honed, there has been a lots of worrying, and VAT will be charged up front. The Committee is working to decrease meeting costs and to get good value from suppliers.

Many safeguards have been put in place for Rome, including transferring funds to IEEE rapidly. VAT collected on registration fees can be passed on to vendors. VAT on conference registration is 20%, while on food it is 10%. There are three VAT statuses: 1) consumer; 2) for profit, charges VAT for services and products – sell – then pay the difference, 3) VAT exempt – in which case VAT can be claimed back, which is likely for foreign delegates to the Rome conference.

IEEE should benefit from our international meeting experiences and we should benefit from theirs. There seems to be no clearing house for sharing these experiences and no hard information.

The RISC Awards committee is being reconstructed. The new members have not yet been announced. Craig Woody will assume chairmanship of RISC in January; Dick Lanza becomes chairman-elect.

Ralph James reported that the total registration for the 2003 NSS/MIC was 1374, a record, with 57% from the US, 7% from Germany, 6% each from Japan and Italy, 5% from France. Uwe Bratzler's committee and advertising push deserve much credit. Many young people were enlisted to serve on committees. About $35k in sponsorship was obtained from government agencies. More sponsorships should be possible (secy's note – that is true, but these are almost always allocated toward publication costs and student travel). The Room Temperature Semiconductor Devices workshop was co-hosted again; this represented some 150 – 200 attendees. The short courses were oversubscribed. The companion tours had 40 to 45 persons each, and the conference benefited from the great warm, dry weather. The river cruises provided excellent networking opportunities.

With the much higher than budgeted attendance, the conference should do well financially because the fixed costs per person drop. There were over 1200 abstracts submitted, with 650 for NSS and about 150 for RTSD, which is a turnaround for NSS, where abstract numbers had been declining. Trending and demographics analyses will be beneficial to future committees.

Erik Heijne, chair of the Transnational Committee, reported on four areas: 1) Conferences; 2) Visa issues; 3) Exclusion countries; and, 4) New members.

1) **Conferences**: there is a lot of RADECS activity; particle accelerators and plasmas are pretty well dissociated from IEEE, and something needs to be done about this. The sentiments aren't neutral. There is European opposition to IEEE where there is an active particle accelerator community. The plasma community seems to be focused in Japan. The particle accelerator community may be hostile because they have a long history of wanting to control their own papers, etc. There is a strong request to consider housing and other possibilities for students in Puerto Rico in 2005 as hotels and travel costs will be high and the conference hotel is isolated. Erik mentioned the Australian proposal to host NSS/MIC.

2) **Visas**: Twenty to 30 participants for NSS/MIC did not receive visas in a timely way. They need a visa support team. Alberto del Guerra noted the need to be very cautious about issuing "letters of invitation." This can imply, among other things, that expenses will be paid. Exceptional care is needed for requests from unusual countries, or from individuals with no history of attending the conference. There are fallacious requests from people trying to leave third-world countries...

3) **Exclusion Countries**: The Transnational Committee is eager to pursue resumption of basic rights of open exchange of scientific information. Hal noted that IEEE is working on this and it is getting solved. They have applied for a license to allow free exchange. Erik said that the committee discussed the possibility of special passports for scientists similar to those for diplomats, to ease the difficulties with visas.

4) **Membership** on the committee is increasing. The CIP committee is focused toward NSS/MIC, but this could be broadened to include other NPSS technical communities/conferences. Many issues require collaboration with US members.

Functional and Appointive Committees

Ray Larsen, chair of the Conference Policy Committee urged better communication in getting conference policy information out to conference chairs and to their committees.

Lest we forget

Remember, all men would be tyrants if they could.

Daniel Defoe

Beats diplomacy!

I want to be the bully on the block.

Colin Powell (1992)

Makes sense to me

Begin with an illogical premise and proceed perfectly logically to an illogical conclusion

Donald Rumsfeld

Balance

The only people with whom you should try to get even are those who have helped you.

John E. Southard

There are free-standing sections in the management documents for each job. These sections should be distributed as appropriate. The main planning materials are the IEEE Meeting Organization Manual, fondly known as MOM, and the NPSS Supplement to deal with NPSS-specific idiosyncrasies such as approval paths. These outline a three-year overall plan for conference management, including post-conference responsibilities and the post-conference report for self appraisal which has not been, but should be, used.

Overseas conferences are an experiment. There needs to be documentation on these experiences and a section on international conferences added to the NPSS supplement.

How can CPC's effectiveness be increased? An introductory letter with the documents and with the web information should be sent to every conference chair, once identified. Conference chairs should come to at least one AdCom meeting, although a session for chairs in conjunction with NSS/MIC would also be desirable.

Rich Callis noted that he used the MOM and the NPSS supplement and distributed them to committee members. They all found this useful

Igor Alexeff said his Awards Committee must start its work right away for 2004. He thanked Peter Winokur, Bill Moses and Ken Dawson for their help this past year.

Vernon Price, Memberships, Chapters, Distinguished Lecturers chair, reported 37% of the NSS/MIC attendees were IEEE members and 14% NPSS members. He signed up 28 new members during the meeting: 18 are transnational; 10 are from the US. IEEE membership is down 4% and NPSS membership is down 6%. Usually NPSS loses 100-150 and then numbers pick up again in January. Age distribution is an issue. More young people need to be attracted to the society. One way to attract young people may be through chapters. Anatoly Rosenfeld wants to start an Australian chapter and there is also a move toward starting a new Swedish chapter.

Chapters have proven tough to sustain. The Distinguished Lecturer program was designed to give chapters some program development assistance. We have abandoned this program, but will perhaps start it up differently. Send Vernon your thoughts (v.price@ieee.org).

There is a problem with ABET in that European and Asian institutions are not always recognized and are not on IEEE's list of acceptable universities, so students have to mail in applications for IEEE membership rather than use on-line resources We need more student involvement and need to be proactive with IEEE HQ to get appropriate institutions recognized. We also need a link from the IEEE web form to permit NPSS membership application at the same time.

Fellow Applications are due on May 15th!! These take time to prepare. A number of our fellows are willing to review applications. Contact me and I'll distribute applications to available fellows.

Hal Flescher addressed the question raised in July of what the 20% assessment on conferences really is. As a line item it is G&A (General and Administrative costs). It is generally agreed in FINCOM that this should be the averaged return for all our conferences. This pays for IEEE infrastructure costs – or the cost of doing business. This is to be added to the Conference Policy Committee NPSS supplement to the MOM. It is up to each conference whether or not to have a contingency line item, but it is highly recommended. The Loma Prieta earthquake, for example, required rescheduling NSS/MIC, with much expense involved. Contingency covers this sort of problem.

Peter Winokur thanked the chairs of the technical committees who each fielded two excellent candidates for open AdCom position. Ed Hoffman reiterated that we had very good candidates for all positions.

Paul Dressendorfer, our Editor–in-Chief, commented further on the 5-year review of our publications. It was clarified that there is a publications review committee that coordinates with SPARC. Bob Lorenz is in charge. They suggested term limits for editors and the EIC, as well as establishing a mechanism for nominating editors. We do need greater depth in trained editorial staff. This will be addressed in March, especially for conference editors.

TPS ranks low in the citation impact index (a function of the number of times a journal is cited over a two-year period and the number of papers in the journal.) This has to be addressed, as does the long time to publication of manuscripts. It is competing with the Journal of Applied Physics, which covers a much broader subject area. TPS's greatest strength is the special issues.

We don't promote our journals very well either on the web or at conferences. The society should pursue this and work for greater exposure.

The TNS February, June and October issues are devoted to NMIS papers in an effort to get these into the medical indices to improve their impact factor. Eighty NSS papers were published in the August 2004 TNS, with a few additional NSS papers published in December. On average, 50% of manuscripts are accepted. The journal is now coming out on time, and should make its 2003 page budget projections.

The big differential in cost between paper and electronic subscriptions has to do with production and mailing costs. At $60 a year, paper subscriptions to TMI are dropping, even though that is incredibly reasonable. If you have an electronic subscription, you have access to all the journal issues, but once your subscription ends, you have nothing. With paper you have that shelf full of transactions available in perpetuity. A yearly CD-ROM containing all issues of that year's journal would resolve this and should not be too expensive to produce.

The new Society brochure has been produced and about 6,000 mailed to NPSS members and to members of other societies with appropriate technical profiles. In 2004 there will be a one-sheet insert sent to appropriate TIP codes. The booth is available for North American conferences. Posters are available and they and the booth can be requested from Peter Clout's office (clout@vista-control. com).

Peter, Ken Dawson or I need to know well ahead how many extra copies of the Newsletter are needed for conferences. The Newsletter appears in March, July and September, so the order needs to go in at least 6 weeks prior to the publication date. These have been a good sales tool for NPSS.

Dick Kouzes continues to look after our web site. Technical committees really need web masters to liaise with Dick and to keep their sites up to date. Why don't YOU volunteer for your field of interest! Links to other sites where information on the field can be found really enhance the TC's site value. It is important to do trial searches and do whatever is necessary to keep NPSS and our TC pages at the forefront of topical responses in searches.

Tony Lavietes reminded us that web registration developed for NSS/MIC can be expanded to be used for any NPSS conference. The server in use is being upgraded.

Tony discussed the issue of computer and AV equipment rentals. The cost for NSS/MIC this year was $53k, not including labor costs. Tony proposes purchasing 50 laptops and 20 LCD projectors. Issues include lifespan, which Tony projects at 5 years. Cost would be $50, 000 and the equipment could be used by any or all of our conferences. At $550/day rental cost per LCD projector, the purchase cost would be recouped in a year. Mikes and lavaliere mikes are also worth considering. Issues include cost of packing, shipping, and storage. Costs will come down. There seemed to be fair consensus about purchasing LCD projectors. Most people bring their own laptops these days.

Tony will come to AdCom in March with a proposal and this issue will be discussed in depth.

Liaison Representatives Reports

Ray Larsen noted that he had written an article on the social implications of technology for the last Newsletter. SSIT had an 18% increase in membership last year; much had to do with the loss of jobs in the US for electrical engineers, the outsourcing of jobs to India and other places, the frivolous use of visas, the increase in allowable H1 visas from 65,000 to 140,000, although that has recently been dropped back to the 65k level, and so on.

Jay Forster reported that NPSS ranks 11th in standards overall, and has the greatest number in Division IV. Our rank may soon go up since there are about 240 standards up for withdrawal. There are two new standards web site available to help with developing standards. One is on International Standards and the other relates to international electrical standards. Lou Costrell, Gary Johnson and Mike Unterweger are available to give advice about these. Remember that there are awards available to those who write standards.

Jay is the recipient of the 2003 IEEE Steinmetz Award presented on December 5th. Congratulations, Jay! More NPSS members should be nominated for IEEE awards!

Gerry Rogoff reported on the continued mission of the Coalition for Plasma Science to educate students, teachers, congressmen and staff about plasma sciences. Information sheets, "About Plasmas" are available for certain areas of plasma science and new sheets are in progress. There is an educational brochure that goes to teachers. CPS is trying to get more of the technical community involved. They provide a question-answering function on plasmas for school children and the media, and are looking for new ideas. A topical award is being

Rationale for irrationality

A government that must hold Senate hearings to discover whether it has reason to go to war is a government that doesn't know the meaning of war.

Lewis H. Lapham

Ignorance is bliss

I think it is much more interesting to live not knowing than to have answers that might be wrong.

Richard P. Feynman

Whoa!

I wish you'd slow down so I could call you a workaholic

Peter Newman

considered. Web information is to be expanded. NPSS support is a big help.

The Sensors conference directly overlapped with NSS/MIC. Erik Heijne, our liaison, is working to get conferences and meetings scheduled so that they don't conflict with our conferences and AdCom meetings. The 2003 conference had about 800 participants, up from about 700 in 2002. The Sensors Journal has a conference issue and three others of contributed papers. Erik was asked to be guest editor on an ion sensors for homeland security special issue. The focus is detection of nuclear materials.

Hal Flescher reported that the 2003 RADECS conference was in the Netherlands, sponsored and run by ESSA. RADECS is looking into ways to raise funds. The 2004 workshop is hosted by Alcatel Spain; dates and site were to be decided. NSREC and RADECS have some overlap, but RADECS is principally European. They do, however, publish through NPSS.

Ken Dawson has been our Newsletter editor for the past 9 years. He feels that the Newsletter needs a fresh look, and that it should provide full coverage of our society activities – including updates on what is happening in each area of interest!. Because NPSS covers so many fields, we need to represent them all. Some, such as Radiation Effects, do a great job in providing information. Others are heard from only with urging. Some are just not heard from at all. Ken has encouraged technical update articles. These do not materialize too often. Some committees have not submitted a report to the Newsletter in years. Most information appears only after much urging. There are rarely reports from the TCs on Awards. Everything going on in the society should be covered in the Newsletter!

The editor does not write articles for the newsletter, simply collects, edits and formats contributions.

Simply getting information for the yearbook is difficult. Lists of committee members do not get submitted in a timely way. How much effort does that take, one must ask, as several people did. Material on the web is often out-of-date. The web also has no deadlines for renewing or posting new material. The Directory is a lot of work, and it is bad when one's colleagues are unresponsive. The last yearbook was published in 2002!

Ken will continue to supply quotations for the Newsletter and will edit the Directory if input is provided. Albe Larsen will take over as Newsletter editor some time in 2004. After the 2005 NSS/MIC, Tom Lewellen will either share or assume the job. He will help as best time allows until then.

Support was requested for the National Council on Radiation Protection and Measurements: Randy Brill has been involved with this organization since 1972. The NCRP has been in existence since 1928. There is also an international sister organization. They are involved with dosimetry, health effects and so on to develop radiation guidelines, rather than standards. IEEE is listed as a supporting organization, but there is actually no support given, and the IEEE people named do not attend meetings. Ed Hoffman queried a colleague about NSRP and got an extremely negative report. Glenn Knoll serves on an NCRP committee and says they overlap with our interests. We should be careful in how we deal with them, and pay attention to this, but encourages support. Randy is involved with them through COMAR - rf fields, cell phones and so on.

NCRP depended on both the stock market and contracts from various organizations to fund projects so are having financial problems. They used to produce 5 to 10 publications a year. They have been reducing staff and have been unable to meet a timely publications schedule. Their materials are used by the medical and accelerator communities, among others. Fast neutron dosimetry and measurements guidelines, for example, are used almost as standards. They seek field leaders to provide input to the guidelines. Once an area of need is identified, they seek funding. Since each publication costs in the range of $100k, and since they are a US organization only, it is unlikely we will give support further consideration.

For many years there were no funds to attend AdCom meetings, but in the last few years limited funds were established to permit attendance at least one AdCom meeting a year. AdCom attendance for TC chairs and elected members is assumed to be required, but our bylaws state that anyone missing three sequential meetings (NOT three meetings in a year) will be dismissed. It has been suggested that this be tightened to two meetings, requiring a bylaws change. The goal is to have members attend meetings and participate in managing NPSS business well. ICOPS provides some travel support for PSAC representatives in its budget. We

provide limited funds to help individuals without institutional support. This may well be discussed further at the retreat.

A proposal to sponsor "Modern Microwave and Millimeter Wave Power Electronics" to be published by the IEEE Press/John Wiley was presented by Edl Schamiloglu on behalf of the editors. The book is a summary of work funded by the AFOSR and most of the editors are active in NPSS.

Edl Schamiloglu moved and Bob Reinovsky seconded a motion that, contingent on ExCom's approval, the NPSS endorse the publication of "Modern Microwave and Millimeter-Wave Power Electronics," R. Barker, N. Luhman, Jr., J.Booska, G. Nusinovich, editors. The motion carried.

Subsequent to the AdCom meeting it was reported to the NPSS Secretary that the PSAC ExCom endorsed the book and IEEE has been duly notified.

Future Meetings:

March 12, 13, 2004
Hotel Monteleone
New Orleans, LA
Retreat followed by meeting

July 24, 2004
Renaissance Waverly
Atlanta, GA
After NSREC

October 23, 2004
Hotel Ergife
Rome, Italy following NSS/MIC

Language wars

Most of the grounds of the world's troubles are matters of grammar.

Montaigne

DIVISION IV DIRECTOR'S REPORT

As the new year dawns, Ken Dawson, the NPS Newsletter Editor (NPS is my society) reminds me that I have been just a tad worse than Peter Staecker, our past Div IV Director, was in communicating with you. Each of us has our strengths and weaknesses, and I guess we now know one of the latter. So, although a bit tardy, let me tell you a little about myself and about what is going on in IEEE.

I come from the Nuclear and Plasma Sciences Society. I am a Fellow of the IEEE for my work in radiation effects on electronics and materials. I retired in 2001 after 35 years with Raytheon Company and now have a small consulting practice that revolves around ensuring success through a team approach for time constrained, large, complex, technical projects. I was NPS President in 1989-1990, and have had a variety of TAB jobs and Chairmanships since then. For 2000-2002 I served as TAB Treasurer. Peter Staecker preceded me as Division IV Director and succeeded me as TAB Treasurer.

Where we are today: Many of the IEEE Directors have more than one job in IEEE. I remain on the TAB FinCom as past Treasurer and I am the Financial Chair of NPS. I also serve on several committees by appointment of our IEEE President, Art Winston. Over the last several years I have been intimately involved in changing the way we work to ensure that we continue to enjoy a fiscally sound IEEE, and one with a reduction in some of the burdening expenses many of you as volunteers have seen in the recent past. I think our restructuring of the past few years has resulted in an IEEE that is today working to sound financial policies. Our budgeting each year is now done with the requirement that we not have deficit budgeting, and investment returns are excluded from consideration in achieving this budget goal. So, as happened in 2003, an upswing in the investment market has given us a substantial increase in our reserves. Our reserves are important to us. Certainly they protect us against drops in our investment market, as happened over the last few years. Perhaps more importantly they permit us to borrow money, for both normal business cash flow and long term projects,, at very low rates. Our good fiscal performance has been aided by excellent management of our spending in all of IEEE, producing annual end-of-the-year actuals/budgets for many years for income and expense substantially in the black. This in spite of the advertising market being a bit off, our conferences not quite earning what we expected because of the marketplace and higher than expected decreases in our paper publications products income.

On the good side our electronic product, IEL (IEEE Electronic Library), is booming and grow-

Harold L. Flescher
Division IV Director

Practice makes perfect

A pessimist is a person who has not had enough experience to be a cynic.

Mary Pettibone Poole

Surprise!

Against all expectations the model behaved as predicted.

BBC World

ing much faster than any losses due to libraries, companies and universities shifting away from paper product. Not only is it more space-friendly, but also the search mechanisms built into the product make it much more functional. Now one can, from one's own PC/Mac, access any product to which you, your company/university has subscribed. No more walking to the library or shuffling through the shelves.

So where we are is that we are members of the largest professional society in the world. We are a worldwide society with 40% of our members from outside of the United States. We provide over 350 technical conferences each year; successful technical conferences open to all, member or not. Our more than 200 technical publications are highly cited in their fields, and are sought by all. We have a fiscal policy that is now conservative in all regards, and will remain so into the future. We are successful and will continue to be so because of our current business policies.

IEEE as a professional society: IEEE membership is a valued resource to all of our members. Those who read these newsletter offerings are part of the only 60% of IEEE members who belong to societies. That means that 40% of all IEEE members don't belong to societies! Why are they too IEEE members? It is because of the professional activities IEEE offers. Please note that I said professional society, not scientific society. There are scientific societies that offer only involvement in conferences and publications, but a professional society is much more. IEEE has many different kinds of Regional activities, Educational Activities, Award Activities, Standards activities, and the many other things that IEEE does because our members value them. Many of these activities are without sources of income, yet collectively "we" believe they need to be supported. IEEE, the largest professional organization in the world, is so because of the inclusion of such diversity of interests. So 40% of our membership participates in ways that don't directly include societies! IEEE is the whole and must be supported by the parts of the whole that earn money. Like any business or nonprofit organization.

So what are the financial issues we have been hearing about over the last few years? Within IEEE there are 5 sources of income (in good years there are 6 as our investments provide a return but I won't consider that here as these returns are not part of the budgeting process):

- IEEE Dues
- Society Dues
- Publications income (over 95% are society pubs)
- Conference income (perhaps 97% are society sponsored conferences)
- Standards sales

IEEE Dues are pretty well fixed by the marketplace. We are now in a process of raising them annually to keep up with inflation, but even if all 350,000 members paid full dues that's only 20% of our over $200M budget.

Most societies, bless our little hearts, don't even break even on dues. As TAB Treasurer I had a study done to see what the incremental costs of membership were. Almost no society was break-even on dues. We're all changing that now, and next year a good number of societies will break even on dues. Thankfully, this only amounts to a small loss. Our printed society member subscriptions lose a lot more. These cost $60/sub on-average to deliver, and we're offering them to members at an average of $15. Multiply by the number of pubs, times the number of societies, times the number of subscribers. We are generous to our members, but at quite a cost to our budget.

The Standards Association has been earning 3.5M roughly each year, a slowly climbing number, but still small compared to the overall IEEE budget.

That means that society publications sales and conference income provides more than 75% of IEEE income.

So what does this mean to us us? IEEE has begun a new era in which we are running a zero deficit (or better) budget each year, without considering investment returns. This is a change of paradigm from when annual double-digit investment returns made us all feel like Superman with enough money for every conceivable idea to be supported. On one end of the budgeting equation, we have been decreasing the costs of operation. On the expense side, over the last few years perhaps $20M of infrastructure costs have been eliminated, and we have identified future savings of millions more that are in process. Each of the entities, like RAB, TAB, EAB, etc. have had their budgets increasingly scrutinized and cut. On the up side, we are focusing on increasing all of our income sources. Standards Association has shown a steady increase in income due to improving business practices and price increases. IEEE dues are on a steadily increasing schedule. Pub prices, non-member print and electronic pricing have been increasing at a rate

that marketing believes is maximized while still under the for-profit pricing schedule. All of the societies are decreasing losses associated with member dues and member pubs by raising prices, unbundling subs from dues and offering electronic-only member subscriptions.

Last let's consider our conferences. Our societies price our conference registration fees based mainly on past performance and how much we need to break even. Most of us also add an x% return-to-the-society as a requirement to help with running our societies and to let us build our reserves. Perhaps there are also a few other incremental factors like the direction of the late-Dec. 1890 Nebraska snowstorm., but we basically price our conferences based on the expenses we have to recover. I don't think that companies can survive when they price according to what they need to stay in the black rather than to the marketplace. Our IEEE Marketing department has been trying to determine how our conference pricing compares to other similar conferences. People involved in conference planning have already begun getting this information. We hope you will pay heed to the differences and help us close the pricing gap.

We collectively have a professional society to run (IEEE). We do a lot of beneficial things for our members and for society. To do these things we need to earn money, not only enough to equal annual expenses, but enough to build up a reserve so we can weather the contingencies of life, like the market of the last 3 years. Conferences are one of our two big businesses (along with pubs). It has been the last to be addressed because of the number of people involved, ergo the number of opinions involved. We need to increase the income from conferences to continue our good work for all.

Harold Flescher, the Division IV Director, can be reached at 8124 159th Court North, Palm Beach Gardens, FL 33418; Phone: +1 561 741-4804; E-mail: h.Flescher@ieee.org

Patience, please

The illegal we do immediately. The unconstitutional takes a little longer.

Attributed to Henry Kissinger

CLASS OF 2007
The Newly Elected AdCom Members

Steven H. Gold

Steven H. Gold is the Senior Scientist for Radiation Generation Physics in the Beam Physics Branch of the Naval Research Laboratory, where he has been employed for the past 23 years. He obtained his Ph.D. in physics from the University of Maryland in 1978. His research interests include high-power microwave generation, fast-wave microwave devices, and applications of high-power microwave sources to accelerators and industrial processes. He presently directs a project to develop a high-power 11.424-GHz magnicon amplifier, and to use it as a test bed to develop other accelerator-related technologies, including active microwave pulse compressors and dielectric-loaded accelerators. He holds 3 patents, and has authored/coauthored more than 50 journal articles, 60 proceedings papers, and 30 invited papers.

Dr. Gold is currently Secretary of the Plasma Science and Applications Committee (PSAC), and has served three 3-year terms on the PSAC Executive Committee (ExCom), four prior years as PSAC Secretary, and two years as PSAC Vice-Chair. On ExCom, he has worked to strengthen PSAC and to improve the International Conference on Plasma Science (ICOPS) and the IEEE Transactions on Plasma Science. He has been an Associate Editor of the Transactions on Plasma Science since 1988, and Guest Editor of its second special issue on High Power Microwave Generation. One of his responsibilities as Associate Editor has been to ensure the continuity of the biennial special issues on High Power Microwave Generation by recruiting their Guest Editors. He has also been actively involved with the annual ICOPS, serving on numerous occasions as Program Committee member, session organizer, and session chair. He was co-chair of the recent RF 2003 Workshop, and co-editor of its Proceedings. He is a Fellow of the IEEE and a Fellow of the American Physical Society.

Steven Gold can be reached at the Naval Research Laboratory, Code 6793, 4555 Overlook Ave. SW, Washington, DC 20375-5346; Phone: +1 202 767-4004; Fax: +1 202 767-3950; E-mail: gold@ppdmail.nrl.navy.mil

Steven H. Gold

Allan H. Johnston

Allan H. Johnston

Allan Johnston received B.S. and M.S. degrees in physics from the University of Washington. He began his career at Boeing Aerospace Corporation, performing research studies on radiation effects in microelectronics and optoelectronics. He joined the Jet Propulsion Laboratory in 1992, where he supervises applied research on radiation effects in microelectronics for space applications.

His technical interests include ionization and single-event upset effects in semiconductor devices, with particular emphasis on low dose-rate effects, latchup, and applications of advanced technologies in space. Related interests include determining how new device technologies and device scaling will influence their radiation performance and reliability in space as well as radiation effects on optoelectronic devices. He has been the author or coauthor of more than 80 papers in refereed journals. He received the Outstanding Paper award at the IEEE Nuclear and Space Radiation Effects Conference (NSREC) in 1999, Meritorious Paper Awards in 1995 and 1996, and the Distinguished Poster Paper award in 1987. Key publications include work on super-recovery (rebound) in MOS devices, latchup from single particles, dose-rate effects in linear integrated circuits, the effects of device scaling on radiation susceptibility, and radiation effects in LEDs, optocouplers and laser diodes. He published invited papers on latchup in the IEEE Transactions on Nuclear Science (TNS) in 1996, on device scaling at the RADECS-1997 and RADECS-2002 Conferences, and on optoelectronics in the TNS in 2003.

He has been active in the IEEE Nuclear and Radiation Effects Conference, serving as Short Course Instructor for four conferences, Local Arrangements Chairman, Short Course Chairman, and Awards Chairman. He was Technical Program Chairman for the 1997 NSREC, and General Chairman for the NSREC in 2003. He is a Fellow of the IEEE.

Allan Johnston can be reached at the Jet Propulsion Laboratory, M.S. 303-220, 4800 Oak Grove Drive, Pasadena, CA 91109; Phone: +1 818 345-6425; Fax: +1 818 393-4559; E-mail: allan.h.johnston@jpl.nasa.gov.

Jane M. Lehr

Jane M. Lehr

Jane Lehr received the Bachelor of Engineering degree from Stevens Institute of Technology and the Ph.D. degree in Electro-Physics from Polytechnic University in 1996. She was introduced to the government laboratory environment in1992 through an AFOSR sponsored Summer Research Fellowship. After working in industry on pulsed power and high power switches, she joined the Air Force Research Laboratory as a civilian in 1997 assigned to the Wideband Sources Group where she used analytical and experimental studies to enhance the performance of critical components in pulsed power. Dr. Lehr initiated the research at AFRL in compact pulsed power for airborne platforms and worked closely with the AF Office of Scientific Research as a Science Officer. Her main research interests are high power switches and their applications. Dr. Lehr received the 2001 Air Force Basic Research Award for her work in compact pulsed power and ultra-fast switching.

Since 2002, Jane Lehr has been a Principal Member of the Technical Staff at Sandia National Laboratories in the Advanced Pulsed Power Technologies Branch, Center for Pulsed Power. Currently, she is leading the system assessment test program for the upgrade to the Z machine, called Z-R. In addition to ongoing work in high power switches, current research interests include the development of the spark channel in liquids and gases.

Jane Lehr is a member of the IEEE NPSS Standing Committee on Pulsed Power Science and Technology and serves as the Membership Chair. As Co-Guest Editor, she is presently conducting the review process for the October, 2004 IEEE Transactions on Plasma Science, Special Issue on Pulsed Power. She also served as Guest Editor for the 2002 Special Issue on Pulsed Power and is on the Editorial Board of the IEEE Dielectrics and Insulation Society. Dr. Lehr has been inducted into the New Mexico Hall of Fame and was named an Outstanding Woman of New Mexico. In 2001, she was awarded the IEEE Region 6 Service medal for leadership of the Albuquerque IEEE Chapter.

Jane Lehr can be reached at the Sandia National Laboratories, Advanced Pulsed Power Technologies, PO Box 5800, MS 1193, Albuquerque New Mexico 87185-1193; Phone: +1 505 844-8554; Fax: +1 505 844-8467; E-mail: jmlehr@sandia.gov

Charles L. Neumeyer

Charles Neumeyer is a Registered Professional Engineer with more than 20 years experience in advanced technology engineering and project management. The primary focus of his career has been fusion research but he has also worked in the A/E sector. He is a recognized expert in electromagnetic and high voltage engineering, AC/DC power conditioning systems, and electrical power systems.

In 2000 he received the PPPL Distinguished Engineering Fellow Award and in 2001 the New Jersey Society of Professional Engineers award for Engineer of the Year.

Since 1997 he has served as the Project Engineer for the National Spherical Torus Experiment (NSTX) at the U.S. Department of Energy's Princeton Plasma Physics Laboratory.

Mr. Neumeyer obtained his B.S. degree in Electrical Engineering in 1975 from the University of Virginia and the M.S degree in 1987 from the Polytechnic Institute of New York. He started his fusion career at PPPL on TFTR in 1976, with the design, procurement, and commissioning of the AC/DC converter systems, and was eventually responsible for the operation of all power systems. He was a member of the CIT/BPX design team. He was manager of the Power Systems, Neutral Beams, and Central I&C Systems for the TPX Project. He was the US Home Team Representative for the ITER Power Systems and a working member of the ITER EDA Power Systems team.

While at Raytheon Engineers & Constructors Mr. Neumeyer was involved in several projects including the Superconducting Super Collider (SSC), and the DOE/DNA Superconducting Magnetic Energy Storage (SMES) ETM.

Mr. Neumeyer has been an invited participant in a number of high-level technical reviews, including Korean Superconducting Tokamak for Advanced Research (KSTAR) Superconducting Coil and Power Supply Review, Tajeon, S Korea, 2002, Engineering Cost & Schedule Review, 1998, 30 Tesla Magnet Project, National High Magnetic Field Laboratory (NHMFL), Tallahassee, Florida, (1997), Preliminary Design Review Committee, 45 Tesla Hybrid Magnet Project, NHMFL (1994).

Charles Neumeyer can be reached at the Princeton Plasma Physics Laboratory, MS41, C-Site B326, P.O. Box 451, Princeton, NJ 08543-0451; Phone: +1 609 243-2159; E-mail: cneumeyer@pppl.gov

Charles L. Neumeyer

Solid foundations

Where the past exists, the future may flourish.

Peter Ackroyd

TECHNICAL COMMITTEES

REPORT FROM THE FUSION TECHNOLOGY COMMITTEE:

20th SOFE Presentations Indicate a Period of Strong Growth for the Worldwide Fusion Program

A successful 20th Symposium on Fusion Engineering was held on October 14-17, 2003 at the Bahia Resort Hotel in San Diego, California under the leadership of General Chair Richard Callis of General Atomics and Program Chair James Luxon, also of General Atomics. Approximately 200 engineers and scientists from 13 countries attended the event. Presentations covered the technological, scientific, and engineering issues of fusion research. Particularly noteworthy was the number of presentations on new experimental fusion facilities. After several decades of modest growth, the worldwide fusion program can now look forward to a period in which a number of major new experimental facilities will be commissioned.

Currently under construction are:

- The National Ignition Facility (NIF) at the Lawrence Livermore National Laboratory in Livermore, CA, USA. This multi-billion dollar facility utilizes 192 laser beams to generate a total of 1.8 MJ of energy per shot to create the extreme temperatures and pressures required to create fusion in small target pellets. Commissioning will begin this spring.
- The Korea Superconducting Tokamak Advanced Reactor (KSTAR) being built at the Korea Basic Science Institute in

Poetic justice

I'm against a homogenized society because I want the cream to rise to the top.

Robert Frost

Daejon, Korea. This device has a 1.8 m. major radius and a plasma current of 2 MA. First plasma is scheduled for 2006.

- The Experimental Advanced Superconducting Tokamak (EAST) under construction at the Institute of Plasma Physics, Chinese Academy of Science in Hefei, China. It has a major radius of 1.7 m., and a plasma current of 1 MA. First plasma is scheduled for late 2005.
- The steady state tokamak SST-1 being built at the Institute for Plasma Research in Bhat, India. This is also a superconducting tokamak; it has a major radius of 1.1 m. and a plasma current of 220 kA. Commissioning is scheduled to begin this year.
- The Wendelstein 7-X advanced stellarator under construction at the Max Planck Institute in Greifswald, Germany. It features superconducting coils and is designed to demonstrate the feasibility of stellarators as fusion reactors. It is scheduled for completion in 2010.
- The National Compact Stellarator Experiment (NCSX) under construction at the Princeton Plasma Physics Laboratory in Princeton, NJ USA. This new type of stellarator is designed to take advantage of tokamak-like magnetic symmetry in a 3D configuration to produce stable plasmas at a smaller aspect ratio than a conventional stellarator. It is scheduled for completion in 2008.

In addition, discussions are now underway to decide on the siting and an implementation plan for the ITER ("the way") international collaboration on a burning-plasma experiment whose mission is to demonstrate the scientific and technological feasibility of fusion energy for peaceful purposes. ITER has a major radius of 6.2 m, a plasma current of 15 MA, and is expected to begin operation in 2014.

We look forward to the opportunity to discuss the progress on these new experimental devices at the 21st SOFE, which is scheduled to be held in the fall of 2005 in the Oak Ridge, Tennessee area. Nermin Uckan of the Oak Ridge National Laboratory is the General Chair, and David Rasmussen of Oak Ridge National Laboratory is the Program Chair.

Phil Heitzenroeder, Fusion Technology Technical Committee chair, can be reached at the Princeton Plasma Physics Laboratory, MS-8, P.O. Box 451, Princeton, NJ 08543-0451; Phone: +1 609 243-3043; Fax: +1 609 243-3030; E-mail: pheitzen@pppl.gov.

NUCLEAR MEDICAL AND IMAGING SCIENCES TECHNICAL COMMITTEE (NMISTC)

Magnus Dahlbom
NMISTC Chair

The leadership of the Nuclear Medical and Imaging Sciences Council (NMISC) has changed with the retirement of Ronald Jaszczak, as the chair. For the next two years I will resume the responsibilities as the NMISC Chair; Tom Lewellen was elected vice-chairman at the annual meeting and he will become the chairman in 2006. The entire council would like to thank Ron for his excellent and enthusiastic leadership during the past two years. I would also like to thank Craig Levin, who will resign as NMISC secretary, for all his work for the council.

The NMISC held its Annual Meeting on October 24, 2003 from Noon-2pm at the Doubletree Hotel—Columbia River in Portland, OR. The meeting was called to order by Ronald Jaszczak, NMISC Chair.

Members and newly elected members present included: John Aarsvold (new), Magnus Dahlbom, Margaret Daube-Witherspoon, Lars Eriksson, Ron Huesman (new), Marijana Ivanovic, Tom Lewellen (new), Steven Meikle, Bradley Patt, Charles Stearns, Christopher Thompson (new), Larry Zeng, Ben Tsui (new), Sibylle Ziegler. Members Absent: Paul Marsden and Gary Wong. Other attendees at the meeting included: Simon Cherry, Alberto Del Guerra, Edward Hoffman, Joel Karp, Ron Keyser, Paul Kinahan, Michael King, Robert Miyaoka, Craig Levin, and Ron Jaszczak.

Paul Kinahan (2002 MIC Program Chair) reported on some of the key statistics of the 2002 MIC meeting that was held in Norfolk, VA. This was the first year that MIC surpassed NSS in registrants: MIC: 484; NSS: 361. 35 regular oral session papers and 266 poster session papers were presented. Other educational activities in conjunction to the main program included two workshops on Compton and

Breast Imaging, and an education outreach program aimed towards local high school teachers, given at the Jefferson lab.

Mike King (2003 MIC Program Chair) reported on some of the key statistics of the 2003 NSS/MIC meeting. The total attendance was 1362 (compared to 845 in 2002). A total of 434 abstracts were submitted (322 in 2002), 24 were rejected (25 in 2002). 52 MIC oral session papers and 354 poster papers were presented. Presentations by Roderick Pettigrew, Benjamin Tsui, Edward Hoffman, William Moses, Harrsion Barett; and Steve Webb were given in three different plenary sessions. This was also Steve Derenzo's first year as Chair of the short courses, which was very successful.

Alberto Del Guerra (2004 NSS/MIC General Chair) reported on the 2004 meeting at the Ergrife hotel (900 rooms) just outside of Rome. The goal is to attract more than 1,200 attendees. All activities will occur at the conference hotel. The organizing committee is in the process of generating student travel awards. More information regarding the meeting can be found at: http://nss-mic-rtsd-2004.df.unipi.it

Tom Lewellen (2005 NSS/MIC General Chair) gave a preview of the 2005 NSS/MIC meeting at Conquistador Resort in Puerto Rico. The hotel has 5,200 sq ft of exhibit space and 14,000 sq. ft. of poster space. The committee has secured funds from DOE and NIH for student travel awards.

Graham Smith (2006 NSS/MIC General Chair) reported on the 2006 NSS/MIC meeting at the Town and Country Resort in San Diego. Key administrative positions on the organizing committee, such as Treasurer and Local Arrangements, are members from previous committees. John Aarsvold will be the MIC Program Chair: Bo Yu will again work as the web-master.

The case for a location in Germany for the 2007 NSS/MIC meeting was presented by Uwe Bratzler. The possible locations discussed were Berlin, Hamburg, or the Aachen-Jülich-Bonn area, which all have universities and/or national labs nearby that are interested in hosting the meeting.

Margaret Daube-Witherspoon, Chair of NMISC Awards-Fellow Subcommittee, reported that the Young Investigator Medical Imaging Science Award went to Habib Zaidi. Nominations are solicited for IEEE Fellow (due March 15, 2004) and NPSS awards (due May 15, 2004). Information for these awards may be found at www.ieee.org/npss under "Awards".

Craig Levin reported on the successful 2002 Breast Imaging workshop, organized by Martin Tornai and Craig Levin, and funded by NIH and the Susan Komen Foundation. Based on the very favorable feedback form the attendees, the organizers are planning to repeat the workshop at the upcoming 2004 Rome meeting.

The annual meeting concluded with the reappointment of Margaret Daube-Witherspoon as the Chair of the Awards-Fellow subcommittee; Larry Zeng will replace Magnus Dahlbom as the Chair of the communications subcommittee and NMISC web-master; Steven Meikle was voted in as the new NMISC secretary starting in 2004.

Excerpted from the Minutes of the Annual Meeting and submitted by Craig Levin, Secretary, NMISC, who can be reached at the Nuclear Medicine Division, School of Medicine, University of California/VA Medical Center, San Diego, CA 92161; Phone: +1 858 552-7511; Fax: +1 858 552-4387; E-mail: clevin@ucsd.edu. The minutes from the meeting can be found at: http://ewh.ieee.org/soc/nps/nmisc.

Magnus Dahlbom, Chair of the NMISC, can be reached at the Division of Nuclear Medicine, David Geffen School of Medicine at UCLA, Los Angeles, CA 90095; Phone: +1 310 206-8273; Fax: +1 310-206-4899; E-mail: mdahlbom@mednet.ucla.edu.

Necessary prerequisite

But, then, before any revolution in technology occurs, the experts in the field always declare the revolution to be impossible. Otherwise it would not be a revolution.

Freeman Dyson

REPORT ON THE 14th IEEE INTERNATIONAL PULSED POWER CONFERENCE

The 14th IEEE International Pulsed Power Conference was held at the Hyatt Regency Hotel in Dallas June 15-18, 2003. 584 Participants from a total of 22 countries were in attendance, despite visa problems and various travel advisories. Dr. Michael Giesselmann and Dr. Andreas Neuber, both from the Center for Pulsed Power & Power Electronics at Texas Tech University served as General and Technical Program Chair respec-

Vladimir K. Chernyshev
Erwin Mark Award

Hidenori Akiyama
Peter Haas Award

Thomas A. Holt
Pulsed Power Student Award

Gary Brent McHale
Pulsed Power Student Award

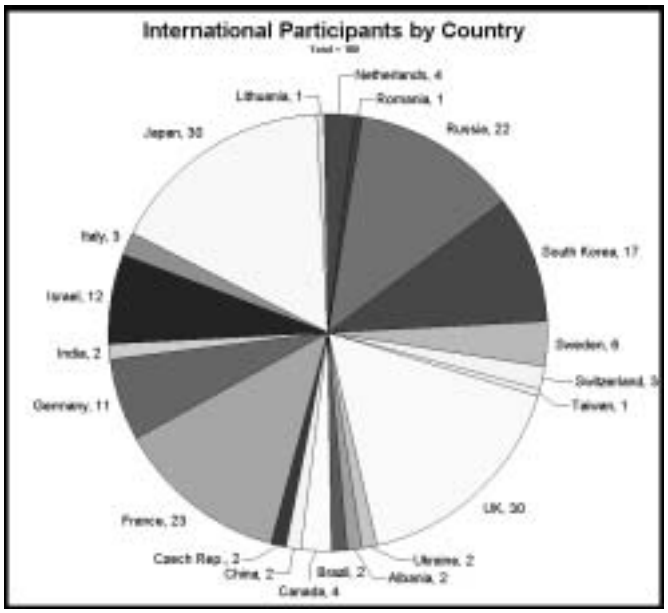
tively. The conference featured several firsts such as all electronic abstract and paper submission, all electronic paper presentation, an expanded and professionally managed industrial exposition and an internet café with wireless hot-spots in the conference area.

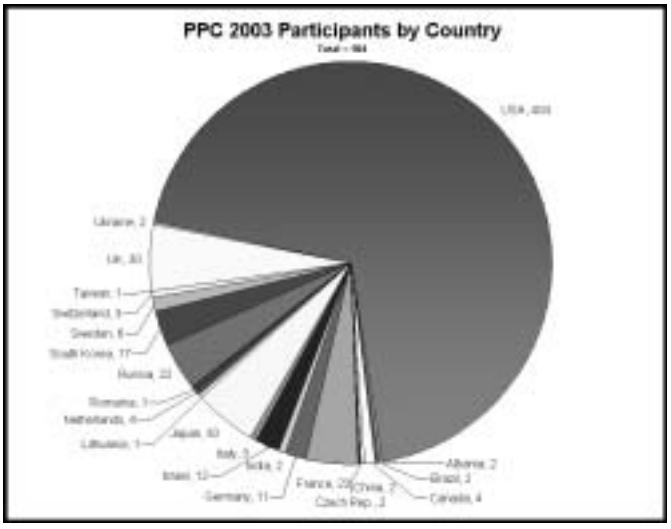
We received 477 abstracts using www.webstracts.com online services. With the help of many colleagues in the worldwide pulsed power community, 1062 technical reviews were conducted online, a first for the Pulsed Power Conference. The results served as the basis for the high-level technical program. Each working day of conference started with a plenary session, followed by 4 breakout sessions in the morning, 4 more breakout sessions in the afternoon and a afternoon poster session.

The social program included a trip to the South-Fork Ranch, site of the famous "Dallas" TV show. The conference started on Sunday with a welcoming reception and culminated on Tuesday evening with the formal Awards dinner.

The Edwin Marx Award winner was Dr. Vladimir K. Chernyshev from the Russian Federal Nuclear Center – VNIIEF in Russia. The Erwin Marx Award began at the 3rd IEEE Pulsed Power Conference (June 1981). It is dedicated to the memory of Professor Marx and his concept of the cascade impulse voltage generator that bears his name. Professor Marx passed away on January 11, 1980, just prior to his 87th birthday. The High Voltage Institute of the Technical University of Braunschweig, has graciously allowed the Pulsed Power Conferences to present the Erwin Marx Award in his name. The award was presented by Dr. Magne Kristiansen.

Prof. Hidenori Akiyama from Kumamoto University in Japan won the Peter Haas Award.The Peter Haas Award was established at the 6th IEEE Pulsed Power Conference (June, 1987) and bears the name of the late Peter Haas who was recognized at the 2nd Pulse Power Conference (1979) "for many contributions to a strong and vigorous pulsed power program through sound management, steadfast conviction, and farsighted technical acumen." Today, the Peter Haas Award honors those individuals who share Peter's dedication, leadership, and vision for Pulsed Power. The award was also presented by Dr. Magne Kristiansen.





The student award winners for 2002/2003 were Thomas A. Holt from the Naval Research Laboratory and Gary Brent McHale from Texas Tech University.

Michael Giesselmann, the 2003 International Pulsed Power Conference General Chair , can be reached at the Center for Pulsed Power & Power Electronics, Department of Electrical and Computer Engineering, EE-Building, Mail Stop 43102, Texas Tech University, Lubbock, Texas 79409; Phone: +1 806 742-3462; Fax: +1 806 742-1281; E-mail: Michael.giesselmann@ttu.edu

INSIDE THE RADIATION EFFECTS STEERING GROUP

The IEEE Radiation Effects Steering Group (RESG) held its annual fall business meeting at the Marriott Sawgrass Resort in Ponte Vedra Beach, Florida, at the site of the 2006 Nuclear and Space Radiation Effects Conference (NSREC).

The 2004 NSREC will be held July 19-23 at the Renaissance Waverly Hotel in Atlanta, Georgia. This marks the first return of the NSREC to the eastern half of the US since 1999. Atlanta is the entertainment center of the South, featuring great restaurants, nightlife, cultural attractions, and five major league sports teams. If the Braves are in town during the conference, plan to attend a game and enjoy outstanding baseball and Atlanta's warm summer evenings. Buckhead, Midtown, and Virginia-Highlands are among the most popular neighborhoods for Atlanta nightlife. Atlanta combines the best of old and new, ranging from Civil War sites to facilities associated with the 1996 Centennial Olympic Games. The Wednesday evening conference social will be held at the World of Coca-Cola, which tells the story of the beverage that was created in Atlanta over 110 years ago. You'll be able to sample varieties of Coke products that are served in countries around the globe. The World of Coke is adjacent to Underground Atlanta, which offers a wide array of shops, restaurants, and activities for everyone to enjoy.

Dan Fleetwood from Vanderbilt University and his 2004 conference committee are planning a strong technical program and social events that will provide frequent opportunities for discussing radiation effects with friends, old and new. Atlanta's convenience for travel, wide range of attractions, and southern hospitality make it an ideal site for conference attendees, as well as their families.

As far as future NSREC's are concerned, the 2005 conference is scheduled for July 11-15, 2005 at the Sheraton Seattle Hotel and Towers in Seattle, Washington. Fred Sexton of Sandia National Laboratories, Conference General Chairman, has selected an excellent conference committee and is well along in the planning process.

Janet Barth of NASA Goddard Space Flight Center is the 2006 Conference General Chairman. Janet has selected Ponte Vedra Beach, near Jacksonville, Florida, as the conference site. This location is ideal for golfers, as well as those who love beaches or historical sites.

The amount of lead time required to plan a conference is increasing and it currently takes more than three years to plan each NSREC. Lloyd Massengill of Vanderbilt University was recently appointed as 2007 Conference General Chair. Lloyd is currently considering sites for the conference and will host the spring meeting of the RESG at his preferred site.

During the fall RESG meeting in Ponte Vedra Beach, Philippe Paillet of the Commissariat à l'Energie Atomique (CEA, the French Atomic Energy Commission) was selected as Assistant Guest Editor for the December issue of the IEEE Transactions on Nuclear Science (TNS). The editor's job is a 3-year term. Philippe will support Guest Editor Lew Cohn from the Defense Threat Reduction Agency and Associate Guest Editor John Cressler from Georgia Tech in the huge task of organizing reviews of all papers to be published in the December issue of TNS. Philippe is the first Guest Editor selected from outside the United States; we look forward to his contributions and new perspective. He has been an active participant in NSREC for a number of years, as well as in RADECS, the European radiation effects conference.

Keep visiting our web site at www.nsrec.com for author information, paper submission details, vendor links, on-line registration, and the latest NSREC information.

Ron Schrimpf serves as Chairman of the Radiation Effects Steering Group, which oversees the NSREC Conference. He is technical chair of the NPSS Radiation Effects Committee. Ron can be reached at Vanderbilt University, 5635 Stevenson Center, Nashville, TN 37235; Phone: +1 615 343-0507; Email: ron.schrimpf@vanderbilt.edu

Ronald D. Schrimpf
REC Chairman

Exclusion principle

Snead's rule says you can either get something done or get the credit for it, but not both.

Freeman Dyson

NEW RESG MEMBER-AT-LARGE

Steve Clark of the Air Force Research Lab was elected Junior Member-at-Large, Radiation Effects Steering Group (RESG) during the annual Open Meeting at the 2002 Nuclear and Space Radiation Effects Conference (NSREC). Steve is the Chief of the

Steve Clark
RESG Junior Member-at-Large

Space Electronics Components Development Program at AFRL in Albuquerque, New Mexico. He has over 19 years experience in research and development of advanced technologies for intelligence analysis tools, and semiconductor device technology and integrated circuit development for space systems. Steve is responsible for advanced research pertaining to analog and mixed signal electronics, as well as power conversion and management electronics systems. He was responsible for the development of many radiation hardened technology applications that are used today in Air Force systems. He previously had appointments in the Space Mission Technologies Division and the Applied Microelectronics Branch of the USAF Phillips Laboratory and at the National Aerospace Intelligence Agency.

Steve has a Master of Science degree in Electrical Engineering from the Air Force Institute of Technology. We welcome Steve to the RESG!

Steve Clark can be reached at AFRL, 3550 Aberdeen Ave. SE, Kirtland AFB, NM 87117; Phone: +1 505 846-6067; E-mail: steven.clark@kirtland.af.mil

RADIATION EFFECTS AWARD

Nominations are currently being accepted for the 2004 IEEE Nuclear and Plasma Sciences Society (NPSS) Radiation Effects Award. The purpose of the award is to recognize individuals who have had a sustained history of outstanding and innovative technical and/or leadership contributions to the radiation effects community but who may not have been honored by being elected Fellows of the IEEE or receiving other IEEE awards such as a Merit Award, the Shea Award, or an IEEE Medal. The $2000 cash award and plaque will be presented at the IEEE NSREC in Atlanta, Georgia, July 19-23, 2004.

Nomination forms are available electronically at http://www.nsrec.com/nominate.htm. Nominations must be submitted by March 26, 2004. NOTE: The guidelines for the award have changed; please review the updated information on the NSREC website.

Additional information can be obtained from Ron Pease, Senior Member-at-Large for the Radiation Effects Steering Group. Ron can be reached at +1 505 565-0548.

Think I'll move there

The dead live a long time in France.

Eugen Weber

Outstanding and Meritorious Papers at the 2003 Nuclear and Space Radiation Effects Conference

The Awards Committee for the 2003 Nuclear and Space Radiation Effects Conference, chaired by Gordon Hopkinson, Sira, Ltd., completed the evaluation of technical papers presented at the Conference, with the following results:

The *Outstanding Conference Paper Award* was given to the paper entitled

"Three-Dimensional Mapping of Single Event Effects Using Two Photon Absorption", by D. McMorrow, J. S, Melinger, Naval Research Laboratory; W. T. Lotshaw, SFA, Inc.; S. Buchner, QSS Group, Inc.; Y. Boulghassoul, L. W. Massengill, Vanderbilt University; and R. L. Pease, RLP Research.

Two other conference papers received high average scores and were selected for *Meritorious Paper Awards*.

"Passivation Layers for Reduced Total Dose Effects and ELDRS in Linear Bipolar Devices", by M. R. Shaneyfelt, J. R. Schwank, P. E. Dodd and L. C. Riewe, Sandia National Laboratories; R. L. Pease, RLP Research; M. C. Maher and S. Gupta, National Semiconductor Corporation.

and

"SEE Characterization of Vertical DMOSFETs: An Updated Test Protocol", J. L. Titus, NAVESEA Crane, and C. F. Wheatley, Consultant.

Two papers presented at the Radiation Effects Data Workshop received *Outstanding Radiation Effects Data Workshop Awards*:

"Analysis of Radiation Effects in Space for Terrestrial Solar Cells on MDS-1", by T. Sumita, M. Imaizumi, S.Kawakita, S. Matsuda, S. Kuwajima, National Space Development Agency of Japan; T. Ohshima and T. Kamiya, Japan Atomic Energy Research Institute.

and

"In-Flight Observations of Long-Term Single Event Effect Performance on Orbview-2 and

Xray Timing Explorer Solid State Recorders", by C. Poivey, SGT-Inc.; J. L. Barth, K. A. LaBel, J. Safren, NASA-GSFC; and G. Gee, SFT-Inc.

The preceding three articles and the one on the 2004 NSREC were all prepared by the RESG Publicity Chairman, Teresa Farris. She can be reached at Aeroflex Colorado Springs, 4350 Centennial Blbd., Colorado Springs, CO 80907-3486; Phone: +1 719 594-8035; Fax: +1 719 594-8468; E-mail: teresa.farris@aeroflex.com

RADIATION INSTRUMENTATION TECHNICAL COMMITTEE REPORT

Craig Woody
RITC Chair

It gives me great pleasure to write this report on the activities of the RITC for the NPSS Newsletter as the new RISC Chairman. I would first like to thank Ron Keyser for the superb job he did as RISC Chairman over the past two years. Ron will continue to serve on the RISC as Immediate Past Chair, and he has already agreed to serve as the new Site Selection Committee Chairman which has as its first job to choose a location and a General Chairman for the 2007 NSS/MIC conference. In addition, Ron will serve as the Exhibits Chairman for the 2005 NSS/MIC meeting in San Juan, Puerto Rico, so he will continue to play a very active role in the future activities of the RISC

I would also like to thank the RISC members whose terms expired on December 31, 2003. These are Pat Doty, Richard Lanza, Tumay Tumer, David Ramsden, and David Wehe. However, David Wehe has graciously agreed to continue to serve on the RISC as the Awards Committee Chairman, as he has done for the past year, and we welcome his continued efforts in this role. As such, his Awards Committee will be assigning two awards this year: the Outstanding Achievements Award, which is given to an accomplished IEEE member for outstanding contributions to the field of nuclear instrumentation, and the Early Career Award, which is given to a more junior person for outstanding achievements in the early part of their career. Normally, the Outstanding Achievement Award is given out in odd years, but was not given out last year due to a delay in the final balloting. Nominations for this year's Early Career Award, which is normally given out in even years, can be submitted to David Wehe using the nomination form located at ewh.ieee.org/soc/nps/awards.htm.

Another member whose term expired last year and who will continue to serve on the RISC in the future is Richard Lanza. Richard will be the NSS Program Chairman in 2005, and was elected Chairman-elect for the RISC starting in 2007. I look forward to working with Richard over the next several years to help plan the long term future for the RISC and RITC.

I would also like to welcome the five new members of the RISC who were elected in the fall of last year and who will be serving a three year term starting January 1, 2004. They are Uwe Bratzler, Paul Lecoq, Charles Melcher, T.J.Paulus and Bo Yu. Many of us know Uwe as the NSS Chair for the 2003 NSS/MIC meeting in Portland, and Bo Yu, who was the Deputy NSS Chair for the 2001 meeting in San Diego. Bo has also played a key role in setting up and maintaining the paper submission and review website for the NSS/MIC meeting, and in organizing the electronic presentations at the meeting itself. Paul, Chuck and T.J. are also familiar to many of us in the NSS, so we welcome all of them to the RISC and look forward to working with them over the next three years.

Surely the main event for the RITC during the past year was the very large and highly successful NSS/MIC meeting held in Portland, Oregon from October 20-25, 2003. This was the largest NSS/MIC meeting ever held, which also included the Room Temperature Semiconductor Detector Conference (RTSD) and the Symposium on Nuclear Power Systems (SNPS), and attracted more than 1400 participants from both the nuclear science and medical imaging communities. In addition, there was a very full program of Short Courses and a number of Satellite Workshops which added even more interest to the meeting. A great deal of credit and thanks goes out to Ralph James, who was the General Chairman, and to Uwe Bratzler, the NSS Chair, and Michael King, the MIC Chair, for making this conference an outstanding success.

For the future, we are looking forward to another successful NSS/MIC meeting this year in Rome, Italy. The conference will be held from October 16-22 2004 at the Ergife Palace Hotel with Alberto Del Guerra as General Chair. The website for this meeting is www.nss-mic.org/2004 and the deadline for

Priority

The world owes you nothing. It was here first.

Mark Twain

Not a whiff

Sewage Treatment Site Up in the Air.

Seattle Post-Intelligencer Headline

paper submission is May 15, 2004. Please mark these dates on your calendar and plan to attend, as we expect to again have another very exciting meeting.

The dates, locations and General Chairs for other future NSS/MIC meetings are:

2005 Oct 22 to 29, San Juan, PR
General Chair: Tom Lewellen

2006 Oct 28 to Nov 4, San Diego, CA
General Chair: Graham Smith

As I start my term as RISC Chair, I would like to encourage all of you to become more involved with the RITC and its activities within the NPSS and IEEE. Our Society is one of the foremost and respected in the field of nuclear science instrumentation and technology, and our annual meeting attracts some of the best scientists and engineers in our field. One way to keep up this high level of standard is to become involved. This can be done by not only attending the meeting, but also helping to make it happen. There are many roles which need to be filled for a meeting of this size, so if you are interested in volunteering to work on one of the future committees, please contact the General Chair or one of the RISC members. I'm sure you will find it a rewarding experience. Also, please consider running for election to the RISC itself. This is really a way to see how the RITC is run, and to express your opinion and make the changes you would like to see done.

Finally, let me conclude by saying that our interaction with the medical imaging community has become extremely strong, and that the activities in these two fields has become very interrelated. Over the past ten years, we have seen the medical imaging portion of our annual meeting grow from a few small, special interest sessions to a conference the size of the NSS itself. I think this is a very positive and healthy development, and that it is very important to keep these two communities working together sharing ideas and information. I therefore look forward to working with the new NMISC Chairman, Magnus Dahlbom, to see that this close level of interaction continues.

Craig Woody, the RITC Chair, can be reached at the Brookhaven National Laboratory, Building 510-C, Upton, NY 11973-5000; Phone +1 631 344-2752; Fax: +1 631 344-3253; E-mail: woody@bnl.gov

REPORT ON THE 2003 IEEE NSS/MIC/RTSD/SNPS

Ralph James
NSS/MIC/RTSD/SNPS General Chair

The 2003 IEEE NSS/MIC/RTSD/SNPS was held in Portland, Oregon at the Doubletree Jantzen Beach and Columbia River complexes beginning Sunday, October 19 through Saturday, October 25th. In keeping with tradition, the NSS/MIC was complimented by a Short Course program from October 19 to 21 and the Symposium on Nuclear Power Systems (SNPS) on Wednesday, October 22nd.

By all measures the meeting was very successful. The NSS/MIC conference is one of the most productive international scientific meetings in the fields of nuclear and particle physics and the physics of nuclear medicine. It is particularly successful, and unique in the manner in which it combines these areas of research, due to the synergism between nuclear physics and medical imaging. This year's success can certainly be attributed to an organization of hard working scientists as well as professionals and administrators. In particular, Uwe Bratzler and Maxim Titov, NSS Program Chair and Deputy Program Chair, respectively; Michael King and Stephen Glick, MIC Program and Deputy Program Chairs, respectively, Ralph James and Paul Siffert, RTSD Co-Chairs and Jay Forster, Chairman for SNPS. This year's conference boasted close to 1400 participants and included an ambitious Short Course Program, chaired by Stephen Derenzo, and numerous Satellite Workshops. The Exhibitor Program, always a favorite among the scientists, was once again top notch.

As General Chair, I'd like to thank all of the members of the program committee who volunteered their time and energy to the organization and running of the conference. In addition to the scientific chairs, I am especially grateful to Roger Gearhart, Judy Sanders, Bonnie Sherwood, Scott Metzler, Bo Yu, Ron Keyser, Tony Lavietes, Tony Maeda and the group from TDMG who took care of registration. To all the participants who year after year make this conference a success, a special thank you as well. I hope to see you next year in Rome.

Ralph James, the General Chair of the 2003 IEEE NSS/MIC/RTSD/SNPS, can be reached at the Brookhaven National Laboratory, Bldg. 460, 40 Brookhaven Avenue, Upton, New York 11973; Phone: +1 631 344-8633; Fax: +1 631 344-5584; E-mail: rjames@bnl.gov.

AWARDS

CALL FOR NPSS AWARD NOMINATIONS
Deadline May 15, 2004

The time is NOW for nominating your well-deserving colleagues for the IEEE Nuclear and Plasma Sciences Society and Committee awards. If you have any questions, e-mail or call me. The deadline is May 15, 2004.

The NPSS Awards funded directly by the Society comprise the following:

The Richard F. Shea Distinguished Member Award

Description: To recognize outstanding contributions through leadership and service to the NPSS and to the fields of Nuclear and Plasma Sciences.

Award: $ 2,000, plaque, and Certificate.

Eligibility: Any member of the IEEE and NPSS who has contributed to the fields of nuclear and plasma sciences through leadership and service.

Basis for Judging:

- Leadership roles and leadership quality;
- Innovative and important contributions to Society activities;
- Service and dedication to the NPSS;
- Technical achievements.

Presentation: One award presented annually at the Nuclear Science Symposium (or at any other IEEE NPSS meeting that the awardee chooses.)

The NPSS Merit Award

Description: To recognize outstanding technical contributions to the fields of Nuclear and Plasma Sciences.

Award: $ 2,000, Plaque and Certificate.

Eligibility: Any individual who has made technical contributions to the fields of Nuclear and Plasma Sciences.

Basis for Judging: Selection criteria, in order of importance are:

- Importance of individual technical contributions;
- Importance of technical contributions made by teams led by the candidate;
- Quality and significance of publications and patents;
- Years of technical distinction;
- Leadership and service within the fields of nuclear and plasma sciences and related disciplines.

Presentation: One award presented annually at Nuclear Science Symposium or at an NPSS sponsored meeting chosen by the nominee.

The NPSS Early Achievement Award

Description: To recognize outstanding contributions to any of the fields making up Nuclear and Plasma Sciences, within the first ten (10) years of an individual's career.

Award: $ 1,800, plaque, and certificate.

Eligibility: Member of the IEEE NPSS who at the time of nomination is within the first ten (10) years of his or her career within a field of interest of NPSS.

Basis for Judging: Three (3) letters of recommendation plus publications and/or reports, patents, etc. which demonstrate outstanding contributions early in the nominee's career.

Presentation: At any major NPSS sponsored conference chosen by the awardee.

The NPSS Graduate Scholarship Award

Description: To recognize contributions to the fields of Nuclear and Plasma Sciences.

Award: $ 500, certificate, and a one-year paid membership in the NPSS.

Eligibility: Any graduate student in the fields of Nuclear and Plasma Sciences.

Basis for Judging: Evidence of scholarship such as academic record, reports, presentations, publications, research plans, related projects and related work experience, Participation in IEEE activities through presentations, publications, student Chapter involvement, etc., will also be considered.

Presentation: Up to four (4) awards presented annually. Check and certificates sent to nominator to be presented at a special occasion at the winners' institutions.

Paul L. Phelps Award

Description: The Paul L. Phelps award is different, in that its objective is to permit people to attend short courses at IEEE NPSS meetings by giving them travel grants.

Award: Several travel grants per NPSS conference.

Igor Alexeff
NPSS Awards Commitee Chair

Disillusioned again...

We've all heard that a million monkeys banging on a million typewriters would eventually reproduce the works of Shakespeare. Now, thanks to the internet, we know this is not true.

Robert Wilensky

Reflection

The image of myself which I try to create in my own mind in order that I may love myself is very different from the image I try to create in the minds of others in order that they may love me.

W. H. Auden

Eligibility: Any graduate student in the fields of Nuclear and Plasma Sciences. Also members of the IEEE who are unemployed or have trouble obtaining travel funds. Each grantee must attend a short course.

Basis for Judging: Each conference shall have an appointed chairman to handle Phelps travel grants. The amount of funding per conference is determined by the short course attendance at the previous conference. (Consult the IEEE NPSS Treasurer.) This amount may then be subdivided at the discretion of the appointed chairman to accommodate several recipients. Application for the grant is by a letter to the appointed chairman (or the conference chairman, who will forward it to the proper person) well in advance of the conference date. The letter will convey the need for the grant, as well as biographical and scientific information to demonstrate the scientific capability of the potential grantee.

Presentation: A check will be sent to each grantee, preferably well before the conference, but as soon as possible in the case of late application.

The IEEE Awards Program

There is an abundance of high–level awards obtainable directly from the IEEE. In general, our society has not participated in these awards. To my knowledge, the NPSS has only received ONE such award in its 30-year history.

Take a look at the IEEE Award Manual whcih is available on the IEEE web site and be amazed at what is available! And get to work!

The IEEE NPSS Technical Committee Awards:

Most of the Technical Committees under the IEEE NPSS umbrella have their own awards. These awards, listed below, are in general funded from the committee's conference budget and details on each one are on the NPSS web site–ewh.ieee.org/soc/npss.

- Computer Applications in Nuclear and Plasma Sciences Award.
- Radiation Effects Award.
- Radiation Instrumentation Early Career Award.
- Radiation Instrumentation Outstanding Achievements Award.
- Fusion Technology Award.
- Particle Accelerator Science and Technology Award (PAST Award).
- Plasma Science and Applications Award.
- Medical Imaging Scientist Award.
- Young Investigator Medical Imaging Science Award.
- Erwin Marx Award
- Peter Haas Pulsed Power Award.
- Outstanding Pulsed Power Student Award.

Igor Alexeff, the NPSS Awards Committee Chair welcomes your inquiries and nominations. He can be reached at the University of Tennessee, Ferris Hall 315, Middle Drive, Knoxville, TN 37996-2100; Phone: +1 865 974-5467; E-mail: alexeff@utk.edu

JOSEPH R. SROUR
2003 NPSS Merit Award

Joseph R. Srour

Joe Srour is presently employed in a senior engineering position at the Aerospace Corporation in Los Angeles, CA. Prior to joining Aerospace in 2003, he worked for TRW (now Northrop Grumman Space Technology) where he managed the Radiation and Survivability Engineering organization. Before TRW, he worked for the Northrop Corporation in Los Angeles for many years where he held various technical and managerial positions, including Senior Research Engineer, Project Manager, and Department Manager. Much of his technical work has focused on nuclear and space radiation effects on materials, devices, circuits, and systems. He has also made technical contributions in the areas of optical detectors, semiconductor device physics, and microelectronics.

Joe was elected a Fellow of the IEEE in 1987, and is a member of Sigma Xi and Tau Beta Pi. He is the author of one technical book and 49 articles published in refereed technical journals. He received the Outstanding Paper Award six times for papers presented at the annual IEEE Nuclear and Space Radiation Effects Conference, and received the Meritorious Paper Award twice for papers presented at that same conference. Joe has held various conference management positions in the radiation effects field within the IEEE NPSS. He also organized and taught several short courses on radiation effects, and developed

a graduate course in semiconductor device physics. He holds two U.S. patents. Joe received bachelors, masters, and Ph.D. degrees in electrical engineering from the Catholic University of America, Washington, DC.

Joe Srour can be reached at The Aerospace Corporation, Mail Stop M4/994, P. O. Box 92957, Los Angeles, CA 90009-2957; Phone: +1 310 336-2565; E-mail: joe.srour@aero.org

STEVEN J. GITOMER
2003 Richard F. Shea Award

The 2003 Richard F. Shea Awardee is Steven J. Gitomer. The award, this year, recognizes Steve Gitomer for his contributions to the IEEE NPSS for 20 years as Editor of the IEEE Transactions on Plasma Science. Steve's biosketch is given below. IEEE NPSS's Richard F. Shea Award recognizes an individual who has given exemplary service to the IEEE NPSS. The Shea Award was established in 1986, with Richard F. Shea the first recipient of the award named in his honor for a "lifetime of service to IEEE NPSS." Since that time, the award has been presented annually to outstanding members of the IEEE NPSS: 1987 - Louis Costrell, 1988 - Lee J. Wagner, 1989 - John A. Martin, 1990 - Julian Forster, 1991 - Paul L. Phelps Jr., 1992 - J. Leon Shohet, 1993 - Igor Alexeff, 1994 - W. Kenneth Dawson, 1994 - John F. Osborn, 1996 - John Walter, 1997 - Harold L. Flescher, 1998 - A. Bertrand Brill, 1999 - Raymond S. Larsen, 2000 - Orhan Nalcioglu, 2001 - Vernon G. Price, and 2002 - Peter N. Clout.

Dr. Steven J. Gitomer received his Bachelors (1964) and Masters (1966) Degrees from The Johns Hopkins University (Baltimore, Maryland) and the Ph.D. in electrical engineering from the University of Wisconsin (Madison) in 1969. From 1969 to 1973, he was a member of the faculty of the Moore School of Electrical Engineering at the University of Pennsylvania. Since 1974, he has been a member of the technical staff of the Los Alamos National Laboratory. His research interests have been primarily in the areas of laser interaction with matter, plasma simulation, and free-electron lasers.

From 1991 to 1993, Dr. Gitomer served a change-of-station assignment at the US. Department of Energy's Office of Arms Control (Washington, DC) where his work focused on implementation of the Threshold Test Ban Treaty (TTBT) and the establishment of the science and technology centers in Russia and Ukraine. In 1994 and 1995, he served short term U.S. Department of State assignments in Washington, DC and Kiev, Ukraine involving the founding and establishment of the ISTC and STCU. He has been a member of U.S. delegations to the TTBT, ISTC and STCU on dozens occasions.

Since 1993, he has been successively a member of Los Alamos' Nonproliferation and International Security (NIS) Division's Center for International Security Affairs, Russian Nonproliferation Programs Office, and Counter Nuclear Terrorism Program Office. He is currently a staff member and project leader in the Safeguards Systems Group of Los Alamos' Nuclear Nonproliferation (N) Division.

Dr. Gitomer has current responsibilities as: U.S. Member of the International Science and Technology Center (ISTC, Moscow) Scientific Advisory Committee; Senior Science Advisor to the U.S. Department of State for the Science Centers in Russia (ISTC) and in Ukraine (STCU, Kiev); and principal Los Alamos point-of-contact for the ISTC, STCU, and Lab-to-Lab interactions with the FSU (Former Soviet Union).

Dr. Gitomer has published nearly fifty papers in plasma physics and laser fusion. He is a Fellow of the IEEE (Institute of Electrical and Electronics Engineers), was awarded the IEEE Centennial Medal in 1984, and the IEEE Millennium Medal in 2000. He has held leadership positions in the IEEE Nuclear and Plasma Sciences Society (NPSS) including Vice President, Secretary, and Editor-in-Chief. He has served as well in the NPSS' Plasma Science and Applications Committee as Chairman, Secretary, and ICOPS Chairman He presently serves as Editor of IEEE Transactions on Plasma Science, a post he has held since 1984.

Steve Gitomer can be reached at the Nuclear Nonproliferation (N) Division, Safeguards Systems Group, N-4, Mail Stop E541, Los Alamos National Laboratory, P.O. Box 1663, Los Alamos, NM 87545; Phone: +1 505 667-4352; Fax: +1 505 667-0966; E-Mail: sgitomer@lanl.gov;

Steven J. Gitomer

What's the difference?

Always remember you are absolutely unique. Just like everyone else.

Margaret Mead

REPORT FROM THE CHAPTER AND MEMBERSHIP DEVELOPMENT COMMITTEES

Vernon G. Price
Chair, NPSS Chapters and Membership Development Committees

A new member of our society recently complained at one of our NPSS conferences. He told me that while he was happy with his membership, he was not happy with the fact that although he had subscribed, he had not received any copies of the IEEE journal ***Transactions on Plasma Science*** in the mail. He asked me to look into this and to rectify the problem. I checked with Headquarters and found that indeed, he did have an active subscription. His subscription, however, was for an electronic version of the journal rather than for a printed one. Had he selected the printed version, copies would have been mailed to him. His electronic subscription, however, had been available to him all that time on the Web but he had forgotten that this had been his choice. Further, he was not aware just how to gain access to his journal selection on the Web. Perhaps the welcoming letters that are sent to each new member should include concise instructions to help our new members when using ***Xplore***®.

I remind each new member who joins IEEE/NPSS at our conferences that the choice for electronic subscriptions requires the creation of a Web Account with IEEE. This free service allows Headquarters to qualify our members to access those subscriptions to which they are entitled through a password-protected process. Some readers may not have set up such an account and the following paragraph may help them. Each IEEE member should have a Web account as this is the preferred means for one to make contact with IEEE member services. Any changes in a member's contact information, any orders for IEEE materials, renewals of membership, additions or deletions of societies, subscriptions to society publications, etc., are best handled by means of the Web account. Setting up one's private Web account is initiated by visiting the IEEE home page at: www.ieee.org.

On that page, one clicks a link found on the upper row entitled 'Web Account'. That link brings up the opening page where one can register one's name and member number and obtain a Pin number for using the account. Cookies are placed on the person's local machine to facilitate entry at each session. Once the Web Account is setup, the member may then select the 'Publications' link in the IEEE masthead to go to that opening screen. From there, at the top of the table of contents will one sees IEEE *Xplore*® and clicking on that link brings up the main page for this valuable capability. A new release (1.6 dated December 2003) was announced, adding new features to this program. Logging in to one of the boxes in the table of contents brings up pages as desired and entry is permitted with the Web account information for the member.

Increasingly, new members recruited at conferences are selecting the Web version of our journals. The keyword search capability, permitting access to journals dating back to 1988, is a great incentive that expands the realm of research for many NPSS members. IEEE now has close to one million journal articles in its master database. The titles to all of those are widely available including an abstract. One has to be a subscriber to see a PDF version of any of the articles, however. There are some 'free' articles available.

NPSS members are encouraged to take advantage of another free service provided by IEEE. Each should obtain an Email alias. The alias has the form 'member.name@ieee.org' in my case, it is v.price@ieee.org. Mail going to that address first passes through a mail server at IEEE headquarters before it is forwarded to the member's actual address. At least three important benefits accrue from using this service. First, IEEE provides additional protection (updated daily) against attacks from viruses. Last year, some 500,000 email messages to members were rejected by the filters in the IEEE servers. Many of those viruses may have been rejected anyway by the members own protection but it is comfortable to know that IEEE is helping out. Second, it is nice to have a simple address that can be used for many years without change since one can easily redirect the alias to a new ISP if the member makes a change. With that available, a member needs neither to change their business cards nor to notify an addressee of a local change. One's

Sloth

Like many lazy people he just kept on working.

Nicholas Lezard

IEEE address is permanent. I recommend it. Finally, spam can be identified and, if desired, deleted by IEEE before it gets to you.

NPSS has ended the year (27 December 2003) with a population of 3006 members, a total that is very close to the average end-of-year for our society for more than a decade. Rosanne Loyal at IEEE headquarters publishes a monthly Society Membership Renewal information sheet which includes data for each society. The numbers in the report change as members renew (or fail to renew), so a periodic review is necessary. The report shows that 135 people who were members of NPSS in August 2003 did renew their IEEE membership but did not renew their membership in NPSS by the end of the year. As the months go by, that number may change as renewals for 2004 continue to be made.

The non-renewals represent some disaffection with our society. This may be consistent with the findings of Dr. Elena Gerstmann, Director of IEEE Research. Last year, Dr. Gerstmann's research group studied the IEEE membership (publishing the IEEE All Society Research Project 2003) whose purpose was to a: measure satisfaction of members toward their societies, b: develop strategies for growth and retention, c: assess values of existing programs, d: highlight "hot" content areas and e: look at demographic information for each society. A PowerPoint presentation of her results is posted on the NPSS Web page for review. Our members are encouraged to view that presentation as it provides an insight into the level of satisfaction our members have toward NPSS.

Starting a new chapter of NPSS is a daunting task. Keeping it going once started is an even greater challenge. Yet, chapters of our Society provide many benefits for our members including the opportunity to learn how to be a volunteer officer in the work of NPSS. Once or twice a year I am asked at our various conferences just how one should go about setting up a local chapter of NPSS. The most recent request came from a member in Mexico City. Recognizing the need for chapter management guidelines, IEEE has just published ***IEEE Chapter Chairs' Reference Guide***. This manual not only describes how to start a chapter, it also tells how to run one. The manual will be of great value to our present NPSS chapter officers as well as those contemplating a new chapter. The PDF file of this guide is found at the following web site: www.ieee.org/chapters. For questions about the document one can contact April Nakamura, a.nakamura@ieee.org at Headquarters. The guide is based upon work done by several societies and is a valuable addition for our chapter chairs. It is arranged so that we may customize the guide for particular needs of NPSS.

Vernon G. Price, the Chair of the NPSS Chapter and Membership Development Committees, can be reached at 22151 Berkeley Court, Los Altos, CA 94024-7452; Phone: +1 408 737-0778; Fax: +1 408 737-1922; E-mail: v.price@ieee.org.

Recipe

To make an apple pie from scratch, you must first invent the universe.

Carl Sagan

ANNUAL REPORT 2003 OF THE NPSS TRANSNATIONAL COMMITTEE

The NPSS TransNational Committee (TNC) came into being at the end of 2000. A description of the charge to the committee is at the end of this report. Of the 3000 NPSS members approximately 1000 reside outside the USA, in more than 50 countries. Our society is attractive in sometimes unexpected ways, and it would be interesting to know more about this in order to satisfy the expectations of the members. Two from the 16 elected AdCom members are now from outside North America, with another three among the ~40 non-elected members. Non-American members of NPSS have played their part in the organizational tasks in the Society. Eventually the TNC should become redundant, once a representative fraction of the AdCom members comes from countries worldwide.

Several of the TNC members are very active in soliciting participation from non-American groups in NPSS conferences, the NSREC and the NSS-MIC in particular. For the latter there is continuous collaboration with the CIP committee of RITC and with the NSS-MIC general chairman. Monthly meetings were held during 2003. This certainly has contributed to the record attendance in Portland, besides the fact that the room-temperature detector workshop was again co-located with the NSS-MIC, as it was in San Diego and as it will be again in Rome in 2004.

There are various links between members of the TNC and local chapters. It is a pleasure to mention the good collaboration with Vern Price in chapter promotion and in membership development all over the world.

Erik Heijne
Chair, NPSS Transnational Committee

Seeing is believing

Religion hinges upon faith, politics hinges upon who can tell the most convincing lies or maybe just shout the loudest, but science hinges upon whether its conclusions resemble what actually happens.

Ian Stewart

TNC members provide input for the awards nominations and for the promotion of members to senior membership. It very clear that the information necessary for a nomination must be collected a long time in advance of the 15 May deadline. Also, one has to make sure that the person in question is actually a member of NPSS, which is a requirement for most of the awards.

The yearly TNC meeting has been held on 22 October, at the Doubletree Hotel in Portland. 11 of the 15 members of the TNC were present. Points discussed were:

- Possible solutions to the problems with entry-visa encountered by scientists/members from certain countries who want to attend IEEE conferences; a 'scientific identity card' was proposed but finally deemed not 'abuse-proof'. Early action with backup via high-level intervention seems best way.
- Organization of future conferences: provisions for cheap hotel rooms is required for the benefit of students and other participants with modest budget.In particular it is requested that the situation for the Puerto Rico conference in 2005 be reviewed. Alberto Del Guerra commented on the preparations for the 2004 Roma conference. Some proposals for the 2007 NSS-MIC to be held outside the US have been made.
- The suspension of IEEE services to members from certain countries on a US State Deptartment list. It was reported that some progress has been made in the negotiations between IEEE and the so-called 'OFAC'. TNC encourages efforts to re-establish scientific exchange as a basic rights for scientists of all nationalities.

Task of the IEEE NPSS Transnational Comittee

The TransNational Committee (TNC) was established in order to provide a framework for ensuring participation by members outside the USA and Canada in the organizational decisions of the Nuclear and Plasma Sciences Society. The chairperson of the TNC is an elected voting member of the NPSS AdCom for the normal period of four years, and must be resident outside the North American continent. This requirement guarantees there will always be at least one non-North-American member on AdCom. The TNC is composed of appointed persons who represent a wide spectrum of the NPSS membership outside North America, both according to scientific fields and nationalities. These TNC members should be in contact with their local IEEE-NPSS membership, so that they can provide via the chair an appropriate input into the decision making of the AdCom.

The TNC prepares a proposal for the election of the TNC chairperson a year before the expiration of the mandate of the previous chair

The members of the TNC are appointed by the NPSS president, on the recommendation of the TNC chair. Each year up to 5 new members are appointed, and it is expected that they will remain on the TNC for at least four years.

Some subjects in which the TNC can specifically play an important role are the following:

- contacts with and initiatives towards local NPSS chapters
- proposals for the location of IEEE-NPSS conferences in regions outside the USA or Canada
- proposals for awards to be given to IEEE members in their countries or in their scientific disciplines
- promotion of IEEE-NPSS membership in their region
- drawing attention to wishes or problems that affect the proper functioning of IEEE locally (an example is the recurrent problem with recognition of local institutes of higher education in the membership acceptance procedure)

Erik Heijne can be reached at CERN, CH1211 Geneva 23, Switzerland; Phone: +41 22 767-3946; Fax: +41 22 767-3394; E-mail: erik.heijne@cern.ch.

IEEE FELLOW CANDIDATE EVALUATION COMMITTEE

Have you ever wondered how an IEEE member becomes an IEEE Fellow? The following description of the process can be found on the IEEE Fellow Program Web Site: "The grade of IEEE Fellow recognizes unusual distinction in the profession and shall be conferred only by invitation of the Board of Directors upon a person of outstanding and ex-

traordinary qualifications and experience in IEEE-designated fields, and who has made important individual contributions to one or more of these fields. The year of election to the grade of Fellow is the year following affirmative action by the Board of Directors in conferring the grade of Fellow. A brief citation is issued to new Fellows describing their accomplishments and the total number selected in any one year does not exceed one-tenth percent of the total voting Institute membership."

For 2004, the following NPSS members were first evaluated by the NPSS Fellow Committee and elected IEEE Fellows: Grant T. Gullberg, Erik H.M. Heijne, Spencer P. Kuo, Jean-Luc B. Leray, Patrick G. O'Shea, and Wu-Tsung (Bill) Weng. Also, the following NPSS members were first evaluated by other IEEE societies and elected IEEE Fellows: Jerome J. Blair, Michael B. Silevitch and Richard M. Leahy. We proudly congratulate these newly elected IEEE Fellows. Their biographical sketches and descriptions of their accomplishments will appear in a future NPSS Newsletter.

Almost anyone can serve as a nominator of a candidate for IEEE Fellow grade; you do not even have to be an IEEE member. But, for perhaps obvious reasons, the following cannot be nominators: members of the IEEE Board of Directors, members of the IEEE Fellow Committee, chairs and members of IEEE Technical Society/Council Fellow Evaluating Committees, or IEEE Staff.

Who is eligible to be nominated? The following requirements are from the IEEE Fellow Program Web Site: "To be nominated, the candidate must meet the following three basic qualifications: hold Senior Member grade at the time the nomination is submitted; be an 'active' member (that is, dues must be current); and must have completed five years of service in any grade of IEEE membership. Note: IEEE affiliate membership within an IEEE society does not apply."

The deadline for receipt of the Fellow Nomination Forms and Reference letters is the 15th of March. Nominating forms, detailed instructions, and frequently asked questions can be found at the IEEE Fellow Program Web Site. Perhaps the easiest way to get to this site is by going to: www.ieee.org, clicking on "Membership," then clicking on "Key Membership URLs," and finally clicking on "Fellow Program."

A nomination must be supported by at least five, but no more than eight references from active IEEE Fellows. A list of IEEE Fellows can be found at the IEEE Fellow Program Web Site or in the current IEEE Membership Directory.

We urge you to consider making an IEEE Fellow nomination next year!

Ronald Jaszczak, Chair, NPSS's IEEE Fellow Candidate Evaluation Committee, can be reached at the Department of Radiology, DUMC-3949, Duke University Medical Center, Durham, NC 27710; Phone: +1 919 684-7685; Fax: +1 919 684-7122; E-mail: rjj@dec3.duhs.duke.edu.

Ronald J. Jaszczak
Chair, NPSS Fellow Candidate Evaluation Committee

SPECIAL TOPIC ISSUES FOR THE IEEE TRANSACTIONS ON PLASMA SCIENCE

Scheduled Special Topic issues of the *IEEE Transactions on Plasma Science* are the following:

Feb. 2004 Special Issue on Pseudospark Physics and Applications
Guest Editors: Professor Martin Gundersen (University of Southern California, Los Angeles CA, USA) & Dr. Werner Hartmann (SIEMENS AG - Corporate Technology - Erlangen, Germany)

Feb. 2004 Special Issue on Plenary and Invited papers from ICOPS-2003
Guest Editor: Professor Sang Hee Hong (Seoul National University, Seoul, South Korea)

Apr. 2004 Special Issue on Physics of Dusty Plasmas
Guest Editors: Dr. Alexei Ivlev (Max Planck Inst für extraterrestrische Physik, Garching-bei-München Germany), Dr. André Melzer (Ernst-Moritz-Arndt-Universität, Greifswald Germany), Professor Wayne A. Scales (Virginia Polytechnic Institute & State University, Blacksburg VA USA) &

Steven J. Gitomer
Editor, TPS

Grantsmanship

Never underestimate the ability of a scientist to generate new and interesting questions when the need arises.

Ken Alder

Interesting

Money costs too much.

Ross MacDonald

Professor Edward Thomas, Jr. (Auburn University, Auburn AL USA)

Apr. 2004 Special Issue of Selected Contributed Oral Papers from ICOPS 2003
Guest Editors: Professor Shigeru Sudo (National Institute of Fusion Studies, Toki, Gifu, Japan), Professor Hiroshi Fujiyama (Nagasaki University, Nagasaki, Japan), Professor Han-Sup Uhm (Ajou University, Ajou, South Korea), Professor Jin Joo Choi (Kwangwoon University, Kwangwoon, South Korea), Yong Seok Hwang (Seoul National University, Seoul, South Korea), Professor Mark Kushner (University of Illinois, Champaign-Urbana IL USA), Professor Wes Lawson (University of Maryland, College Park MD USA), Dr. Frank Hegeler (Naval Research Laboratory, Washington DC USA), Professor Paul K. Chu (City University of Hong Kong, Hong Kong) & Dr. Ian Brown (Lawrence Berkeley National Laboratory, Berkeley CA USA)

Jun. 2004 Special Issue on High Power Microwave Generation
Guest Editors: Dr. Monica Blank (CPI - Communications & Power Industries, Palo Alto CA USA) & Dr. David Abe (Naval Research Laboratory, Washington DC USA)

Aug. 2004 Special Issue on Effects of Space Weather on Technology Infrastructure
Guest Editors: Dr. Ioannis A. Daglis (National Observatory of Athens, Athens Greece), Professor Daniel N. Baker (University of Colorado, Boulder CO USA) & Dr. K. Koutroumbas (National Observatory of Athens, Athens Greece)

Aug. 2004 Special Issue on Non-thermal Medical/Biological Applications of Ionized Gases and Electromagnetic Fields
Guest Editors: Professor Ravi Joshi (Old Dominion University, Norfolk VA USA), Dr. Andrei Pakhomov (Brooks Air Force Base, San Antonio TX USA), & Dr. Walter Rogers (Brooks Air Force Base, San Antonio TX USA).

Oct. 2004 5th Special Issue on Pulsed Power Science and Technology
Guest Editors: Dr. Jane Lehr (Sandia National Laboratories, Albuquerque NM USA), Professor James Dickens (Texas Tech University, Lubbock TX USA) and Professor John Mankowski (Texas Tech University, Lubbock TX USA).

Feb. 2005 Special Issue on Plenary and Invited papers from ICOPS- 2004
Guest Editor: TBD

Feb. 2005 Fourth Triennial Special Issue on Images of Plasma Science
Guest Editor: Professor Mark Kushner (University of Illinois, Urbana IL USA) and Dr. Greg Hebner (Sandia National Laboratories, Albuquerque, NM USA)

Apr. 2005 (tentative) Special Issue on Plasma-Aided Combustion
Guest Editor: Dr. Louis Rosocha (Los Alamos National Laboratory, Los Alamos NM, USA)

Oct. 2005 Special Issue on Vacuum Discharge Plasmas
Guest Editor: TBD

Feb. 2006 Special Issue on Plenary and Invited papers from ICOPS- 2005
Guest Editor: TBD

Apr. 2006 (tentative) Special Issue on Space and Cosmic Plasmas
Guest Editor: Dr. Anthony Peratt (Los Alamos National Laboratory, Los Alamos NM USA)

If you have any questions about these special issues or about TPS in general please get in touch with Steven Gitomer, the editor of TPS. He can be reached at the Nuclear Nonproliferation (N) Division, Safeguards Systems Group, N-4, Mail Stop E541, Los Alamos National Laboratory, P.O. Box 1663, Los Alamos, NM 87545; Phone: +1 505 667-4352; Fax: +1 505 667-0966; E-Mail: sgitomer@lanl.gov.

ANNUAL REVIEW OF THE TNS EDITORIAL PROCESS

Paul Dessendorfer
Editor, TNS

This note provides the annual review of the editorial process for the Transactions on Nuclear Science for regular contributed papers (those not associated with conferences or with our new section on nuclear medical and imaging sciences). This material also appeared as an Editorial in the February, 2004, issue of TNS, so anyone who read that note can skip this one and move on to other things.

The data presented begins with 1994, after I had fully transitioned into the Editor's role for these Transactions. The "year" used for each data interval is from November 1 through October 31; for example, "2003" represents the twelve-month interval from November 1, 2002, through October 31, 2003.

Figure 1 shows the number of contributed papers submitted over each of the last 10 years, ranging from 67 to 113. Figure 2 shows for those manuscripts that completed the review process in a given year the percentage of manuscripts accepted for publication. As can be seen, the acceptance rate continues to remain around 50%.

Figure 3 shows the average time taken for the first review cycle for papers completing the review process in a given year. It generally takes from 6 to 8 weeks for the authors to be sent the comments from the reviewers of their manuscript. Although reviews are typically requested from at least three reviewers, the average number of reviews sent to authors ranges from 2.4 to 2.7 (Fig. 4); approximately 10-20% of the time a reviewer does not return comments on a manuscript, resulting in this average being less than three.

Essentially all contributed manuscripts require revision in response to the reviewers' comments. Over the last ten years, the average time for authors to submit the revised version of their manuscript after being sent the reviewers' comments ranges from seven to over fourteen weeks, as illustrated in Fig. 5. It remains interesting that on average the authors seem to take longer to respond to the reviewers' comments than for the reviewers to perform their reviews.

When all the editorial work is completed, and the manuscript is either accepted or rejected for publication, the manuscript (in electronic format) and illustrations (usually in electronic format) are sent to IEEE for

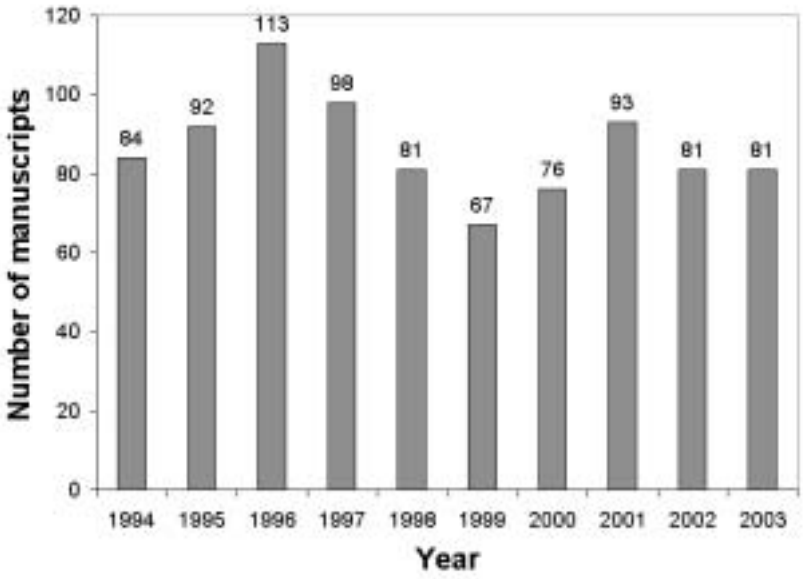


Figure 1. Number of contributed papers submitted for consideration for publication in TNS

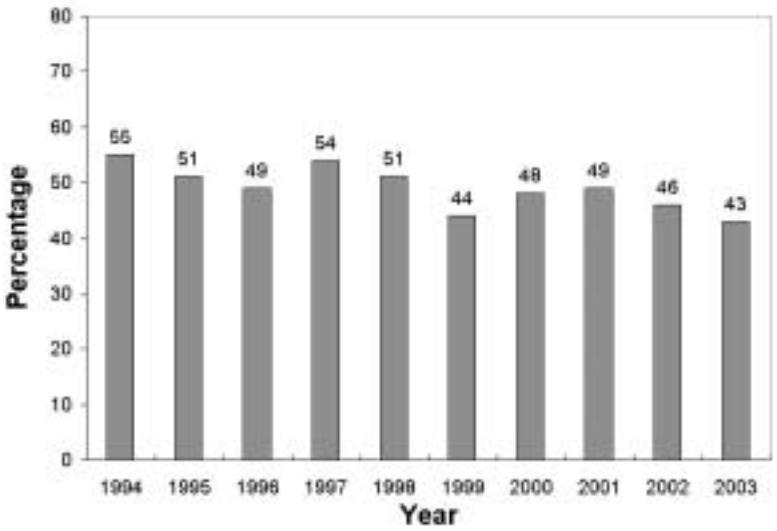


Figure 2. Percentage of contributed papers accepted for publication in TNS

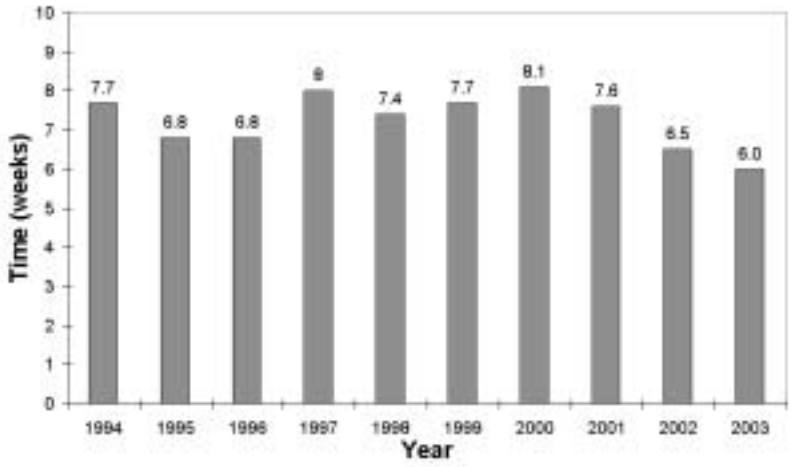


Figure 3. Average time to complete first review of papers submitted to TNS and sent to reviewers for comments.

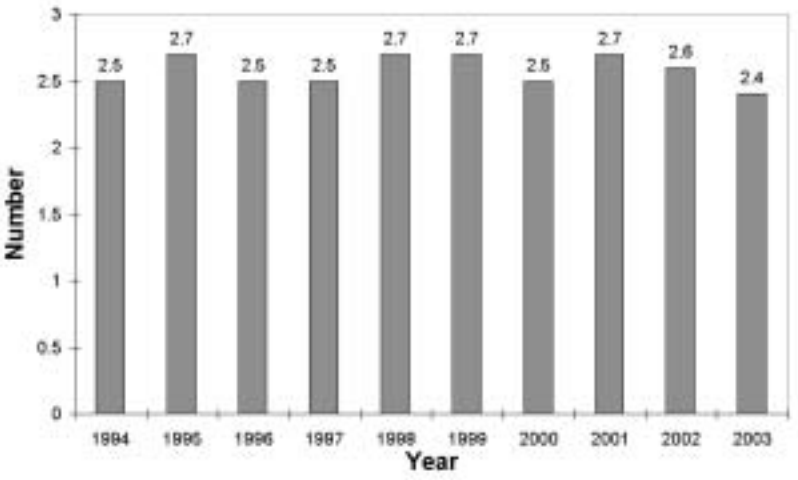


Figure 4. Average number of reviewers returning comments for each manuscript submitted to TNS

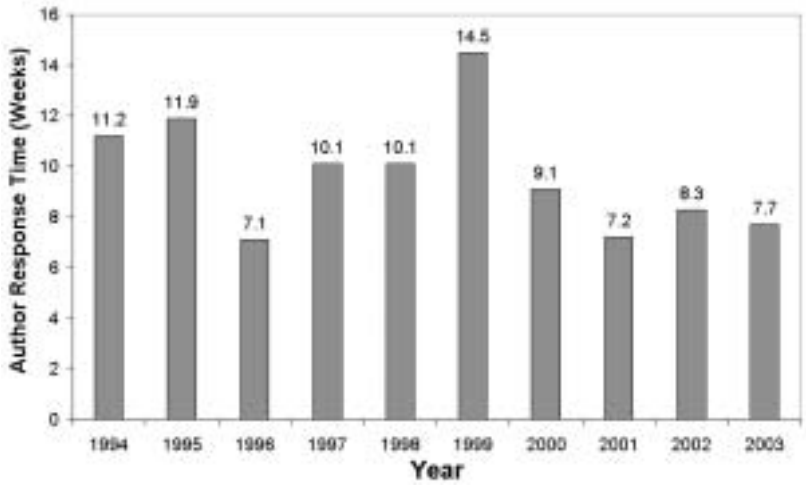


Figure 5. Average time for TNS authors to return revised versions of their manuscripts responding to comments from the first review cycle.

publication. Figure 6 shows that the average time from receipt of a manuscript by the Editor until its final disposition (acceptance for publication or rejection) has ranged from 3.1 to 4.4 months over the period 1994 through 2003. In 2003 if two papers in which the authors took >6 months to return their first revision are eliminated from this average, the average time from receipt to final disposition drops to 2.9 months.

There remains additional time before an accepted manuscript appears in print. Since the Transactions on Nuclear Science is published bimonthly, on average a manuscript is delayed one month waiting for the next publication issue. IEEE schedules approximately 10 weeks to format, index, paginate, typeset, and otherwise prepare for printing, print, and mail the issue. Over this last year IEEE Publishing overcame the problems which had been causing delays in their schedule over the previous few years, and met their scheduled time of 10 weeks.

An overview of the times in the publication process is shown in Fig. 7. For each year, the average times for first review, for the authors to respond to the comments from the first review, the delay from the fact that these Transactions are a bimonthly publication, and the time for IEEE to put together the issue is shown, along with what percentage each of these factors contribute to the overall time. This depiction is somewhat notional, since a number of manuscripts undergo a second (and sometimes a third) review cycle, and the average time for first review includes those manuscripts that are rejected (and thus do not proceed through the subsequent steps of the process). However, it does provide a good overall picture of the contributors to and the overall time for the publication process.

The international character of the journal dominated again this year. Of the 61 papers completing the review process during this period, 14 (23%) were from the US. Asia had the most submissions, with 19 (31%); Europe had 7 papers (11%). The Middle East accounted for 2 papers, Africa had 4, the Former Soviet Union had 1, and India/Pakistan had 14 (23%).

The average number of reviewers reporting on each manuscript has been 2.4. The reviewer pool for manuscripts draws upon the expertise of the international community;

from 1994 through 2003 the proportion of international reviewers (those outside the United States) has ranged from 25% to 53% of the reviews returned. In 2003 that percentage was 53%.

If any readers have other questions about the editorial process for the Transactions on Nuclear Science, or have suggestions for improvement, please do not hesitate to contact me. Also I am continually seeking additional reviewers, so if any of you are interested in participating, please send me your name, mailing address, phone and FAX numbers, email address, and areas of interest/expertise.

Paul Dressendorfer, the editor of the Transactions on Nuclear Science, can be reached at the Sandia National Laboratories, P.O. Box 5800, MS 1413, Albuquerque, NM 87185-1413; Phone +1 505 844-5373; Fax: +1 505 844-5470; E-mail: p.dressendorfer@ieee.org.

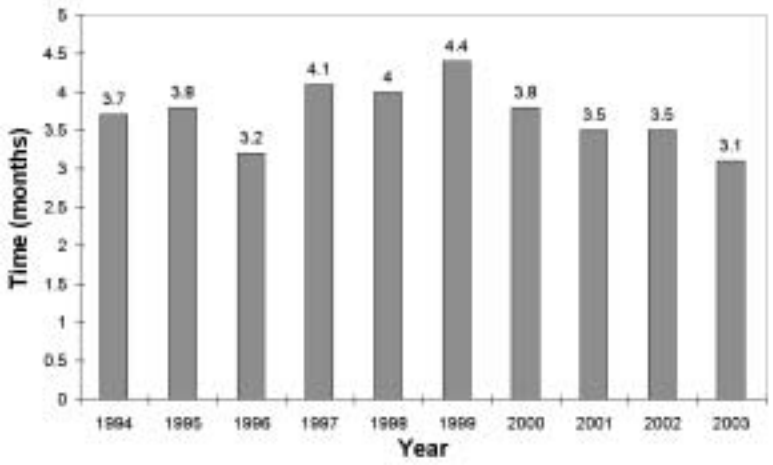


Figure 6. Average time from receipt to final disposition (acceptance or rejection) for each manuscript submitted to TNS

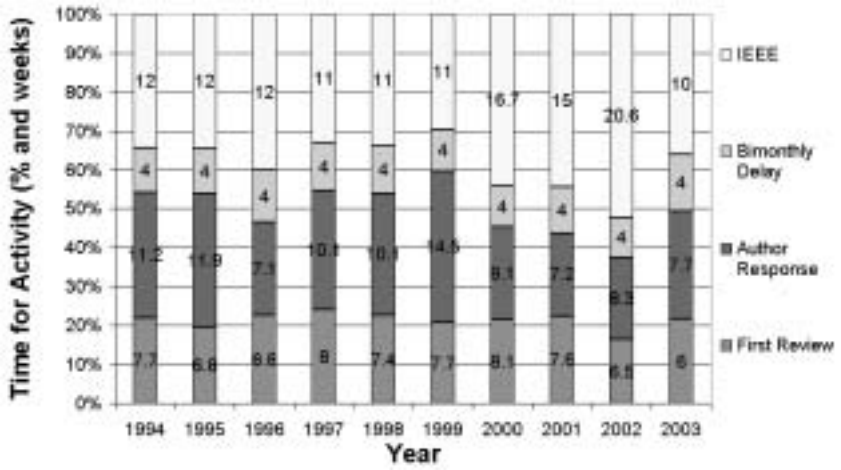


Figure 7. Average time for primary parts of publication process for each manuscript submitted to TNS

ARTICLES

CONGRESSIONAL QUARTERLY

This is my third year working for Senator Harry Reid, the minority Whip or assistant democratic leader in the U.S. Senate. I'm the Senator's Energy & Transportation Advisor. I'm staffing the senator on the Energy bill again this year and it's been a wild ride. I also do transportation appropriations and policy, which has been a learning experience. The most constant part of my job is growth and learning. There's so much to learn, especially when you get new assignments.

The House passed an Energy bill early this year, but the Senate was locked in a stalemate on the morning of Thursday, August 31. The night before the leader sent the bill back to committee because the prospects for getting the bill done in any reasonable amount of time seemed unlikely. The leaders traded barbs on the floor about who was at fault. The Democratic leader suggested that the Senate simply pass last year's bipartisan Energy bill. To the shock of just about everyone, the Republican leadership said "OK, let's pass last year's bill." The rest of the day was spent "clearing" the bill on both sides of the aisle. The Senate runs by unanimous consent. That means any Senator can object and place a "hold" on any piece of legislation. Although the leaders agreed to consider last year's Energy bill, they still needed 51 republican, 48 democrat, and 1 independent Senator to agree to the deal. In the end, the bill was agreed to, but several senators were prom-

Peter S. Winokur
IEEE Congressional Fellow

Dream away

The advocates of the metric system, like today's advocates of globalization, saw their goal as creating at one stroke a new kind of economy and a radical new kind of politics.

Ken Alder

How about TV?

The man who does not read good books has no advantage over the man who cannot read them.

Mark Twain

ised that (1) certain provisions would prevail in "conference," (2) they would be given an opportunity for amendments without second-degrees on a "must-pass" appropriations bill, or (3) they would be promised several hours of floor debate and an "up-and-down" vote on a standalone piece of legislation. Remember, this is the U.S. Senate that runs by unanimous consent, so getting the commitment of leadership to vote on a bill is a big deal, especially since members prefer to avoid a recorded vote on difficult, contentious issues.

Who really won? It's hard to say. Did the democrats win because the republicans were forced to accept a bill democrats crafted? Did the republicans win because they now had a bill to take to conference that they can easily change. In fact, Senator Domenici, Chairman of the House-Senate conference committee on the Energy bill, immediately went public stating he would discard the bill that just passed the Senate and substitute the bill reported out of his committee this year. At the time, it still seemed that getting a bill out of a House-Senate conference was going to be a daunting task, so it might not matter.

Then we had the power blackout in the northeast and the bill became real. Legislation is driven by the needs and interests of the American people. When 50 million people in North America lost power to their homes and businesses in mid August, something had to be done. I'm writing this article the day after Hurricane Isabel has swept through the DC area. Four million people in the region are without power and it's a real hardship. Nobody knows what the bill that emerges from conference will look like or if it can pass the Senate. Many folks feel that issues like drilling in the Arctic National Wildlife Refuge, higher fuel efficiency standards for cars, relicensing of dams, and nuclear power subsidies remain too contentious and that Congress should pass a standalone bill that simply deals with electricity, but that would take the steam out efforts to pass a comprehensive Energy bill. Whatever bill emerges from conference, it may be filibustered, so the republicans are going to need 60 votes to pass the legislation.

I have truly enjoyed working on transportation. One of the bills I'm working on reauthorizes the Federal Aviation Administration (FAA), which provides for airport infrastructure and related security. These important programs will expire at the end of September, so we need a bill. We passed a great bill in the Senate. They passed a great bill in the House. So, what went wrong? Well, the conference committee that reconciles the House and Senate bills decided to color outside the lines. They included a provision in the conference report that "privatizes" 69 air traffic control towers that use visual flight rules. They did this to please the Administration, but it isn't pleasing democrats in the Senate who cried "foul!" Democrats feel that privatizing the air traffic control function will compromise safety. Why did the government accept responsibility for screening of airline baggage only to turn around and turn the air traffic control system over to private industry?

At this time, the conference report on the FAA bill is stalled in House, but not because of the privatization issue. The "appropriators," i.e., the "cardinals" in the House, say the bill is beyond repair. The bill attempts to place a cap on the number of airport screeners and sets aside an Airport Security Fund of $250 million for explosives detection systems. The "appropriators" consider both of these provisions to be under their purview and outside the jurisdiction of the authorizing committees. Last week, democrats in the Senate introduced a simple, clean substitute bill that will reauthorize the FAA for 6 months. We need a bill.

Each year, the Congress must pass 13 appropriations bills by October 1. Last year, we didn't get the job done until March of the next year — about 6 months late. This year, with Republicans controlling both the Senate and House, the expectation was these bills would be completed in a more timely manner. Well, Congress has only sent a couple of bills to the President. It's 2nd down and 11 to go, and many bills haven't passed the Senate yet. Congress will pass a Continuing Resolution to keep the government operating in the new fiscal year, and I expect the Senate will be in session until Thanksgiving finishing its work. Nevada has many exciting transportation projects including a monorail down the Las Vegas strip, light rail, new rapid bus service, and even plans for a 300 mph magnetic-levitation train. Our main airport in Las Vegas, McCarran International, screens more passengers than any airport except LAX, Los Angeles International. Last year, Las Vegas was visited by 36 million people. Drop by and see the city and its incredible growth. The Transportation Appropriations bill has been reported out of committee, but has yet to make it to the Senate floor.

Senator Reid is the Ranking Member on the Environment and Public Works subcommittee on Transportation & Infrastructure. As such, he is working with the majority to reauthorize the Transportation Equity Act, which provides a framework for transportation projects over the next six years. It's been tough sledding since the Congress wants considerably more money for the nation's transportation infrastructure than the Administration. The House wants $375 billion, while Administration is proposing a price tag of $250 billion. Congressman Young, the powerful head of House Transportation Appropriations, wants an increase in the gas tax, indexed to inflation, to pay for the difference. Neither the House nor Senate can pass this bill, so look for a 6-month extension.

Senator Reid is in "cycle" meaning he's up for re-election in 2004. The tone of the office changed the week after the November '02 elections, especially in light of the drubbing that democrats took at the polls and their poor showing in Nevada. Getting re-elected is job 1. Nevada is an increasingly Republican state and the Senator's elections in the past have been razor close. In fact, he defeated Senator Ensign, who was subsequently elected in 2000, by only 428 votes in 1998. But the Senator has a much stronger team and his main challenger, Congressman Gibbons, has decided not to run. Nobody's taking anything for granted, so the campaign is in full gear. Many folks in the office will eventually go out to the state to support the campaign. If you're a fellow interested in the legislative process, don't work for a Senator when they're up for re-election.

We always pay a great deal of attention to constituent matters. We answer every letter the office receives within a two-week window. We now pay even more attention to the letters. We devote a great deal of effort arranging events in the state to highlight the Senator's accomplishments and contributions to the state. The legislative shop plays an important role in promoting the Senator in the state. Events are often planned around appropriations and important policy issues.

I will be on Senator Reid's staff for one more year, four years in all. This will take me through his re-election campaign. Most staffers only stay on the Hill a few years. I now know why. It's a heady job, but one of constant stress. It's a little different on the committees where folks tend to be career oriented and stay longer, but it's hard to take the grind in a personal office, day in and day out, with policy and constituent matters. Hill staffers are underpaid, their salaries are a matter of public record. Many have just finished law school and have some big loans to pay off, but an opportunity to work on the Hill can't be passed up and there are potential rewards down the road. Many of the staffers who befriended me in my first year on the Hill are saying goodbye. They are dedicated workers who go to join important public interest groups — Sierra Club, National Resources Defense Council, etc. — and others join lobby shops who value their expertise and know how. Many lobbyists I talk to say — "I used to work for so and so." It's a get in and talk to me card. One of the most valuable things I have is my Rolodex with staffers and lobbyists, who are often quite expert on an issue. Among the lobbyists, I have one or two go-to folks who are a treasure of information and honest, even-handed advice.

When the campaign ends, I expect the Senator to be reelected. I expect he will be the Democratic leader some day. He is a gifted legislator and a man of integrity who is respected on both sides of the aisle. I expect many people in the office to be gone at the end of 2004. It's a natural point of departure. Many folks who helped out in the state will end up in the DC office. As George Harrison said, "All things must pass." Many of the staff will be gone at the end of 2004. And so will I.

Peter Winokur, a Past NPSS President, is an IEEE Congressional Fellow who can be reached at Office of Senator Reid, 528 Hart Senate Office Building, Washington, DC, 20510; Phone: +1 202 224-3542; Fax: +1 202 224-7327; E-mail: p.winokur@ieee.org.

Self delusion

Those who have done nothing, fancy themselves capable of everything: while those who have exerted themselves to the utmost only feel the elimitation of their powers.

William Hazlitt

Familiarity...

Sit at the feet of the master long enough, and they'll start to smell.

John Sauget

Exposed!

Sports do not build character. They reveal it.

Heywood Hale Broun

SYNCHROTRON RADIATION IN 2003

Sandra Biedron, Argonne National Laboratory and MAX-Laboratory
Patrick O'Shea, University of Maryland
Alan Todd, Advanced Energy Systems, Princeton, New Jersey

Sandra Biedron

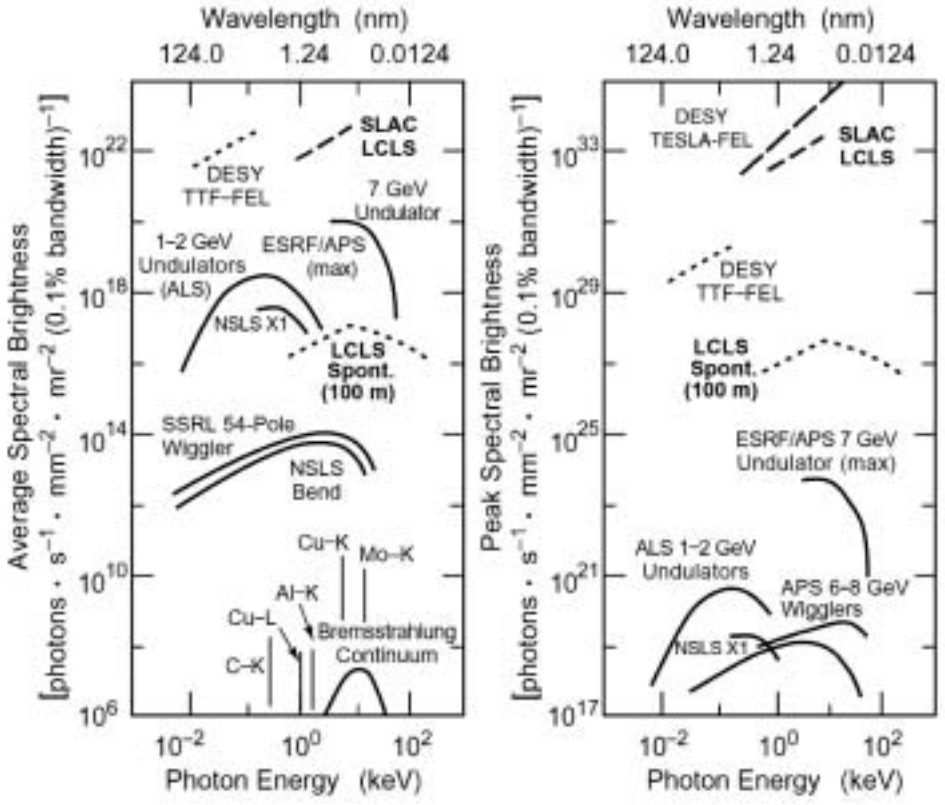
Patrick O'Shea

Alan Todd

Accelerator-based synchrotron radiation light sources have become indispensable tools for an extraordinarily wide spectrum of user research and development. New projects under construction promise to greatly expand the brightness and shorten the radiation pulse length for the users.

The synchrotron radiation community presently employs many so-called "third-generation" light sources, including hard x-ray sources like the Advanced Photon Source (APS) [1] at Argonne National Laboratory (ANL), USA, the European Synchrotron Radiation Facility (ESRF) [2] in Grenoble, France, SPring-8 [3] in Harima Science Garden City, Japan, and the Swiss Light Source [4] in Villigen. There are also a number of operational VUV and soft x-ray light sources that include MAX-Laboratory [5] in Sweden, BESSY II [6] in Berlin, and the National Synchrotron Light Source (NSLS) [7] at Brookhaven National Laboratory (BNL). Such sources are currently capable of producing photons with energies up to 100 keV at peak spectral brightnesses of 1×10^{23} photons.s^{-1} (0.1% bandwidth)$^{-1}\times$mm$^{-2}\times$mrad^{-2}. In the figure below, the peak and average spectral brightness versus wavelength are shown for all generations of synchrotron light sources, including the new "fourth-generation" sources, DESY-TTF and the SLAC-LCLS.

These International light sources produce high-brilliance photon beams that are used by scientists and engineers from diverse research and development communities — for instance: biology, chemistry, physics, material science, environmental science, medicine, geophysical, and planetary science. These "user" communities utilize light sources to ex-



Average and Peak Spectral Brightness as a Function of Wavelength for all Generations of Synchrotron Light Sources [8]

plore the structure and dynamics of materials. Recent highlights of this research can be found at the following sites:
www.aps.anl.gov/apsimage/cobrafrnt.html
www.aps.anl.gov/
www.esrf.fr/News/FrontNews/PressRelease_23-06-2003/
www-als.lbl.gov/als/science/sci_archive/zinc.html
nslweb.nsls.bnl.gov/nsls/sci&tech/

First-generation light sources were electron synchrotrons and storage rings that were built for other purposes (e.g., high-energy and nuclear physics), but whose bending magnet radiation was parasitically used by synchrotron radiation "users." This radiation covered many wavelength regimes due to the nature of the bending magnet emission and had rather large photon source size because the electron beam emittance in such older machines was large. Further, the devices were neither originally intended nor ideal for synchrotron radiation applications. Second-generation machines that employ bending magnets as the primary source of synchrotron radiation are specifically dedicated to synchrotron radiation users. Beam emittance levels were designed to be smaller in order to provide users with smaller source size and thus higher brilliance. Third-generation machines, the current standard, are also dedicated to synchrotron radiation users, but were additionally designed to accommodate many so-called "insertion devices" such as wiggler and undulator magnets. Since these 'insertion devices" wiggle/undulate the electron beam back and forth through multiple bending magnet fields, these magnets generate a higher brightness photon beam than bending magnets alone. Undulator magnets have the additional feature that they generate narrow spectral lines and this enhances the overall photon brilliance of the machine. Today, there are 43 operational second and third-generation synchrotron light sources with more than 15 third-generation facilities presently under construction.

Although all of these short-wavelength, high-brightness machines have proven successful in discovering previously inaccessible structural information in a variety of scientific disciplines, the ability to obtain dynamical (temporal) information on the subpicosecond time scale, particularly in relation to the biological sciences, is not presently possible. This is because the current machines are limited to time scales longer than ~10 ps. To obtain dynamical information at shorter time scales one must produce and utilize x-rays in the 1-C-wavelength regime that have pulse lengths on the order of a few tens of femtoseconds. It is also preferable that these pulses are fully coherent longitudinally in order to insure the delivery of a narrow spectral bandwidth, and that the source is diffraction-limited with full transverse coherence. Finally, there is great interest in the generation of peak intensity and peak brightness that is many orders of magnitude higher than is available today from existing machines. This will enhance spatial resolution and may even lead to the possibility of determining single molecule structures. This promise has spawned a number of international construction projects [9] and numerous proposals. Two of the largest projects, based upon self-amplified spontaneous emission (SASE) free-electron laser (FEL) technology, are the Linac Coherent Light Source [10] that will operate at 1.5 C at the Stanford Linear Accelerator Center, and the DESY FEL [11] in Hamburg, Germany, that is designed to operate at 1 C.

Other complimentary "light source" development includes Energy Recovery Linacs (ERL) [12, 13, 14], x-ray laser development [15] and high-harmonic generation using traditional lasers [16]. The ERL concept in particular has recently generated tremendous community excitement and spawned a plethora of projects and proposal all around the world.

The number of synchrotron radiation "users" is constantly on the rise and the number of machines proposed and under construction is increasing year by year. Synchrotron radiation is one of the most robust and evolving analytical tools in the world and it has continued to benefit society. Examples that demonstrate this enormous social value are new designer drugs that have been brought to market by the pharmaceutical industry due to protein crystallography research, and computer development including semiconductor performance and patterning and giant magnetoresistance for storage media.

[1] www.aps.anl.gov
[2] www.esrf.fr
[3] www.spring8.jp
[4] sls.web.psi.ch/view.php/about/index.html
[5] www.maxlab.lu.se
[6] www.bessy.de
[7] nslsweb.nsls.bnl.gov/nsls/Default.htm
[8] Courtesy of the Advanced Photon Source.
[9] See, for example, the Proceedings of the 2002 Free-Electron Laser Conference, Elsevier.
[10] www-ssrl.slac.stanford.edu/lcls/

Pardon

If you don't say anything you won't be called upon to repeat it.

Calvin Coolidge

Live and learn

Judgement comes from experience, and great judgement comes from bad experience.

Old saying

Not lost in space

No matter where you go, you are there.

Allan Lambert

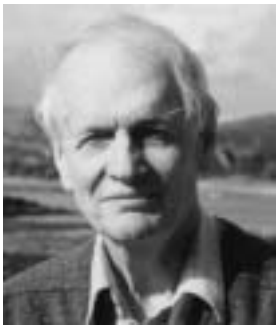
[11] xfel.desy.de/
[12] www.jlab.org/FEL/
[13] erl.chess.cornell.edu
[14] www.4gls.ac.uk/
[15] See, for example, the proceedings of the 8th International Conference on X-ray Lasers Aspen, Colorado, 2002 AIP conference Proceedings, 641.
[16] See, for example, Proceedings of the Workshop on the Generation and Uses of Soft X-ray Coherent Pulses, MAX-Laboratory 2001.

Sandra Biedron can be reached at the Argonne National Laboratory, 9700 S. Cass Ave., Bldg. B4208, Lemont, IL 60439-4803; Phone: +1 630 252-1162; E-mail: biedron@aps.anl.gov. Patrick O'Shea can be reached at the University of Maryland, College Park, MD 20742-3511; Phone: +1 301 405 4952; Fax: +1 301 314 9437; E-mail: poshea@umd.edu. Alan Todd can be reached at Advanced Energy Systems, P.O. Box 7455, 501 Forrestal Road, Suite 316, Princeton, NJ 08543-7455; Phone: +1 609 514-0316; Fax: +1 609 514-0318; E-mail: alan_todd@mail.aesys.net.

authored by members of the NPSS..... Handbook of Radiation Effects: Second Edition

by Andrew Holmes-Siedle, Technical Director, REM Oxford Ltd. and Consultant to Brunel University and Len Adams, Honorary Professor Associate, Brunel University.

Oxford University Press, Jan 2002, ISBN 0-19-850733-X.



Andrew Holmes-Siedle

The first edition of this handbook was developed from an engineering guidebook for building electronics to withstand space radiation. The book was broadened to be useful in other branches of design and engineering. Severe environments such as medical accelerators, robots, nuclear power, sterilization, high-energy physics, weapons environments were included. New material on human risk and detector design was also written. **Over ten years later, in 2002,** considering the revolutionary changes in some electronic devices, it was time for an update. Another round of new topics was also inserted. As a result of this evolution, a great breadth of technical information on radiation effects, with careful explanations, literature references and a compendium of websites has been presented. Its uses have become wider than and engineer's guide - it will also find uses in **graduate courses** teaching about radiation and modern technology.

This revised edition aims first and foremost to give straightforward account of the relationship between high-energy radiation environments, electronic device physics and materials. Problems arise when highly engineered materials such as semiconductors, optics and polymers are used in a radiation environment. The finely-adjusted properties of these materials often change dramatically when exposed to a radiation environment such as a beam of X-rays or electrons, the nuclear and space environment or the 'hadrons' in CERN's new collider. The book describes all of these environments and several more. At the core of this book is a discussion of the impact of these environments on the devices used in computing, data processing and communication. While unashamedly oriented to the engineer-designer and manager, with descriptions in a highly readable form, there is no compromise in physical accuracy in the description of high-energy radiation and the effects it produces, such as electronic failure, coloration and the decay of strength. Advanced scientific training is not required for the understanding of the material as presented.

A list of the contents follows. **Bold type picks out the topics new in the 2nd edition.**

- Radiation, Physics and Measurement;
- Radiation Environments including human risks from the terrestrial environment;
- Response of Materials and Devices to Radiation including **defect cascades**;
- Metal-Oxide-Semiconductor (MOS) Devices including **dual dielectrics and the new submicron designs of integrated circuit**;
- Bipolar Transistors; Diodes, Solar Cells, Optoelectronics;
- Power Devices;
- Optical Media including a **new table of colour centres and "colorability of materials"**;

- Polymers including **electronic organic films**;
- Shielding;
- Computer Methods;
- Radiation Testing;
- Radiation-Hardening of Parts;
- Equipment and Hardness Assurance;

Appendices:

- Useful general and geophysical data;
- Useful radiation data including **Ci-Bq chart**;
- Useful data on materials;
- **A comprehensive bibliography of MOSFET dosimetry**;
- **new SPENVIS depth vs. dose curves** for typical satellite orbits;
- Degradation in polymers;
- **Compendium of Websites**;
- **Over 500 new references**.

This book was authored by two members of IEEE-NPSS. Andrew Holmes-Siedle, the winner of the 2001 Radiation Effects Award, can be reached at REM Oxford Ltd., 64A Acre End St, Eynsham, WITNEY, Oxfordshire OX29 4PD, ENGLAND; Phone: +44 (0) 18 65 88 00 50; Fax: +44 (0) 18 65 88 00 30; E-mail: holmes.siedle@dial.pipex.com

THE L-1 VISA FOR INTRACOMPANY TRANSFERS

IEEE-USA Position Statement

(Approved by the IEEE-USA Board of Directors, 13 Nov. 2003)

IEEE-USA supports the legitimate use of the L-1 visa to facilitate intra-company transfers within multinational corporations and allow executives, managers, and employees with special skills to transfer to a U.S.-based office, subsidiary, or affiliated company to perform temporary services. We believe, however, that L-1 related practices intended to reduce labor costs in the United States through displacement of U.S. workers is a violation of the spirit, if not the letter, of the nation's immigration laws. We are also concerned that increased utilization of L-1 technical workers within the U.S. is contributing significantly to the current high levels of unemployment among U.S. engineers, computer scientists and information technology professionals.

IEEE-USA recommends that Congress examine recent instances in which U.S.-based employers have replaced citizens and legal permanent residents with foreign nationals admitted to the United States on L-1 visas, assess the impact of such practices on employment opportunities for U. S. workers, and advance remedial legislation that will help distinguish between legitimate and illegitimate uses of the L-1 intra-company transfer visa program. IEEE-USA believes that such legislation should:

- require that the use of the L-1 visa not result in the displacement of U.S. workers;
- require that L-1 visa workers in the U.S. be paid prevailing U.S. wages;
- add other appropriate safeguards for U.S. and foreign workers;
- establish transparent administrative and enforcement requirements;
- provide for timely investigation and adjudication of complaints; and,
- authorize additional civil and monetary penalties to deter abuses.

This statement was developed by the IEEE-USA's Career and Workforce Policy Committee, and represents the considered judgment of a group of U.S. IEEE members with expertise in the subject field.

Background

The U.S. Immigration and Nationality Act, Section 101(a)(15)(L), provides for issuance of L-1 intra-company transfer visas to qualified aliens employed by corporations to work in the United States for seven years in an executive or managerial position or five years in a position requiring specialized knowledge or skills.

In a September 2003 report to Congress, the General Accounting Office noted that "àin recent years, employers have increasingly turned to the L-1 visa, an intra-company transfer visa that can be used by companies to bring their foreign professional workers to the United States on a temporary basis. L-1 visas

Wishful thinking

I have always wished that my computer would be as easy to use as my telephone. My wish has come true. I no longer know how to use my telephone.

Bjarne Stroustrup

Pecking order

The person who knows how will always have a job; the person who knows why will always be his boss.

Diane Ravitch

What??

Science progresses when people ask the right questions.

Harry J. Lipkin

do not have an annual cap and are not subject to prevailing wage laws." (GAO-03-883)

According to the U.S. Department of State figures cited by the GAO, the number of L-1 visas issued in fiscal year 1998 was 38,307 and rose to 41,739 in fiscal year 1999, peaked in fiscal year 2001 at 59,384, and decreased slightly in fiscal year 2002 to 57,721.

Taking advantage of the opportunities created by the current corporate emphasis on down-sizing and outsourcing of technical work, a number of foreign technical services firms with a U.S. presence are utilizing the L-1 visa to move large numbers of non-U.S. engineers and information technology professionals to the United States as a source of lower-cost contract labor. Several foreign corporations have even established U.S. subsidiaries specifically for that purpose.

As a consequence, U.S. engineers, computer scientists and information technology professionals are being laid-off by their U.S. employers in significant numbers. Some employers have even conditioned payment of severance benefits and termination allowances on the willingness of laid-off professionals to train replacements with L-1 visas. A particularly egregious example of this practice involving use of the L-1 Intra-Company Transfer visa to displace U.S. workers was described in the March 10, 2003 edition of Business Week and in an investigative report produced by WKMG-TV6 in Orlando FL.

The increase in utilization of the L-1 visa and other non-immigrant visas for entry of skilled foreign technology workers is mirrored by record high levels of unemployment among U.S. electrical engineers, computer scientists and other high tech professionals in the United States. Many IEEE U.S. members are concerned that the unemployment problem is exacerbated by the continuing admission of substantial numbers of foreign professionals on temporary visas. Most are justifiably outraged when they learn that some employers are taking advantage of loopholes in the nation's immigration laws to replace citizens and legal permanent residents with lower salaried foreign workers on temporary visas such as the L-1 visa for intra-company transfers.

NANOTECHNOLOGY RESEARCH & DEVELOPMENT

IEEE-USA Position Statement

(Approved by the IEEE-USA Board of Directors, 13 Nov. 2003)

Madison Avenue

Society drives people crazy with lust and calls it advertising

John Lahr

The Institute of Electrical and Electronics Engineers-United States of America (IEEE-USA) supports the research, development and commercialization of nanotechnology. Nanotechnology, the observation and manipulation of materials at the molecular and atomic levels, is an enabling technology that will positively affect all areas of the American economy, quality of life, and will help America maintain its technological leadership. Nanotechnology will lead to significant advances in electronics, defense and homeland security, agriculture, communication, biology, diagnostic medicine, structural materials and many other areas of prospective application in the next decade.

The National Nanotechnology Initiative (NNI) is a multi-agency program launched in 2001 to support and coordinate federal research and development in many aspects of nanotechnology. The NNI represents the U.S. response to government programs underway in the European Union, Japan, China, Israel and Russia that are actively supporting the development of revolutionary applications of nanotechnology, which are expected to have a significant impact on the world economy.

The IEEE-USA strongly supports government policies that promote nanotechnology research and development and provide related support for commercialization and workforce education. To ensure the growth of nanotechnology and its economic benefits in the United States, the IEEE-USA further recommends that Congress and the Executive Branch:

- **Authorize Continued and Stable Funding for the NNI.** The NNI is already providing a strong foundation for nanotechnology research and development in the United States. The Govern-

ment should continue to encourage and enhance cross-agency and multi-disciplinary collaboration.

- **Encourage and Support Nanotechnology-Related Technology Transfer Programs.** The Government should encourage and promote the rapid transfer of research results to technology development. The Government should promote the collaboration among federal laboratories, universities and industry to foster an environment for rapid application of nanotechnology. (For example, National Science Foundation, Department of Energy, or Department of Defense nanotechnology facilities should be made accessible to industry and universities.)
- **Provide Incentives for Commercialization.** Government incentives should be implemented to facilitate the timely commercialization of nanotechnology from the research laboratories to the marketplace.
- **Facilitate Development and Implementation of Nanotechnology Standards.** To maintain U.S. leadership in nanotechnology, it is imperative for the U.S. Government to facilitate the establishment of international standard measurement, nomenclature, and quality methodologies in parallel with the technology development.
- **Support Nanotechnology Education Programs.** To create and maintain an appropriate workforce, the Government should encourage and financially support the development of curricula and instruction for teaching and training in nanotechnology at all educational levels.
- **Explore the Societal and Environmental Implications of Nanotechnology.** Since nanotechnology has the potential to affect humans and the environment in ways that are not yet known, research must be sponsored to examine its impact to avoid unforeseen adverse consequences.

This statement was developed by the IEEE-USA Research and Development Policy Committee and represents the considered judgment of a group of U.S. IEEE members with expertise in the subject field.

SYMPOSIUM TO HIGHLIGHT PRESIDENT'S FY'05 REQUEST FOR ENGINEERING R&D

IEEE-USA has joined with a coalition of professional engineering societies in offering the 2d annual Engineering R&D Symposium, which will be held on March 8-9 at the Holiday Inn on Capitol Hill in Washington. Designed to highlight the President's FY 2005 budget request for engineering R&D, the session will include panels on the industry and state outlooks and an over-the-horizon presentation by the National Science Foundation on future R&D initiatives by the National Science Foundation. Presidential science advisor John Marburger is slated to kick off the program, with Rensellear president Shirley Ann Jackson invited to give the luncheon keynote. A half day session the next morning will include remarks by House Science Committee chair Sherwood Boehlert and budget briefings by the various federal agencies.

Mark your calendars for 8-9 March, and keep an eye on http://engineeringpolicy.org/ for more information.

From the IEEE-USA's Eye on Washington, January 16,2004.

Lost for words

The purpose of mathematical theories is not to reveal the true nature of things to us; that would be an unreasonable presumption. Their sole aim is to co-ordinate the laws of physics, which are revealed to us by experiment but which, without the help of mathematics, we would never be able to describe.

Henri Poincaré

Catch 22

We never arrest anybody who is not guilty. And even if you weren't guilty, we can't release you, because then people would say we are picking up innocent people.

Soviet police inspector

The Institute of Electrical & Electronics Engineers, Inc.
445 Hoes Lane • Piscataway, NJ 08855-1331, USA

Non-Profit Org.
U.S. Postage
PAID
Easton, PA
Permit No. 7