



IEEE

# OCEANIC ENGINEERING SOCIETY

NEWSLETTER



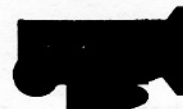
EDITOR: FREDERICK H. MALTZ

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# OCEANS<sup>91</sup>



Conference in  
Honolulu, Hawaii USA  
Hilton Hawaiian Village  
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Sponsored by Oceanic Engineering Society of IEEE



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(Continued on inside back cover)

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\*\*\*Term through 1990. \*\*Term through 1989. \*Term through 1988

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CALL FOR FELLOW NOMINATIONS

Fellowship in the IEEE is valued not because it is exclusive, but because it identifies each Fellow with a body of distinguished and respected people. The prestige of this award will be maximized by conferring it on all of the Institute's most outstanding members.

The Institute and the Oceanic Engineering Society are asking for your help in identifying distinguished members of the profession who are eligible for nomination for Fellowship, and present Fellows of the IEEE who are familiar enough with the candidate's work to write up the nomination papers. The OES Membership directory you received a few months ago will enable you to identify OES members who satisfy the technical criterion of having been an IEEE member in any grades for five years or more, and are now Senior Members. The attached list of IEEE Fellows in the Oceanographic Engineering Society will help you search for a Fellow who is in a position to write up the nomination papers.

If you need assistance or further information, telephone or write to Gordon Raisbeck or Rui de Figueiredo (address on back cover). A nomination kit with detailed descriptions of Fellow qualifications, blank nomination and reference papers, and instructions for filling them out, can be had from the Staff Secretary, IEEE Fellow Committee, 345 East 47th Street, New York, NY 10017, tel. 212-705-7750.

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The IEEE bylaws define the Fellow grade as one of unusual distinction in the profession, to be conferred only by invitation of the Board of Directors upon a person of outstanding and extraordinary qualifications and experience in the designated fields (including electrical engineering, electronics, computer engineering and computer science, and the allied branches of engineering and related arts and sciences), for important individual contributions to one or more of these fields. The Fellowship grade is held in honor and is not subject to expiration. The Fellowship grade is conferred by the Board of Directors upon the recommendation of the Committee on Recommendations for the Fellowship Grade. The Committee on Recommendations for the Fellowship Grade is composed of members of the Board of Directors and is authorized to recommend individuals for the Fellowship Grade. The Committee on Recommendations for the Fellowship Grade is authorized to recommend individuals for the Fellowship Grade. The Committee on Recommendations for the Fellowship Grade is authorized to recommend individuals for the Fellowship Grade.

FELLOWS OF THE IEEE WHO ARE MEMBERS OF THE OCEANIC ENGINEERING SOCIETY

- |                     |                     |                      |
|---------------------|---------------------|----------------------|
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| M P Bachynski       | R W Gilbert         | H A Peterson         |
| Arthur S Baggeroer  | Gerald G Gould      | P J Pontecorvo       |
| P L Bargellini      | Truman S Gray       | E A Post             |
| Laurence Batchelder | Eugene W Greenfield | E J Powers Jr        |
| L L Beranek         | W M Hall            | G Raisbeck           |
| W M Boerner         | C W Harrison Jr     | V Ramachandran       |
| Johann F Bohme      | R K Hellmann        | H F Rempt            |
| D M Bolle           | Eric Herz           | Paul Rosenberg       |
| Giorgio Borgiotti   | R C Honey           | E J Schaefer         |
| J V Bouyoucos       | R A Isberg          | O H Schmitt          |
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| William H Doherty   | Shota Miyairi       | Calvin T Swift       |
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| Fred E Gardiol      | Hanzo Omi           | W C Whitman          |
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IEEE

## IEEE FELLOW COMMITTEE ACTIVITIES

The IEEE Bylaws define the Fellow grade as one of unusual distinction in the profession, to be conferred only by invitation of the Board of Directors upon a person of outstanding and extraordinary qualifications and experience in IEEE designated fields (including electrical engineering, electronics, computer engineering and computer sciences, and the allied branches of engineering and related arts and sciences), for important individual contributions to one or more of these fields. The candidate shall hold Senior Member grade at the time the nomination is submitted. Normally the candidate shall have been a member in any grade for a period of five years or more preceding January 1 of the year of election; however, the five-year membership requirement may be waived for a Fellow candidate who has been engaged in professional practice (as needed to qualify for Senior Member grade) in a geographical area where, in the judgment of the Board of Directors, it was difficult to become a member previously, as evidenced by the absence of a Section previously and the recent formation of a new Section to cover that geographical area. In such case, membership of five years or more in a recognized local electrical, electronics, or computer engineering society may substitute for the five-year IEEE membership requirement when the nomination is submitted within two years after the formation of the new Section.

The Fellow Committee, appointed by the Board of Directors, has the responsibility of making recommendations to the Board of Directors for nominees to be conferred the grade of Fellow.

The Fellow Committee acts as a guardian of IEEE Fellow grade standards and works carefully and faithfully to maintain these standards uniformly throughout the IEEE. In the performance of its duties, the Committee is concerned with determining whether the applicants meet the requirements of the IEEE Bylaws and it seeks assistance from many sources in adjudicating the nominations.

The Fellow Committee depends upon the *nominator* of a candidate to furnish all of the basic necessary information requested on the nomination form, and to point out the unique contributions of the candidate in a concise and succinct statement.

The Fellow Committee depends upon the *Society evaluations* of the technical contributions of the candidates, and their ranking of the candidates.

The Fellow Committee depends upon the *Fellow grade references* to comment on the candidate's specific achievements which they are qualified to judge.

The Fellow Committee will consider brief *letters of endorsement* from IEEE Sections, Chapters and Committees.

In the processing by the Fellow Committee, the candidate's dossiers are evaluated on a basis of eight criteria:

- (1) Individual contributions as engineer, scientist, originator, technical leader, or educator;
- (2) Evaluation by an IEEE Society. Note that only one IEEE Society evaluation is to be submitted for each candidate. The nominator is responsible for selecting the IEEE Society that best reflects the candidate's field of technical accomplishments.

The Society is responsible for identifying potential problems in Society selection and for notifying the IEEE Fellow Committee and the nominator of recommendations for a more appropriate Society for evaluation.

# The Institute of Electrical and Electronics Engineers

## RECOMMENDATION OF PRACTITIONER CONTRIBUTIONS United States District

Application to the grade of Fellow is an honorific award in recognition of the theory and practice of electrical and electronics engineering.

- (3) Tangible and verifiable evidence of technical accomplishment, such as technical publications, patents, reports, or published descriptions of products, facilities, and/or service;
- (4) Opinions of confidential Fellow references who are qualified to judge the work of the candidate;
- (5) Service to IEEE and its predecessors, the AIEE and IRE;
- (6) Professional engineering service other than the IEEE;
- (7) Opinions of endorsers;
- (8) Total years in the profession.

Having considered all of the valuable information supplied from these many sources, a consensus of Committee judgments is reached on the nominees to be recommended to the Board of Directors for elevation to the IEEE Fellow grade, taking into account the maximum number of recommendations permitted by the IEEE Bylaws which can be submitted annually.

During the next few years, greater attention will be given to recognizing the contributions of practitioners, and the attached one-page summary is intended to encourage the nominations of practitioners in 1991.

The Society's Board of Directors has approved the following guidelines for the nomination of practitioners. The guidelines are intended to provide a framework for the evaluation of practitioners and to ensure that the process is fair and equitable. The guidelines are as follows:

1. Nominations should be based on technical accomplishments and contributions to the field of electrical and electronics engineering.
2. Nominations should be based on the candidate's performance in the field of electrical and electronics engineering.
3. Nominations should be based on the candidate's contributions to the field of electrical and electronics engineering.
4. Nominations should be based on the candidate's contributions to the field of electrical and electronics engineering.
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10. Nominations should be based on the candidate's contributions to the field of electrical and electronics engineering.

IEEE Fellow Program  
1300 Avenue of the Americas  
New York, N.Y. 10020  
Telephone: (212) 875-8300

Applications must be postmarked no later than March 31, 1991 to be eligible for consideration.

## RECOGNITION OF PRACTITIONER CONTRIBUTIONS

Election to the grade of Fellow is an important element in pursuit of the IEEE objective of recognizing excellence among its members in the advancement of the theory and practice of electrical and electronics engineering.

The IEEE Board of Directors and the Fellow Committee seek to enhance the recognition accorded to the electrical engineering practitioner for outstanding technical contributions. The practitioner is to be distinguished from the academic who teaches the content of the electrical engineering profession and from the theoretician who deals with the basic science underlying electrical engineering practice. The work of the practitioner can be described as product design and applications, and the construction, operation, and evolution into practical use or manufacturing of items or systems. Part of the difficulty in providing recognition to the outstanding practitioner is that proprietary considerations of the corporation in which he practices his profession sometimes prevent full documentation of his contributions in the open literature. Recognition of the practitioner must be based on the product (which is publicly visible), by assurances from those within his company regarding his individual role in creating and developing the product (Fellow references that are suitably specific), and by documentation from within the company which confirms, to some small group in the IEEE, that the individual's relation to the product is as cited. Some level of disclosure of the nature of the product and the individual's specific technical contributions embodied in it are necessary to assure the integrity of the selection process; but, with the passage of time, such disclosure is ultimately palatable for most companies.

It is not the intention of this pursuit of enhanced Fellow recognition for practitioners to reduce the standards for recognition of technical contributions. The goal is to accord to those whose contribution is of a proprietary nature and not immediately publishable, and to those whose contribution is the product and its application, the same recognition now available to those who can publish and/or patent their results and the products that stem from them. The standards for associating the product with the individual and his individual technical contribution must be, if anything, more stringent since the information is not generally available in public documents and errors in attribution and faulty perspective regarding the importance of the contribution must be guarded against.

This message is intended to encourage those who are seeking to nominate outstanding practitioners. Such nominations will be given special attention by the Society Evaluation Committees and by the Fellow Committee. It is strongly urged that those who were discouraged by the previous emphasis on publicly documented individual contributions should proceed to submit practitioner nominations with the assurance that such nominations will be regarded with a positive attitude by the evaluators.



**The Institute of Electrical and Electronics  
Engineers, Inc.**  
**United States Activities**  
*Announces the 19th Annual Competition for*  
**1991-1992**

**IEEE-USA Congressional Fellowships**

**A CONGRESSIONAL INTERNSHIP  
FOR MEMBERS OF IEEE**

**PROGRAM:** Electrical and Electronics Engineers and Allied Scientists are competitively selected to serve a one-year term on the personal staff of individual Senators or Representatives or on the professional staff of Congressional Committees. The program includes an orientation session with other Science-Engineering Fellows, sponsored by the American Association for the Advancement of Science (AAAS).

**PURPOSE:** To make practical contributions to more effective use of scientific and technical knowledge in government, to educate the scientific communities regarding the public policy process, and to broaden the perspective of both the scientific and governmental communities regarding the value of such science-government interaction.

**CRITERIA:** Fellows shall be selected based on technical competence, on ability to serve in a public environment, and on evidence of service to the Institute and the profession. Specifically *excluded* as selection criteria are age, sex, creed, race, ethnic background, and partisan political affiliations. However, the Fellow must be a U.S. citizen at the time of selection and must have been in the IEEE at Member grade or higher for at least four years. Additional criteria may be established by the selection committee.

**AWARDS:** IEEE-USA plans to award at least two Congressional Fellowships for the 1991-1992 term. Additional funding sources may permit expansion of awards.

**APPLICATION:** Further information and application forms can be obtained by calling W. Thomas Suttle (202) 785-0017 at the IEEE-USA Office in Washington, D.C. or by writing:

**Secretary, Congressional Fellows Program**  
**The Institute of Electrical and Electronics Engineers, Inc.**  
1828 L Street, N.W.  
Washington, D.C. 20036

**Applications must be postmarked no later than March 31, 1991 to be eligible for consideration.**





# Call for Papers

## Neural Networks for Ocean Engineering Workshop

Washington, DC — August 15-17, 1991

The Ocean Engineering Society (OES) of the Institute for Electrical and Electronics Engineers (IEEE), in cooperation with the IEEE Neural Networks Council, is sponsoring a workshop dedicated to the application of neural networks to all aspects of ocean engineering. The workshop's program will include technical sessions on:

- Passive Sonar Signal Processing
- Active Sonar Signal Processing
- Ocean Monitoring and Modelling
- Bioacoustics
- Fisheries and Oil Industry Applications
- AUV and ROV Applications
- Underseas Communication
- Underwater Image Processing

We strongly encourage members of the ocean engineering and neural network communities to submit papers for consideration in this exciting conference. For those contributing papers to the conference, the papers must be postmarked no later than April 1, 1991 and submitted in five copies. All papers must be completed within eight pages in length including figures, tables and references. There will be a charge for papers exceeding eight pages. Papers must be camera-ready on 8-1/2 by 11 inch white paper with title, author name(s) and affiliation(s) with full address(es) all at the top of the first page followed by the abstract. Format is one-column in Times or similar font style, 10-point or larger. Margins must be one inch on all four sides. All text, figures, captions, and references must be clean, sharp, readable, and high contrast.

Accepted papers will be published in the IEEE OES Neural Networks for Ocean Engineering Workshop Proceedings as submitted; Proceedings will be ready at the Workshop. A cover letter must be submitted with your paper and show: 1. Title of paper. 2. Name, address and telephone number of the corresponding author. 3. Your choice of technical session (one only) in which you wish to present your paper. After acceptance, the author will be required to sign and return a standard IEEE copyright agreement.

Send papers to:

NN for OES Workshop  
Nomi Feldman  
Meeting Management  
5665 Oberlin Drive  
Suite 110  
San Diego, CA 92121

# Call for Tutorials

## Neural Networks for Ocean Engineering Workshop Washington, DC — August 15-17, 1991

The Ocean Engineering Society (OES) of the Institute for Electrical and Electronics Engineers (IEEE), in cooperation with the IEEE Neural Networks Council, is sponsoring a workshop dedicated to the application of neural networks to all aspects of ocean engineering. This workshop will include a day of tutorials. The Program Chairman is seeking qualified instructors that can present clear, highly understandable, and succinct tutorials that are approximately four hours in length. Tutorials are being sought for all aspects of neural networks and ocean engineering, especially in the following areas:

- Introduction to Neural Networks
- Neural Networks for Signal Processing
- Neural Networks for Image Processing
- Neural Networks for Communication
- Neural Networks for Control
- Neural Networks for Systems Modelling
- Animal Sonar Systems and Neural Networks

Tutorials in areas that are applicable to the workshop but not mentioned in the above list are also requested. All tutorial instructors will be required to produce typeset camera-ready figures 60 days prior to the Workshop. Tutorial materials should be fresh, original, clean, sharp, readable, and high contrast. Handwritten materials will not be allowed. Interested individuals must submit a 500 word tutorial abstract with a 200 page biography of the presenter(s) attached (for marketing), an outline for a four-hour tutorial, a curriculum vitae, and any supporting material considered to be useful to the evaluation process.

Tutorial proposals must be received by February 1, 1991. Tutorial presenters will be offered a modest honorarium, but they will not receive travel expenses. Tutorial proposals received after February 1, 1991 will be returned unopened. Any overlap between tutorial materials and conference paper presentations is strongly discouraged and will receive minimal consideration.

Submit tutorial proposals to:

Patrick K. Simpson, Program Chairman  
Neural Networks for Ocean Engineering Workshop  
General Dynamics Electronics Division  
5011 Kearny Villa Road; Bldg. 70  
Mail Zone 7202-K  
San Diego, CA 92186-5310

# IEEE USA HOT LINES

IEEE-USA Office, 1828 L Street, N.W., Suite 1202, Washington, DC 20036-5104, USA (202) 785-0017

IEEE-USA telephone hotline recording: (202) 785-2180

James A. Watson, Editor—Georgia C. Stelluto, Associate Editor

## IEEE-USA Co-Sponsors Engineering Supply and Demand Conference

IEEE United States Activities, the Engineering Manpower Commission (EMC) and the American Association of Engineering Societies (AAES) are co-sponsoring a two-day conference entitled *Engineers in America's Future: Supply and Demand—New Problems and New Opportunities*. Taking place November 28-29 in Washington, D.C., the conference commemorates EMC's 40th anniversary.

The conference will feature speakers, panel discussions, and opportunities for exchange of information and opinions on current and projected demand for engineers. Conference highlights include summary remarks by IEEE-USA Competitiveness Committee Chairman Edward J. Doyle for the session on "Future Scenarios: Impact of Demographic, Economic and Technological Changes on Engineering Supply and Demand"; viewpoints of key Congressional policymakers; panel presentations by representatives of major employers of engineers; and perspectives on the future impact of demographics and economics.

For more information regarding the Engineering Supply and Demand Conference contact the IEEE-USA Office in Washington, D.C.

## IEEE-USA Supports High Performance Computing Legislation

IEEE-USA's Supercomputer Subcommittee of the Committee on Communications and Information Policy (CCIP) submitted a statement to the House Subcommittee on Science, Research and Technology on H.R. 3131, *The National High Performance Computer Technology Act of 1989*. CCIP strongly supports the bill, citing the major points of the legislation as being vital to its success. The committee also recommended certain modifications:

- Authority for developing and overseeing the national high-performance computing technology plan should be vested in the hands of a single person, such as the Director of the Office of Science and Technology Policy (OSTP), rather than a committee, the Federal Coordinating Committee on Science, Engineering and Technology (FCCSET), as the bill now states.
- The Department of Energy and NASA should be given financial weight greater or equal to the Defense Advanced Research Projects Agency (DARPA) in the realm of developing new hardware and software systems.
- The user community should be given the largest possible role, in conjunction with computer scientists, in developing applications software. The organization of high performance computing activities at the National Center for Atmospheric Research was cited as a model.

IEEE-USA's Scientific Supercomputer Subcommittee stresses the enormous importance of high performance computing to U.S. economic well-being and national security. The statement warns that U.S. technology leadership today is threatened by international competition and, more seriously, by our inability to foster healthy industry growth internally. The Subcommittee urges resolution of this threat through continuing development of hardware and software appropriate to high performance computing and major infrastructure issues spanning government, industry, the universities, and the U.S. financial system.

## IEEE-USA Testifies on H.R. 3999

Current IEEE-USA National Government Activities Committee Chairman and former IEEE United States Activities Board Chairman Edward C. Bertnolli recently testified before the House Armed Services Subcommittee on Investigations regarding H.R. 3999, *The Economic Adjustment, Diversification, Conversion and Stabilization Act of 1990*.

"The effects of the defense budget tightening are immediate and far-reaching" for IEEE's U.S. members, Bertnolli said. He warned that "unemployment for our members may well reach the proportion of the early 1970s" and urged the Federal government to assist communities, businesses and employees in making economic adjustment to cutbacks in defense spending.

The House panel is one of several committees considering H.R. 3999. The bill calls for allocating more than \$200 million for training and entrepreneurial programs for people displaced by Defense Department budget cutbacks. Bertnolli advocated Federally funded retraining and job search assistance for electrical and electronics engineers. He suggested IEEE-USA could carry out these efforts by holding job interview workshops, teacher-training programs for engineers, and possibly helping engineers establish their own businesses.

Following his testimony, Bertnolli said he felt that the committee testimony was positive. "I told them IEEE was ready to roll up its sleeves." Bertnolli said that with Federal financial assistance, IEEE-USA would participate in activities similar to those of the 1970s. During 1968-1972, IEEE and the American Institute of Aeronautics and Astronautics set up a program to aid 80,000 unemployed engineers.

*Copies of testimony and IEEE-USA Position Statements are available from the IEEE-USA Office in Washington, D.C.*

IEEE-USA Hot Lines is designed to provide IEEE Sections and Societies with up-to-date information on United States Activities. IEEE publication editors who receive IEEE-USA Hot Lines can use entirely or excerpt from the contents.

We invite your comments on format, content, and lead time.

# IEEE USA HOT LINES

IEEE-USA Office, 1828 L Street, N.W., Suite 1202, Washington, DC 20036-5104, USA (202) 785-0017

IEEE-USA telephone hotline recording: (202) 785-2180

James A. Watson, Editor—Georgia C. Stelluto, Associate Editor

## Who Are IEEE-USA's Congressional Fellows? You Could Become One . . .

Applications are being accepted until March 31, 1991 for the 1991-1992 Congressional Fellowship term. IEEE members are competitively selected to serve for one year on the personal staff of an individual Senator or Representative or on the professional staff of a Congressional Committee. One of the program's important purposes is to make practical contributions to the more effective use of science and technology in public policy decision-making.

Congressional Fellows are selected on the basis of their technical competence, their ability to serve in a highly visible environment, and their past service to the Institute. At the time of their selection, they must be U.S. citizens and must have been in IEEE at Member grade or higher for at least four years. Additional information and application kits are available from the IEEE-USA Office in Washington, D.C.

## Call to Scrap Space Station—Build Skylab II

Congressman Bill Green (R-New York) called on NASA to scrap the current space station design and replace it with a Skylab II, at considerable savings over the projected \$30 billion cost for the present space station design, in a July 25th address to IEEE-USA's Aerospace R&D Policy Committee.

The Congressman's remarks, reported on the CBS Evening News, reflect Congress's growing concern over the rising Federal deficit and cuts needed in the FY'91 budget request to meet Gramm-Rudman deficit reduction goals. He noted, "NASA has too many items on its plate. It is time to recognize that there are limits to what the space program can accomplish in an era of \$169 billion deficits."

In testimony before Congressman Green's subcommittee last May, Dr. George Sponsler, Chairman of IEEE-USA's Aerospace R&D Policy Committee, noted that IEEE-USA "supports the great majority of the President's space program, with one exception—what we believe to be NASA's overemphasis of the space station." The committee's testimony went on to urge better balance between NASA's manned and unmanned space programs.

For a copy of Congressman Green's speech, please send your request to IEEE-USA's Aerospace R&D Policy Committee at the IEEE-USA Office in Washington, D.C.

## IEEE-USA's Precollege Education Committee Produces New Brochure

IEEE-USA's Precollege Education Committee has produced a new *Directory of Volunteer Opportunities in Precollege Mathematics and Science Education for Engineers and Scientists*. The directory is a guide to education-related programs that aim to improve math,

science, and technology education at the precollege level. The programs listed are established, ongoing efforts that are nationally coordinated but operate locally in different cities. They are heavily dependent upon volunteers at the local level.

IEEE members are invited to write to the IEEE-USA Office for a copy of the directory and then to volunteer for one of the programs. The directory contains a handy matrix that enables the reader to see at a glance whether an assignment fits his or her unique skills, interests, and undoubtedly hectic schedule.

The *Directory of Volunteer Opportunities in Precollege Mathematics and Science Education for Engineers and Scientists* is available from the IEEE-USA Office in Washington, D.C.

## Updated Career Guidance Brochure Now Available

IEEE-USA has revised and updated its career guidance brochure, *Your Career in the Electrical, Electronics, and Computer Engineering Fields*. The brochure is distributed to high school and college students who are interested in exploring careers in electrical, electronics, or computer engineering. Information and guidance on engineering technology and technician careers is also included in the brochure.

IEEE members who wish to distribute the brochure to local student groups or others may write to the IEEE-USA Office in Washington, D.C. for up to 25 complimentary copies. For larger groups it is suggested that a single copy be displayed. Individual copies are available free. Multiple copies may be purchased for \$.75 each.

## IEEE's First Worldwide Member Opinion Survey Now Available

IEEE's *1990 Member Opinion Survey* is now available to the public. The survey is an unprecedented worldwide effort by IEEE to study professional, academic, and intellectual activities of all its members. Previous IEEE surveys were limited to members in the United States.

Respondents ranked professional publications, influencing employer practices, influencing the business climate, professional meetings and workshops, influencing engineers' public image, and influencing Federal policy among the IEEE United States Activities programs most important to them. A majority of respondents, both in and outside the United States, urged IEEE to exert increasingly more influence as a worldwide technical leader.

The 260-page *1990 IEEE Member Opinion Survey* may be purchased through the IEEE Service Center, 445 Hoes Lane, P.O. Box 1331, Piscataway, New Jersey 08855-1331; telephone 1(800) 678-IEEE or (201) 981-1393. Ask for IEEE Catalog No. JH9992-9; prices are \$7.50 for members and \$19.95 for non-members.

IEEE-USA Hot Lines is designed to provide IEEE Sections and Societies with up-to-date information on United States Activities. IEEE publication editors who receive IEEE-USA Hot Lines can use entirely or excerpt from the contents. We invite your comments on format, content, and lead time.

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