

SGC 12/4/94



OCEANIC ENGINEERING SOCIETY

Newsletter



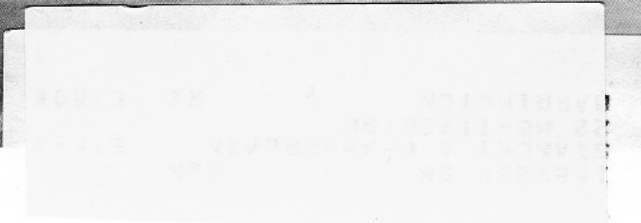
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The IEEE-USA National Job-Listing Service

Travel the Information Superhighway to Your Next Job!

IEEE United States Activities has developed a new electronic job-listing service that gives IEEE members free information on job openings in every region of the country.

To browse through current job listings, send an e-mail message to any of the following Internet addresses (no subject line or text message is needed, and requested files will automatically return to your e-mail address):

Region 1: info.ieeeusa.jobs.r01@ieee.org; **Region 2:** info.ieeeusa.jobs.r02@ieee.org;
Region 3: info.ieeeusa.jobs.r03@ieee.org; **Region 4:** info.ieeeusa.jobs.r04@ieee.org;
Region 5: info.ieeeusa.jobs.r05@ieee.org; **Region 6:** info.ieeeusa.jobs.r06@ieee.org;
Nationwide & non-U.S.: info.ieeeusa.jobs.other@ieee.org

If you don't have Internet access, ask your local Section officers for assistance. For more information, contact Bill Anderson at 202-785-0017, 202-785-0835 (fax) or w.anderson@ieee.org (Internet).



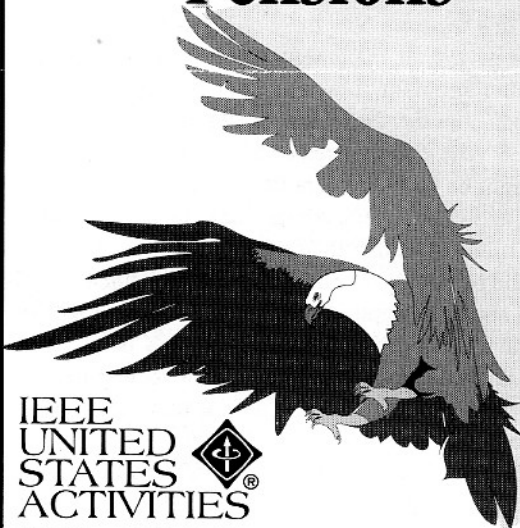
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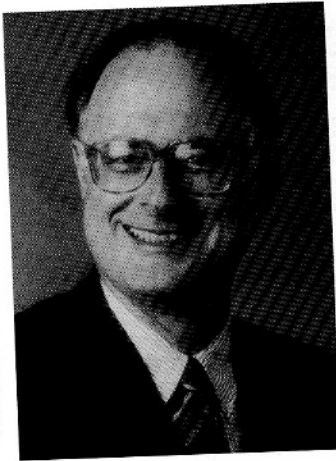
IEEE United States Activities is backing Federal legislation to increase the adequacy and efficiency of the private pension system. H.R. 1874, The* Pension Portability Improvement Act, would:

- ☆ **Reduce vesting requirements** from five to three years.
- ☆ **Improve pension portability** by permitting vested employees to transfer earned benefits from one retirement savings plan to another.
- ☆ **Preserve pension assets** through direct transfers of vested benefits to individual retirement accounts (IRAs) or other portable pension plans.

What You Can Do

IEEE's U.S. members can help by writing to their Senators and Representatives in Washington, D.C. Urge them to enact portability improvement legislation during the current Congress. Tell them how important it is to reduce vesting requirements, guarantee transferability of pension benefits, and promote pension preservation.

Information on legislation and how you can communicate your support to lawmakers is available from IEEE-USA's Vin O'Neill (v.oneill@ieee.org).



Jim Collins

The OES — A Privileged Society? Standards and Free Lunches

The question of whether or not a certain population is a privileged society usually arises in a much more political or geographic context than an IEEE society provides. However it might prove interesting to apply the question to the OES to see what sort of answer we might come up with.

As I look out my office window on this sunny and fresh autumn day in Victoria thinking how privileged I am to be here, I am reminded that most OES members are equally privileged by the nature of our business to live in beautiful coastal cities in some part or other of the world. Score one for us!

The Society itself has developed into a valuable resource for our calling. We are served very well through the Transactions, the Newsletter, Conferences, Workshops and Chapter activities. Sounds pretty good so far.

On the down side in all this, we certainly appear to be sharing in the economic and employment problems affecting many areas of technology and science. Military research and development spending is down everywhere as politicians take advantage of the fact that the most powerful nations in the world are trying to settle their differences by peaceful means for the time being at least. Sustainable offshore development continues to be a dormant issue as the prices of petroleum and other raw products continue to be relatively reasonable and stable. We all know at least one oceans person whose employment has been affected by this probably temporary downturn in our business affairs. Unfortunately the privilege correlation with our society seems to become perhaps negative on this issue.

I became Vice-President for Technical Activities for this Society in January of this year. I was concerned about the above economic issues affecting our members and since have contemplated frequently what I could do to make the Society a more effective force in helping us make an increasingly valued contribution to the world. As I said before, all of the activities that the society currently undertakes are well done.

One area of IEEE activity where we seem to do relatively little compared to other Societies is in standards. Consider the following indicators that it might be time for something to happen in the area of standards in OES:

- At the OCEANS 93 Conference in Victoria, standards surfaced as an issue in a panel discussing the slow rate of progress in the development of autonomous underwater vehicles. It was felt that standards for the interfacing of communications and instrumentation modules might have the benefit of permitting more flexibility and interchangeability in the relatively few AUV projects underway.
- I have had a couple of useful conversations with the Chair

of the OES Technical Committee on Modelling, Simulation and Databases, George Dworski. He sees a need for the standardization of large or frequently used ocean data bases so that they may be easily accessed over Internet by arbitrarily located researchers with custom programs that correspond to a standard format.

- I was recently contacted by the Standards Activity Board to provide representation from the OES on their Terms and Definitions Committee. I have approached one of our most qualified and interested members to consider this request.
- The ISO has introduced its 9000 series quality management standards which has had a large impact recently with European companies. This would seem to be an issue considering the large number of North American companies exhibiting at the very successful OCEANS 94 OSATES Conference in Brest, France this past September.
- There is much activity in regulatory and market-driven standardization of oceanic electronics, electronic charts, etc. in which the IEEE does not yet participate.

It thus seems timely to raise these question:

1. what does the OES membership think about the involvement of your society in the promotion of oceanic engineering standards?
2. if we should be involved, what are the areas needing attention and what steps are necessary?
3. who can help?

Let me know what you think!

I recently attended an IEEE Technical Activities Workshop to review the service that IEEE is giving its members. One problem perceived is that there is little intersection between the Technical Societies and the Regional Section/Chapter organizations. This gives rise to problems such as important IEEE Society Conferences being held in a town without the local Section being involved or even aware. On a smaller scale IEEE Fellows, Seniors and other eminent members sometimes visit the city of a section where there might be a mutual benefit in the visitor giving an IEEE seminar to local members. To solve the latter problem, I would like to propose that our Chapters might consider the following "Free Lunch" program. When an OES visitor to the area of a particular Chapter feels that there might be a mutual benefit in meeting and speaking to the local Chapter members, contact the Chapter Chairperson a few weeks in advance. If both agree that a seminar or Chapter meeting would be appropriate and could be scheduled then the talk is given and the Chapter Chair hosts the Visitor to a free lunch or dinner as appropriate. The Chapter Chairs contact information is always available in the latest society proceedings or newsletter. "Free lunches" do not make a privileged society but maybe they are a step in the right direction.

My number in Victoria is (604) 363-4605 and my E-mail is j.s.collins@ieee.org. Please contact me if you have any suggestions, comments, or are interested in a "Free Lunch."

Jim Collins

Vice President for Technical Activities



Norman D. Miller

OES Editorial Professional Activities

In June, as a part of my society duties, I participated in an Education Activities Board workshop. This was held in Denver in connection with the IEEE Board of Directors and TAB meetings. At the beginning of the workshop Professor Findley reviewed the organization of the IEEE. I have been a member of the IEEE since its be-

ginning and have served at the Section Level as well as on Conference boards and with the OES. It took the workshop for me to realize how large the operational structure of IEEE was and how interwoven are the various boards and committees. The amazing thing is that the entire operation, with the exception of a small paid staff, is run by volunteers! I also realized how few of the members really know how IEEE is organized and understand the organization. This could be the subject of a future editorial.

Closer to home, how many of you understand the organization and administration of the OES? OES is governed by the Administrative Committee (AdCom), which is composed of the elected members, the technology committee chairs, Chapter chairs, Journal Editor, and ex-officio members. The Executive Committee of the AdCom is comprised of the President, Vice Presidents, Secretary, Treasurer, and the Journal Editor. At the AdCom meeting in Victoria during OCEANS '93, the AdCom approved changes to the bylaws for a new organizational structure of the AdCom. The structural changes included the redesignation of the Vice Presidents and defined responsibilities for the Vice Presidents. When the OES became a society the constitution and bylaws defined a structure which included two vice presidents, designated Vice-president East and Vice-president West. No duties or responsibilities were defined for the vice presidents. One consequence of this was that the President was responsible for everything and each did as much as he could, but a lot of responsibilities went unattended. The new organizational structure is intended to free the President for important tasks, such as the Society's representative on the Technical Activities Board, and define for the vice presidents, areas of responsibility in the operation of the Society.

The new organization has three vice presidents:

- Vice President – Technical Activities
- Vice President – Professional Activities
- Vice President – International Activities

Each Vice President has a general oversight responsibility for the committees assigned to them and serves a liaison role between the AdCom and the committees. The Vice President is also an ex-officio member of the committees. The committee responsibilities are:

Vice President – Technical Activities;

- Technology Committee
- Standards Committee
- Steering Committee
- Meetings Committee
- Publications Committee
- Publicity Committee

Vice President – Professional Activities;

- Chapters Committee
- Membership Services
- Awards and Fellows
- Distinguished Service/Technical Contributions Committee
- Student Affairs Committee

Vice President – International Activities

- Liaison with International oceanic and marine activities
- International Membership and Chapters
- Ad Hoc Committees for international conferences and workshops

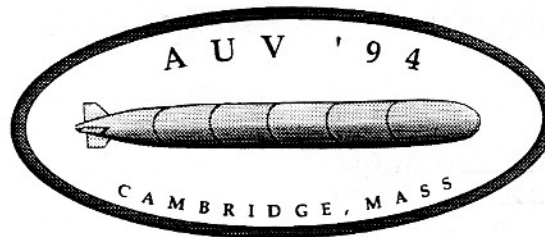
A new committee was authorized, as a part of the reorganization, the Student Activities Committee. The OES has been a leader society within the IEEE in the involvement of students at technical conferences. Starting with OCEANS '89, the OES has sponsored a student poster session at each OCEANS Conference. Students selected to participate have had their travel expenses and registration paid to the conference. The poster sessions have been well received by the conference participants and have been of benefit to the students who have participated. We need to get the Student Activities Committee organized to continue and expand our work with students. If you are interested in serving on this committee, please contact the Vice President of Professional Activities.

The AdCom meets at least once each year. It functions as the legislative body to approve budgets and act on recommendations from the ExCom and provide broad overall policy. The ExCom functions as the executive arm and meets at least once a year and at the call of the President. The ExCom handles routine business, provides planning and long term guidance recommendations for the AdCom, and functions to carry out the policies approved by the AdCom.

While the Oceanic Engineering Society is one of the smallest societies within IEEE, it is also one of the most active societies. It sponsors at least one conference and workshop each year. It publishes a Journal and a Newsletter. Because of its size, the individual member is important and can make a difference. One of our areas of weakness is in our local chapters. We need members to become active in their chapters and take part in the chapter activities. For members where there are no chapters, consider organizing one. If you are interested in becoming involved in OES, please feel free to contact any of the officers listed in the Newsletter. You can make a difference and make a great society even better!

Norman D. Miller, P.E.
Vice President – Professional Activities

Symposium on Autonomous Underwater Vehicle Technology



Held on:
July 19-20, 1994
Cambridge, Massachusetts

Sponsored by:
The Oceanic Engineering Society of the
Institute of Electrical and Electronics Engineers

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Executive Chairperson

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The Autonomous Undersea Vehicle conference, AUV, had its beginning mid-1990. The Advanced Research Projects Agency (ARPA now, DARPA back then) was two years into the Unmanned Undersea Vehicle (UUV) program. Charles Stuart of the ARPA/UUV program felt that there was sufficient interest in the UUV technical community to justify a conference dedicated to underwater vehicles and associated technologies. Thus, AUV '90 came into being. That year 371 people attended the 2 day conference.

In 1992, the second AUV conference was conducted. Even with the best effort of the conference organizing team, interest appeared to have waned, maybe because of funding difficulties. Attendance that year was 171 people.

In 1994, a decision was made to hold the third AUV conference. There were major obstacles to overcome: DoD funding was drying up, and corporate budgets to pursue the technology was also fading away. As AUV Executive Chairman, I assembled a working team from the Naval Postgraduate School, Monterey, California; Draper Laboratory, Cambridge, Massachusetts; and local support from Washington, DC. With a lot of dedicated efforts, the technical team configured a program of over 70 papers, from both stateside and foreign countries and publication issued an excellent proceeding. Financial and publicity support

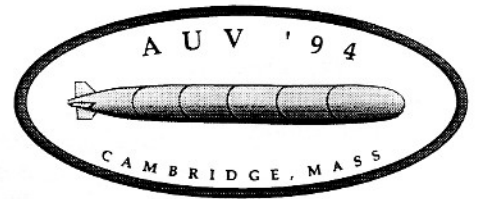
was also very good. In lieu of the normal social cocktail part and hors d'oeuvres, a dinner cruise on Boston Harbor proved to be a big hit. One major milestone for AUV '94 was the fact that the two day conference was on Internet video live and was received by both U.S. and foreign users. (I suggest you read the special write-up presented by Don Brutzman)

As the AUV '94 conference start date was approaching, pre-registration numbers were very discouraging. On the day of the conference, the number of people that registered at the desk overwhelmed expectations and capabilities. The start time was delayed by one hour to cope with the situation. Charles Stuart of ARPA presented the plenary with enthusiasm and sincerity, even after spending eight hours to fly from Washington, DC, to Boston and arriving in the early morning hours. Based on the comments from the registrants and presenters, it was generally felt that the AUV '94 conference was successful, the technical quality high, and social interaction enjoyable; overall, a rewarding experience.

I personally would like to thank the organization committee and the attendees, without both groups, AUV '94 (final count 290) would not have been the success it was.

Claude P. Brancart
Conference Executive Chairman

SCENES FROM AUV '94 DINNER CRUISE BOSTON HARBOR



AUV '94

On July 19-20, 1994, the IEEE-OES held the *Symposium on Autonomous Underwater Vehicle Technology* at the Cambridge Marriott Hotel. The conference was a resounding success. Not only was the technical program innovative, but the registration exceeded the planned attendance and while final numbers are yet to be determined, we believe that a substantial income to the Society will occur.

The plenary speaker was Charles Stuart from ARPA/ MSTO who spoke about Intelligent Systems for Marine Applications, and the technical program consisted of approximately 75 presentations in three parallel sessions. This is larger than previous symposia, and drew the attention of authors from 11 different countries including one from Russia. Strong European contributions as well as the continued support from Japan has indicated that this subject matter is indeed International in scope.

The technical subjects presented discussed the following topics:

- Vehicle Systems
- Software Architectures
- Underwater Vision
- Object Detection
- Underwater Communications
- Power Components
- Vehicle Design Issues
- Fuzzy Control
- Vehicle Positioning and Motion Control
- Adaptive Control
- Acoustic Sensors

- Multiple Vehicles
- Thrusters and Propulsors
- Navigation
- Reliability
- Simulation and Control
- Power Sources

The proceedings containing 64 written papers is available through IEEE Service Center, P.O. Box 1331, Piscataway, NJ 08855-1331. 1-800-678-IEEE (USA & Canada); 908-981-1393 (outside USA & Canada).

For the first time the conference registration fee included a copy of the video proceedings. This is VHS video tape lasting approximately 90 minutes containing segments of about 15 minutes each, about key underwater vehicle and related projects from around the world. The video has served well as an introduction and statement of the state of the art at the present time.

We are planning to request the authors of selected papers to either upgrade their work or submit their papers as they are to me for processing through a normal review process for publication in *special issue* of the IEEE Journal of Oceanic Engineering devoted to the conference subject. I will be working with Bill Carey to produce the special issue in the near future.

The conference also included a much enjoyed dinner cruise on the ODYSSEY, lunchtime visits to the Charles Stark Draper Laboratory, the MIT AI Laboratory, and the MIT Sea Grant Underwater Vehicles Laboratory.

Anthony J. Healey
Technical Program Chairman

Video Proceedings and Mbone Broadcast at AUV 94

Introduction. The IEEE Oceanic Engineering Society sponsored the Autonomous Underwater Vehicles (AUV) 94 Symposium in Cambridge Massachusetts July 19-20, 1994. Two significant new events were part of this conference: a video proceedings, and live broadcast of technical session audio and video over the Internet. Two lessons were clear. First, there are many autonomous underwater robots doing real missions in the ocean right now. Second, international collaboration and remote presence on a daily basis is feasible using free multimedia software tools over the Internet Multicast Backbone (Mbone).

Video Proceedings. Several years ago it became clear that the underwater robotics community was beginning to achieve meaningful results. Despite annual conferences and a variety of publications, it was nevertheless difficult to determine the "state of the art" in AUV research. It was even harder to show outsiders what was currently possible. Most AUV groups keep a video record of their successes, so a video proceedings seemed like a natural way to permanently demonstrate results and record progress. The IEEE Robotics and Automation Conference has successfully included video proceedings for several years already. The first underwater robotics video proceedings was produced for the Unmanned Untethered Sub-

mersibles Technology (UUST) 93 conference. A dozen submissions conclusively showed that an effective AUV community existed. This year, fifteen new video segments were accepted and compiled into a single tape. Tape copies and an accompanying abstract booklet were provided to AUV 94 conference participants along with the regular printed proceedings. Some of the video clips supplement papers in the proceedings, others stand alone. Together the segments show that a number of working AUVs exist today which are capable of performing a broad spectrum of real missions. Two plenary sessions at the end of each day gave everyone the opportunity to watch the proceedings on a big screen and ask questions of the authors.

Mbone Broadcast. The AUV research community is relatively small: slightly over 200 participants attended AUV 94. The AUV community is also spread out across the globe. Direct collaboration is difficult due to constraints of time and distance. Our intention in broadcasting the AUV 94 conference worldwide was to show that the use of live audio and video over the Internet makes international collaboration not only feasible but even convenient. Additionally, the use of Mbone provides an excellent data path for live underwater vehicle sensor data from remote robots to large groups of

people. In one sense, our real audience was not only "the world" but also the people right there at the conference. We want to push the horizon of what is possible.

What is Mbone? Mbone is an acronym for Multicast Backbone. Multicast is a way to send information streams to multiple Internet hosts without duplicating them. This feature is very important since video consumes a lot of bandwidth, and the Internet is very bandwidth-constrained. Bandwidth constraints are dealt with using multicast networking protocols, software compression, real-time buffering and human cooperation. A number of free software tools have been developed for sending and receiving sound, video and graphics among unlimited numbers of participants. Other tools have also been developed for shared whiteboard, Distributed Interactive Simulation (DIS) packets and session control. Currently over 1,000 subnets have successfully connected to the Mbone. The free, open and international nature of the Mbone community of users and developers has enabled anyone on the Internet with a direct high-bandwidth connection to use live multimedia. Mbone multicasts complement archived multimedia available via the World-Wide Web using tools such as Mosaic. Mbone frequently makes conferences such as AUV 94 widely available to nearly anyone who cares to listen and watch.

Plans, preparations and network setup. Several months before AUV 94 we created a group mailing address auv94@ieee.org so that conference organizers might easily communicate with conference contributors, attendees and each other. In addition to traditional mailings, a call for papers and a call for videos were posted on the robotics and artificial intelligence electronic newsgroups. Andrew Bennett of the MIT Sea Grant Laboratory was instrumental in obtaining and setting up a radio Ethernet link and multicast router so that the hotel would have the prerequisite high-speed Internet connection. A conference announcement was put out on the Mbone mailing list in order to notify the Mbone world of our intention to use some of the worldwide Internet bandwidth that week. Draper Laboratories provided local contacts, and Silicon Graphics Inc. (SGI) Boston graciously loaned two Indy graphics/video workstations. These preparations paid off: we were able to overcome a number of last minute obstacles and then send out live video for both days of the conference.

Coming up next. The availability of underwater vehicle videos makes it much easier to show what can be done today and where we want our community to go tomorrow. There is so much information packed in the video proceedings that each viewing brings fresh insights which can be applied to the problems of the day. Meanwhile, Mbone video teleconferencing can shrink the globe for scientists, students and the general public. OES conferences can become available to lots of people regardless of their ability to travel. If Mbone is available at the next AUV symposium, remote demonstrations might be performed in distant laboratories or even using vehicles at sea. If our robots communicate over the Internet, we will no longer think of the global network as a bunch of computers on desks. Instead our autonomous vehicles and remote sensors will be accessible to any of us, anywhere on the planet. These are compelling possibilities!

Lots of conclusions. Video proceedings have been a very useful tool for AUV researchers to show others what is really happening. These videos show what is currently possible and provide lots of ideas about what can be done next. Next, multicasting AUV 94 sessions to the world was successful technically and educationally. I believe that the ready availability of Mbone changes everything you know about the Internet. The network is more than A computer, it is even more than YOUR computer, it is really OUR computer. Free access to any type of live or archived resource is now freely available for you, your programs, collaborators and even robots. World-wide collaboration works, both for people and machines. Examples of these kinds of research include distributed simulation, scientific visualization, distributed conferences, live interaction, remote presence and virtual worlds. We look forward to seeing you on the Mbone.

How to get on the Mbone. There are a number of good references available on Mbone that explain technical details and describe how to get involved. Price of admission is a willingness to learn. Anonymous ftp addresses are included with the following references.

Macedonia, Michael R. and Brutzman, Donald P., "Mbone Provides Audio and Video Across the Internet", IEEE COMPUTER, pp. 3036, April 1994. PostScript, text, and hypertext article versions are available as

<ftp://taurus.cs.nps.navy.mil/Vpub/mbmg/mbone.ps>
<ftp://taurus.cs.nps.navy.mil/Vpub/mbmg/mbone.txt>
<ftp://taurus.cs.nps.navy.mil/Vpub/mbmg/mbone.html>

Casner, Stephen, "Are You on the Mbone?" IEEE Multimedia, Summer 1994, pp. 76-79.

Casner, Stephen, "Frequently Asked Questions (FAQ) on the Multicast Backbone,"

<ftp://venera.isi.edu/mbone/faq.txt> or
<http://www.research.att.com/mbone-faq.html>

Mbone and NPS AUV resource pointers via the Naval Postgraduate School

home page:<ftp://taurus.cs.nps.navy.mil/Vpub/mosaic/mbone.html>

<ftp://taurus.cs.nps.navy.mil/pub/mosaic/auv.html>

Video proceedings abstract booklets for AUV 94 and UUST 93 in text and Postscript form:

<ftp://taurus.cs.nps.navy.mil/pub/auv/auv94video.txt>
<ftp://taurus.cs.nps.navy.mil/pub/auv/auv94video.ps>
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Thanks. I thank Claude Brancart, Tony Healey, Bob McGhee, Mike Zyda, Jim Barbera, Drew Bennett MIT, Dick Blidberg Northeastern University, Mike Lee MBARI, Mario Santarelli and Cindy McKee of C.S. Draper Laboratories, Kevin Johnson of SGI Boston, Bob Franco of Endorphin Productions Pacific Grove, theme composer John Roesli, and all of the many authors who contributed to the UUST 93 and AUV 94 video proceedings.

Don Brutzman
Video Proceedings Chairperson
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Report on Student Activities

The Oceanic Engineering Society has been actively promoting student involvement at the OCEANS Conferences. At OCEANS '89 the OES help the first Student Poster Competition. Graduate and undergraduate students were invited to submit poster abstracts. The authors of the selected abstracts were invited to come to the conference and present their posters. The Conference received a grant from OES to provide funding for transportation and housing for the students. The Conference gave a complimentary registration to the selected students. Eleven students participated in the first poster competition. All subsequent OCEANS Conferences except OCEANS '90 have had a Student Poster Session. This has proven to be a very popular session at the OCEANS Conferences and has benefitted the students as well as the Conference audience. As a result of a student poster at OCEANS '93 the student's project was the basis for a job and the opportunity to continue his work. The Student Poster Session at OCEANS '94 took an international flavor with student participation from Europe and North America. Fourteen posters from Europe and nine from North America were presented.

Norman D. Miller, P.E.
Vice President – Professional Activities

Upcoming Conferences

The Fifth IEEE Working Conference on Current Measurement

St. Petersburg, Florida
7-9 February 1995
Contact: Albert Williams
(508) 457-2000, ext. 2725
awilliams@cliff.who.edu

The Third Thematic Conference on Remote Sensing for Marine and Coastal Environments

Seattle, Washington
18-20 September 1995
Contact: Erim Conferences
(313) 994-1200, ext. 3234
Fax: (313) 994-5123

OCEANS 95 MTS/IEEE

San Diego, California
9-12 October 1995
Contact: Bob Wernli
(619) 553-1948
Fax: (619) 553-1915
wernli@wosc.mil

Results of the Administrative Committee Election Ballot

As you know, a ballot for the election of six members to the IEEE Oceanic Engineering Society Administrative Committee was issued on August 19, 1994. The ballots returned have been counted, and the following candidates have been elected for the term ending December 31, 1996:

Claude P. Brancart
Roger F. Dwyer
→ James M. Glynn
→ Demetrios Kazakos
Frederick H. Maltz
→ Richard C. Robinson

IEEE Awards Board Accomplishment Search Questionnaire

An important mission of the IEEE is recognizing achievements in the fields of interest of the IEEE. Recognition is accomplished through the Institute Medals, Field Awards, and awards of the Societies, Councils and other IEEE entities. You are invited to help the IEEE Awards Board build a comprehensive list of outstanding accomplishments. Your inputs can be used to promote nominations for the IEEE Awards Programs.

Have you ever admired a particularly effective electrical, communications, or software product, a breakthrough in some processing technique, an impressive graphics tool, a clever solution to some technical problem, or concepts which are changing our technical, professional and social lives? Have you participated in innovative solutions to ocean engineering problems? Please think about this and jot down your ideas or provide answers to the questions listed below. Accomplishments covering a broad range of subjects and achievement levels are sought. Your input could lead to their recognition.

- What were the most significant technical accomplishments/products in your organization over the past few decades?
- What work or products from other organizations have you most admired? A competitors product? A tool you have purchased?
- What technical solutions have impressed you the most over the years?
- What accomplishments do you experience in your everyday life (on or off the job) that benefit your way of living?
- What technical breakthroughs are producing major changes in our professional and social lives?

Please send any ideas or comments and/or answers to the above questions to Norman D. Miller, Vice President/Professional Activities, 2644 NW Esplanade Drive, Seattle, WA 98117-2527. The replies will be consolidated and forwarded to the Awards Board as a contribution from the Oceanic Engineering Society. Thank you for your inputs.

Highlights from the Technical Activities Board Meeting June 20, 1994

The second meeting of the 1994 Technical Activities Board (TAB) was held on June 20, 1994 at the Hyatt Regency Tech Center, Denver, Colorado. The following actions were taken:

Elections. TAB announced the following election results: Dr. Glen N. Williams was re-elected Chair of the Society Presidents' Forum for the term 1995; Mr. Harold L. Flescher was elected Chair of the TAB Nominations and Appointments Committee for the term mid-year 1994 to mid-year 1996; Mr. Warren A. Kesselman and Mr. Milton G. Slade were elected Society President Representatives to the TAB Nominations and Appointments Committee for the term mid-year 1994 to mid-year 1996; and Mr. E.G. Kiener and Mr. John S. Ryan were elected Division Director Representatives to the TAB Nominations and Appointments Committee for the term mid-year 1994 to mid-year 1996.

Actions from TAB Administration Council Meeting. TAB accepted the actions from the May 1, 1994 TAB Administration Council meeting, which included the approval for funding for the TAB/USAB Technical Information Statement Ad Hoc Committee, the approval for computer upgrades in the IEEE Technical Activities Department, the approval of agreements regarding small quantity Book Broker acquisitions as revised during the meeting, and the approval of IEEE Computer Society Library Subscription Plan (CSLSP) as revised during the meeting.

IEEE Electron Devices Society Agreement. TAB approved the draft agreement between the IEEE Electron Devices Society Japan Society of Applied Devices (JSAP).

1995 TAB Meeting Schedule. TAB approved the proposed 1995 TAB Meeting schedule.

Proposed Revisions to IEEE Policy Statement 6.9 — Page Charges. As requested by the TAB Periodicals Council, TAB endorsed modifications to IEEE Policy statement 6.9 outlining page charges, for recommendation of approval by IEEE Board of Directors.

Proposed Revisions to IEEE Policy Statement 6.5C — Publication of Papers Presented at IEEE Meetings and 6.18A(6) — Guidelines for IEEE Transactions, Journals and Letters. As requested by the TAB Periodicals Council, TAB endorsed modifications to IEEE Policy Statements 6.5C and 6.18A(6) regarding policy for handling papers under review, for recommendation of approval by the IEEE Board of Directors.

IEEE Transactions Department Proposal. As requested by the TAB Periodicals Council, TAB approved the proposal to allow IEEE Transactions Department staff to investigate the feasibility of developing a finer gradation in the pricing structure (for charges to S/Cs for editing) as a function of the type of word-processing software used.

IEEE Voluntary Page Charge. As requested by the TAB Periodicals Council, TAB approved the current IEEE Voluntary Page Charge of \$110 for 1995.

1995 Publishing Services Rates and Magazine Page, Composition and Indexing Rates. As requested by the TAB Periodicals Council, TAB approved the 1995 Publishing Services rates and magazine page composition and indexing rates.

New Publications. As requested by the TAB Periodicals Council, TAB approved a new *IEEE Industry Applications Magazine* to be published by the IEEE Industry Applications Society with a special promotional non member rate of \$40 in its initial year, for a period not to exceed four years, and to be reviewed annually by the appropriate TAB bodies. TAB also approved the following proposals for new publications beginning in 1995: *IEEE Journal on Selected Topics in Quantum Electronics* to be published by the IEEE Lasers and Electro-Optics Society; and *IEEE Transactions on Visualization and Computer Graphics* to be published by the IEEE Computer Society.

Declaration of New IEEE Industry Applications Magazines a General Interest Publication. TAB approved offering the new *IEEE Journal on Selected Topics in Quantum Electronics*, the new *IEEE Transactions on Visualization and Computer Graphics*, *IEEE Transactions on Computers*, *IEEE Transactions on Software Engineering*, *IEEE Transactions on PAMI*, *IEEE Transactions on KDE*, *IEEE Transaction on PDS*, *IEEE Transactions on Networking*, and *IEEE Transactions on VLSI* as Interdisciplinary Publications to be made available to members of other IEEE Societies at subscription rates of \$35, \$22, \$35, \$34, \$35, \$35, \$35, \$28, and \$24, respectively, for 1995.

Proposed Revisions to IEEE Policy Statement 10.24 — Auditing of Conference Finances. As requested by the TAB Technical Meetings Council, TAB endorses modifications to IEEE Policy Statement 10.24 regarding auditing of conference finances, for recommendation of approval by the IEEE Board of Directors.

Establishment of a Subset of the APP. As requested by the TAB Products Council, TAB approved the establishment of a subset of the All Society Periodicals Package consisting of periodicals of interest to the medical community. The package will be offered in the fall of 1994 at a 20% discount, and will be reconsidered in three years based on its impact on the APP and target markets, as well as clarification of procedural issues. After one year, periodicals will be considered for inclusion or deletion by the TAB Products Council.

USAB Dues Assessment Increase. As requested by the TAB Liaison Council, TAB strongly opposed the \$3.00 increase in dues assessment for proposed activities of the IEEE United States Activities Board.

TAB Council/Committee Charters. TAB approved revisions to several TAB Council/Committee Charters, effective January 1, 1995.

TAB Environment, Health and Safety Committee. TAB took the following actions on items relating to the TAB Environment, Health and Safety Committee: TAB endorsed for recommendation of approval by the IEEE Board of Directors a new IEEE Policy Statement 9.21 regarding environment, Health and safety; TAB approved the TAB Environment, Health and Safety Committee Charter; and TAB expressed appreciation to the TAB Environment, Health and Safety Committee for their excellent work.

Proposed Revisions to IEEE Bylaw 310 — Technical Activities Board. TAB endorsed for recommendation of approval by the IEEE Board of Directors modifications to IEEE Bylaw 310 governing the operations of the Technical Activities Board effective January 1, 1995.

Student Fees and Student Member Subscription Rates. TAB requested that the TAB Management Committee prepare necessary revisions to IEEE Bylaws to permit Societies to set Student fees and Student Member subscription rates beginning in 1996. If no specific rates are provided, Student Society fees will be 50% of member fees and student subscription rates will be 75% of higher grade Member rates.

Society Reviews. As requested by the TAB Society Review Committee, TAB accepted the reviews of the IEEE Communications (COMM), IEEE Geoscience and Remote Sensing (GRS), IEEE Magnetics (MAG), and IEEE Oceanic (OE), Societies.

Field of Interest Changes. TAB endorsed for recommendation of approval by the IEEE Executive Committee the revised Field of Interest Statements for the IEEE Executive Committee the revised Field of Interest Statements for the IEEE Aerospace and Electronics Systems (AES), IEEE Microwave Theory and Techniques (MTT), and IEEE Reliability (R) Societies which more accurately describes each Society's scope.

Society Reserves. TAB requested that the Staff Executive — IEEE Business Administration direct that specific procedures, as submitted to TAB, be followed by the IEEE Finance Department regarding reporting of data on Society reserves and investment income.

1995 TAB Budget. As requested by TAB Finance Committee, TAB approved the 1995 TAB Budget.

1995 Society/Council Membership Fees, Publication Rates and Schedules. As requested by TAB Finance Committee, TAB endorsed the 1995 Society/Council membership fees, publication rates and schedules for recommendation of approval by the IEEE Executive Committee.

1995 Student Society Fees and Publication Rates. As requested by TAB Finance Committee, TAB endorsed the 1995 Student Society fees and publication rates for recommendation of approval by the IEEE Board of Directors.

1995 Section Library and Student Branch Library Subscription Rates. As requested by TAB Finance Committee, TAB endorsed the 1995 Section library and Student Branch library subscription rates for recommendation of approval of the IEEE Executive Committee.

1995 Non Member Subscription Prices. As requested by TAB Finance Committee, TAB endorsed the 1995 non member subscription prices, including All Periodicals Package for recommendation of approval by the IEEE Executive Committee.

Board Membership Representation. TAB encouraged the Societies/Councils to seek broad membership representation on the Editorial Board of their periodicals.

Handling Fees for Non Member Subscribers. TAB tabled a Motion to distribute the \$15 and \$250 handling fees presently charged to non member subscribers in Region 8-10 less direct expenses directly to the Societies which publish periodicals and to the All Periodicals Package income account for distribution, respectively, effective January 1, 1995.

Subscription Agents. TAB failed to endorse a Motion to recommend to the IEEE Board of Directors the termination of use of subscription agents at the earliest possible date, and utilize a direct contact process.

Society Awards. TAB approved the following actions regarding awards: Revision to IEEE Power Electronics Society William E. Newell Award; Establishment of IEEE Power Electronics Society Outstanding Young Power Electronics Engineer Award; and Establishment of IEEE Communications Society Chapter of the Year Award.

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Careers Conference Explores Engineering Leadership

IEEE-USA's Career Maintenance & Development Committee sponsored the 8th Biennial Careers Conference, April 14–15, in Fort Worth, Texas. Entitled *Every Engineer A Leader: Learning and Leading In Today's Organizations*, the conference explored such topics as engineering leadership, how to create a learning organization in the engineering community, and organizational practices that build leadership in the technical ranks.

Keynote speaker William Berry, former CEO of Dominion Resources, opened the conference by remarking that it is possible not every engineer is a leader. Berry maintained that teamwork and self-management are important, but traditional leadership still needs to come from the top. Presenting an opposing view, Jerre Stead, Vice President of AT&T Global Information Systems, told the audience that even though he was former CEO of NCR and now heads a division of AT&T, he likes to be referred to as a coach. He asserted that it is important to be a coach to employees rather than a traditional boss.

The conference provided participants with a wide range of views on management, work force diversity, and organizational education. For a copy of the conference record, call IEEE's Operations Center at (800) 678-IEEE. Ask for IEEE Catalog Number UH0195-8 when placing your order. The list price is \$20 for members and \$25 for non-members.

IEEE-USA Cosponsors NII Workshop

IEEE-USA cosponsored a workshop on advanced digital video in the national information infrastructure (NII), May 10–11, in Washington, D.C. Workshop objectives included defining the role of digital video within NII, identifying architectural scaling and performance issues in realizing this vision, and recommending the research steps necessary to resolve these issues.

Within NII, digital video is expected to provide vital information to manufacturers communicating with suppliers, to medical practitioners consulting with patients and specialists, to researchers, and throughout the entertainment business. This wide range of applications imposes a variety of technical demands on NII, including a degree of flexibility nonexistent in present computer and television systems.

The workshop included such speakers as Kenneth Davies of the Canadian Broadcasting Corporation, Glenn Reitmeier of the David Sarnoff Research Center, and Michael Nelson of the U.S. Office of Science and Technology Policy. Attendees participated in breakout sessions on display performance, image capture and requirements, and digital delivery services.

Consultants' Workshop A Success

Recognizing the importance of its educational mission, IEEE-USA's Alliance of IEEE Consultants' Networks held its first workshop on April 23 in Anaheim, California. The event attracted more than 100 consultants from all parts of the United States.

The workshop was divided into four panel sessions, covering such issues as marketing, legal and tax considerations, client referral systems, and ideas for starting and running a consulting business. In each session, panelists gave brief presentations followed by questions from attendees and discussion.

Linda Resnick, author of *A Big Splash In A Small Pond—Finding A Great Job In A Small Company*, spoke at the marketing session. Mel Kaufmann, who leads seminars that teach businesspeople how to network effectively, was the luncheon speaker. Both he and Resnick emphasized that networking—the development of relationships for mutual benefit—is the key to consulting success.

The workshop featured quality speakers, and attendees showed great interest and involvement. Annual workshops are planned, to be held on both the east and the west coasts. Watch for announcements of dates and locations. For more information, contact the IEEE-USA Office in Washington, D.C.

Committee Holds Laser Satellite Communications Workshop

Representatives of major U.S. aerospace firms, Government, and academia participated in a workshop on laser satellite communications sponsored by IEEE-USA's Aerospace R&D Policy Committee on May 11 in Washington, D.C. The attendees embodied nearly every major organization in the U.S. aerospace community with an interest in developing or using laser satellite technology.

The day-long meeting served as the first opportunity for participants to discuss the feasibility of laser satellite communications and the prospect such technology has in future commercial applications. Presenters gave attendees synopses of their organizations' research on the topic.

Experts speculated that needs for relaying defense-related surveillance data and commercial information from U.S. space and airborne objects back to ground-based information centers would increase. Communications necessary for this future information infrastructure will extend well beyond current Government and privately supported services. Laser crosslinks have the potential to reduce the size, weight, complexity, and cost of such systems.

WISE Summer Interns Selected

IEEE's Washington Internship for Students of Engineering (WISE) Task Force, supported by IEEE-USA and IEEE's Technical Activities Board, selected two 1994 interns who began the summer program on May 31. The WISE program brings engineering students to Washington, D.C., to learn about the relationship between engineering and public policy.

Craig S. Smith, a U.S. Military Academy student, will be researching the Department of Defense's flat panel display initiative and its policy implications. Brian M. McDaniel, of Texas A&M University, will be examining the role of universal service in the digital networks of the future, including the national information infrastructure.

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IEEE-USA Testifies On Federal Appropriations

IEEE-USA's Energy Policy Committee Chairman Ned R. Sauthoff testified on the Department of Energy's (DOE) 1995 research and development (R&D) appropriation before the House Appropriations Subcommittee on Energy and Water Development. He said that IEEE-USA strongly supports DOE's objective of developing the scientific and technological basis for a more diverse set of long-term energy sources for national security, economic, and environmental reasons. Sauthoff also offered IEEE-USA's assistance to Congress and the Executive Branch in identifying energy-related technical issues and assessing opportunities where applying electrical technologies might improve U.S. competitiveness.

Marvin H. Hammond, IEEE-USA's Defense R&D Policy Committee Chairman, testified on the Department of Defense's (DOD) 1995 R&D budget appropriation before the House Appropriations Subcommittee on Defense. IEEE-USA recommended that DOD's expertise and facilities should serve post-cold war economic needs by removing barriers for defense technology transfer to industry and increasing research with state and university laboratories. Hammond called on Congress to eliminate cumbersome DOD procurement regulations, which have resulted in an unnecessary and wasteful segregation of U.S. civilian and defense industrial bases.

IEEE-USA Aerospace R&D Policy Committee Chairman E. David Hinkley testified on the National Aeronautics and Space Administration's (NASA) 1995 budget request, offering advice on reducing the unit costs of space infrastructure. Hinkley also outlined goals for the U.S. space program and aeronautics programs warranting funding. IEEE-USA supports policies and programs within NASA that will promote economic growth and international competitiveness, open up space to the general public and private sector, sustain activities of direct societal benefit, and pursue space exploration.

In testimony before the House Subcommittee on Commerce, Justice, State, the Judiciary and Related Agencies Appropriations, Richard B. Marsten, a member of IEEE-USA's Engineering R&D Committee, endorsed the National Institute of Standards and Technology's (NIST) 1995 budget request. Marsten commented favorably on NIST's Advanced Technology Program, plans for manufacturing outreach, standards and measurements laboratory programs, and expansion of NIST's quality programs. He also applauded the Administration's objective to renovate and upgrade NIST facilities.

Symposium Addresses Intellectual Property and Technology Transfer

IEEE-USA's Intellectual Property Committee (IPC) recently held a symposium addressing intellectual property and technology transfer issues on May 20 in Washington, D.C. Top Federal officials presented the Clinton Administration's vision for enhanced U.S. competitiveness through improved intellectual property policy.

According to Bruce A. Lehman, assistant secretary of commerce and commissioner of the U.S. Patent and Trademark Office (PTO), even as reforms have been instituted over the past 15 years making intellectual property more valuable, new legal obstacles have emerged deterring innovation. PTO has responded by defining performance guidelines for patent examiners, that emphasize patent quality, issuing legal guidance to examiners, and shifting resources to the examining officials.

Anne K. Bingaman, assistant attorney general of the Antitrust Division at the U.S. Department of Justice, lauded the new interagency cooperation on intellectual property issues achieved through the National Economic Council's intellectual property task force. Bingaman asserted that although antitrust currently has negative connotations, it could be a powerful boost to the U.S. economy. Citing two examples of successful actions by her division, she maintained that antitrust would remain a critical function in Federal efforts to guarantee a free, open, and dynamic U.S. economy.

Joseph S. Papovich, deputy assistant trade representative for intellectual property, described General Agreement on Tariffs and Trade (GATT) ramifications on intellectual property. Papovich cited his office's activities to hasten implementation of fair practices in advance of GATT's timetables. He further contended that its section on trade-related intellectual property has significantly reduced piracy in many foreign nations.

A second panel of speakers addressed efforts to advance government and industry cooperation in commercializing technology. Lionel S. Johns, associate director for technology and space, White House Office of Science and Technology Policy, defined how the National Science and Technology Council promotes interagency cooperation and improvements in technology transfer policy. The remaining panel included Jon Paugh, director, Office of Technology Commercialization, U.S. Department of Commerce; Joseph Allen, director of training and economic development, Federal Technology Transfer Center; and Beverly Berger, Washington, D.C., representative, Federal Laboratory Consortium.

IEEE-USA Supports Lithography Research

On behalf of IEEE-USA's Committee on Communications and Information Policy, USAB Chairman Charles K. Alexander urged the House Armed Services Subcommittee on Research and Technology and the House Appropriations Subcommittee on Defense to support the Administration's budget request of \$75 million for advanced lithography programs at the Advanced Research Projects Agency (ARPA). IEEE-USA endorses such programs because microlithography is a key component of semiconductor manufacturing.

Alexander stressed that the United States must be a leader in this technology to enhance economic competitiveness. He emphasized that funding is critical to the U.S. electronics industry, national security, and military systems manufacturing.

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IEEE's Board Takes Action on Ethics

Responding to IEEE-USA's Ethics Committee recommendations, an ad hoc IEEE-USA ethics committee made a supportive interim report to IEEE's Board of Directors' meeting on June 22. The Board passed three of the committee's action items, mandating inclusion of IEEE's Code of Ethics in the new membership acknowledgment package, adding the Code to the obligation statement on the membership card, and encouraging publication of ethics-related issues.

In addition, IEEE's United States Activities Board (USAB) recently passed a reorganization plan recommending that IEEE-USA's Ethics Committee become an Institute-wide committee reporting to the Board of Directors. Affirming this proposal, USAB formally passed a motion urging the Board of Directors to form an Ethics Policy Committee.

IEEE-USA Remembers First Moon Landing

To commemorate the 25th anniversary of the first moon landing, IEEE-USA ran an advertisement in the *New York Times* and the *Wall Street Journal* on July 20, 1994.

According to USAB Chairman Charles K. Alexander, the ad was designed to "tie IEEE's U.S. members to the monumental space achievement in the public's mind and link them with impressive current activities that contribute to U.S. jobs and economic growth." He noted that with a continuing commitment to technological innovation, additional quantum leaps are possible.

By highlighting these engineering achievements, the ad also "enhanced our members' professional image with the important audiences who read these prestigious publications," Alexander explained. Millions of decision-makers, electrotechnology executives, media, and potential members read the ad.

USAB Approves Position Statements

IEEE's United States Activities Board (USAB) recently approved these position statements. Copies are available from the IEEE-USA Office in Washington, D.C. To receive a complete list of position statements by electronic mail, write to info.ieeeusa.pos@ieee.org (Internet) or info.ieeeusa.pos (Comppmail). A copy of the listing will be returned automatically by electronic mail to your originating address.

•Enhancing U.S. Productivity Through Improved Utilization of U.S. Engineers—IEEE-USA believes that effective utilization of the U.S. engineering work force is crucial to the nation's technological competitiveness. According to MC, effective utilization of engineers results in increased productivity and profit margins, higher quality products and services, technical growth, enriched individual skill development, and enhanced self-esteem. To achieve improved engineering productivity, IEEE-USA

recommends that employers have engineers assist in management decisions that influence engineering projects; provide patenting and product improvement incentives; and offer continuing education.

•Pension Underfunding and PBGC Solvency Problems—The Pension Benefit Guaranty Corporation (PBGC) was established to protect pension plan participants, if a defined benefit pension plan terminates with insufficient funds. It recently reported a \$2.9 billion deficit, with a significant majority of underfunded plan participants. PBGC underfunding could result in financially sound plans paying higher premiums, plan participants losing benefits, and taxpayers being called upon for financial assistance. To resolve pension underfunding and related PBGC solvency problems, IEEE-USA and its Pensions Committee recommend restricting lump-sum distributions from underfunded pension plans; amending the Employee Retirement Income Security Act and the Internal Revenue Code to require that sponsors of underfunded plans contribute the necessary funds for promised benefit enhancements; establishing defined contribution plans, with employers matching contributions; and mandating the transfer of earned benefits in a defined benefit plan to defined contribution plans for vested employees who leave jobs prior to retirement.

•Encryption Policy—IEEE-USA's Committee on Communications and Information Policy (CCIP) urges U.S. policymakers to reconsider current encryption* legislation that is significantly hindering U.S. commercial competitiveness. CCIP advocates the development of public, exportable, and secure algorithms, and a reconsideration of the current encryption classification for export purposes.

•IEEE's Commitment To Serve The Career Needs of Its Members—The engineering profession plays a critical role in sustaining and improving a high quality of life for all people. Recognizing the dedication, responsibilities, and efforts of its members, IEEE-USA strives to pursue courses of action that will assist members in achieving basic career needs.

Engineering Education Survey Available

Westat, a research foundation, and the National Science Foundation recently completed a survey on undergraduate engineering education, collecting data from all undergraduate electrical, mechanical, and civil engineering schools in the United States. The report addresses such issues as the distribution of undergraduate degree programs, trends in student and faculty demographics, and problems faced in undergraduate engineering as perceived by department chairs. For a free copy of the survey, write to Carin Celebuski, Westat, 1650 Research Boulevard, Rockville, Maryland 20850, or call (301) 294-3986.

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