IEEE

OCEANIC ENGINEERING SOCIETY

NEWSLETTER

VOLUME XIII NUMBER 2

EDITOR: HAROLD A. SABBAGH SUMMER 1984 (USPS 420-910)

OCEANIC ENGINEERING SOCIETY

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IEEE Oceanic Engineering Society Newsletter is published quarterly by the Oceanic Engineering Society of the Institute of Electrical and Electronics Engineers, Inc. Headquarters: 345 East 47th Street, NY 10017. Sent automatically and without additional cost to each member of the Oceanic Engineering Society. Printed in U.S.A. Second-class postage paid at New York, NY and at additional mailing offices. Postmaster: Send address changes to IEEE OCEANIC ENGINEERING SOCIETY NEWSLETTER, IEEE, 445 Hoes Lane, Piscataway, NJ 08854.

CALL FOR NOMINATIONS
OES ADMINISTRATIVE COMMITTEE

The time has come again to request nominations for the OES Administrative Committee. At this point we have twenty-one members serving on the committee with four whose terms end December 31, 1984. We are able to elect up to thirty members to our Ad. Com. Committee. However, it is probably appropriate at this point to elect no more than seven members to our committee so as to have a total membership of twenty-four where eight new members are elected each year to serve for three years. The four members whose terms are up this year are: J. David Irwin, Robin B. Lake, Lloyd Zell Maudlin, and Glen N. Williams.

We seek nominations of individuals willing to help us in building a strong, dynamic Oceanic Engineering Society. They are people who must be willing to attend the two Administrative Committee meetings each year held during the Oceanic Conference in the Fall and the Off-shore Technology Conference held in Houston in the Spring, and furthermore are willing to work on projects in between times.

The Nominations Committee seeks volunteers as well as nominees. In each case, the individuals nominated must express a willingness to be considered by the Nominations Committee and to appear on the ballot. They must provide a brief five hundred word biography listing professional activities, current affiliations, and participation in IEEE activities. We would expect to have no more than fourteen candidates for Ad. Com. positions placed on the ballot. Please submit nominations and supporting material to:

Donald M. Bolle
Jr. Past President
College of Engineering and Physical Sciences
308 Packard Lab #19
Lehigh University
Bethlehem, PA 18015

FROM THE DIRECTOR'S DESK

By S. H. Durrani, Director, Division IX

This is my first "letter" as Division Director, and it may be appropriate to briefly describe the new Division structure. As many of you may recall, the Institute bylaws were changed last year to authorize 10 technical divisions and the various Conncils, Societies, and Groups were regrouped into these divisions. Commonality of technical interests was used as the primary criterion for the grouping.

Division IX, called Signals and Applications, contains four Societies and one group. These are:

Aerospace and Electronic Systems Society
Geoscience and Remote Sensing Society
Ocean Engineering Society
All three previously in Division III

Acoustics, Speech and Signal Processing Society
Previously in Division I

Sonics and Ultrasonics Group
Previously in Division IV

Incidentally, there is no essential difference between a Society and a Group. However, the word "Society" appears to carry some added prestige, especially when interacting with an outside organization, e.g., the American Physical Society, or the Society of Mechanical Engineers. I have discussed the question of changing from Group to Society with Dr. Herman van de Vaart, President of the SU Group, and he will consult with his AdCom to see whether they wish to make a change.

One of my hopes is that we will be able to identify a few projects where joint efforts by several Societies would be desirable to produce synergistic results. One idea being considered by other Divisions is to introduce a Division Magazine, which may be unaffordable by individual Societies. Another idea is to replace or supplement the Society Newsletters by a Division Newsletter: the larger circulation may produce cost savings and additional advertising. Still another idea is to open joint Chapters in Sections where the number of members of individual Societies is too small to support separate chapters of their own.

I would like to invite your ideas on these and related topics, and will discuss them with the Society leadership to see if some of them would be suitable for our Division. It will take a while for the five Presidents and me to get to know each other's views, but I am sure that all of us will be eager to receive such suggestions from our collective membership.

By now every IEEE member knows that 1984 is our Centennial Year. The first major Institute-wide Centennial events were held in Washington in February. These included the Technical Press Briefing, and the Technology Policy Conference, both of which have been reported upon in the INSTITUTE. In parallel with these meetings there was a TAB orientation and managment seminar for incoming Society Presidents and other officers, and a full-day TAB meeting. This intensive activity was exhausting but productive, and the participants came out of it with a greater awareness of the problems and issues, and also of the resources available in the Institute to resolve these problems.

I hope all members will try to attend at least one Centennial event during the year in their area. Almost all Sections are organizing Centennial Awards ceremonies, and in many cases these occasions provide an excellent opportunity for our society members to meet the local IEEE leaders and discuss setting up joint programs. Additional Institute-wide events are scheduled for May in Boston, October in Philadelphia, and December in San Francisco. Let us all participate in them this year when we can — not many of us will be here for the next Centennial!

Saj Durrani

ELECTIONS '84

Statements by Candidates for 1985 President-Elect

The following independently written statements by the two candidates for President-Elect, Dr. Jose B. Cruz, Jr. and Dr. Bruno O. Weinschel, have been especially prepared for readers of IEEE newsletters. It is hoped that these statements will supplement the biographical sketches and other statements made by the candidates which appear elsewhere in the IEEE literature and that they will assist IEEE member voters in the election process.

Statement by Jose B. Cruz, Jr.

Improvement of Technical and Educational Services to Members

Advances in computers, communications, microelectronics, electronic materials, electromagnetics, systems, energy, and other areas within the scope of IEEE concern have been dramatic in recent years. IEEE members must continuously learn a significant amount of new material. The nature of our profession demands that lifelong learning, in its broadest sense, occupy a central place in our individual activities.

The IEEE provides an organizational framework through which each member can participate to more fully utilize collectively developed technical services. Publications, short courses, workshops, Society and Regional conferences, and Section/Chapter meetings will continue to be the principal vehicles through which we achieve lifelong learning objectives. In view of the great diversity of our fields of activity and the speed with which these fields change, I believe that we need to develop new and highly flexible means of service for delivering educational and technical information.

This year the IEEE Publications Board—which I chair—will provide an experimental service called "Finding Your Way." This enables a member, who wishes to learn a new field, to access a computer system through a communication network. Members can obtain listings of tutorial articles, workshops and conferences, home study courses, special satellite broadcasts, short courses, IEEE press books, and other relevant aspects on desired topics. I propose to greatly expand this service so that a member with a personal computer or terminal may obtain a variety of additional information services from IEEE.

Enhancement of Status of Members of the Profession

An important mission of the IEEE is to enhance the status of the members of the profession. This is a constitutional mandate which I strongly support. Although our principal activity in this regard is confined to the United States arena, many professional issues have universal applicability. Thus, we are addressing concerns affecting the status of the profession as a whole. Moreover, we are serving the needs of a large fraction of IEEE members who reside in the United States.

I am very supportive of the USAB positions on career enhancement issues including professional practices for engineers and their employers, portable pensions, patent rights, and age discrimination; salary surveys and other member opinion surveys; and legislative coordination. We need to develop more position papers to address the major problems facing the profession. Furthermore, we should give strong support to the joint USAB/TAB initiatives on: technology policy issues on productivity, technology transfer, energy, the environment, and communications.

As President I will work for the improvement of our technical services to IEEE members through expanded tutorial and educational materials. I will support the creation of a system that provides access to a variety of IEEE information services through a computer network. Overall, I will press for the establishment of a dynamic professional development program to enhance the status of members of the engineering profession.

Statement by Bruno O. Weinschel

1. *Necessity To Improve Competitiveness:* The most important problem confronting the economy today where engineers can play a more important role, is the *re-establishment of our competitiveness in world trade and against imports*. This requires the introduction of many new technologies into "smoke stack" industries and continuing *improvement of the manufacturing processes, quality control, reliability, after-sales-service and customer satisfaction*. The management of some companies including Hewlett-Packard and IBM are emphasizing these points, but many others have not yet grasped that we are in a worldwide competition. About 90% of all products used here are subject to foreign competition. We need better manufacturing, quality and reliability engineering as well as marketing research. Our private sector management must be improved. *Engineers must participate*.

2. *Continuing Education of Engineers*: Industry must budget for the *maintenance of human technical capital*. Especially, electrical engineering changes so rapidly that continuing education is necessary to stay abreast of current technologies. We must *improve* the *utilization* of engineers, so that an engineer can use a greater part of his time utilizing his technical knowledge. This requires sufficient support by subprofessionals including technicians, tech writers, etc., and adequate facilities.

3. *Improvement of Engineering Education*: Many engineers feel unprepared for their jobs. Some schools still teach engineering on a narrow, disciplinary basis while in real life, the required knowledge is inter-disciplinary. For example, in semi-conductors, the demarcation between electrical engineering, chemistry, solid-state physics and advanced fabrication processes has practically disappeared. This needs to be reflected in the *structure and programs* of engineering schools. Since engineers work with other departments as well as the public, they must be able to *communicate effectively*. This is essential if more engineers are to become leaders in the shaping of policy in industry and government.

4. *Long-Term Civilian R&D by Industry*: About 70% of U.S. R&D is supported by defense. While important to national security, the Japanese and West Germans, as a percentage of GNP, spend more on non-defense research. Wealth, jobs and the trade balance are closely related to the amount and quality of non-defense research. Our industries must perform more long-term R&D in civilian products, services and process technology in order to improve the quality of life both here and in the rest of the world. Technology has improved and must continue to improve health, communications, environment, transportation, cost of energy and utilization of materials.

5. *Support for Engineering by the National Science Foundation*: The NSF by law must support both *science* and *engineering*. Historically, it concentrated on basic science. Its budget is about $1.5 billion. Grudgingly, within the last six years engineering increased to 10%. Its engineering research is not supportive of industry's new technologies. The needs of highly technical *industries* have outrun their support by the NSF. Our technological *competitiveness* is closely coupled to the *quality of our engineering research and talent*. Excellence in science is necessary but not sufficient. The NSF must improve the support of engineering research and education, resulting in new and better products and services.

Statements by Candidates for 1985 Executive Vice President

The following independently written statements by the two candidates for Executive Vice President, Dr. George P. Rodrigue and Mr. Merlin G. Smith, have been especially prepared for readers of IEEE newsletters. It is hoped that these statements will supplement the biographicl sketches and other statements made by the candidates which appear elsewhere in the IEEE literature and that they will assist IEEE member voters in the election process.

Statement by George P. Rodrigue

The IEEE is primarily a technical organization and has limited financial assets. Unlike a major corporation or government agency, the IEEE cannot hire full-time professionals to carry out most of its programs. However, the IEEE has enormous resources in its volunteer members, and its professional staff is best utilized to facilitate the voluntary actions of members. Our meetings and conferences are successful because interested and capable engineers volunteer both time and talents. Our publications are pre-eminent in many fields because reviewers, authors, and editors volunteer their efforts. In the professional area members write position papers, testify before government agencies, and lobby with local school boards, and the aggregate of individual member reputations has political power.

The IEEE has a good track record, but much remains to be done in making the engineering profession a rewarding life-long career. I believe that the IEEE Board of Directors should promote programs that foster collective and mutually supportive actions on the part of IEEE members. The program "Finding Your Way" that I successfully urged the Board to approve last year is one such example. This program builds its data base on the recommendations of technically qualified members, and will provide to IEEE members guidance on the best tutorial material available in a broad range of specific technical areas.

Programs in the professional area are also most successful when a heavy infusion of volunteer effort exists. I believe that part of the problem with the AAES is that it has no significant base of volunteer support. A true pooling of the knowledge and talents of engineers from various societies with common professional goals must be achieved. Top-down organizations rarely work on a voluntary basis.

Statement by Merlin G. Smith

It is an honor to be considered for the position of Executive Vice President. Participation in the Executive Committee and Board of Directors affords the opportunity to consider all the interests of the Institute. We are particularly interested in promoting efforts which foster interorganizational or interdisciplinal synergisms. These and other priorities are:

- Joint industry, government and university programs
- Cooperative activities between Society and Regional entities
- Collaboration amongst regional, technical and educational groups in the generation of affordable educational programs
- Conference services to an increasing number of members
- Publications to serve a broader member base
- Intersociety conferences and publications
- Individual-recognition programs
- Recognition of Engineering and Computer Science professions
- Responsible participation in societal and governmental forums
- An environment encouraging greater volunteer participation.

One of the specific functions of the Executive Vice President is to chair the Conference Board. As a founder and a current member of this Board, we can be effective in the brief one-year term of office. We also bring the experience as a past chairman of a major conference board, the National Computer Conference Board, chairmanship of the NCC, founder of the Compcon Fall series, and initiator of a number of workshops and meetings.

We have the support and encouragement of our employer, and we are prepared to give it a good effort.

These candidates will usher in the IEEE's second century. What better way to participate in this gala event than to vote? The percentage of eligible voters who do vote in our elections has been rather low in recent years.

This is the time to reverse that trend and participate in the one activity that we are all entitled to, at no cost to ourselves.

OF OCEANIC INTEREST

Reprinted from InfoWorld, Vol. 5, Number 20

COMPUTER MODEL AIDS LAW OF THE SEA MINING NEGOTIATIONS

By Tom Shea, IW Staff

What was Elliot Richardson—the Harvard man of integrity who refused to fire special prosecuter Archibald Cox in the "Saturday Night Masacre" that hastened Richard Nixon's resignation — doing at a conference exploring the social impact of computers?

Richarson spoke on the final day of the Computer Culture symposium held in New York City last month. Together with other diplomats, Richardson talked about the world's first international instance of CAN — computer-assisted negotiations.

Richardson and others negotiated a complex international treaty establishing the legal and financial framework for undersea mining. They did it with the help of a computer simulation developed at MIT. The computer model demonstrated the economic dynamics of mining operations so well that all parties to the negotiations eventually became users of this shared model.

The MIT computer model became the touchstone for discussions, calculations and negotiations; it shifted people's thinking into a more realistic and cooperative mood and allowed all parties to agree on a scheme that is fair. Richardson and the others are confident that the agreement will last for many years without having to be renegotiated.

Did the MIT model make any difference in terms of the final shape of the agreement?

Making a difference

Yes, according to the negotiators, the model made a big difference—in three ways: It enabled countries to abandon unrealistic negotiating positions in the face of genuine learning with a minimum loss of face. It gave the delegates confidence that they could understand the dynamics and economics of a complex process that was not yet even in existence. And, as negotiations progressed, the model also let the delegates keep track of the whole picture while they negotiated the parts.

The model became so popular that representatives from different countries and the mining industry would come in on Saturday mornings to play with the program and try out different possibilities.

No one would say the Law of the Sea for undersea mining of metal nodules found in international waters is the most earthshakingly significant item on the international agenda right now. It is important, however, as a precedent, for the fact is this—the computer did make a dramatic difference in the negotiations.

The landmark use of a computer model to assist in complex negotiations among many participants with vested interests and conflicting claims was deemed so impressive by those involved that Richardson and other negotiators are now champions of the use of computer models for solving several of the most stubborn of the world's problems — including the reduction of nuclear weapons.

To give credence to their enthusiasm for the potential of computer modeling, the diplomats recounted — slowly, ponderously, pausing often in the manner of diplomats to praise the integrity and competence of their colleagues — the strange saga of the Law of the Sea Negotiations.

In the mid-1800s it was discovered that the seabed in the Pacific Ocean contains numerous lumps, or *nodules* — roughly the size of potatoes — strewn on and just below the ocean floor. The nodules are composed of metals such as copper, nickel, cobalt and manganese. They cover an area of the ocean floor about the same size as Switzerland; and are located southeast of Hawaii in international waters.

After this discovery, it was expected that some day the nodules would be mined from the ocean and that some kind of legal permission would need to be given to the ocean miners. The possibility sparked many questions, however. What kind of legal permission could be used? Who could guarantee that miners wouldn't be kicked out of an established location after they had invested millions in a site? Who would collect taxes from the miners? After all, a regulating body is traditionally a taxing body as well.

In 1970 the United Nations declared that the nodules were "the common heritage of mankind." It was a simple declaration without force, but it established who owned the lode of valuable metals, and it provided the basis for future negotiation.

From 1974 to 1982, negotiations were held to establish an international seabed authority and to establish, in the words of Richardson, a "minicorporate tax code for the future of deep-sea mining."

Richardson, now an attorney with Millbank, Tweed, Hadley and McCloy in Washington, D.C., was ambassador to the Law of the Sea Conference and head of the U.S. delegation at these negotiations.

Devising a model

Meanwhile, professor Daniel Nyhart was directing the work of some graduate engineering and law students at MIT who attended a 1974 seminar on problems of law and engineering. A few students devised a computer model to simulate costs and sizing of undersea mining operations.

When negotiators began exploring the same issue later, one investigator began to collect his own data, and in the course of his research, he heard about the MIT model.

Nyhart insisted that his students break down each cost aggregate into its components — the cost of ore transports, how much per foot of stringer pipe, the cost of a collecting mechanism that would scrabble along on the ocean floor scooping up nodules, replacement costs, maintenance costs, detailed costs of operating a refining operation on shore and so forth. These cost breakdowns later proved crucial to the acceptance and credibility of the MIT model by negotiators.

To insure accuracy, Nyhart insisted that the students submit the model to mining-industry sources for two reviews of cost data.

The program ran on an IBM 370 mainframe and used simple printouts for output. The model as written in FORTRAN and consisted of several thousand lines of code. It was not, in microcomputer vernacular, "user friendly."

The computer-assisted Law of the Sea negotiations were eminently successful. In 1982 representatives from 120 countries met in Jamaica to sign an agreement that the negotiators are confident is fair and will not need to be renegotiated for a long time.

The achievement is not without its ironies, however, By the time the agreement was signed, the U.S. government was operating under a new administration, and the U.S. elected not to sign the treaty that U.S. delegates had helped to draft. Secondly, although a sensible legal and financial framework is now in place to support undersea mining of the nodules, no one is actually doing any mining yet.

In spite of this, the negotiators clearly produced a "good result in an issue of world importance," according to Richardson. The negotiators, mostly people with legal backgrounds who are not familiar with computers, were impressed with the difference the computer model made in terms of the quality of the agreement and the effects the model had on the negotiating process itself.

"We had to resolve questions like, what's the investor entitled to make to make undersea mining attractive to him?" Richardson said. "It was the MIT model that allowed us to more easily solve intractable 'hard-core' problems, such as what is reasonable to charge initially?"

According to Richardson, Tommy Koh, Singapore's ambassador to the United Nations, was the real hero of the negotiations. The Harvard-educated diplomat conducted a series of graduate-school-type seminars that lasted for a year. The seminars taught delegates how computer models are set up, the assumption and dynamics built into the model and about the kind of work that the MIT programmers had put into the model.

The prestige of MIT helped give the model some initial credibility, but that was not enough by itself. Other countries suspected that the U.S. was advancing some high-tech gimmick that would help its position at the expense of everybody else's.

Adding to those suspicions, Nyhart and his graduate students had received funding to continue work on the model. An agency called NOAH, which is part of the U.S. Department of Commerce, had provided the research grant.

"There were several obstacles to the acceptance of the MIT model," Koh related. "It was done in the U.S. and was financed by the U.S. Department of Commerce. In addition, most lawyers have very little knowledge of computers."

Koh's seminars — and a series of retreats sponsored by the Quakers and the Methodist Church that provided some quiet time for reflecting and talking — enabled the delegates to set most of their suspicions aside. "They found that it was an objective study and that the men and women of MIT were people of integrity," Koh said.

"Using the model, we were able to get across the great uncertainty that the ocean miners faced. We also used the model to convince delegates that some proposals were financially infeasible. You could put in variables and see the results," Koh explained.

Koh does not believe that computer models can help solve all the world's international problems, but there are certain problems that, like the ocean mining issue, could yield to such an approach. "These negotiations were primarily about numbers," Koh said. "And there was a felt need among everyone concerned for obtaining the best objective information possible. Also, there were able men and women involved at each stage of the process."

The computer model was injected into the negotiating process after its basic form had already been established. Later, at the insistence of the delegates, the model's output routines were changed and expanded to include specific information the diplomats were interested in.

James Sebenius, a professor at Harvard who assisted Richardson and MIT during the negotiations, gave several reasons why the MIT model was such a success. "Early uses of the model seemed to cut both ways," he said. "The mining interests insisted at first that the risk was so great that little or no taxes should be imposed. But the model seemed to show that the venture could be profitable enough to generate higher taxes and still be fair to the miners."

According to Sebenuis, underdeveloped countries would probably not be able to manage such a high-tech venture as deep-ocean mining. Their interest was in getting as much revenue for themselves as possible. Since these countries were convinced the miners would make a fortune, they wanted to impose very high fees and taxes. "But the computer model indicated that, yes, mining would be profitable, but that it was no bonanza," Sebenius remembered.

Sebenius said the final taxing scheme the negotiators worked out was unique and appeared to fit the venture well. "Instead of numbers, the structure of the model became clear to the delegates," he said. "It's a novel tax structure — a technical achievement."

"We believe the agreement is of much higher quality than it would have been without a computer model," he said. "It should let us avoid a painful series of negotiations later.

Initially, India was adamant about charging very high up-front fees from mining interests — fees that would be payable before the ventures began making any money. The existence of the computer model made it possible for India "to withdraw its proposal in the face of genuine learning," Sebenius said. "The model provided a way to move that didn't cause a loss of face."

Nuclear weapons

What other world problems might be resolved using computer models? Obviously it takes some extraordinary human qualities to conclude negotiations with fairness, but maybe some issues take more than that. Some problems, especially those in the international realm, are complex and involve relationships among interactive elements that are impossible for the unaided human mind to see in their entirety.

In spite of copious amounts of blood, sweat and tears, unclarity and confusion often stymie negotiators and force separate countries, assuming the worst about the others, to fall back on protecting their self-interests. In the absence of unvarnished facts, pet theories and fears advance and, in turn, bring forth a barrage of counter theories and fears from others. The more the discussions veer toward validating the theories and fears, the farther the negotiations move away from settling the issues.

What do the experts say?

Richardson, Nyhart, Koh and Sebenius are all hopeful that some international problems — ones that could be

clarified by numerical analysis — can indeed yield to computer models. Nyhart put forth a long list of treaties and agreements that are due for renegotiation soon that he said could benefit from this approach.

Richardson thinks a shared computer model could help the U.S. and Russia finally freeze and then reduce the number of nuclear weapons. He even proposes that the United Nations should generate and provide computer programs that could be used as shared models by parties in negotiations. In his view, it would be a more useful function than much of what the U.N spends its energies on now. Richardson has recommended that Koh be the U.N. delegate to champion that effort.

Both the U.S. and Russia, Richardson points out, have agreed on the goals of achieving parity in nuclear weapons and then reducing the number of such weapons on both sides simultaneously. So far, however, the two countries have failed to agree on what parity is and, to make matters worse, have separated out only one aspect of the nuclear arsenals from all the rest.

The current round of arms-reductions negotiations is, for the first time, considering ***all*** nuclear weapons and conventional forces in the talks, he said. Such an approach is useful because it is easier to balance many elements of different weights than to balance only a few elements.

It should be possible, given the number and variety of weapons on both sides, to establish some sort of parity, but the work of deciding what is equivalent to what has not yet been done. No one has yet figured out an agreed-upon way to compare medium-range, land-based missiles tipped with MIRV warheads to, say, cruise missiles or submarine-launched missiles.

Yet this is surely possible, at least in theory, Richardson points out. A computer model could force that kind of weighting and comparison and provide the basis for an agreement on terms. By using a shared computer model in arms-limitations talks, the opposing parties might shift their thinking from hazy side issues to cooperative considerations to discover underlying facts.

Exchange adjustments

Another numerical dispute, now mired in opinion and controversy, that could stand a computer's touch is the international monetary situation. Dollars, yen, marks, francs, rubles and other currencies seem to work reasonably well within their own countries, but the international rates of exchange are forever in need of adjustment.

In the area of money, opinions and pet theories abound. Some argue that a fixed rate of exchange is best. Others favor a floating exchange rate. Some still want a gold standard.

Tommy Koh suggests that a computer model would help negotiators get a clear view of how the world money systems actually work. He suggested such a model could help them agree on workable and fair rates of exchange.

From their own personal experience, diplomats agree that computer models can make concrete contributions to international relations. They have seen a complicated international negotiation change from an adversarial battle to a fair, cooperative agreement. The diplomats' experience proves the benefit of using computers to build toward world peace.

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1985 OFFSHORE TECHNOLOGY CONFERENCE ABSTRACT SUBMISSION FORM

Deadline for Receipt — September 14, 1984

Note: All information requested on this abstract submission form must be included in order to be considered by the OTC Program Committee. Specific details regarding the nature of the work will be given priority consideration by the Program Committee.

GUIDELINES FOR AUTHORS

All Sponsoring Societies of the Offshore Technology Conference will participate in developing the technical program for the 1985 Conference. The Program Chairman for the 1985 Conference is Leroy M. Williams.

Individuals interested in submitting an abstract for consideration by the 1985 Conference Program Committee should review carefully the material included in this document. Specifically, potential authors should note that **a manuscript will be required for inclusion in the Proceedings Volume for each paper accepted for the 1985 Conference Program.**

The OTC Program Committee will evaluate papers solely on the basis of information supplied on this form. Authors must provide specific information on the paper proposal in each of the areas of the abstract section.

OTC provides complimentary registration **only** for presenting authors who register on special author registration cards. OTC assumes no obligation for any other expenses incurred by authors for travel, lodging, food, or other incidental expenses.

SUBMITTAL OF PAPERS

Solicitation of technical papers for the 1985 Conference will be made primarily with this Abstract Submission Form. The form contains space for the abstract that must be included for all proposed papers. This system permits the selection of papers for the program before manuscripts are written. Additional copies of this form will be supplied by the OTC Headquarters on request.

ABSTRACT: An abstract, containing 200-300 words, must be provided. Develop the abstract by addressing the major aspects of the paper as described below:

Description of the Paper: Summarize the scope and nature of the work upon which the paper will be based. Note the relative emphasis of components such as field data, laboratory data, design, analysis, field operations, research or system development. Note differences from other past or current related work being done in this area. If the paper is a review paper, carefully state the extent of the coverage.

Application: Describe the possible application of knowledge provided in this paper to a particular area of offshore resource development and recovery. If the paper is a review paper, carefully state the extent of the coverage.

Results, Observations, Conclusions: Describe results to be presented in the paper and state specific conclusions of work. Describe how these differ from results or conclusions of previous work in the same or similar subject. If the paper describes hardware, or operation of a system, or describes an event, state specific new information revealed. Also state whether or not results of field data, laboratory test data or calculated computer work will be included in the paper.

Significance of Subject Matter: Briefly state the most significant aspect of the subject matter.

Subject Categories are listed below. Please indicate by number the most appropriate Primary and Secondary Category designation on the abstract form where indicated.

1. Marine Geology & Geochemistry
2. Exploration & Production Geology
3. Geophysical Interpretation
4. Geophysical Data Gathering & Data Processing
5. Seafloor Surveying & Mapping
6. Foundations & Soil-Structure Interaction
7. Earthquake Prediction & Effects
8. Oceanography & Meteorology
9. Wind & Wave Loading Forces
10. Offshore Platform Concepts
11. Structural Engineering, Design, and Analysis
12. Platform Construction & Installation
13. Engineering Materials for Offshore Applications
14. Corrosion & Corrosion Control
15. Welding & Fatigue
16. Wire & Synthetic Rope
17. Mobile Offshore Drilling Units
18. Construction, Support & Service Vehicles
19. Position Control & Stabilization of Vessels
20. Mooring & Anchoring
21. Navigation Systems
22. Communication & Telemetry
23. Offshore Data Collection, Instrumentation & Transmission
24. Power & Power Support Systems
25. Drilling, Production & Completion Technology
26. Field Development
27. Subsea Production Facilities
28. Marine Riser Systems
29. Offshore Pipelines
30. Manned & Unmanned Submersible Systems
31. Diving, Salvage, & Repair Operations
32. Arctic Logistics
33. Ice Mechanics
34. Ocean Transportation & Marine Terminals
35. Marine Mining, Ocean Minerals & Energy Sources
36. Offshore Islands & Breakwaters
37. Offshore Processing
38. Safety & Fire Prevention
39. Environmental Quality Considerations

(Please continue on reverse side)

Return Forms To: PROGRAM DEPT., OFFSHORE TECHNOLOGY CONFERENCE
P.O. Box 833868, Richardson, Texas 75083-3868 U.S.A.

EVALUATION OF ABSTRACTS BY THE 1985 PROGRAM COMMITTEE

The following criteria will be observed by the Offshore Technology Conference Program Committee in selecting papers for the 1985 Conference.

1. The paper must not have had prior extensive publication or circulation. Publication in trade periodicals or other professional and technical journals will be considered extensive publication.

2. The paper should contain new knowledge or experience in some field of offshore resource and environment.

3. The paper must be technically correct and should be of interest to a reasonable number of people working in the field of offshore resources and environment. It may be theoretical or may present the results of laboratory studies, and it may state or analyze a problem. The paper may also be a review-type paper, but must be of significant value to the technical field.

4. The paper may present information about equipment and tools to be used in offshore technology. Such papers must show the definite applications and limitations of such equipment and should avoid undue commercialism and the extensive use of trade names.

5. **The abstract should have necessary clearance before submittal to OTC Headquarters. Prospective authors should provide information on any clearance problems when the abstract is submitted.**

Although theoretical papers will be selected in various fields, application papers presenting solutions to problems are also desired. Program time is limited, so the Program Committee will emphasize the quality of the contribution and its value in the field of offshore technology.

A WORD ABOUT COMMERCIALISM . . .

The OTC Program Committee has a stated policy against use of commercial trade names or language that is **commercial** in tone in paper titles and text. Use of such terms will result in **careful scrutiny** by the Program Committee in evaluating abstracts, and the presence of **commercialism** in the text of papers submitted for the *Proceedings* Volume is cause for removal of the paper from the program.

COPYRIGHT

In accordance with the Copyright Law, the Offshore Technology Conference must receive and maintain on file a copy of the Transfer of Copyright Form, signed by all authors of papers to be presented at the OTC.

PREPARATION OF MANUSCRIPTS OF ACCEPTED PAPERS

Authors of papers selected for the 1985 OTC program will be notified by mail in late November 1984.

Authors offering papers for the program should fully understand that a manuscript will be required for each technical paper selected for the 1985 Conference. If selected, the manuscript will be printed in the *Proceedings* Volume to be sold at the Conference. The maximum desirable length for any paper is about 7,000 words.

Complete instructions on preparation of manuscripts and slides will be sent to authors of accepted papers. There are two options for preparing manuscripts:

Option 1—**Deadline January 18, 1985.** Author provides complete manuscript and illustrations to OTC Headquarters, and the final typing and printing is done by the OTC Staff.

Option 2— **Deadline February 15, 1985.** Author types final copy of his manuscript on special forms provided by the OTC Office, then sends typed forms and loose illustrations to OTC Headquarters. The OTC Staff completes the layout and printing of the paper.

ANNOUNCEMENTS AND CALLS FOR PAPERS

HELP US IDENTIFY OUR WINNERS

Our records are innaccurate (or merely uncertain). Here is the list of our past Technical and Service Award winners, as we recall them. Please help us correct this list and fill in the gaps in our records. Call Don Bolle at (215) 861-4025, or write to him at:

D. M. Bolle
Packard Laboratory #19
Lehigh University'
Bethlehem, PA 18015

if you have some answers.

	Distinguished Technical Achievement Award	Distinguished Service Award
1975	Robert Frosch	Arthur S. Westneat
1976		
1977	Frank Snodgrass	Calvin T. Swift
1978	Howard A. Wilcox	Edward E. Early
1979	Richard K. Moore	Richard M. Emberson
1980	Werner Koebel	Donald M. Bolle
1981	Neil Brown	Lloyd Z. Maudlin
1982	Ira Dyer	Arthur S. Westneat
1983	Alan Berman	Elmer P. Wheaton

SPECIAL ISSUE ON BEAMFORMING

In July 1985 a special issue of the IEEE Journal of Oceanic Engineering will be devoted to beamforming, covering both the electromagnetic and the acoustic case, with emphasis on the latter. Among the topics to be covered are comparative analysis of electromagnetic and acoustic beamforming, image formation, arrays, side lobe reduction, interpolation and adaptive beamforming, as well as modern beamforming techniques inclusive of, but not limited to, frequency domain approaches, maximum likelihood methods, and maximum entropy processes.

GUEST EDITORS

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Biophysics and Electronics (DIBE)
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16145 Genova, Italy

ISSUE MONTH: JULY 1985

SUBMISSION DEADLINE:

October 15, 1984

Prospective authors should prepare their manuscripts in the manner prescribed on the back cover of the IEEE Journal of Oceanic Engineering and submit them at any time to the deadline to either of the Guest Editors.

SPECIAL ISSUE ON ADVANCES IN ELECTROMAGNETIC REMOTE SENSING OF THE OCEANS

Papers are invited that present new observations, technologies and scientific results related to studies of the ocean from air and space platforms. Active and passive remote sensing at all electromagnetic and optical frequencies are of interest. Recent advances in technology, theoretical interpretations and modeling, and applications are sought. In addition, activities that directly support air and space measurements and operations are also encouraged.

GUEST EDITORS

Prof. David E. Weissman
Department of Engineering
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Hempstead, New York 11550

Prof. Adrian K. Fung
Remote Sensing Laboratory
University of Kansas
Center for Research, Inc.
Lawrence, Kansas 66045

ISSUE MONTH: SEPTEMBER 1985

SUBMISSION DEADLINE:
December 15, 1984

Prospective authors should prepare their manuscripts in the manner prescribed on the back cover of the IEEE Journal of Oceanic Engineering and submit them at any time up to the deadline to either of the Guest Editors.

OCEAN ACOUSTIC REMOTE SENSING

In October 1985, a special issue of the IEEE Journal of Oceanic Engineering will be devoted to ocean acoustic remote sensing. Among the topics to be covered are acoustic monitoring and assessment of fish stocks, ocean acoustic tomography, acoustic monitoring of pollution and acoustic current velocity profiling. Papers on these or other ocean acoustic remote sensing topics are invited.

Prospective authors should prepare their manuscript in the manner described on the back cover of the IEEE Journal of Oceanic Engineering and submit them by January 15, 1985 to the guest editor:

Dr. John E. Ehrenberg
BioSonics Inc.
4520 Union Bay Place N.E.
Seattle, Washington 98105

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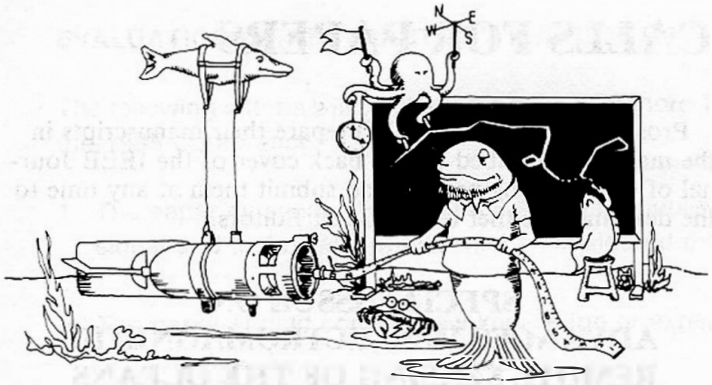

CURRENT MEASUREMENT TECHNOLOGY COMMITTEE NEWS AND INFORMATION

A primary objective of the Current Measurement Technology Committee (CMTC) of the Oceanic Engineering Society (OES) is to provide a focus for information exchange and promote cooperation and coordination among those in the marine community involved in current measurement. To this end, this column has been established as a regular feature of the *OES Newsletter* and everyone is encouraged to participate by submitting news items and information about active or planned current measurement efforts to Bill Woodward (301) 443-8444 or Jerry Appell (301) 443-8026 for publication in the column. This will be an effective forum only if everybody participates, so let's hear from you.

The proceedings of the November 2-3, 1983, NOAA/IEEE Acoustic Current Profiling Symposium are now available. For information contact Bill Woodward (301) 443-8444, Dave Porter (301) 443-8444 or Jerry Appell (301) 443-8026.

A Remote Acoustic Doppler (RAD) system was installed and operated for four months by NOAA at Ambrose Light Station, New York. This system, based on the AMETEK-Straza DCP4400/300 doppler current profiler, provided real-time current profiles which were telemetered to Rockville, Maryland every 6 minutes. The system went down in December 1983 due to cable damage that occurred because a mounting bracket which attached the cable to the tower leg failed. The system has been recovered and is being modified for installation in the Government Cut channel, Miami, Florida in September 1984. A series of engineering experiments are planned for this installation to determine the quality of near-surface measurements made with the acoustic profiler and to evaluate the system's potential for providing real-time current measurements as an aid to navigation. A short term current prediction model will be developed which can provide both real-time and predictions (up to 2 hours in advance) of the currents in the channel. This information will be provided to the Biscayne Bay Pilots Association, on an experimental basis, who will help NOAA evaluate the capabilities of this type system for harbor monitoring.

For further information contact Tom Mero (301) 443-8026.

The motionally induced electric potential on the submarine cable between Jupiter Inlet and Settlement Point, GBI has been continuously measured by NOAA since March 1982. Extensive additional electric field measurements, as well as comparison with measurements of vertical profiles of current and temperature from Pegasus (a ship deployed acoustically tracked dropsonde) at nine stations across the straits have provided a cable calibration relating transport to cross stream potential of 25 ± 0.7 Sverdrups/volts ($Sv/_V$). A comparison between the mass transport of the Florida Current calculated from the Pegasus stations and that determined from the JI-SP cable shows remarkable agreement throughout the transport range from 20-to-40 Sv with a correlation squared of 0.95.

These results demonstrate that the submarine cable indeed provides an integral measure of Florida current mass transport and its variability. Because the cable signal is by nature an integrated measurement that can be easily recorded at a shore-based site without use of ships, it is a very efficient monitoring technique.

For further information contact Jim Larsen (206) 527-6782.

An Ametek DCP 4400/300 acoustic doppler current profiler has been installed and is now in operation aboard the 720 ft. oil tanker "Exxon JAMESTOWN." The profiler operates, "piggyback" fashion, on the JAMESTOWN's pre-existing acoustic speed log system. Ship's Officers are now tending the data recorder which requires a tape change once per day. Satellite navigator positions and times and ship's heading are automatically being recorded along with the Doppler data. The electronics appear to function correctly. Data interpretation problems remain that appear to be related to the 4000's internal data processing algorithms which are provided by Ametek as firmware. For example, comparisons made between fore and aft beams and port and starboard beams indicate substantial discrepancies which tend to be disguised by the common practice of subtracting the fore-aft and port-starboard beams. It removes the problems only if certain offsets and distortions are equal and opposite in the data from opposing beams.

For further information contact Dave Cutchin (619) 452-3226.

Announcements and Calls for Paper continued from page 13

PROCEEDINGS OF THE IEEE SPECIAL ISSUE ON SEISMIC SIGNAL PROCESSING (Oct. 1984)

Papers	Authors
1. Interpretation	L. R. Denham
2. Data Gathering	H.W. Cooper R. E. Cook
3. Velocity Estimation	P. S. Schultz
4. Reflection Statics	D. L. Hinkley
5. Refraction Statics	R. C. Farrell
6. Multiple Reflections	M. M. Backus
7. CDP Stack	W. A. Schneider
8. Signal-to-Noise Estimation	R. E. White
9. Wavelet Estimation	D. G. Stone
10. Vibrator Signals	G. M. Hoover
11. Statistical Pulse Compression	E. A. Robinson
12. Migration	J. Gazdag P. Sguazzero
13. Modeling and Inversion	J. L. Black G. A. King C. B. Wason
14. Multi-dimensional Filtering	R. H. Tatham

Nonsubscribers can order copies of the PROCEEDINGS from the IEEE Service Cener, 445 Hoes Lane, Piscataway, NJ 08854, USA, telephone 201-981-0060.

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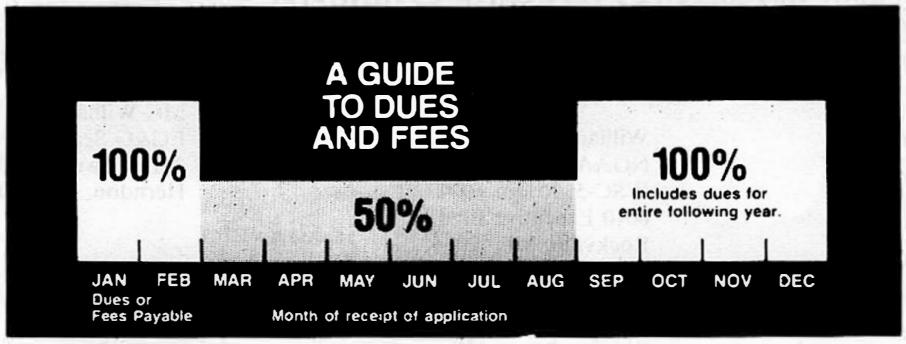

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