

Rev 10/10/85



OCEANIC ENGINEERING SOCIETY

NEWSLETTER 

VOLUME XIX

NUMBER 3

EDITOR: HAROLD A. SABBAGH

FALL 1985 (USPS 420-910)

IEG 1

IEEE OCEANIC ENGINEERING SOCIETY

President

STANLEY G. CHAMBERLAIN
Raytheon Co.
Submarine Signal Division
Box 360
Portsmouth, RI 02871
(401) 847-8000 Ext. 442

Vice President, East Coast

ANTHONY I. ELLER
Code 130
NORDA Liaison Office
800 North Quincy St.
Arlington, VA 22217
(202) 696-4951

Vice President, West Coast

LLOYD Z. MAUDLIN
Lloyd Z. Maudlin Assoc.
5461 Toyon Rd.
San Diego, CA 92115
(619) 265-9292 (H)
(619) 474-2214 (O)

Treasurer

EDWARD W. EARLY
4919 N.E. 93rd St.
Seattle, WA 98115
(206) 543-9825

Secretary

JOSEPH CZIKA
The Analytical Sciences
Corp.
1700 North Moore St.
Suite 1220
Arlington, VA 22209
(703) 558-7400

Jr. Past President

DONALD M. BOLLE
College of Eng. Phys. Sci.
Packard Labs #19
Lehigh Univ.
Bethlehem, PA 18105
(215) 861-4025

Membership Development

DAVID E. WEISSMAN
Dept. of Eng. & Computer Sci.
123 Adams Hall
Hofstra Univ.
Hempstead, NY 11550
(516) 560-5546

Chapters

ARTHUR S. WESTNEAT, JR.
Wadleigh Falls Rd. RD#1
Newmarket, NH 03857
(603) 659-2195

Awards and Fellows

DONALD M. BOLLE
College of Eng. Phys. Sci.
Packard Labs #19
Lehigh Univ.
Bethlehem, PA 18105
(215) 861-4025

Nominations

DONALD M. BOLLE

Sr. Past President

LLOYD Z. MAUDLIN
Lloyd Z. Maudlin Assoc.
5461 Toyon Rd.
San Diego, CA 92115
(714) 265-9292

Meetings

ANTHONY I. ELLER (East)
LLOYD Z. MAUDLIN (West)

**Constitution and Bylaws
Committee**

JOSEPH CZIKA

SPOTLIGHT ON SAN DIEGO

HISTORY OF THE SAN DIEGO CHAPTER OF OCEANIC ENGINEERING

by Ken D. Kalbfell

Our first real organizational meeting was Oct. 18, 1984. This was a dinner meeting strictly for the purpose of generating interest in the new chapter. About 35 people were in attendance and more than 15 signed the petition to form a chapter.

During the next few months, we met several times to organize and select leaders. These meetings were held at Instruments, Inc., a small electronics company owned by Ken Kalbfell. This location was convenient to all and was available after work hours. John Lester was chosen as Chairman, Norene Bradshaw as Vice Chairman, and Ken Kalbfell as secretary.

John Lester is an engineer with the San Diego Gas and Electric Co. He has worked on various committees and was in charge of a major political campaign. He was chosen as acting Chairman because of his overall organizational abilities.

Norene Bradshaw is a senior scientist working with Lloyd Maudlin. Her many contacts with possible speakers made her the obvious choice as acting Vice Chairman in charge of programs.

Ken Kalbfell is the President of a small electronics company. He was selected as acting secretary due to his interest in the area of ocean engineering and the logistic support available from his office staff and equipment.

The first technical meeting was on March 21, 1985. The evening started with a prime rib dinner at the Admiral Kidd Club. This was followed by a presentation by Dr. Fred Fisher of Scripps Inst. on the development and operation of FLIP. Dr. Fisher was one of the original designers of the specialized research vessel. 31 were in attendance and 6 more members signed the petition.

John Lester found that a work change combined with a family move made it impossible to continue as chairman. In addition, we found that Norene Bradshaw would soon be leaving the area. That left Ken Kalbfell in charge. Fortunately, Lloyd Maudlin was never far away and always available for counseling.

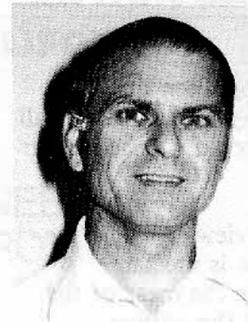
Our next technical meeting was on June 20, 1985. This was a joint meeting with the San Diego Section's social evening at the Cafe del Rey Moro in Balboa Park. Following the dinner, Francis Sullivan, the vice chairman for the Section, presented a certificate to Ken Kalbfell showing that the Chapter was officially recognized. The Science Fair awards were also presented. The technical program was a slide presentation and talk about acoustic measurements by Chris DeMoustier, a graduate student at Scripps. About 30 people enjoyed this full evening.

Another organizational meeting will be held near the end of August to recruit help and elect officers. The next

general meeting will be held toward the end of September.

The big event in our future is the Oceans '85 conference. This will be Nov. 12-14, 1985 in San Diego. Various people from our chapter and others from the Section will be working with the Marine Technology Society on this project.

The San Diego Chapter of the Oceanic Engineering Society has a bright future and we are all looking forward to active growth.



Ken D. Kalbfell was born in San Diego, California in 1946. He received a BA degree in a combination of Physics, Industrial Electronics, and Business in 1971, and an MBA in Production and Operations Management in 1982, both from San Diego State University.

After the first two years of College, he became a private flight instructor. Two years of this was enough to open his eyes to the long term advantages of higher education. He then returned to school and began working with his father at Instruments, Inc.

Ken has performed all tasks involved in this state-of-the-art electronics company. Starting with janitorial work he progressed through parts testing, PWB assembly, chassis wiring, sheet metal work, precision machining, and transformer fabrication. Soon he was doing purchasing and gradually worked into designing PWBs including the actual tape-ups.

Another talent that developed during those years was computer programming. Ken wrote programs in HPL, Basic, and dBase II. These included a family of programs for transformer design. His father created the formulas and Ken wrote the code.

As Ken learned more about the business, his father let him assume more responsibility. In 1978 Dr. Kalbfell retired and turned the business over to Ken.

Currently, his primary responsibilities, in addition to being the President and CEO, are to structure and guide software development and work with customers in an engineering sales function.

'TIS A PUZZLEMENT

LAST QUARTER'S PUZZLE

Potpourri

1. **A Glass of Water:** The level stays the same as the ice melts. The mass of the water displaced by the ice cube equals the mass of the ice cube. This remains true as the ice cube melts. It is possible you may see an increase in level once the ice melts, and the water in the glass warms up.

2. **Solar Days Versus Sidereal Days:** A mean solar day uses the sun as its point of reference while the sidereal day uses a distant star. Since the earth revolves around the sun as it rotates, the reference point for the solar day moves eastward, and the earth has to rotate a bit more than 360 degrees to bring the sun back to the same position overhead. Over a year's time this extra rotation results in one extra day of rotation.

$$\frac{\frac{24 \text{ hr.} \times 60 \text{ min.}}{\text{day}}}{\frac{365 \text{ days}}{\text{year}}} = 4 \text{ min./day}$$

This 4 min./day is the difference between the solar day and sidereal day. If a sidereal day doesn't suffer all these problems and complexities, why do we use a solar day?

3. **A Bird in a Cage:** An E.I.T. review book I have says the weight measured by the scale is the same whether or not the bird is flying since the mass of the system is the same. I'm suspicious of the answer, though. My guess is that you will see weight fluctuations on the scale as the bird flaps its wings due to reaction forces. This would be analogous to the weight fluctuations you see if you bounce on your bathroom scale, even though your mass stays the same (Too bad!).

4. **Coffee, Cream and the Phone Call:** If you like your coffee hot, you put the cream in right away and then answer the phone. Lowering the temperature of the coffee by adding the cream first lowers the amount of heat lost by the coffee while you are on the phone (Newton's Law of Cooling).

5. **Finding Yourself in Solitary:** First, flush the toilet. If it swirls counterclockwise, you are in the Northern Hemisphere. Clockwise means the Southern Hemisphere. Next, while outside you stick the pencil into the ground and time when the shadow is shortest. If you have not reset your watch, you can determine the time difference between where you are now and where you were abducted. An hour's difference equals fifteen degrees of longitude. Now you know your approximate longitude. Last, you check the pencil on March 21st or September 21st at noon. The angle formed by the shadow and the pencil is equal to the latitude.

6. **Balloons, Subs and Chains:** A portion of the chain is dragged along the ocean floor while the rest hangs suspended. If the sub sinks closer to the floor, more chain falls on the floor. This lightens the sub and helps restore it to its original position. The opposite occurs if the sub rises.

THIS QUARTER'S PUZZLE

Risky Business

In the game of *Risk*[®], the attacking player can choose to roll up to three dice while the defending player can roll up to two. The two sets of dice are then compared highest to highest. The player who rolled the lowest of each pair of dice loses an army. The defending player wins all ties. Based on these rules, what is the best strategy for offense and defense?

ANNOUNCEMENT

Preliminary Call For Papers

OCEANS '86

SCIENCE — ENGINEERING — ADVENTURE

The Marine Technology Society (MTS) and the
Institute for Electrical and Electronics Engineers/Oceanic Engineering Society (IEEE/OES)
invite papers from interested authors for the
OCEANS '86 CONFERENCE AND EXPOSITION.

Conference Dates: 22-25 September 1986

Conference Location: Sheraton Washington Hotel, Washington, DC

Abstracts Due: 1 March 1986

Manuscripts Due: 15 June 1986



**TENTH ANNIVERSARY JOINT MTS/IEEE CONFERENCE
AND EXPOSITION**

NOVEMBER 12 — 14, 1985

**TOWN & COUNTRY CONVENTION CENTER
SAN DIEGO, CALIFORNIA**

OCEAN ENGINEERING
AND THE ENVIRONMENT

Advance Program

CONFERENCE AND EXPOSITION
SAN DIEGO



OCEANS '85 CONFERENCE COMMITTEE

CHAIRMAN

VICTOR C. ANDERSON
Marine Physical Laboratory
Scripps Institution of Oceanography
UCSD

VICE CHAIRMAN

CHARLES B. BISHOP
Marine Physical Laboratory
Scripps Institution of Oceanography

CONFERENCE COORDINATOR

IVOR LEMAIRE
Naval Ocean Systems Center

ARRANGEMENTS

MEDFORD N. HOGMAN
Sonatech, Inc.

TUTORIALS

NIHIL D. SMITH
Honeywell Marine Systems Division

EXHIBITS

GEORGE V. SHAEFER
C-TEK, Inc.
(619) 461-9179
FRANK SIMPSON
Lockheed Advanced Marine Systems
(619) 569-3541

FINANCE

GORDON MARTIN
Martin Acoustic Software Technology
IRENE ANDERSEN
Hydro Products, Inc.

FILM FESTIVAL

PHIL RAPP
Marine Physical Lab. Scripps
(619) 294-3656

PUBLICATIONS

DAVE SANDERSON
Honeywell Marine Systems Division

PUBLICITY

JACQUELINE L. PARKER
Scripps Institution of Oceanography
(619) 452-3624

REGISTRATION

LYNDA KENNEDY
AMETEK/Straza Division
(619) 442-3451

TECHNICAL PROGRAM

JACK E. JAEGER
Hydro Products Inc.
(619) 455-0102
JAMES H. BROWN
Integrated Systems Analysts, Inc.

STEERING COMMITTEE

LLOYD MAUDLIN (IEEE OES)
Integrated Systems Analysts, Inc.
JOSEPH R. VADUS
National Oceanic and Atmospheric
Administration
ROBERT L. WERNLI (MTS)
Naval Ocean Systems Center

OCEANS '85 ADVISORY COMMITTEE

DR. WILLIAM A. NIERENBERG . . . Director Scripps, UCSD
R. CURTIS CROOKE Global Marine Development Co.
MICHAEL L. FISCHER Executive Director,
California Coastal Commission
DR. ROBERT FROSCHE Vice President,
GM Research Laboratories
ADM. JAMES GRACEY, USCG Commandant, USCG
ROBERT M. HILLYER Technical Director, NOSC
DR. ANTON INDERBITZEN . Director, Polar Programs, NSF
DR. JOHN KNAUSS Vice President, Marine Programs, URI
RADM. J.E. LANGILLE III USN (Ret.) Deputy Director,
Scripps, UCSD

RADM. JOHN B. MOONEY, USN . Chief of Naval Research
DR. JOHN PENHUNE Vice President, Science
Applications Institute
COMO JOHN R. SEESHOLTZ, USN Oceanographer
of the Navy
DR. DEREK SPENCER Associate Director, WHOI
DR. FRED SPIESS Director, Institute of Marine
Resources, UCSD
DR. JAMES WINCHESTER Associate Administrator, NOAA
DR. JAMES ZUMBERGE President, URI

*Make
Waves*

OCEANS 85

CHAIRMAN'S MESSAGE



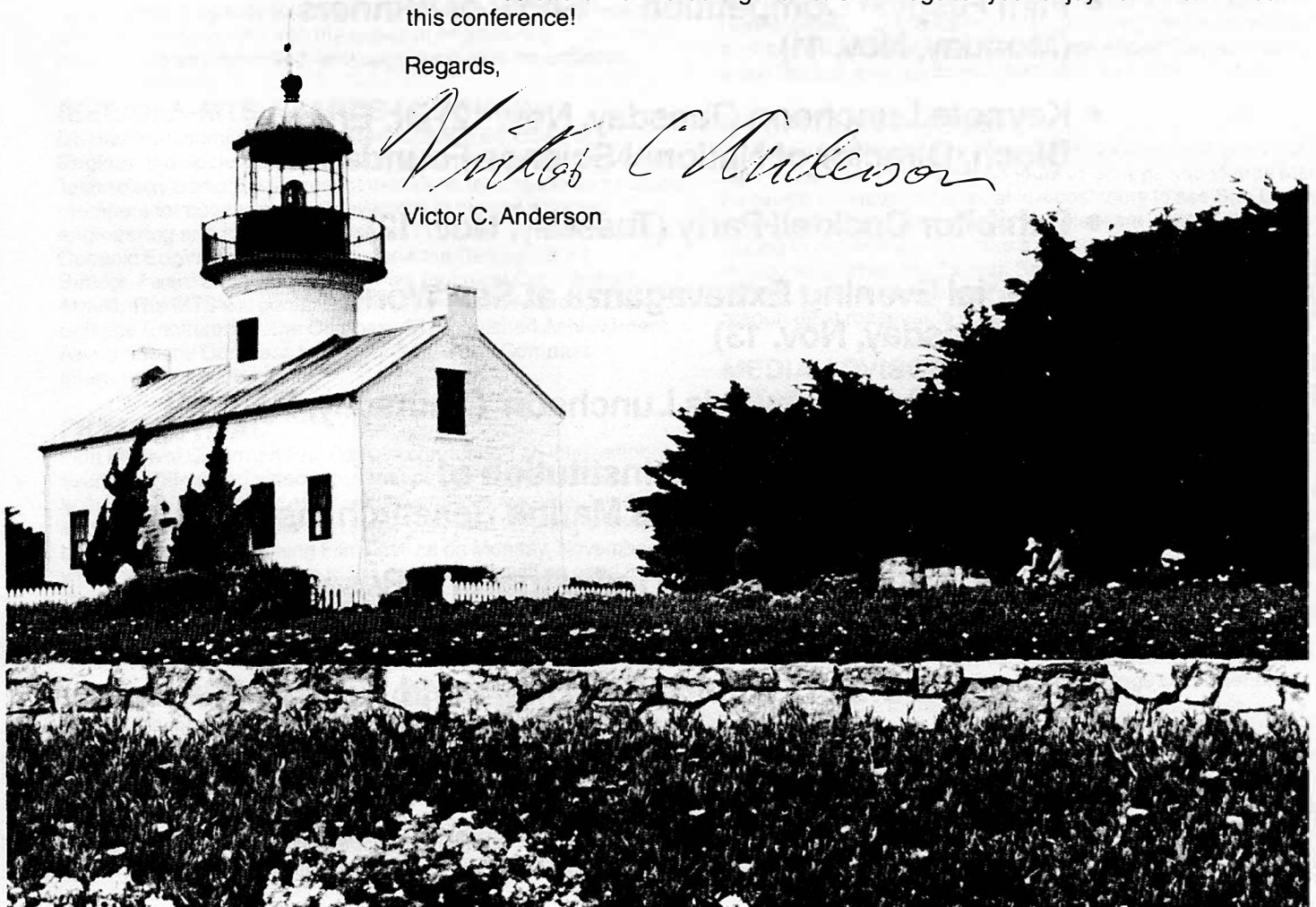
OCEANS '85 marks the tenth anniversary of OCEANS '75, the first conference jointly sponsored by the Institute for Electrical and Electronics Engineers and the Marine Technology Society. It seems fitting that this annual event has returned to San Diego, especially with a conference theme of "Ocean Engineering and the Environment." Ocean engineering has been a part of our involvement with scientific, industrial, and government maritime activities for many years, and it has increased with the growth of local industries, the Naval Ocean Systems Center, and UCSD's Scripps Institution of Oceanography. In addition, California has been a leader in environmental concern and protection since the days of John Muir. It is natural, therefore, that we focus our attention on the oceanic environment to learn how to operate in both coastal and deep ocean waters in an effective and beneficial manner.

This conference offers its attendees opportunities to increase their knowledge of the technical, economic and legal aspects of the theme through its program of technical papers and exhibits. It also provides opportunities for personal contacts with people actively working in the field, both in the USA and in more than a dozen foreign countries, whose talents and knowledge can be helpful in solving technical problems. Registrants at OCEANS conferences, coming from industry, academia and government, represent a wide cross-section of ocean-oriented interests; and the conference exhibits cover the latest technical developments available. And finally, Oceans '85 offers the interesting area of San Diego for your enjoyment. Don't miss this conference!

Regards,

A handwritten signature in cursive script that reads "Victor C. Anderson".

Victor C. Anderson





SPECIAL EVENTS

- **Tutorials (Monday, Nov. 11)**
- **Welcoming Cocktail Party (Monday, Nov. 11)**
- **Film Festival Competition — Show of Winners (Monday, Nov. 11)**
- **Keynote Luncheon (Tuesday, Nov. 12) Dr. Erich Bloch, Director of National Science Foundation**
- **Exhibitor Cocktail Party (Tuesday, Nov. 12)**
- **Special Evening Extravaganza at Sea World (Wednesday, Nov. 13)**
- **IEEE/OES-MTS Awards Luncheon (Thursday, Nov. 14)**
- **Tours of UCSD's Scripps Institution of Oceanography and Hubbs Marine Research Institute**
- **Tours of other San Diego Industrial and Research Centers for the Marine Industry**
- **Special Tours of La Jolla, San Diego and Tijuana, Mexico**
- **Special Post Convention Package to Hawaii**
- **Special Student Science Poster Session (NEMA) (Wednesday, Nov. 13)**



SPECIAL EVENTS DETAILS

KEYNOTE LUNCHEON SPEAKER — NSF DIRECTOR ERICH BLOCH

Dr. Erich Bloch, director of the National Science Foundation and former engineering executive with IBM, will give a major luncheon talk on Tuesday, November 12. Since joining NSF in 1984, Dr. Bloch has emphasized the importance of upgrading the nation's investment in teaching and research in engineering science and technology. He has encouraged university/industry consortia and the provision of state-of-the-art equipment for the acceleration of R&D and improved resources for education programs. NSF is a major funding agency for university research. Director Bloch's talk should provide insight into the status of engineering in the nation, problems to be addressed, and opportunities to be explored.

IEEE/OES-MTS AWARDS LUNCHEON

Dr. Stanley Chamberlain, president of the IEEE Oceanic Engineering Society and Dr. John Flipse, president of the Marine Technology Society, will present awards to their respective society members for outstanding achievement in marine science, engineering and technology. Awards to be conferred by the IEEE Oceanic Engineering Society include the Distinguished Service Award and the Distinguished Technical Contribution Award. The MTS will confer the MTS/Lockheed Award for Ocean Science Engineering, the Compass Distinguished Achievement Award and the Compass Industrial Award and Compass International Award.

FILM FESTIVAL

Film Festival Chairman Phil Rapp is conducting an international search for films and video tapes that portray ocean-related activities. A panel of judges from university, government, industry, and the broadcast media will review the films. Winning entries will be presented at an evening Film Festival on Monday, November 11, which will be free and open to the public. Clips will be used in media promotions. Deadline for submission of films is September 1. Write or call: Phil Rapp, Marine Physical Laboratory/Scripps/UCSD, Code P-001, La Jolla, CA 92093, (619) 294-3656.

IN CONJUNCTION WITH OCEANS

Conferees may wish to arrive in San Diego early and attend the joint U.S./French Scientific Diving Symposium at Scripps on October 31-November 3. Sponsors are the American Academy of Underwater Sciences and Confédération Mondiale des Activités Subaquatiques. For more information, call or write Mike Lang, San Diego State University, (619) 265-4676; Department of Biology, San Diego State University, San Diego, CA 92182 U.S.A.

The National Advisory Committee on Oceans and Atmosphere (NACOA) will hold a meeting at the convention center during the week of OCEANS. Date to be announced later.

And on Friday, November 15, there will be the special classified Military Ocean Engineering Conference at the Naval Ocean Systems Center.

EARLY BIRD REGISTRATION

There will be an "Early Bird" Registration Reception in the Exhibit Hall on Monday evening preceding the Film Festival. Hors d'oeuvres and ambience for socializing will be provided. No host bar will be set up with special drink prices. Register early, enjoy the fun, and get acquainted early for a running start.

HOSPITALITY ROOM

There will be a Hospitality Room for all spouses and guests of attendees. See information on tours of Scripps and Hubbs Marine Research Institute and special low-cost tours to see San Diego and Mexico. San Diego usually has pleasant weather for sight-seeing in November and offers a variety of activities from art museums to deep-sea fishing. San Diego does "FEEL GOOD ALL OVER" — it's a friendly, clean, and attractive town, with big-city resources at reasonable costs.

MEDIA ADVISORY

OCEANS '85 will have a press room staffed with veteran public information officers and press briefings on selected key topics in advance of paper presentations. Media with identifications have courtesy registration status, but are responsible for all arrangements for housing, travel and transportation. Media are requested to fill out a registration form, indicating their media status. Please also indicate estimated time of arrival and contact number in San Diego, so we may alert you to developments. For advance news releases/updates, write or call: Jackie Parker, OCEANS '85 Publicity Chairman, Scripps Public Affairs Office, UCSD, Code A-033A, La Jolla, CA 92093, (619) 452-3624/587-9090. Computer jacks, telephones, typewriters, and usual press room amenities available. Proceedings with scientific papers available at the conference.

JOB BOARD

There will be a job opportunities bulletin board at OCEANS. If you have openings, send to: OCEANS '85, P.O. Box 6830, San Diego, CA 92106.

TUTORIALS

OCEANS '85 will offer nine tutorial sessions to give you the latest in technology on a variety of topics from microprocessors to fibre optics and from hydraulics to cables and connectors. A special tutorial will be presented on polar research. Tutorials are one-half day each. Please indicate your choice on the registration form on page 10.

T1 BASIC PRINCIPLES OF MICROPROCESSORS

This tutorial will present a brief introduction to microprocessors, their history and applications. Topics will include:

- History of microprocessors
- Microprocessor types and technologies
- Typical applications
- Architecture
- Instruction sets
- Assembly language and programming
- Memories
- Input/Output
- Interrupts
- Systems Development methods

This tutorial will be presented by Mr. Ken Arnold BS/EE, president of Hi Tech Corporation. Mr. Arnold's responsibilities include consulting, teaching, and product development, specializing in areas of computer hardware and software design, as well as signal and image processing and development of several computers, including microprocessors and bit-slice processors. He has built his own computer, implemented a FORTH system, designed and implemented a PASCAL subset compiler, and written I/O drives for various operating systems.

T2 ACOUSTIC POSITIONING AND TRACKING

Provides guidance in selection and operation of equipment and an open discussion to address specific problems, questions, and concerns. Considerations in equipment selection and the maximizing of operation value include:

- Types of systems available
- Technical considerations
- Operational considerations
- Economic trade-offs
- Ultimate selection criteria
- Navigation tasks
- Typical techniques for increasing operations efficiency
- Expanding performance capability
- Expanding contract value
- Equipment available for practice and demonstration

Honeywell Marine Systems Division is a recognized leader in subsea acoustic navigation. They have been applying state-of-the-art technology to meet the increasing demands of subsea operations for over 25 years. Representatives of Honeywell will lead this tutorial.

T3 MARINE APPLICATIONS OF FIBRE OPTICS

Provides a technical overview of fibre optic systems in marine applications. This will include optical theory, fibre and cable, connectors and splices, transmitters and receivers, system analysis, analog and digital systems, and sensors. The session will continue with a design discussion of a Fibre Optic ROV Tether System. This will include general system design, flux and rise time budgets, performance trade-offs, and system construction and testing. Finally, several specific fibre optic marine applications will

be examined. These include submersibles, shipboard LAN's, and fibre optic sensors.

Hosts of this tutorial include Dr. Barry Paton, senior scientist at Focal Marine Ltd. and Dr. James L. Cairns, director of engineering and development at Lockheed Advanced Marine Systems. Dr. Paton is a prominent lecturer in the fields of fibre optics and microelectronics. He has helped establish companies in both industries. Dr. Cairns has established an ocean technology based company and holds a position of Professor at the Florida Institute of Technology.

T4 UNDERWATER VIEWING SYSTEMS

Provides an overview of basic TV theory and proceeds into a detailed presentation of basic underwater camera design. Areas to be discussed include mechanical (housings, connectors, and cables), electrical (power, sync, video processing), optics (lens design, window), and sensors (tubes, solid state). Underwater viewing conditions will also be examined with discussion of light absorption and backscatter, plus a look at a variety of lighting sources. Hydro Products will be the host of this presentation. They have over 20 years of experience in this field. Current applications of their equipment include guideline, diver, and ROV inspection systems.

T5 ANALYTICAL SIMULATIONS OF ROV SUSPENSIONS

Includes a summary discussion of where analytical simulation is helpful in the design of ROV systems by identifying specific components where analytical results could input directly to the design. A description of equipment configurations and operational situations that may be described analytically, and of static and dynamic codes used for the simulations will be presented. Limitations in simulation capabilities and examples of analytical simulations with their interpretation will be shown. Finally, specific problems submitted by the attendees will be discussed. (These problems should be submitted to the instructor prior to the session.)

Henning Ottsen, vice president of Western Instrument Corporation, will be the host of this tutorial. Dr. Ottsen has 15 years of direct experience in the field of ocean cable dynamics study with both the US Navy, where he worked in related ocean engineering R&D programs, and Western Instrument Corporation, where he is responsible for the development and implementation of their cable system simulation capability. He has been awarded several patents for his systems developments, and has authored and presented several papers on this subject at various ocean engineering conferences.

T6 HYDRAULICS

Many systems on board ROV's are powered by hydraulic fluid. Thrusters, manipulators, pan and tilts, other subsystem designs all benefit from this technology. We will begin by looking at basic fluid power concepts and developing those into actual system design. Areas to be covered include principles of fluid power, fluid power symbols, functional and directional control components including cylinders, motors, pumps, pressure boosters, and others, safety considerations, and troubleshooting.

The host of this tutorial will be Paul Monroe Hydraulics, Educational Division. This company is a recognized leader in their field, and their educational programs have been of great aid to many engineers.

T7 CABLES AND CONNECTORS

This tutorial will provide a detailed review of design and engineering concepts of electromechanical cable, mechanical terminations, jacket construction, and electrical performance, and will discuss penetrator and connector design. Here we will look at all the various mechanical and electrical design considerations in underwater penetrators and connectors including seals, pressure compensation, material selection, power, signal, and coupling.

Phil Gibson of Tension Member Technology, Huntington Beach, California, will be the instructor of the first portion of the tutorial.

Brantner/SeaCon, a connector manufacturer of long experience, will be the host instructors of the second portion of this tutorial.

T8 PLASTICS FABRICATION TECHNIQUES

If you are interested in prototyping or low volume production, this is the tutorial for you. Topics to be covered include general guidelines of part design, molding methods, material selection, and secondary finishing techniques. This presentation by three experts in the field, will give attendees a good understanding of the amazing number of options available to them. The tutorial will begin with a presentation of pourable plastics and epoxies and their use in mold making, tooling, and part fabrication. An actual injection mold tool will be fabricated during a demonstration.

The second portion of the tutorial will deal with Short Run Injection Molding. This presentation, based on actual case examples, will discuss part design, tooling, material handling, and equipment. Sample parts will be run from a demonstration injection molding machine.

The third portion of this tutorial will discuss advanced composite plastics. Fibre materials, such as glass, Kevlar™, and graphite, are added to a plastic matrix to produce a family of engineering materials with a wide range of cost/performance advantages.

The first instructor of this tutorial is Doug East, Applications Engineer with Yale Enterprises. He has extensive experience with pourable plastics and has given several group presentations on this subject. Art James of Morgan Industries, a manufacturer of short run injection molding equipment, will present the second portion. Our third instructor is Brian Jones of Compositek Engineering, a major supplier of advanced composite structures to the undersea community.

T9 POLAR RESEARCH

This tutorial will be conducted by Mr. Beaumont Buck, president of Polar Research Laboratory Inc. Topics will include environmental and logistic considerations for conducting and supporting arctic operations.



PLENARY SESSION

The OCEANS '85 Conference opens with a Plenary Session chaired by Professor William A. Nierenberg, Director of UCSD's Scripps Institution of Oceanography. The conference theme of "Ocean Engineering and the Environment" will be developed by discussions presented by several leading figures in their areas of expertise, including:

- Ocean Mining DR. JOHN FLIPSE
Pres., MTS; Chairman, National Advisory Committee on
Oceans and Atmosphere; Texas A&M
- Offshore Oil. R. CURTIS CROOKE
Global Marine Development Co.
- Waste Disposal DR. TUDOR DAVIES
Environmental Protection Administration

- Coastal Processes DR. DOUGLAS INMAN
Scripps Institution of Oceanography, UCSD
- Remote Sensing. LARRY E. HEACOCK
National Oceanic and Atmospheric Administration
- Environmental Concerns MICHAEL FISCHER
California Coastal Commission

The technical knowledge and practical experience of these speakers enable them to provide an excellent picture of where we are today in the ability to achieve ocean engineering objectives in a manner beneficial to the environment, and some keen insights on problems yet to be solved. Interaction among the participants, and well considered questions from the audience will add to the value of this stimulating session.



HIGHLIGHTS

The major international ocean-related conference and exposition of the year is attracting some of the nation's leaders in the ocean and atmospheric sciences. The meeting, **OCEANS '85**, has drawn some 300 scientific papers, with authors from a score of countries around the world and including the People's Republic of China and the Soviet Union.

More than 1,000 participants from government, industry, and the academic community will gather November 12-14 (1985) at the Town and Country Convention Center in San Diego to discuss key issues on the theme, "Ocean Engineering and the Environment." A plenary session, chaired by Prof. William A. Nierenberg, director of UCSD's Scripps Institution of Oceanography, will "launch" the discussion with talks by some of the nation's top scientists on such topics as offshore oil, ocean waste disposal, and ocean mining.

OCEANS '85 also will be a major showcase of the latest ocean technology and equipment by 100 exhibitors; a film festival; a full evening, combining dinner, entertainment, and conference-related activity, at San Diego's Sea World marine park, and a series of first-day tutorials — or mini-courses in science and technology held on Monday, Nov. 11.

To address key ocean engineering issues that affect national security, a separate, classified conference will be held at the Naval Ocean Systems Center (NOSC) in San Diego in conjunction with **OCEANS '85**. Sponsored by the Office of Naval Technology, the 1985 Military Ocean Engineering Conference, set for Nov. 15, will be attended by many of the **OCEANS '85** participants. Attendance will be limited to individuals with appropriate security clearance.

The annual **OCEANS** conference is co-sponsored by the Marine Technology Society and the Institute of Electrical and Electronics Engineers, Oceanic Engineering Society. **OCEANS '85** marks the tenth anniversary of the joint meetings, with San Diego being the site of the first (1975) conference and another in 1979.

San Diego is viewed as a natural location by **OCEANS** sponsors, with its more than 100 ocean-oriented companies and major government-academic organizations such as NOSC and Scripps, both of which are playing leading roles in staging the conference. Special rates for hotel, airfare, auto rental, and tours have been arranged.

Dr. Victor C. Anderson and Capt. Charles B. Bishop, USN (Ret.), deputy director and assistant director, respectively, of Scripps's Marine Physical Laboratory, are chairman and vice chairman of **OCEANS '85**. Ivor Lemaire, head of NOSC's Ocean Engineering Division, is the conference coordinator.

Keynote speaker for the event will be Dr. Erich Bloch, an engineering executive with IBM and now director of the National Science Foundation, a major funding agency for university research. Since coming to NSF in 1984, Bloch has stressed the importance of upgrading resources devoted to engineering education and research.

Technical program chairman Jack Jaeger, of Hydro Products,

Inc., says "**OCEANS '85** will feature the heights and depths of oceanography. We have a paper by Lt. Cmdr. Richard Williams reporting on a 20,000-foot dive by the Navy manned submersible *Sea Cliff*, and another by astronaut Dr. Paul Scully-Power of the Naval Underwater Systems Center on his oceanography projects in the Space Shuttle, orbiting miles above the earth."

In addition to these, the nearly 300 papers will be presented in 56 sessions over a three-day period. Key topics to be addressed during the technical sessions include acoustics, offshore structure design, biology, fisheries, education, oceanography, surface currents and waves, manned vehicles and remotely operated vehicles (ROVs), energy, meteorology, ocean physics, remote sensing, mineral resources, coastal processes, economic potential, geology and geophysics, and pollution.

Two potentially controversial papers from a Russian scientist will call for free scientific research access to otherwise restricted waters and address his proposal that the United States and seven other countries establish a "new regime" relative to ocean mining, one contrary to the Law of the Sea.

There are also a number of papers on polar research, which will be presented at a special session on arctic-related ocean science and engineering issues.

To encourage attendance by students majoring in ocean sciences, **OCEANS '85** is arranging host housing in the area. Full-time graduate students with the recommendation of their faculty advisors are eligible and may arrange housing during their stay by contacting Oskar Kirsten, (619) 452-2598.

IN CONJUNCTION WITH OCEANS '85

For those interested in diving, the Joint International Scientific Diving Symposium will be held at Scripps in San Diego Oct. 31 - Nov. 3. It will be a joint meeting of the American Academy of Underwater Sciences and the Confederation Mondiale des Activités Subaquatiques (CMAS), an international diving association with a section specializing in research/scientific diving. Contact is Mike Lang, San Diego State University, (619) 265-4676.

The National Youth Conference on Marine and Aquatic Science is sponsoring a conference and awards program Nov. 11-13, involving out-of-town science fair winners and some 100 San Diego high school students and teachers.

The conference will be headquartered at Scripps. Students will present poster sessions and interact with **OCEANS** attendees, and tour Scripps and NOSC facilities. Contacts are Pat Kampmann, Scripps, (619) 452-4087, and Don Ream, NOSC, (619) 225-6862.

OCEANS '85 will have a press room staffed with veteran public information officers and press briefings on selected key topics in advance of paper presentations. Media are requested to contact Jackie Parker, **OCEANS '85** publicity chairman, for an advance registration packet, (619) 452-3624. For information, write **OCEANS '85**, P.O. Box 6830, San Diego, CA 92106.

OCEANS '85 PROGRAM SUMMARY

MONDAY 11 NOV				TUESDAY 12 NOV					WEDNESDAY 13 NOV				THURSDAY 14 NOV											
AM	PM	EARLY EVE	LATE EVE	ALL DAY	AM	NOON	PM	EVE	ALL DAY	AM	PM	EVE	ALL DAY	AM	NOON	PM								
T1	T5	W E L C O M E	F I L M	E X H I B I T S	P L E N A R Y	K E Y N O T E	A1	E X H I B I T	E X H I B I T S	A2/A3	A4	S E A	E X H I B I T S	A6	A W A R D S	A8								
							B1			B2/B3	B4			B6		B8								
T2	T6						P A R T Y	F E S T I V A L		O P E N	S E S S I O N			L U N C H E O N		C1	C O C K T A I L S	C2	C4	W O R L D	O P E N	D6/D7	L U N C H E O N	D8
																D1		E2	E4			E6/E7		E8
T3	T7	P A R T Y	F E S T I V A L	O P E N	S E S S I O N	L U N C H E O N	E1	C O C K T A I L S	O P E N	F2	F4	S P E C I A L	O P E N	F6	L U N C H E O N	F8								
							F1			G2/G3	G4			G6		G8								
T4	T8	P A R T Y	F E S T I V A L	O P E N	S E S S I O N	L U N C H E O N	H1	C O C K T A I L S	O P E N	H2/H3	H4/H5	S P E C I A L	O P E N	H6/H7	L U N C H E O N	H8/H9								
	T9						I1			I2/I3	I4/I5			I6		I8								

Note: Alphanumeric designation refers to tutorials or technical sessions.

1985 MILITARY OCEAN ENGINEERING CONFERENCE

FRIDAY, 15 NOVEMBER 1985

Sponsored by Office of Naval Technology

Hosted by and Held at Naval Ocean Systems Center — San Diego, California

For Registration Information Write Or Call:

Commander
Naval Ocean Systems Center
Code 0321
San Diego, CA 92152-5000

Kitty Pitts
(619) 225-7988
AUTOVON
933-7988

PLEASE NOTE:

THIS MEETING IS CLASSIFIED SECRET. NO FOREIGN ATTENDEES.

REGISTRATION IS LIMITED TO U.S. GOVERNMENT MILITARY AND CIVILIAN EMPLOYEES
AND CONTRACTORS WITH CURRENT U.S. GOVERNMENT CONTRACTS IN THE AREA OF
UNDERSEA SEARCH, SALVAGE, RESCUE AND WORK SYSTEMS, WHO HOLD SECRET CLEARANCES.

OCEANS '85 EXHIBITORS

AANDERAA INSTRUMENTS, INC.
ACOUSTIC TRANSDUCERS, INC.
AMETEK, INC., STRAZA DIVISION
APPLIED MICROSYSTEMS, LTD.
BENTHOS, INC.
BRANTNER & ASSOCIATES, INC.
BURTON ELECTRICAL ENGINEERING,
DIVISION OF WYLE LABS
CCM ENTERPRISES
COASTAL CLIMATE COMPANY, LTD.
CONFERENCE BOOK SERVICE, INC.
CROUSE-HINDS ELECTRIC
CUBIC PRECISION, INC.
DAVID TAYLOR NAVAL SHIP RESEARCH
AND DEVELOPMENT CENTER
DEEP OCEAN ENGINEERING, INC.
DEEP SEA POWER AND LIGHT
DEL NORTE TECHNOLOGY, INC.
D.G. O'BRIEN, INC.
DIVING SYSTEMS INTERNATIONAL
DUKANE CORPORATION,
SEACOM DIVISION
EG&G SEA-LINK SYSTEMS
ELECTROCHEM INDUSTRIES
ENDECO, INC.
EPC LABORATORIES, INC.
FERRANTI-ORE, INC.
GECO, U.S. INC.
GENERAL INSTRUMENTS
CORPORATION
GENERAL OCEANICS
GEODIMETER
GEOMAREX
GIANNINI
GLOBAL IMAGING

GOULD, DEFENSE ELECTRONICS
DIVISION
GPS NAVIGATION SYSTEMS
HECKERMAN CORPORATION
HEWLETT-PACKARD
HONEYWELL
HUMPHREY INC.
HYDRO PRODUCTS, INC.
IEEE/OCEANIC ENGINEERING
SOCIETY
INNERSPACE CORP.
INSTRUMENTS, INC.
INTERNATIONAL TRANSDUCER
CORPORATION
INTEROCEAN INDUSTRIES, INC.
LOCKHEED ADVANCED MARINE
SYSTEMS/CHALLENGER MARINE
CONNECTORS, INC.
MARINE OPTICAL SYSTEMS
MARINE TECHNOLOGY SOCIETY
MARSH-McBIRNEY, INC.
MOTOROLA POSITION DETERMINING
SYSTEMS
NATIONAL SCIENCE FOUNDATION
NAUTICA
NAVAL OCEAN RESEARCH AND
DEVELOPMENT CENTER
NEIL BROWN INSTRUMENT SYSTEMS
NOAA/NATIONAL OCEAN SERVICE
NOAA/NATIONAL OCEANOGRAPHIC
DATA CENTER
OCEAN INDUSTRY
OCEANO INSTRUMENTS, USA INC.
OCEANUS
OFFSHORE

PERRY OFFSHORE, INC.
PETRO-MARINE
PHOTOSEA SYSTEMS, INC.
POLAR RESEARCH LABORATORY, INC.
PREFORMED MARINE, INC.
RACAL SURVEY, INC.
RAYTHEON OCEAN SYSTEMS, CO.
RD INSTRUMENTS
SCANMAR INC.
SCRIPPS INSTITUTION OF
OCEANOGRAPHY / UCSD
SEA-BIRD ELECTRONICS, INC.
SEA DATA CORPORATION
SEASTAR INSTRUMENTS, LTD.
SEA TECHNOLOGY (MAGAZINE)
SEIMAC LTD.
SERVICE ARGOS
SIMPLEX WIRE AND CABLE COMPANY
SIPPICAN OCEAN SYSTEMS, INC.
SONATEC, INC.
SUBNOTES
TENSION MEMBER TECHNOLOGY
TEXAS INSTRUMENTS
TRIMBLE NAVIGATION LTD.
TSK AMERICA, INC.
ULVERTECH AMERICA
UNITED ROPEWORKS USA
UNIVERSITY OF SOUTHERN
CALIFORNIA
U.S. GEOLOGICAL SURVEY
U.S. NAVAL OCEAN SYSTEMS CENTER
U.S. NAVY MILITARY SEALIFT
COMMAND
WHITNEY AND ASSOCIATES, INC.
YALE CORDAGE INC.

EXHIBITS

An extensive exhibit of marine products and services is planned as part of the OCEANS '85 conference and exposition. Special events have been scheduled at the exhibit hall to encourage interaction of exhibitors and attendees. San Diego has more than 100 ocean oriented industries, research and military centers.

NOTE

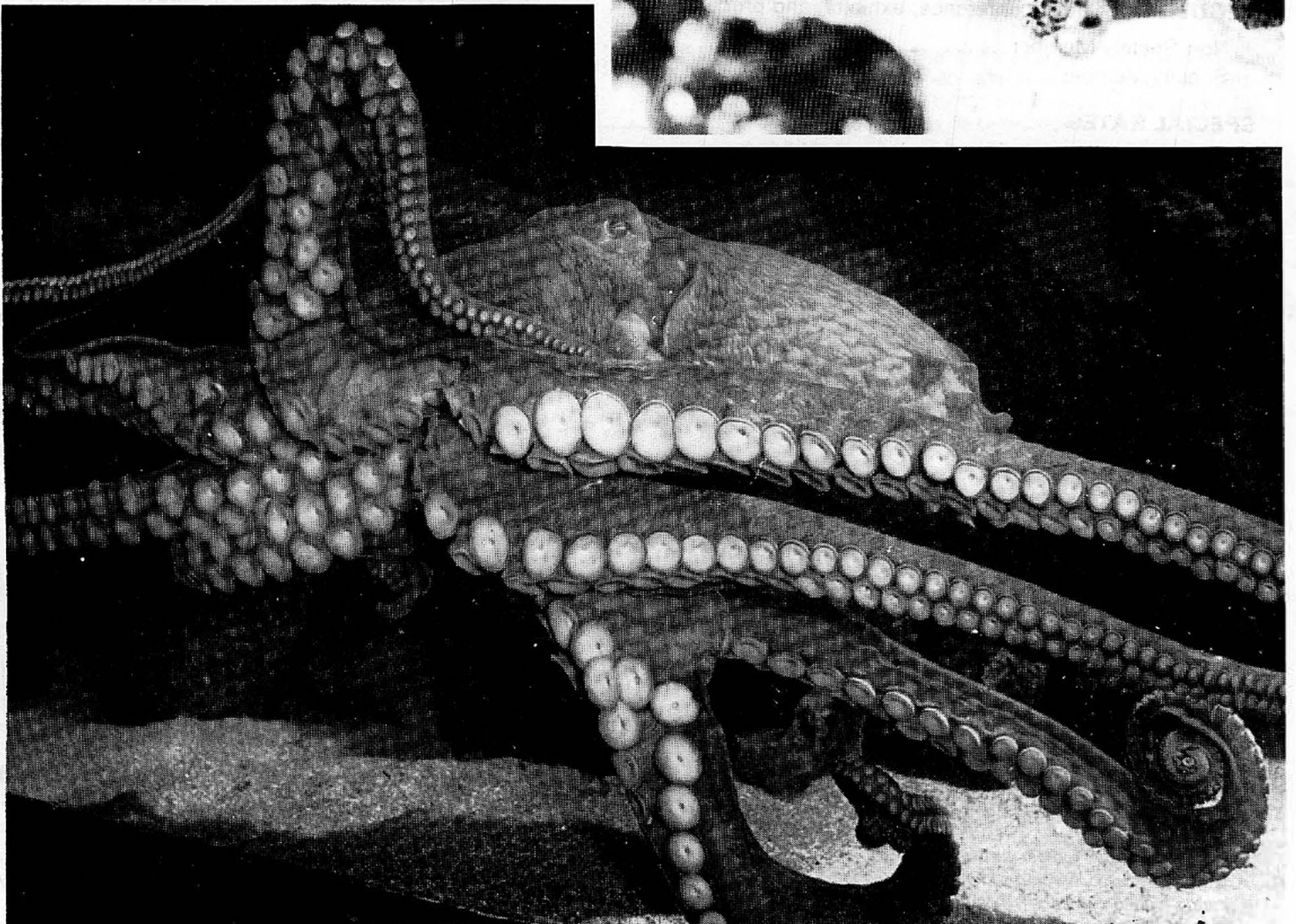
*Preliminary listing subject to change. Booth numbers and map will be available in the final program.

More than 100 companies will be displaying at OCEANS '85. For information about remaining space and costs, please contact George Shaefer — C-Tek, (619) 461-9179. OCEANS '85 MTS/IEEE-OES San Diego Section P.O. Box 6830, San Diego, CA 92106

feels
san good
diego all
over™



Old Town
in San Diego



OCEANS '85 REGISTRATION FORM

NOVEMBER 12 — 14, 1985



Please *Print* your name as you want it to appear on your badge.

Name (First or Initials, Last) _____

Company/Organization _____

Position _____ Telephone (Include Area Code) _____

Address/Home or Business (Dept. or M/S) _____

City/State/Postal Code/Country _____

Spouse to attend (Complimentary) (Luncheon Not Included) Name _____

CURRENT MEMBERSHIP (Check ALL memberships):

- IEEE Acoustical Society of America National Advisory Committee on Oceans & Atmosphere
- MTS American Geophysical Union National Sea Grant Association

PACKAGE (Includes three-day conference, exhibits, proceedings, luncheon tickets for Tuesday and Thursday, and Sea World)

	AT DOOR	ADVANCE*
Non-Society Member	_____ \$220	_____ \$190
Society Member	_____ \$175	_____ \$145

REGULAR (Includes conference, exhibits, and proceedings)

Non-Society Member	_____ \$180	_____ \$150
Society Member	_____ \$135	_____ \$105

SPECIAL RATES

One-day rate (Includes conference and exhibits)		\$50
Specify day/days <input type="checkbox"/> Tues <input type="checkbox"/> Wed <input type="checkbox"/> Thurs		
Exhibits Only rate		\$5
Specify day/days <input type="checkbox"/> Tues <input type="checkbox"/> Wed <input type="checkbox"/> Thurs		

ADDITIONAL TICKETS

Luncheon Tickets		\$20
Specify day/days <input type="checkbox"/> Tues <input type="checkbox"/> Thurs		
Sea World Tickets (includes meal)		\$40
Conference Proceedings		\$50
Mailing USA		\$5
Mailing overseas		\$35
MTS Membership <input type="checkbox"/> new <input type="checkbox"/> renewal		\$50
IEEE (OES) Membership <input type="checkbox"/> new (\$85) <input type="checkbox"/> renewal (\$70)		

MONDAY TUTORIALS — NOVEMBER 11 (select one each)

Morning (circle session) 1 2 3 4 (see page 4)		\$50
Afternoon (circle session) 5 6 7 8 9 (see page 5)		\$50

GRAND TOTAL _____

* Advance registration requires that payment be enclosed with this form and received by the Registration Committee no later than October 11, 1985.

Member registration represents the following:

- Acoustical Society of America • American Geophysical Union • IEEE
- Marine Technology Society • National Sea Grant Association
- National Advisory Committee on Oceans and Atmosphere

Amount _____ Ck # _____
 Date _____
 Cashier _____
 Make check payable to OCEANS '85 in U.S. dollars only
 Mail to: P.O. Box 6830, San Diego, CA 92106 USA

RESERVATIONS

ACCOMMODATIONS

PLEASE SEND ACCOMMODATIONS: TOWN AND COUNTRY HOTEL, ATTENTION RESERVATIONS,
P.O. BOX 80098 (500 HOTEL CIRCLE NORTH) SAN DIEGO, CA 92138

NAME _____ COMPANY _____

ADDRESS _____

CITY/STATE/ZIP _____

ARRIVAL DATE/TIME _____ DEPARTURE DATE _____

TELEPHONE NUMBER () _____

SIGNATURE _____

Please circle preferred rate below:

Accommodations	Standard	Superior	Deluxe	
SINGLE (1 person)	55	65	80	
TWIN (2 persons) 2 beds	65	75	90	
DOUBLE (2 persons) 1 queensize bed	65	75	90	
SUITES 1 Bedroom & 2 Bedroom	CONTACT HOTEL DIRECT			

Note: Please mail \$65.00 to the hotel to confirm your reservation or call direct (USA) 1-800-854-2608; (Calif.) 1-800-542-6082; (International) 619-291-7131. Please mention that you will be attending the Oceans '85 Convention.

----- KEEP A COPY!!!! -----

AIRLINE RESERVATIONS

American Airlines is the official airline for Oceans '85. American Airlines will guarantee discounts.

Call these special toll free numbers for more information and ticketing. Ask for Star File S-7699.

1-800-433-1790 (except Texas)
1-800-792-1160 (in Texas)

If American Airlines does not adequately service your location, please call the Oceans '85 travel agent, American Travel Service, Inc., collect at (619) 722-2391, and they will guarantee the lowest fares.

PACKAGE TO HAWAII

Many airfares to Honolulu (which allow stops in San Diego or LA) are as low in price as the round trip fare to San Diego alone! Oceans '85 is pleased to offer special stopover packages to Hawaii. *The main stopover holiday is for five nights at the Deluxe Island Colony Resort in Waikiki for just \$149 per person, double occupancy (not including airfare). This package includes room with kitchenette, transfers from airport to hotel and return, all taxes and tips, plus a beautiful Lei Greeting.*

Stopovers in other Islands are just as easy to put together at similar savings. For further information or reservations call AMERICAN TRAVEL SERVICE, collect (619) 722-1218.

STUDENTS

Special accommodations will be available in host homes for graduate students. Contact Oskar Kirsten (619) 452-2598.

CAR RENTAL

Dollar Rent A Car is the official car rental company for Oceans '85. You may receive special convention rates by sending the attached reservation form, or by calling Dollar Rent A Car at 1 (800) 421-6868. Be sure to mention that you are with Oceans '85.

CAR
CLASS:

- _____ Economy: \$22.00 Per Day/Unlimited Mileage
- _____ Compact: \$25.00 Per Day/Unlimited Mileage
- _____ Intermediate: \$28.00 Per Day/Unlimited Mileage
- _____ Standard: \$30.00 Per Day/Unlimited Mileage

TOURS AND ATTRACTIONS

"HARBOR EXCURSION AND CITY TOUR,"

Tuesday, November 12, 1985 Today you'll cruise the peaceful blue waters of San Diego Harbor! Wonder at its splendor as you cruise under the magnificent Coronado Bridge and past the U.S. 11th Naval Fleet. Then you will see the highlight of America's Finest City by land. Visit the site of the first Californian mission and Old Town. See America's most visited National Monument — Cabrillo. This is sure to be an enjoyable day!
Depart Town and Country Convention Center: 1:00 p.m.
Return: 5:00 p.m. **Cost:** \$14.50 Per Person

"JAI ALAI EVENING IN OLD MEXICO," Tuesday,

November 12, 1985 Just fifteen minutes from San Diego is colorful and exciting Tijuana! A guide will be on hand to show you the best places to shop! Then you are off to one of Tijuana's finest restaurants for a delicious Mexican dinner complete with a margarita cocktail and all the trimmings! Top the evening off with a visit to the exciting Jai Alai Fronton where guests may take their reserved seat to watch and perhaps gamble on the world's fastest sport! Non-U.S. citizens should have appropriate documentation for re-entry to the United States.
Depart Town and Country Convention Center: 6:00 p.m.
Return: 12:00 Midnight **Cost:** \$32.50 Per Person

"SAN DIEGO ZOO — INSIDE LOOKING OUT,"

Wednesday, November 13, 1985 Today you journey to the world famous San Diego Zoo! Special arrangements have been made for you to see the zoo from a new perspective, inside looking out! An exclusive Zoofari Bus tour will answer those unusual questions, such as what would you feed a dromedary or an armadillo? You will meet some of the residents up close, so don't forget to bring your camera! You are sure to find exotic surprises around every corner in areas forbidden to the public.
Depart Town and Country Convention Center: 9:00 a.m.
Return: 1:00 p.m. **Cost:** \$22.00 Per Person



Rare douc langurs on exhibit at the San Diego Zoo

"LA JOLLA SHOPPING," Thursday, November 14,

1985 Today you will visit unique and beautiful La Jolla, the "Jewel of the Pacific," with its white sandy beaches, rocky shores and seaside cliffs! Amidst all this scenic splendor is the most fascinating array of shops to be found anywhere! Strolling along its quaint streets — some even cobblestoned — you will find art galleries, antiques, arts and crafts, continental boutiques and specialty shops. The perfect place to spend your shopping hours!
Depart Town and Country Convention Center: 9:30 a.m.
Return: 1:30 p.m. **Cost:** \$9.00 Per Person

PAYMENT POLICY: Full payment must be received no later than Monday, October 28. No refunds will be made after Monday, October 28. If ENJOY CALIFORNIA ENTERPRISES must cancel the tour due to lack of participation, a full refund will be made. Your tickets will be waiting for you at your hotel upon your arrival. Additional tickets will be available on a space available basis.

OCEANS '85

Please send the completed form together with payment in full to:
 ENJOY CALIFORNIA ENTERPRISES 1094 Cudahy Place, Suite 201, San Diego, CA 92110

"HARBOR EXCURSION AND CITY TOUR"
 (Tuesday, November 12) Tickets at \$14.50 = \$ _____

"JAI ALAI EVENING IN OLD MEXICO"
 (Tuesday, November 12) Tickets at \$32.50 = _____

"THE ZOO: INSIDE LOOKING OUT"
 (Wednesday, November 13) Tickets at \$22.00 = _____

"LA JOLLA SHOPPING"
 (Thursday, November 14) Tickets at \$ 9.00 = _____

TOTAL ENCLOSED \$ _____

NAME _____ PHONE () _____

ADDRESS _____

CITY/STATE/ZIP _____

HOTEL IN SAN DIEGO _____

feels
san good
diego all
over™



Anza-Borrego Desert State Park



Stately California Tower — in San Diego's Balboa Park



Penguins at Sea World

TUESDAY P.M.

SESSION A1

OCEAN ENGINEERING AND THE ENVIRONMENT

Chair: H. R. Talkington — *U.S. Naval Ocean Systems Center*

Environmental Assessment: An Ocean Energy Design Tool

L.F. Lewis — *U.S. Department of Energy*

M. Hunt, P. Wilde — *U of C, Berkeley*

Ocean Space Technology Outlook

T. Sakou — *Tokai University (Japan)*

International Cooperation in Science & Technology with Japan, China and Chile

P.K. Park, R.C. Junghans, A.F. Rock & J.L. Buizer — *NOAA, Office of Oceanic & Atmospheric Research*

The Future of the Artificial Gill

T.A. Pryor — *Aquanautics Corporation*

Air-Independent Power Systems for Autonomous Submarines — The Comex Saga I

H. Nilsson, L. Lundsten — *Sub Power AB (Sweden)*

RANGER 1: A Self-Propelled Data Buoy

D.W. Egles — *Seaboy Marine Services Ltd. (Canada)*

Bio-Shield: An Anti-Fouling System for Offshore Platforms That Works! — I. Engineering

R.F. Engel, J.P. Ray — *Shell Oil Company Bellaire Research Center*

Bio-Shield: An Anti-Fouling System for Offshore Platforms That Works! — II. Biology

J.P. Ray, R.F. Engle — *Shell Oil Company*

SESSION B1:

REAL TIME MARINE DATA SYSTEMS

Co-Chairs: J.R. Vadus — *NOAA*

R.J. Seymour — *Scripps Institution of Oceanography*

THRUST (Tsunami Hazard Reduction Using System Technology)

E.N. Bernard, R.R. Behn — *Pacific Marine Environmental Laboratory*

Real-Time Oceanographic Model Systems: Present and Future Applications

B.B. Parker — *NOAA/NOS*

Real-Time Information Systems for Port and Harbor Operations

C.E. McLain — *System Planning Corporation*

Design Criteria for Automated Data Acquisition Systems in the Marine Environment

R.L. Erichsen - *NOAA Data Buoy Center*

NOAA's Shipboard Environmental Data Acquisition System

M. Szabados, G. Withee & K. Schultz — *NOAA/National Ocean Service*

Multi-Computer Acquisition and Processing for Marine Environmental Monitoring

D. Bower — *Computer Sciences Corp.*, & S. H. Lieberman, *Naval Ocean Systems Center*

SESSION C1:

POLAR RESEARCH

Chair: G. Frankenstein - *USA CRREL*

A Simple Device for Making Large Holes in Sea Ice

D.P. Bothman — *Oceanographic Services, Inc.*

Iceberg Detection by Radar

J.D. Miller, K. Satterfield — *Petro-Canada Resources (Canada)*

Cryospheric Data Management System for Special Sensor Microwave Imager DMSP Data

R. Weaver, R.G. Barry — *NSIDC-CIRES University of Colorado*

Ice Management for Drilling Operations in the Grand Banks

I.S. Hotzel, J.D. Miller, D.M. Nazarenk & D.E. Pearson — *Petro Canada Resources (Canada)*

SESSION D1:

INTERNATIONAL ISSUES

Chair: M.H. Nordquist — *Herrick & Smith*

Latest Developments in Ocean Mining: A Potential for New Conflict

V.V. Zdorovenin — *United Nations Secretariat (U.S.S.R.)*

Mr. Reagan and the Oceans

L.R. King — *Texas A&M University Sea Grant Program*

Improving Ocean Governance: Problems and Prospects

B. Cicin-Sain, R.W. Knecht — *University of Calif., Santa Barbara*

Whales and Whaling — An International Perspective and Its Bearing on Indian Ocean's Conservation Efforts

J.J. Bhatt — *Community College of Rhode Island*

Marine Scientific Research as a New Area of Tension Between States

V.V. Zdorovenin — *United Nations Secretariat (U.S.S.R.)*

SESSION E1:

STD INSTRUMENTATION

Co-Chairs: T.M. Dauphinee — *SeaMet Sciences*

J.E. Jaeger — *Hydro Products*

A Simple System for Mapping Conductivity Microstructure

L. Washburn, T.K. Deaton — *Scripps Institution of Oceanography*

Results from Test Trials with a Very Fast Measuring High Precision

C-T-D Compact Sonde For Profiling Speeds of up to 7 . . . 10 m/s

W. KroebeI — *University of Kiel (West Germany)*

The Fast Profiler: An Untethered Sensor Platform with Acoustic Homing Capability

J.K. Loyt, A. M. Bradley — *Woods Hole Oceanographic Institution*

Quantitative Performance Data of a New Automatic Optical Bench Salinometer/Densitometer

K.-H. Mahrt, W. KroebeI — *University of Kiel (West Germany)*

An Instrumentation and Data Acquisition System for Measuring Brine Plumes in Coastal Waters

R. E. Randall, P. Price — *Texas A&M University*

Environmental Time Series Measurement in the Central Gulf of California — Instrument Adaptation and Development

A. Soutar, J. Singleton and E. Duffrin — *Scripps Institution of Oceanography*; T. Folsom; M. Butler — *Pac. Micro*; S. Rau-Fabrau;

T. Baumgartner, CICESE; and R. Zaneveld — *Oregon State University*

SESSION F1:

ECONOMIC POTENTIAL

Co-Chairs: S.E. McCoy — *NOAA*

M.M. Bundy — *Maryland Dept. of Natural Resources*

Ocean Technology Transfer: The Role of Multinational Corporations

C. Gopalakrishnan — *University of Hawaii*

Frontier Oil and Gas Development: Implication for National Energy Planning

J.W. Curlin, P. Johnson, C. Stevens, W. Westermeyer, D. Kevin,

C. Dybas, N. Harllee — *U.S. Congress, Office of Technology Assessment*

The Public/Private Partnership: Ensuring the Future of Basic

Oceanographic Research

D.M. Gower — *NOAA/NOS External Affairs Div.*

Growth and Impacts of Recreational Boating in the Gulf of Mexico

I.C. Sheifer — *NOAA/NESDIS*

Energy from the Oceans: Some Socio-Economic Considerations

M.G. Johnson

The Time Path of Resource Management

M.M. Bundy — *Maryland Department of Natural Resources*

SESSION G1:

POLLUTED WATER DIVING WORKSHOP

Co-Chairs: M. Wells — NOAA
W.C. Phoel — NOAA/NMFS/NEFC

Prologue to Diving in Polluted Waters

P.E. Purser, H.S. Kunz & H.S. Placchi — *Searle Consortium, Ltd.*

Infectious Disease Hazards Associated with Polluted Waters

O.P. Daily, J.C. Coolbaugh — *Naval Medical Research Institute*

Studies of the Water Column, Sediments and Biota at the New York

Bight Acid Waste Dumpsite and a Control Area

W.C. Phoel, R.N. Reid, D.J. Radosh, P.R. Kube and S.A. Fromm —
NOAA/NMFS/NEFC Sandy Hook Laboratory

Technical Specifications of a System for Contaminated Water Diving

S.M. Barsky — *Diving Systems International*

Protection of Divers in Biologically Polluted Waters

J.C. Coolbaugh, O.P. Daily — *Naval Medical Research Institute*

Range of Motion Studies of Anti-Contaminant Diving Dress

G.H. Egstrom, J.M. Wells & A. Bachrach — *University of California,
Los Angeles*

Scuba Diving in Polluted Coastal Waters

C.J. Jones, A. Goodman, S. Friedman, S. Schultz — *City of New York*

U.S. Coast Guard's National Strike Force Dive Team's Developments

Towards a Hazardous Material Diving Capability

R.M. Gaudiosi — *U.S. Coast Guard*

SESSION H1:

MARINE BIOLOGY

Chair: W.H. Queen — *East Carolina University*

Deep Tank — A Research Facility for Simulation of the Marine Environment

C.S. Coughran, J.D. Powell — *Scripps Institution of Oceanography*

Changing Oceanography of the Black Sea Due to the Combined Effect of the Soviet River Diversions and Tunnel Construction in the Bosphorus

D. Tolmazin — *University of Connecticut*

Selection of Zostera Marina L. Esotypes for Transplanting

T.W.H. Backman — *Navy Personnel Research & Development Center*

A Hard Bottom Monitoring Program Investigating the Effects of

Discharged Drilling Fluids from an Exploratory Drilling Operation in the Western Santa Barbara Channel

J.A. Johnson — *Johnson & Associates*

D.D. Hardin — *Kinnetic Laboratories*

Easy Zooplankton Net Logger

E. Blanchette, J.H. Seiler — *Seimac Limited (Canada)*

Interaction of Hg, Na, Ca, and Mg with Intestinal Absorptive Functions in Marine Fish

A. Farmanfarmanian — *Rutgers University*

SESSION I1:

OCEAN ENERGY: OTEC POWER CYCLES

Chair: N. Sather — *Argonne National Laboratory*

Structure and Material of the Cold Water Pipe for OTEC Pilot Plant in Tahiti

R.H. Vilain, J.P. Miquel Elcano & M.A. Spielrein — *ERGOCEAN (France)*

A 5 MW Ammonia Closed Cycle OTEC Power Station

D. Destre — *FRAMTOME (France)*

Open Cycle Ocean Thermal Energy Conversion (OC-OTEC)

Experimental Study of Flash Evaporation from Vertical Spouts

T. Fournier — *Alsthom-Atlantique Neyrtec (France)*

Systems Studies of Open Rankine Cycle OTEC for Seawater

Experiment Definition

B.K. Parsons, H. Link — *Solar Energy Research Institute*

Open Cycle OTEC Experiments with Seawater — Early Results

J. Larsen-Basse, H.J. Krock, A. Seki & M. Zapka — *University of Hawaii,
and B. Shelpuk — SERI*

WEDNESDAY A.M.

SESSION A2:

OCEAN TECHNOLOGY

Chair: C. Manley — *Hydro Products*

A Technical Development Plan for a Next Generation Water Level Measurement System

E.M. Russin, D.C. Beaumariage — *NOAA/NOS*

An Expendable, Free Drifting, Horizontal Acoustic Line Array System

C.V. Bruengger — *Hazeltine Corp.*

Air Launched Underwater Acoustic Systems

M.P. Wapner, J.E. McCann — *Sonatech, Inc.*

SESSION A3:

DATA BASE MANAGEMENT

Chair: N. Ross — *NOAA/NESDIS*

Using the NEDRES Interactive Database to Find Oceanographic Information

G.S. Barton — *NOAA, National Environmental Data Referral Service*

Recent Research Accomplishments of the CERC Field Research Facility

C. Mason — *U.S. Army Engineer Waterways Experiment Station*

Contributions of Atlantic OCS Environmental Studies Program to Knowledge of Ocean Environments

A.T. Fritz — *DOI, Minerals Management Service, Atlantic OCS Region*

New Tools for the Ocean Pollution Data and Information Network

J.J. Audet — *NODC*

SESSION B2:

SATELLITE SENSORS FOR THE NEXT DECADE

Chair: D.E. Weissman — *Hofstra University*

Navy Remote Ocean Sensing System — Ocean Monitoring System

D.C. Honhart — *U.S. Navy*

The NASA NSCAT and Topex/Poseidon Programs

R.H. Stewart — *Jet Propulsion Laboratory & Scripps*

RADARSAT Oceanic and Ice Measurements

N.G.S. Freeman, L. McNutt — *RADARSAT Project Office (Canada)*

Ocean Color Measurement and NOAA's Future Role

D.K. Clark — *NOAA/NESDIS*

SESSION B3:

OCEAN OBSERVATIONS FROM SPACE — CURRENT DATA AND IMPLICATIONS FOR THE FUTURE

Chair: J.J. Gallagher — *U.S. Naval Undersea Systems Center*

OCEANS: Oceans from Challenger Exhibit 'Anomalous New Structures

P. Scully-Power — *Naval Underwater Systems Center*

Current Operational Satellite Capabilities for Oceanic Research and Marine Operations

A.E. Strong — *NOAA/NESDIS*

The Ensemble of Oceanic Data in the 1990's: Where We Are Now and How We Approach the Next Decade

J.W. Sherman, III — *NOAA/NESDIS*

The Future Bonanza in Marine Data From Space

S.W. McCandless, Jr. — *User Systems Incorporated*

WEDNESDAY A.M. (Continued)

SESSION C2: ICE STATION ENGINEERING

Co-Chairs: G.L. Johnson — *ONR Arctic Programs*
D.A. Horn — *ONR Arctic Programs*

The Science Program of the FRAM Experiments in the Eastern Arctic Ocean

A.B. Baggeroer — *MIT*; F. DiNapoli — *NUSC* and T. Manley — *Lamont-Doherty Geological Observatory*

The Deployment and Operation of the Ice Stations for the FRAM Program

A. Heiber & A. Hielscher — *University of Washington*

An Automatic Arctic Profiling System for Oceanography Under Ice

J.C. Van Leer — *University of Miami*

Heave, Surge and Sway of an Iceberg in the Labrador Sea

D.M. Nazarenko, J. Miller — *Petro-Canada Resources*; and
L. Davidson — *Seaconsult (Canada)*

SESSION D2: MARINE EDUCATION

Chair: T.C. Shafer — *TCS and Associates*

International Perspective & Futuristic Prospects in Ocean Education

J.J. Bhatt — *Community College of Rhode Island*

The Ocean/Space Interface

J. Klassi — *Expedition Earth Inc.*

Issues in Marine Resource Management Education

V.T. Neal — *Oregon State University*

Transfer of Knowledge Within the Lake Ontario Salmonid Sport Fishery

M.J. Brody — *University of Maine*

The Relevance and Nature of Natural Hazard Losses in the Coastal Zone

M.G. Johnson

Student Knowledge of a Natural Resource Issue in the Gulf of Maine

M.J. Brody — *University of Maine*

Qualifying High School Teachers for Teaching Marine Science and Technology

E.B. Klemm — *University of Hawaii*

SESSION E2: OCEANOGRAPHIC INSTRUMENTATION

Co-Chairs: K. Hill — *National Research Council (Canada)*
E.M. Russin — *NOAA/NOS*

Shipboard Data System III

D.B. Enabnit — *NOAA/NOS*

Vibrocoring, Its Superior Operation and Characteristics

T. Hosoya, Y. Ishii — *Kokusai Denshin Denwa* and S. Kubo,

K. Hashimoto — *Sanyo Hydrographic Survey (Japan)*

Design and Initial Testing of a Motion Compensating Winch System

K.D. Saunders — *Naval Ocean Research and Development Activity*

AVATAR: Second-Generation Transceiver Electronics for Ocean

Acoustic Tomography

P.F. Worcester, D.A. Peckman, K.R. Hardy & F.O. Dormer — *Scripps*

Institution of Oceanography

Pulsing Technique for Improved Performance of Oxygen Sensors

C. Langdon — *University of Rhode Island*

An In Situ Microelectrode Profiling System for Measuring Seafloor Gradients of Oxygen and pH

C.E. Reimers, R. Merewether & K.M. Fischer — *Scripps Institution of Oceanography*

SESSION F2: IMPROVED MARINE ENVIRONMENTAL QUALITY THROUGH NEW TREATMENT PLANT AND OUTFALL TECHNOLOGY

Co-Chairs: W.F. Garber — *Consultant*
J.P. St. John — *Hydro Qual*

Ocean Disposal Systems for Sewage Sludge and Effluent

N.H. Brooks — *California Institute of Technology*

Policy First or Science First in the Management of Risk

T. Page — *California Institute of Technology*

The Evidence of One's Eyes

W. Bascom — *Southern California Coastal Water Research Project*

Energy Use and Net Pollution with Respect to Wastewater Treatment and Solids Disposal

R. Miehle — *Los Angeles County Sanitation Districts*

Monitoring Designs and Allocation of Resources

B.B. Bernstein — *EcoAnalysis, Inc.*

Environmental Laws and Environmental Improvement

W.F. Garber — *QUAD Consultants*

Options in Ocean Outfall Systems

C.G. Gunnerson — *NOAA*

SESSION G2: DIVING

Chair: W.I. Milwee, Jr. — *Milwee Associates*

Equipment & Techniques Developed for Scientific Exploration of Oceanic Underwater Caves

J.E. Bozanic — *Island Research Institute*

Restoration and Preservation of Marine Structures by Divers

W.I. Milwee — *MILWEE Asso.*; W.F. Aichele, *Inshore Divers*

An Aero-Space Simulator Approach to Mixed Gas Bell Diver Training

G. Butler — *International Underwater Contractors, Inc.*

U.S. Coast Guard's Salvage Computer Program

M. Fitzpatrick, S. Allen, J. Clay — *U.S. Coast Guard Office of R&D*

SESSION G3: MANNED SUBMERSIBLES

Chair: F. Busby — *Busby Associates*

An Advanced Submersible Handling System

A.M. Clark — *Harbor Branch Foundation* & R. McCallum — *Caley*

Hydraulics (Scotland)

DSV SEA CLIFF 20,000 Foot Certification and Recent Operations

R.B. Williams — *U.S. Navy*

Deep Water Dual Purpose Submersible

D. Barthelmess — *International Underwater Contractors, Inc.*

NAUTILE's (SM97) First Year: The Results of the Tests and First Operational Dives

J. Jarry — *IFREMER (France)*

SESSION H2: OCEAN FISHERIES

Chair: R.L. Edwards — *NOAA/NEFC/NMFS*

An 'Expert System' for Fisheries Management

J.D. Ryan — *Scripps* & P. Smith — *NOAA/NMFS*

The Status of Fishing Technology Research in Norway

C.W. West — *Nat'l Marine Fisheries Service*

U.S. Gulf of Mexico Continental Shelf — An Ecological Overview

R.M. Darnell — *Texas A&M University*

SESSION H3: ATMOSPHERIC MEASUREMENTS

Chair: C.B. Ihli, Jr. — *U.S. Naval Oceanography Command Facility*

A Model of the Effects of a Shelf Break and of Wind Stress on the Dynamics of Oceanic Fronts

D.L. Porter — *NOAA/NOS* and T. Kao — *The Catholic University*

The Mobile Environmental Team (MET) Concept

S.T. Foster — *Naval Oceanography Command Facility*

Wind Stress Measurements from Shipboard Navigation Radars

D.L. Porter — *NOAA* and D.B. Trizna — *Naval Research Lab*

SESSION 12: OCEAN ENGINEERING: CORROSION AND MATERIALS

Chair: B. Liebert — *University of Hawaii*

Mineral Accretion Technology: Self-Growing and Self-Repairing Structures in Sea or Brackish Water

W.H. Hilbertz — *Marine Resources Co., Inc.*

Corrosion and Materials Technology in Ocean Engineering

T.S. Lee, D.B. Anderson — *LaQue Center for Corrosion
Technology, Inc.*

Flexible Pipe Offshore Petroleum Delivery System

B.C. Dubois, K.D. Briggs — *Simplex Wire and Cable Company*

Synthetic Foam Buoyancy Systems for Manned and Unmanned Submersibles

L.W. Watkins — *Emerson & Cuming, Inc.*

SESSION 13: OCEAN ENERGY: BIOFOULING AND CORROSION

Chair: F. LaQue (Canada)

Corrosion and Biofouling of OTEC Heat Exchangers: IFREMER Researches

L. Lemoine — *IFREMER (France)*

Closed Cycle OTEC Corrosion and Heat Transfer Studies at the Seacoast Test Facility — Current Status

J. Larsen-Basse, S. Jain, L.R. Berger & J. Berger — *University of Hawaii;*

T. Daniel, A. Bhargava — *Natural Energy Laboratory, Hawaii* and

C. Panchal, H. Stevens — *Argonne National Lab*

Nondestructive Monitoring of Biofouling and Corrosion on OTEC Heat Exchangers

P.K. Sullivan, B.E. Liebert — *University of Hawaii*

Ultraviolet Irradiation for Controlling Biofouling in OTEC Heat Exchangers

A. Seki, B. Auker, R. Fujioka, P. Ono & P. Takahashi — *University
of Hawaii*

WEDNESDAY P.M.

SESSION A4: MARINE INFORMATION SYSTEMS

Co-Chairs: G.N. Williams — *Texas A&M University*
K. Hughes — *NOAA*

A High Resolution Ultrasound Triangulation System for Mapping Underwater Sites

G.N. Williams — *Texas A&M University*; D. Hahn — *Shell Oil Co.*
and M. Wilcox, P. Wilcox — *Applied Sonics, Inc.*

New Hydrographic Surveying Standards

S. Alper, J.D. Bossler — *NOAA/NOS*

The Ease and Flexibility of SIR/DBMS Software In Ocean Science Statistical Applications

M.B. Wagner — *Boeing Computer Services Co.*

Data Acquisition for Fast Ice Arctic Drilling Structures

J.M. Blumberg, D.I. Devan & D. Bothman — *Oceanographic
Services, Inc.*

Data Base Structure for Real Time, Interactive, Arctic Environment Monitoring

D.P. Bothman — *Oceanographic Services, Inc.*

"One-Stop" Marine Information Center — NOAA's Northwest Ocean Service Center

R.P. Kopenski, K.S. Short — *NOAA*

An Operational Global Scale Spectral Ocean Wave Forecasting Model Dr. Chin — NOAA

SESSION B4: INNOVATIVE MEASUREMENTS OF THE SEA SURFACE WITH MICROWAVE AND INFRARED SENSORS

Chair: M. Freilich — *Jet Propulsion Laboratory*

A Remote Sensing Study of a Surface Ship Wake

R.D. Peltzer, W.D. Garrett — *Naval Research Laboratory*
and P.M. Smith — *NORDA*

Measurements of the Radar Backscatter from the Ocean by the Microwave Scatterometer

G. Naito, I. Watabe, M. Takuda — *National Research Center for Disaster
Prevention (Japan)*

An Algorithm for the Dependence of Sea Surface Radar Cross Section and Modulation Transfer Function on Winds, Atmospheric Stability and Sea State

D.E. Weissman — *Hofstra University*

The Use of Remote Sensing to Obtain Quantitative Ocean Data: A Few Examples

D. Sheres, K.E. Kenyon — *Ocean Sensing*

A Multispectral Video Imaging and Analysis System

T. Niedrauer, C.A. Paul — *Xybion Corporation*

Asymptotic Approximations for Wave Scattering from Rough

**Surfaces: Range of Valid Application as Determined by Numerical
Electromagnetic Techniques**

S.L. Durden, J. Vesecky — *Stanford University*

SESSION C4: POLAR OPERATIONS

Chair: L.W. Brigham — *U.S. Coast Guard*

A New Vessel for Polar Oceanographic Research

A.L. Inderbitzen — *National Science Foundation*; M. Eichnenberger,
ITT Antarctic Services, Inc.; and J. Leiby, *Woods Hole Oceanographic
Institution*

Ice Navigation Studies in the Alaskan Arctic Using POLAR Class Icebreakers

L.W. Brigham — *U.S. Coast Guard*; R.P. Voelker — *ARCTEC Engineering,
Inc.*

Construction of a Runway on Annual Sea Ice

B. Shoemaker — *U.S. Navy* and C. Hoffman — *Naval Civil Engineering
Laboratory*

Construction of an Ice Pier

B. Shoemaker — *U.S. Navy* and C. Hoffman — *Naval Civil Engineering
Laboratory*

The Evolution and Potential of the Arctic Submarine

A.S. McLaren — *University of Colorado*

SESSION D4: MARINE TRAINING

Chair: T.C. Shafer — *TGS and Associates*

Marine Science Project: FOR SEA

J.A. Kolb — *Marine Science Center, Educational Service*

M.D. Philbrick — *U.S. Dept. of Education*

ROV Training

E. Galerme — *International Underwater Contractors, Inc.*

The Role of Diver Training in Submersible Use

C.A. Cipolla — *University of Rhode Island*

New Directions in Maritime Management & Training

J. Morton — *Florida Institute of Technology*

Bridge Building Between Government, Industry and Education

N. Doelling, T. Sheridan — *Massachusetts Institute of Technology*;

J. MacFarland, E. Jackson — *International Submarine
Engineering (Canada)*

Symbiosis and the Survival of Science Education

J.P. McLaren — *Eastern Nazarene College*

Strategic Analysis for Coastal Zones Adjacent

to Metropolitan Areas

M.G. Johnson

WEDNESDAY P.M. (Continued)

SESSION E4: ACOUSTIC INSTRUMENTATION

Chair: J.E. Jaeger — *Hydro Products*
M.D. Serotta — *Raytheon, Inc.*

- A New Side Looking, High Resolution, Imaging System**
O.B. Bjorkheim, L.J. Robinson — *International Submarine Technology Ltd.*
- Field Performance of the Benigraph High-Resolution Multibeam Seafloor Mapping System**
E. Hamerstad, A. Lovik — *Bentech A/S (Norway)*
- Broad Band Energy Detection in the Ocean**
T.J. Curry — *Southeastern Massachusetts University* and R. Chace, D. Hartge, M. Shalek — *Sippican Ocean Systems*
- Single Ship Large Offset Seismic Profiling Using a Surface Towed Radio Telemetry Array (STRATA)**
H.O. Berteaux, G.M. Purdy & W. Witzell — *Woods Hole Oceanographic Institute*
- Transit Detection in the Ocean: Some Methods and Criteria**
T.J. Curry — *Southeastern Massachusetts University*
and R. Chace, D. Hartge — *Sippican Ocean Systems*
- Sonar Detection of Riverine Fish Using the Pulse Pair Covariance Doppler Frequency Estimator**
J.W. Waite — *Hewlett Packard Co.* and E.O. Belcher — *APL, University of Washington*
- SOCAL ASW Range Subsurface Link and Cable System**
F.G. Wyatt, Jr. — *U.S. Naval Underwater Systems Center*

SESSION F4: NEW OUTFALL TECHNOLOGY

Chair: J.P. St. John — *Hydro Qual*

- A Sea Outfall for Alexandria**
A.M.Z. Alam — *Metcalf & Eddy, Inc.*
- Prediction of Outfall Plume Shapes in Strongly Tidal Estuaries**
L.A. Roesner, M.S. Rosenberg & R. Walton — *Camp Dresser & McKee Inc.*
- Outfall Mixing Design in Shallow Coastal Water Under Arctic Ice Cover**
G.H. Jirka — *Cornell University*; D. Jones — *Alaska Environmental Conservation* and J. Colonell
- Forecasting Chlorination Needs for Wastewater Outfalls with a Real-Time Buoy Monitoring and Telemetry System**
I. Haydock, T. Wong & D. Weisman — *Los Angeles County Sanitation Districts*

SESSION G4: TOWED INSTRUMENTATION

Chair: — *University of California, San Diego*

- Passive Cable Accumulator for the Deep Seafloor ROV, RUM III**
V.C. Anderson, R.C. Horn — *Marine Physical Laboratory, Scripps*
- Development of an Axial Load Bearing Ring for Use on Double Served Strength Member Electromechanical Marine Cable**
A. Mech — *Fathom Oceanology Limited (Canada)*
- Controllable Paravane for Fast Profiling**
C.W. Anderson — *Johns Hopkins University/APL*
- Acoustic Imagery of Sea Floor**
A. Farcy, M. Voisset — *IFREMER (France)*
- The Variable Depth V-Flin Depressor**
R.E. Race — *ENDECO, Inc.*
- Towed Underwater Pumping System for Deep Ocean Sampling**
D. Wiesenberg, C. Rain — *NORDA*

SESSION H4: SURFACE WAVE MEASUREMENTS

Chair: J.L. Newton

- Directional Surface Wave Measurements in the Southern Thyrrean Sea Coastal Waters, an Investigation of the Wave Climate Near the Gioia Tauro Harbour**
M. Venturi, P. Caccavella — *TEI (Italy)*
- Intercomparison of Wave Measurements Obtained from a NOMAD Buoy and From a Waverider Buoy in Lake Erie**
D.J. Schwab, P.C. Liu — *NOAA — Great Lakes Environmental Research Lab*
- Power Spectrum Estimation of the Observed Wave Data by the Maximum Entropy Method**
X. Hongda, W. Xiuji — *The Chinese Society of Oceanology and Limnology (China)*
- Comparative Laboratory Test on Methods for Directional Wave Spectrum Analysis**
C.T. Stansberg, E.K. Hasle — *Norwegian Marine Technology Research Institute A/S (Norway)*

SESSION H5: SURFACE CURRENT MEASUREMENTS

Chair: R.J. Seymour — *Scripps Institution of Oceanography*

- Wind Generated Surface Current Model Identification**
K.J. Eidsvik — *Division of Port and Ocean Engineering (Norway)*
- Water Velocity and Turbulence Measurements by Pulse Coherent Doppler Sonar**
R.M. Lhermitte — *University of Miami*
- Agulhas Current Trajectory from New ARGOS Drifter Compared with Simultaneous Shipboard Measurements**
J.R. Luyten — *Woods Hole Oceanographic Institution*; P.F. Smith — *Ferranti O.R.E.*

SESSION I4: OCEAN ENERGY: ENVIRONMENT AND AQUACULTURE

Chair: P. Wilde — *University of California, Berkeley*

- Potential Impacts from OTEC-Generated Underwater Sounds**
J.B. Rucker — *NOAA*; W.A. Friedl — *NOSC, Hawaii*
- Aquaculture Using Cold OTEC Water**
T.H. Daniel — *Natural Energy Laboratory of Hawaii*
- From Seaweeds to Crop Plants**
M. Polne-Fuller, D. Fisher & A. Gabor — *University of California, Santa Barbara*
- Environmental Enhancement of the Oceans by Increasing Solar Radiation from Space**
J. Klassi, T. Taylor — *Expedition Earth Inc.*

SESSION I5: COMMUNICATIONS TECHNOLOGY

Chair: R.H. Cassis, Jr. — *USCG Support Center*

- Digital Acoustic Communication in Multipath Underwater Channels**
A. Zielinski, M. Caldera — *Memorial University of Newfoundland (Canada)*
- The Use of Radio Frequency Systems in the Marine Environment**
R.J. Decesari — *Radio Engineers*
- HydroCom — A Low Cost Solution for Three Diver Communications**
D. Gravitz — *Hydro Products, Inc.*

THURSDAY A.M.

SESSION A6: OCEAN DRILLING PROJECT

Chair: P.D. Rabinowitz — *Texas A&M University*

The Ocean Drilling Program: An Overview and Future Science Plans

P.D. Rabinowitz, L. Garrison, B. Harding, S. Herrig, R. Kidd,
R. Merrill, R. Olivas — *Ocean Drilling Program*

JOIDES RESOLUTION — Scientific Drillship of the 80's

G.N. Foss — *Ocean Drilling Program*

The Shipboard Science Laboratories on ODP's "JOIDES RESOLUTION"

R.B. Kidd, P.D. Rabinowitz, L. Garrison, A. Meyer — *Ocean Drilling
Program, Texas A&M University*

Deep Water Coring Technology — Past, Present & Future

M.A. Storms, D.P. Huey — *Ocean Drilling Program*

Logging for the Ocean Drilling Program — Operational Results from the First Two Legs

D. Moos, R.N. Anderson, C. Broglia, D. Goldberg, C. Williams,
M.D. Zoback — *Lamont-Doherty Geological Observatory*

Drill Spring Model Sensitivity to Hydrodynamic Approximations

J.M. Niedzwecki, S. Serocki — *Texas A&M University*

SESSION B6: APPLICATIONS OF HIGH RESOLUTION SATELLITE DATA TO ENVIRONMENTAL OBSERVATIONS

Chair: J.J. Gallagher — *U.S. Naval Undersea Systems Center*

Multichannel Sea Surface Temperature (MCSST) from the TIROS-N Advanced Very High Resolution Radiometer (AVHRR) for the FGGE Period (Dec. 1978-Nov. 1979)

Z. Ahmad, J. Sutton & W. Mitchell — *SASC Technologies and A. Strong —
NOAA/NESDIS*

Application of Satellite Remote Sensing to U.S. Fisheries

R.M. Laurs, P.C. Fiedler — *NOAA/NMFS/Southwest Fisheries Center*

Thematic Mapper (TM) Analysis of Nantucket's Nearshore Marine Environment

K. Richardson, N. West — *University of Rhode Island*

An Interactive Digital Image Processing Workstation for the Ocean Sciences

M. Guberek — *Global Imaging, Inc.*

Enhanced Soundings Over Oceans from NOAA-9 Polar Orbiting Satellite

A. Swaroop, A. Nappi, Z. Ahmad — *SASC Technologies and M. Chalfant, L.
McMillin & A. Reale — NOAA/NESDIS*

SESSION C6: ARCTIC ACOUSTICS

Chair: B.M. Buck — *Polar Research Lab*

A Non Resonant Acoustic Projector (NRAP) for Low Frequency Studies

S.P. Burke, D. Iddings & B.M. Buck — *Polar Research Laboratory, Inc.*

In-Situ Noise Measurements of a Labrador Sea Iceberg

J.D. Miller, D. Nazarenko — *Petro-Canada Resources and M. Noble —
Barron & Assoc. (Canada)*

Effects of Irregular Surface Geometrics on Velocity Measuring Sonars

J.M. Blumberg — *Oceanographic Services, Inc.*

Acoustic Array Sensor Tracking System

K. von der Heydt — *Woods Hole Oceanographic Institution;*

G.L. Duckworth & A.B. Baggeroer — *MIT*

Ocean Acoustic Measuring Systems: VEKA and VEDABS

D.A. Milburn, T.A. Burke — *NORDA*

SESSION D6: MARINE RECREATION

Chair: T. Morash — *California State University, Northridge*

The Ocean Port, Resort and Research Facility

J. Klassi — *Expedition Earth Inc.*

Research and Information Needs for Marine Recreation in the Los Angeles Area

S.A. Ross — *University of Southern California Sea Grant Program*

Offshore Petroleum Structures Lure Fishermen Seaward in the Central Gulf of Mexico

J. Auyong, R.B. Ditton & V.C. Reggio, Jr. — *University of Hawaii*

SESSION D7: COASTAL ZONE MANAGEMENT

Chair: R. Knecht — *University of California, Santa Barbara*

Overview

D.E. Pryor — *NOAA/NOS*

Effect of Oil Spill Cleaning Techniques on Beach Profiles, Galveston, Texas

Y.-H. Wang — *Texas A&M University at Galveston*

Geologic Aspects of Maritime Boundaries

R.W. Rowland — *U.S. Geological Survey*

Sediment Accretion Associated with Surgebreaker Offshore Reef, A Low Cost Shore Protection Device: An Update on the Corps of Engineers Section 54 Program

C.W. Shabica, R.E. Schultz — *Northeastern Illinois University*

SESSION E6: WAVE INSTRUMENTATION

Chair: E.M. Russin — *NOAA/NOS*

SPEAR-F, A Wave Height Spectrum Measuring Buoy via ARGOS Satellite System

G. Ayela, J.P. Hue, J.M. Coudeville & R. Ezraty — *IFREMER (France)*

Evaluation of a Seismometer Gage for Coastal Wave Measurements

E.F. Thompson, S.A. Chesser & J.M. Smith — *US Army Engineer*

Waterways Experimental Station

Effects of the Lack of Stationarity on Deep Water Wave Statistics

S. Elgar, R. Seymour — *Scripps Institution of Oceanography*

SESSION E7: CURRENT MEASUREMENT TECHNOLOGY: EVALUATION BY INTERCOMPARISONS

Co-Chairs: B. Magnell — *EG&G*

T.N. Mero — *NOAA*

An Intercomparison of Two Acoustic Doppler Current Profilers

G.F. Appell, T.N. Mero and J.J. Sprengle — *NOAA*

Comparison of Recording Current Meters Used for Measuring

Velocities in Shallow Waters of San Francisco Bay, California

J.W. Gartner, R.N. Oltmann — *U.S. Geological Survey*

Comparison of Current Meters in a Tidally Dominated Flow

D.J. Pashinski — *Pacific Marine Environmental Laboratory, NOAA*

SESSION F6: SCIENCE AND TECHNOLOGY IN THE MANAGEMENT PROCESS

Co-Chairs: C. Gunnerson — *World Bank*

T.T. Davies — *U.S. EPA*

U.S. Coast Guard Arctic Pollution Response Research and Development

M. Fitzpatrick — *U.S. Coast Guard*

On One of the Indirect Repercussions of the Oil Industry on Norwegian Fjords

D.M. Licata — *Norwegian Hydrotechnical Laboratory (Norway)*

An Ocean Dumping Surveillance System

R.A. Doughty — *U.S.C.G. Office of Research & Development*

The Seekonk River: A Case History in Estuarine Management

M. Petruny-Parker, D.D. Robadue, Jr. — *University of Rhode Island*

Missing Links in Water Pollution Control: The Case of Combined Sewer Overflows in Upper Narragansett Bay

D.D. Robadue, Jr., B.K. Martin — *University of Rhode Island*

The Role of Scientific Information in the Restoration and Protection of Polluted Estuaries

D.D. Robadue, Jr. — *University of Rhode Island*

THURSDAY A.M. (Continued)

SESSION G6:

REMOTELY OPERATED VEHICLES

Chair: R.L. Wernli — *U.S. Naval Ocean Systems Center*

Simulation on the Motion Characteristics of an Unmanned Submersible

N. Tanaka, M. Mochizuki & T. Oda — *Mitsui Engineering & Shipbuilding (Japan)*

Advancements in Remotely Controlled Underwater Vehicles

A.B. Billet — *Hydro Products*

Robotic Underwater Vehicles: Methodology and Demonstration

D.R. Yoerger, J. Newman — *Woods Hole Oceanographic Institution*

The Lander: Recent Developments In Free Vehicle Instrument Platform Design

O. Kirsten, R.A. Jahnke — *Scripps Institution of Oceanography*

Tanker Inspections Using Remotely Controlled Vehicles

B. Matthias — *Hydro Products, Inc.*

An Expert Control System for the ROV CUDA

R.L. Earp — *AT&T Technologies, Inc.*

RUM III Vehicle Control System Description

R.F. Currier — *Marine Physical Laboratory, Scripps*

SESSION H6:

OCEANOGRAPHY

Chair: L. Regier — *Marine Physical Laboratory, Scripps*

NAVOCEANCOMFAC San Diego — Naval Oceanography at Work

C.B. Ihli, Jr. — *Naval Oceanography Command Facility*

Numerical Calculation of the Pollutant Diffusion under the Action the Semidiurnal Constituent in the Bohai Sea

X. Hongda, W. Zhongjun, Z.P. Liu — *NBO (China)*

A Proposal For An Oceanographic Vessel Based Upon Experience And Observation

C.R. Berman, Jr., B. Barber — *NOAA/NMFS*

On Filtering and Tracking in the Presence of Large Errors

J.C. Hassab — *Naval Underwater Systems Center*

SESSION H7:

OCEAN PHYSICS

Chair: K. Stehling — *NOAA/NOS*

Hydraulics of Coastal Currents

R.L. Hughes — *Yale University*

Simulating Surface Scattering and Sound Transmission in a Refractive Ocean

F.H. Maltz — *Naval Undersea Systems Center*

NORDA's Shallow Water Acoustic Measurement System

S. Stanic, B. Eckstein — *NORDA* and D. Sherman — *Petro-Marine Eng.*

SESSION I6:

BUOY TECHNOLOGY

Chair: R.H. Canada, Jr. — *NOAA Data Buoy Center*

Buoy Hull Developments and Plans at the NOAA Data Buoy Center

R.H. Canada, Jr. — *NOAA Data Buoy Center*

The Environment Sensors on NOAA Data Buoy Center's Buoys

E.D. Michelena — *NOAA Data Buoy Center*

Meteorological Data from a United States Coast Guard (USCG) Exposed Location Buoy (ELB)

D.W. Smith — *U.S. Coast Guard/NDBC*

Hydromechanic — Electric Power Converter

E. Haeusler, L. Stein — *Saarland University (West Germany)*

A Drogued Drifting Buoy Designed to Follow Ocean Surface Currents

H.J. White — *TECHNOCEAN Associates* and P.P. Miller & R.E. Davis — *Scripps Institution of Oceanography*

The Role of Drifting Buoys in the Tropical Ocean Global Atmosphere (TOGA) Research Program

R.P. Kozak, R.M. Partridge — *NOAA Data Buoy Center*

Conceptual Design of an Aircraft Deployed Miniature Remote Control Air-Sea Interaction Drifter (RC/ASID) Buoy

R.P. Kozak — *NOAA Data Buoy Center*

Hydrodynamic Drag of Drogues and Sea Anchors for Drift Control of Freefloating Buoys

R.A. Holler — *Naval Air Development Center*

THURSDAY P.M.

SESSION A8:

NAVIGATION

Chair: R.H. Cassis, Jr. — *USCG Support Center*

Activities of the International Hydrographic Organization Committee on Exchange of Digital Data

C.W. Hayes, R.L. Hogan — *NOAA/NOS*

Some International Concerns about our Common Resource — the Oceans

E.H. Harlow — *Soros Associates*

Automation of Buoy Positioning

W.R. Ridley, J.G. Way — *USCG, Office of Research & Development*

Acoustic Long Baseline Sequential Relay Calibration

J. Sharkey, D. Clark — *Oceano Instruments U.S.A., Inc.*

SUBCAL — A New Electronic Cable Avoidance System

C.S. Wade — *AT&T Communications* and J.B. Langley, II & D.R. Newman — *EPSCO, Inc.*

GPS Doppler Processing for Precise Positioning in Dynamic Environments

J. Ashjaee — *Trimble Navigation*

SESSION B8:

MARINE MINERAL RESOURCES

Co-Chairs: J.R. Moore — *University of Texas*

F. Simpson — *Lockheed*

Managing Nonenergy Marine Mineral Development — Genesis of a Program

J.B. Smith, B. Holt, R. Paul — *Minerals Management Service*

Technology For Mining Cobalt Rich Manganese Crusts From Seamounts

J.E. Halkyard — *John E. Halkyard & Company*

The Distribution of Trace Cesium of Manganese Nodules and Sediments in Northern of the Middle Pacific Ocean

Q. Xuexiang, Z. Benchuan, Z. Zhensen, Q. Juhai, D. Chunyan — *National Bureau of Oceanography (China)*

Preliminary Considerations for the Design of Cobalt Crust Mining Systems in the U.S. EEZ

R. Kaufman, J.P. Latimer — *Deepsea Ventures, Inc.*

Subaqueous Mineral Management — The Virginia Experience

N.B. Theberge — *Virginia Institute of Marine Science*

SESSION C8:

ACOUSTIC ANALYSIS

Co-Chairs: D.J. Ramsdale — *Naval Ocean Research & Development Activity*

A Definition of "Ocean Bottom" and "Ocean Bottom Depth"

T.L. Clarke, J. Proni — *DOC/NOAA/ERL/AOML/Ocean Acoustics Div.* and S. Alper, L. Huff — *NOAA/NOS*

Experimental Verification of A Signal Processing Concept for Sea Floor Topography

T.L. Henderson — *University of Texas* and S. Reese — *Raytheon*

SEA BEAM Sidelobe Interference Cancellation

D. Alexandrou — *Marine Physical Laboratory/Scripps*

I₁, I₂, and I_∞ Deconvolution Algorithms for Ocean Seismo-Acoustic Signals

T.T. Pham, R.J.P. deFigueiredo — *Rice University*

Accuracy of Acoustic Multipath Timing and Ranging Predictions Over Extended Ranges

D.M. Coffey — *Naval Underwater Systems Center* and D.L. Paquette

Auto Aligning System for Narrow Beam Acoustic Telemetry

J.L. Galloway — *Institute of Ocean Sciences*; J.S. Collins — *Royal Roads Military College* & R. Balderson — *University of Victoria (Canada)*

Implementation of Rough Surface Loss in Sonar Performance Models

A.I. Eller — *Naval Ocean Research and Development Activity*

SESSION D8: COASTAL PROCESSES

Chair: D.L. Inman — *Scripps Institution of Oceanography*

- Exceedence of Sea Level Over Predicted Tide Heights**
R.E. Flick — *California Department of Boating and Waterways and*
W.C. O'Reilly — *Scripps Institution of Oceanography*
- Wave Dynamics in the Mission Bay Entrance Channel**
R.T. Guza — *Scripps Institution of Oceanography*
- Effect of Sample Spacing on Beach Profile Volume
Change Calculations**
J.R. Wanetick, R.E. Flick — *Scripps Institution of Oceanography*
- Damming of Rivers in Southern California Leads to
Beach Erosion**
D.L. Inman — *Center for Coastal Studies/Scripps*
- The Louisiana Response to Land Subsidence and
Coastal Erosion**
M. Silva, M. Meo — *Woods Hole Oceanographic Institution*
- Maintenance Dredging Alternatives for Coastal and
Estuarine Harbors**
D.W. Skelly — *Scripps Institution of Oceanography*
- Hydrostatic Release for Sea Floor Instrumentation**
M.C. Clifton — *Scripps Institution of Oceanography*
- A High Density Cassette Data Acquisition System: Operation
and Applications**
W. Boyd, R. Lowe — *Scripps Institution of Oceanography*

SESSION E8: CURRENT MEASUREMENT TECHNOLOGY: NEW APPROACHES

Chairs: W.E. Woodward — *NOAA*
W.E. Terry — *WHOI*

- Inclinometer Current Meters in Weak Currents**
T.J. Hendricks — *Southern California Coastal Water
Research Project*
- A Titing Current Meter for Low Velocity Currents**
J.C. Boylls — *Access Research Corporation and T.J. Hendricks — Southern
California Coastal Water Research Project*
- Solid State Recording Current Meter Conversion**
R.T. Cheng, L. Wang — *U.S. Geological Survey*
- A Correlation Sonar System for Profiling Ocean Currents**
J.F. Mattock, J.L. Galloway — *Seastar Instruments Ltd. (Canada)*
- An Evaluation of the Anderaa RCM4 Current Meter in the
Wave Zone**
M.J. Woodward — *Institute of Ocean Sciences (Canada)*

SESSION F8: MONITORING AND RESEARCH INPUTS TO MANAGEMENT DECISIONS

Co-Chairs: H.M. Stanford — *NOAA*
D.F. Soule — *University of Southern California*

- Offshore Environmental Control of Advanced Drilling Muds**
C.E. Zumwalt — *Western Oceanic, Inc.*
- Modeling Marine Impact of Ocean Incineration of
Hazardous Waste**
M. Reed, D. French & K. Jayko — *Applied Science Associates, Inc.*
- Finite Element Modeling of an Offshore Region with
Restricted Flow**
D. Galya — *Environmental Research & Technology, Inc. and*
D. McDougall — *Stone & Webster Engineering Corp.*
- Accurate Measurements of the Effects of Underwater Chemical
Explosives on Coastal Fisheries Resources: An Emerging
Technology**
D.R. Munday — *Coastline Environmental Services Ltd. (Canada) and*
L. Brocklehurst — *Lab-Core Systems*
- Status and Trends in Sediment Toxicity In Puget Sound**
E.R. Long — *NOAA, Ocean Assessments Div.*
- Design of Bioindicator Based Programs to Monitor Ocean
Status and Trends**
D.A. Segar, E. Stamman — *SEAMOcean, Inc.; D.J.H. Phillips —
Hong Kong EPA; and T.S. Tsui — Hong Kong*

SESSION G8: DESIGN AND ANALYSIS OF OFFSHORE STRUCTURES

Chair: T. McGuinness — *Brown & Root Development, Inc.*

- Electrochemical Noise Monitoring Technique for Cathodic
Protection Systems**
J.U. Chavarin — *Instituto de Investigaciones Electricas (Mexico) and*
J. Dawson — *U.M.I.S.T. Corrosion Centre (England)*
- Artificial Islands: A Distinct Alternative**
G. Zadikoff — *Florida Institute of Technology*
- Gulf of Mexico Deep Water Current Studies for Offshore Oil
Exploration and Production**
J.R. Haustein — *Mobil Research and Development Corp. and*
J.W. Feeney — *Horizon Marine*
- Motion Analysis of Floating Structures by a Surface Singularity
Panels Method**
I. Sahin — *Western Michigan University*
- Status of Floating City Technology**
K. VanDyke W.B. Kirland and R. Meier — *U.C. Berkeley*
- Soil Improvement Techniques: Feasibility in Offshore
Construction**
M. DeLucca — *Terra Aqua, Inc.*

SESSION H8: MARINE GEOLOGY

Chair: M.J. Cruickshank — *U.S. Minerals Management Service*

- Mapping the Exclusive Economic Zone**
R.B. Perry — *NOAA/NOS*
- Radio-isotope Tracer Measurements of Sand Transport on the
Outer Continental Shelf, Sable Island, Canada**
G. Drapeau, D.O. Hodgins, B. Long, C. Amos — *INRS-Oceanologie,
University of Quebec (Canada)*
- The Active Source Electromagnetic Surveying of the
Ocean Crust**
C.S. Cox, S.C. Constable & A. Chave — *Scripps Institution of
Oceanography*

SESSION H9: GEOPHYSICAL MEASUREMENTS

Chair: G.N. Clausen — *Hydro Products*

- Multi-Purpose Geophysical Vessel**
T. Conway — *International Underwater Contractors, Inc.*
- Characteristics of Ocean Bottom Roughness for Several
Seamounts Derived from Multi-Beam Data**
M. Czarnecki, J.M. Bergin — *Naval Research Laboratory*
- Use of Statistical Analysis and Time Series Analysis for
Assessment of Data Quality**
S.K. Gill, W. Scherer — *NOAA/NOS*
- Enhancement and Quantitative Analysis of Side-Scan Sonar
Imagery for Marine Resource Exploration**
T.B. Reed IV — *Hawaii Institute of Geophysics*

SESSION I8: MOORINGS

Chair: R.C. Swenson — *Neptune Ocean Engineering*

- Mooring Developments and Design Philosophy at the NOAA
Data Buoy Center**
R.H. Canada, Jr., D.R. May — *NOAA Data Buoy Center*
- Dynamic Modelling of Nylon and Polyester Double Braid Line**
K.R. Bitting — *U.S. Coast Guard Research and Development Center*
- A Novel Traction Winch for Oceanographic Moorings**
G.A. Fowler, J.M. Hamilton & W.J. Whiteway — *Bedford Institute of
Oceanography (Canada)*
- An Oceanographic Mooring Winch System Utilizing a Horizontal
Double-Barrelled Capstan**
K. Hardy — *Scripps Institution of Oceanography; W. Kenton —
Kenton Engineering Co.*
- A Flume for Handling Arrays at Sea**
F.H. Fisher — *University of California, San Diego*

IEEE OCEANIC ENGINEERING SOCIETY

Administrative Committee

DANIEL I. ALSPACH
Orca Corp.
366 North Torrey Pine Ct.
La Jolie, CA 92037
(619) 455-5530

WALTER L. BACON*
323 N. Elizabeth Ave.
Monterey Park, CA 91754
(213) 573-5663

ARTHUR B. BAGGEROER*
Dept. Ocean Eng. — Rm. 5-326
Mass. Inst. Technology
Cambridge, MA 02139
(617) 253-4336

DONALD M. BOLLE*
College of Eng. Phys. Sci.
Packard Labs #19
Lehigh Univ.
Bethlehem, PA 18105
(215) 861-4025

LLOYD R. BRESLAU
U.S. Army Cold Regions
Research & Eng. Labs
77 Dyme Rd.
Hanover, NH 03755

Cmdr. ROBERT H. CASSIS, JR.
U.S. Coast Guard
U.S.C.G. Support Center
4000 Coast Guard Blvd.
Portsmouth, VA 23703
(804) 483-8590

STANLEY G. CHAMBERLAIN*
Raytheon Co.
Box 360
Submarine, RI 02871
(401) 847-8000, Ext. 4423

THOMAS M. DAUPHINEE
Div. Phys. Nat. Res. Council
Ottawa, Ont., Canada K1A 0R6
(613) 993-2313

EDWARD W. EARLY
4919 N.E. 93rd St.
Seattle, WA 98115
(206) 543-9825

STANLEY L. ERLICH*
Raytheon Co.
Submarine Signal Div.
P.O. Box 360
Portsmouth, RI 02871
(401) 847-8000, Ext. 3130

ANTHONY I. ELLER*
Code 130
NORDA Liason Office
800 North Quincy St.
Arlington, VA 22217
(202) 696-4951

RUI J.P. de FIGUEIREDO**
Dept. of Elec. Eng.
Rice Univ.
P.O. Box 1892
Houston, TX 77251
(713) 527-8101, Ext. 3569

J. DAVID IRWIN**
Elec. Eng. Dept.
Auburn Univ.
Auburn, AL 36849
(205) 826-4333

RICHARD C. ROBINSON
800 Follin Lane
Suite 245
Vienna, VA 22180
(703) 281-7920

HAROLD A. SABBAGH
Sabbagh Associates, Inc.
2634 Round Hill Lane
Bloomington, IN 47401
(812) 339-3446

MICHAEL D. SEROTTA**
Raytheon Co.
Submarine Signal Div.
P.O. Box 360
Portsmouth, RI 02871
(401) 847-8000

ROBERT C. SPINDEL*
Dept. Ocean Eng.
Woods Hole, MA 02543
(617) 548-1400, Ext. 2283

JOSEPH R. VADUS
U.S. Dept. of Commerce
NOAA Office of Oceanic Eng.
6010 Executive Blvd.
Rockville, MD 20852
(301) 443-8655

DAVID E. WEISSMAN
Dept. of Eng. & Computer Sci.
123 Adams Hall
Hofstra Univ.
Hempstead, NY 11550
(516) 560-5546

ARTHUR S. WESTNEAT, JR.*
Wadleigh Falls Rd., RD#1
Newmarket, NH 03857
(603) 659-2195

WILLIAM E. WOODWARD**
U.S. Dept. of Commerce
NOAA WSC-5
6010 Executive Blvd.
Rockville, MD 20852
(301) 443-8444

Newsletter Editor for Technology

ROD MESECAR

Chapter Chairpersons

Central New England

MICHAEL D. SEROTTA

San Diego

KEN D. KALBFELL

** Term through 1987. * Term through 1986. All others, term through 1985.

Technology and Standards Committee Chairpersons

Arctic Instrumentation

EDWARD W. EARLY*
4919 N.E. 93rd St.
Seattle, WA 98115
(206) 543-9825

Autonomous Underwater Vehicle

ARTHUR S. WESTNEAT, JR.*
Wadleigh Falls Rd. RD#1
Newmarket, NH 03857
(603) 659-2195

Current Measurement

WILLIAM E. WOODWARD
U.S. Dept. of Commerce
NOAA WSC-5
6010 Executive Blvd.
Rockville, MD 20852
(301) 443-8444

Marine Communication and Navigation

Capt. ROBERT H. CASSIS, JR.*
U.S.C.G. Support Ctr.
Government Island
Alameda, CA 94501

Ocean Energy Conversion

Oceanographic Instruments and Data Acquisition

THOMAS M. DAUPHINEE*
Div. Physics, Nat. Res. Council
Ottawa, Ont., Canada K1A 0R6
(613) 993-2313

Remote Sensing

DAVID E. WEISSMAN*
Dept. of Engineering
Hofstra Univ.
Hempstead, NY 11550
(516) 560-5546

Underwater Acoustics

DAN J. RAMSDALE*
Naval Ocean Research
& Development Activities
Code 240
NSTL, MS 39529
(601) 688-5230

REPRESENTATIVES TO IEEE/LAB COMMITTEES, GROUPS, SOCIETIES

Professional Activities
Committee for Engineers
(PACE) Coordinator

Division IX
Nominations
STANLEY G. CHAMBERLAIN

Communications and
Information Policy

Energy

Environmental Quality

WALTER L. BACON

Large Scale Systems
DANIEL L. ALSPACH

Man and Radiation

Research and Development
JOSEPH R. VADUS

Social Implications
of Technology
FRANCOIS A. ENVENT

Offshore Technology Conference (OTC)

Executive Committee

GLEN N. WILLIAMS
Data Processing Ctr.
Texas A&M Univ.
College Station, TX 77843
(713) 845-4211/5531

Technical Program

ALFRED M. WILLIAMS
C.E. Oil & Gas Controls Co.
3726 Dacoma
Houston, TX 77092
(713) 683-1255
(713) 682-6444

Future Meeting Chairpersons

General

Victor C. Anderson/Charles B. Bishop
Gilbert Maton
Alan Longhurst/Clifford Tyner

Technical

Jack Jager/James Brown
Anthony Eller/Gene Russin
David McKeown/Ulrich Lobsiger

OCEANS '85 (San Diego, CA)
OCEANS '86 (Washington, DC)
OCEANS '87 (Halifax, NS)