



OCEANIC ENGINEERING SOCIETY

Newsletter



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EDITOR: FREDERICK H. MALTZ

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Plan to attend

OCEANS '95 MTS/IEEE

"CHALLENGES OF OUR CHANGING GLOBAL ENVIRONMENT"

**October 9-12, 1995
Town and Country Convention Center
San Diego, California USA**



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Joe Czika

President's Comments

I would like to give you a progress report on some significant activities that are under way by the volunteers of the Oceanic Engineering Society. First, I want to report that planning for Oceans 95 MTS/IEEE is in high gear. Conference Cochairs Bob Wernli and Dan Alspach are heading up a topnotch team composed of MTS and IEEE members. Many members are alumni of the highly successful Oceans 84 conference in San Diego. Technical Program Cochairs Jack Jaeger and Glen Williams report that nearly 300 abstracts were received. Exhibits Cochairs Bill Hubbard and George Shaefer report that nearly 100 exhibitors have already been signed. Be sure to mark your calendar for 9 through 12 October 1995 and join us in San Diego for the premier oceans community conference.

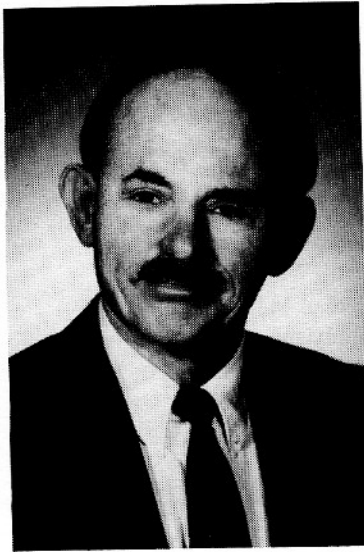
Second, I want to report on a project that will introduce OES to the information highway. A team led by Eric Nelson is preparing an OES home page on the World Wide Web. The page will contain important information about the Society including: technology committee descriptions and events, upcoming articles in the Journal of Oceanic Engineering, future conferences, Newsletter activities, membership, chapters, and society officers. We intend to use the WWW to reach the society membership, the oceanic engineering community and the public. We are especially excited about reaching K-12 students with educational materials. While only in the concept development stage at the moment, our educational materials consist of projects where data and methods are made available on the home page for student access. It is particularly important to develop projects that will expose our profession to young people. We need a lot of help to launch this program. If you would like to help design a project or share your ideas, please call our VP of Technical Activities, Jim Collins, or our VP of Professional Activities, Norm Miller.

Third, I want to report on our strategic planning activities. We are making steady, but slower than expected, progress on charting the future of the Society. For the first time we have a budget that puts the Vice Presidents in charge of the activities in their arenas. We performed a stakeholder analysis. Its results suggest that the Society should do more to: improve member services in technical currency and job information, lead the oceanic engineering community, support the IEEE in globalization and other activities, and educate and inform the public about our profession. We recognize that information technology offers unprecedented opportunities to satisfy the needs of our stakeholders, especially the members. We anticipate completing the strategic plan in time for presentation to the AdCom at Oceans 95 MTS/IEEE. Following the AdCom review, the plan will be published in a future edition of the Newsletter.

Last, I want to report that our plan to revitalize the Newsletter is being implemented in outstanding fashion by Fred Maltz. About a year ago, he presented an expansion plan that called for feature articles from our technology committees, periodic reports from our chapters, up-to-date news on jobs and industry happenings, along with new ideas on electronic communication. This is a daunting task for one person. He has made great progress, but much remains to be done. We would particularly like some help in establishing coverage of industry news and jobs. Please contact Fred if you would like to contribute.

As always we welcome your comments and complaints. Let us know how we are doing. Let us know what you would like to do for your peers.

Joe Czika



Fred Maltz

Editor's Note

I am reserving a page for you, the membership, to provide inputs to future issues of the newsletter on the subject of industry news and jobs. The society needs your help to build a better business network and professional network.

Congratulations to returning members of the AdCom for another term, ending Dec. 31, 1997.

James T. Barbera, Sr.
Christian de Moustier
Eric L. Nelson
David Everett Weissman

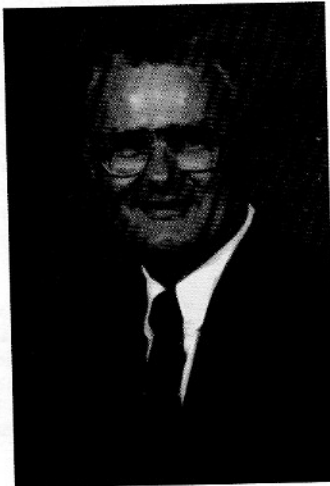
and two of our Vice Presidents

James S. Collins and Ferial El Hawary.

Welcome to two distinguished new members, also elected to serve the term ending Dec. 31, 1997

Pierre Sabathe and Thomas F. Wiener.

Fred Maltz



Glen Williams

Oceanic Engineering Society Awards

The OES presents two awards annually at the Oceans Conferences. These awards are the Service Award to the Society, and the Technical Achievement Award. I would like to take this opportunity to open the nominations for these awards to the AdCom.

The Service Award has traditionally been presented to members of governing organizations in the Society, such as the AdCom. However, exceptions have been made in the past, in presentations to members of the IEEE Staff. The recipient of this award should be a member of the IEEE.

The Technical Achievement Award is one given to any person who has contributed significantly to the field of electrotechnology in the ocean. Achievements must be technical in nature, and they must have been recognized as major advances by the oceans community. The recipient of this award is not limited to IEEE members.

The awards process in the OES is secret, and the nominees must not be aware of their nominations. The Society will notify the award winners at the appropriate time to allow their voluntary participation in the awards process.

I would welcome your nominations for either of these two awards. They are the highest forms of accolades given by the Society, and are held in high regard by the community. Please call me at (409) 845-5484 or fax me at (409) 847-9284 and we'll discuss the brief nomination package to be prepared to be submitted to the OES Awards Board.

Glen Williams



This Page Reserved for Your Inputs

1995 Schedule of OES Newsletter Inputs

I. DUE DATES TO THE EDITOR

Spring - March 10
Summer - June 9
Fall - September 8
Winter - December 9

II. INPUTS

A. Editorials

Spring Issue - President's Message & Editor's Comments.
Summer Issue - Message from vice-president for Technical Activities, Jim Collins.
Fall Issue - Message from vice-president for Professional Activities, Norm Miller.
Winter Issue - Message from vice-president for International Activities, Ferial El-Hawary.

B. Features

Spring Issue - Paper reprinted from Oceans '94, Fred Maltz
Summer Issue - Paper from OTC '95 Conference, Ferial El-Hawary.
Fall Issue - Paper from AUV '94 Conference, Jim Collins.
Winter Issue - Student Paper from Oceans '95 Conference, Norm Miller.

C. Chapters

Summer Issue - Washington/N. Virginia, James Barbera.
Fall Issue - New Orleans, Lloyd Breslau and Paris, France, Jean-Yves Jourdain.
Winter Issue - Honolulu, Bobbin Talbalno and San Diego, Brett Castile.

D. Technology

Summer Issue - Current Measurement, Gerald F. Appell
Modeling, Simulation & Data Bases, George Dworski.
Fall Issue - Autonomous Unmanned Underwater Vehicles, Claude P. Brancart.
Winter Issue - Remote Sensing, David E. Weissman

E. Membership Development

Summer Issue - Status, Jim Barbera.

F. Professional Activities

Summer Issue - Nominations, Dan Alspach.
Fall Issue - Activities in the Field, Norm Miller.
Winter Issue - Awards & Fellows, Glen Williams.

G. International Activities

Fall Issue - Oceans 'XX Conference planning update.

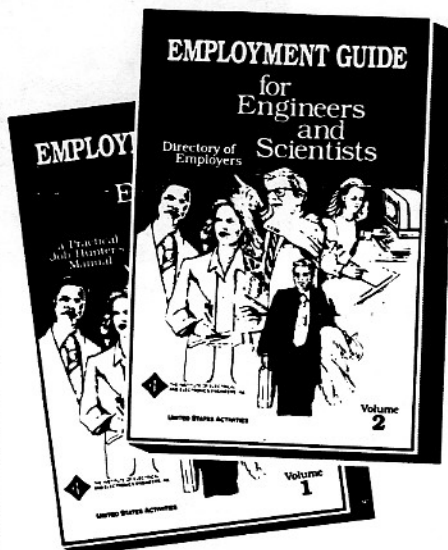
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OCEANS '95 MTS/IEEE

“Challenges of Our Changing Global Environment”

October 9-12, 1995

**Town and Country Convention Center
San Diego, California USA**

The lure of San Diego as both a center of technical excellence and a tourist paradise will provide the perfect backdrop for the MTS/IEEE conference. Continuing the tradition of OCEANS '75 AND OCEANS '85, also hosted in America's Finest City, OCEANS '95 will usher in a new era of cooperation as the Marine Technology Society and the Institute of Electrical and Electronics Engineers/Oceanic Engineering Society once again bring their annual conferences together for this joint event.

The experience and dedication of the locally based conference Executive Committee will ensure that the “Challenges of Our Changing Global Environment” are successfully addressed with a well balanced program and high level of international participation.

OCEANS '95 will be held at the Town and Country Hotel and Convention Center where centralized technical sessions, exhibits, tutorials, social events and lodging provide a relaxed environment for all involved. Traditional events such as the Early Bird Reception, annual Awards Luncheons, Exhibit Hall Technology Reception and Gala Evening Social will continue.

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Don't miss out on this premier international event. If you wish to exhibit, give a technical paper, or just attend the conference, call the numbers above for more information. A more extensive listing of the events and advance registration information will be provided in future mailings, so be sure that we have your current mailing address.

OCEANS '95 will bring together government, academic, military and industry professionals from around the globe, and will be the international Oceans event of the year. We look forward to seeing you in San Diego in October, 1995.



Sponsored by

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The RMS Titanic 1985 Discovery Expedition

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Abstract: The RMS Titanic was tragically lost after collision with an iceberg during the night of the 14th and sank the 15th of April 1912. A French American team discovered her the 1st of September 1985 lying on the sea floor at a depth of 3800 meters. The two years of preparation are briefly described and followed by the description of the search and survey expedition from July to September 1985. The subsea systems used for this expedition were the towed sonar SAR of IFREMER and the towed optical vehicles ARGO and ANGUS of WHOI (Woods Hole Oceanographic Institution). For the first time, SAR and ARGO systems were used intensively in 85. Since then, they have been largely used for scientific missions. New deep sea explorations tools have also been developed since 85 which contribute to push the limits of the knowledge of our subsea environment.

Résumé: Le RMS Titanic a sombré tragiquement au cours de la nuit du 14 au 15 avril 1912. Une équipe franco américaine l'a découvert le 1er septembre 1985 reposant par 3800 mètres de fond. Nous décrivons succinctement les deux ans de préparation qui ont précédé cette découverte puis l'expédition de recherche et de reconnaissance qui s'est déroulé de juillet à septembre 1985. Les moyens performants utilisés pour cette recherche ont été: le sonar remorqué SAR de l'IFREMER et les véhicules remorqués de relevé optique ARGO et ANGUS du Woods Hole Oceanographic Institute ainsi que les moyens de positionnement associés. Ces moyens, le SAR et l'ARGO, utilisés pour la première fois de façon intensive en 85, ont depuis été largement utilisés pour les applications scientifiques auxquelles ils étaient destinés. D'autres moyens ont depuis été développés ou sont en cours de réalisation contribuant à la connaissance de notre environnement sous-marin.

1. INTRODUCTION

The means for deepsea exploration are developing in a spectacular way.

The advanced technologies used in 85 have permitted the discovery of the sunken liner RMS Titanic at a depth of 4000m. in the course of a French-American Expedition.

For the partners of this expedition this operation was also the first intensive trial of these new advanced systems.

2. THE PREPARATION

In the early 80 both IFREMER and WHOI were building new tools for deep sea scientific exploration (up to 6000 m depth): the ARGO and the SAR systems.

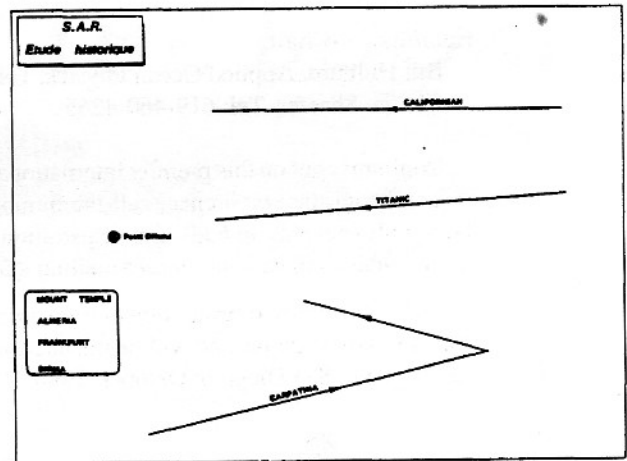
The ARGO vehicle, developed by the Deep Submergence Laboratory of the WHOI, was a deep towed vehicle mainly fitted with long range video cameras.

The SAR vehicle developed for IFREMER by two french companies (THOMSON CSF for the acoustic sensors and ECA for the vehicle) is a deep towed vehicle mainly fitted with a long range high resolution sidescan sonar, and a sub-bottom profiler.

In late 83, on Dr R BALLARD's proposal, IFREMER agreed to prepare a joint expedition for the search of RMS Titanic using for the first time the new advanced tools SAR and ARGO.

Specific studies were led to prepare this expedition:

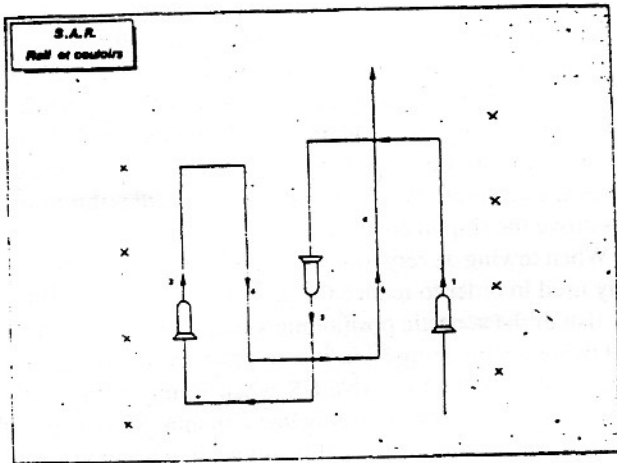
- Defining a research area (20 x 20 km) based on an historical analysis.



- Collecting geological information on the seafloor environment in the search area by 3800m depth taking into account the influence of the Grand Banks slump of 1929 and the presence of a deep sea canyon.
- Exploring oceanographic data to determine the best period for the expedition (wind, waves, currents).
- Analysing operational efficiencies involving acoustic and magnetic sensors conducted by the firm AERO. This analy-

sis led to propose the addition of a magnetometer to the exiting suite of the SAR. A highly sensitive magnetometer was lent by the French Commission for Atomic Energy (CEA) and operated by their experts.

- Defining navigation requirements which conducted to choose a long base line acoustic system for the subsea positioning of the vehicles including the tuning of the positions between the French and American nets.



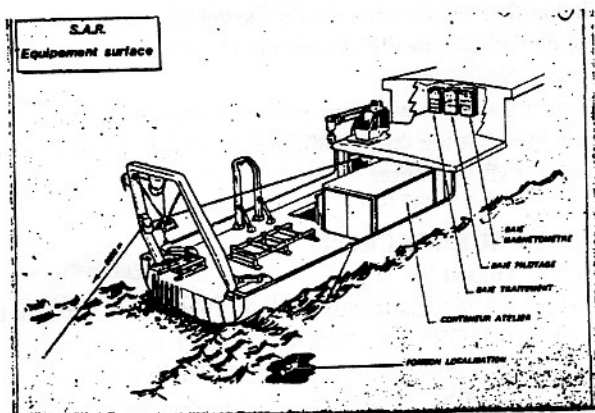
The expedition was organized under several legs. The first two legs were conducted by the R/V Le SUROIT towing the SAR acoustic sonars and the magnetometer. The strategy was to conduct a complete coverage of the search area with the acoustic images of the sea bottom obtained with the SAR.

The last leg was conducted by the R/V KNORR towing the ARGO with its video sensors. On an extended search area, the strategy was to conduct profiles spaced one nautical mile at first and then, in case of failure to increase the coverage by adding extra profiles so that the spacing be reduced to half a mile (instead of one mile).

3. THE DEEP SEA SYSTEMS

A - The SAR system

The SAR (Système Acoustique Remorqué) is designed to provide mainly acoustic information of the sea floor by means of two sonars:



- a sidescan sonar (200 KHz) which is able to detect reliefs of a few meters high and extending over several meters at a range of 500 meters to 750 meters on each side of the vehicle.
- a sub-bottom profiler able to penetrate over 50 meters of abyssal mud with a metric resolution.

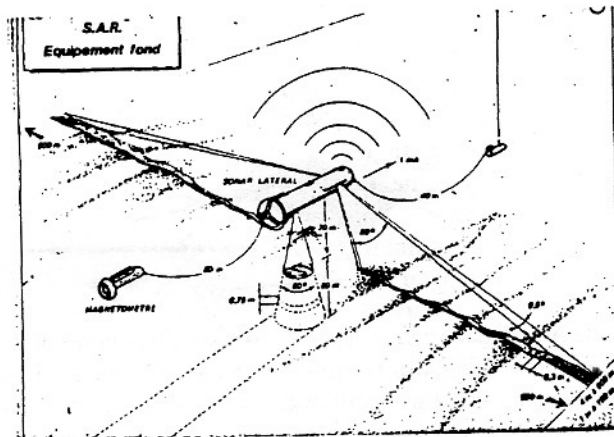
For this expedition, the SAR was fitted with a CEA LETI magnetometer extremely sensitive (0,01 gamma) towed in a separate fish behind the main acoustic body.

The vehicle has a weight of 2,4 metric tons but when submerged it has a positive buoyancy of more or less ten kilograms. This vehicle is towed 50 to 70 meters above the sea floor at a speed of 1 to 2 knots.

The vehicle may operate up to 6000 m depth and the information are transmitted to the mother ship through an electromechanical cable.

A mobile winch with its associated hydraulic power unit enables to manage the 8 500 meters of cable at a maximum speed of 1 meter per second.

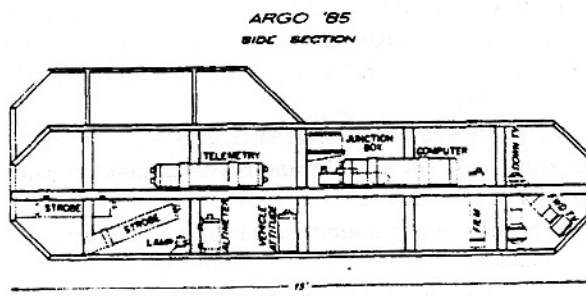
The total weight of the SAR system is about 50 metric tons, this system could be used on several research vessels.



B - The ARGO system

The ARGO system is designed to provide mainly optical images of the sea floor (up to 6000 meters depth) by means of several video cameras of high sensitivity:

- one forward looking
- one down looking
- one telephoto down looking.

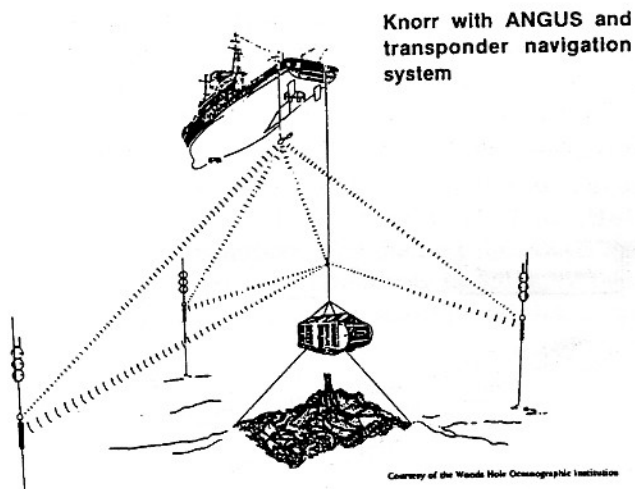


The illumination is supplied by incandescent or strobe lights.

The ARGO vehicle (2 metric tons) is also fitted with a sidescan sonar (100 KHz) in order to extend its coverage capacity and with vehicle attitude sensors (depth, heading, pitch and heave, altitude).

The vehicle is towed by means of an electro mechanical cable at a flying altitude of 10 to 30 meters above the sea floor. On board the mother ship, the cable is handled by a mobile traction winch and a storage drum. A control room of the size of two twenty-foot vans mounted side to side includes all the equipment required to navigate the research vessel KNORR and to fly the ARGO vehicle.

C - The ANGUS system



The ANGUS system is designed to take still pictures of the sea floor up to 6000 meters depth. The vehicle (2,2 metric tons) is thus mainly fitted with still cameras (3000 frames by camera) which are set to take exposures at a constant rate.

The illumination is supplied by high energy flashes (1500 W/second).

A pinger (12 KHz) is used for altitude monitoring (5 to 7 meters). The ANGUS system is towed through a simple mechanical cable available on the mother ship. A photo van allows to process the pictures.

During this expedition around 20 000 pictures were taken by ANGUS.

D. The acoustic positioning systems

The position of the vehicles is given by a long base line system owing to ranges measured from a net of acoustic transponders moored on the sea floor. The vehicles are fitted with responders.

On the research vessel a subsurface towed fish enables to interrogate and listen to the moored transponders and the responder of the vehicle.

The positioning operations achieved with a long base line must include:

- transponders launching
- transponder nets calibrating

- towing the vehicle within the nets
- transponders recovery.

For absolute positioning, surface systems such as Loran C, Navsat and GPS are used.

The coherence of the French and the American nets was achieved owing to an American transponder which was moored and positioned by the R/V LE SUROIT.

Surface and subsea localization have contributed largely to the success of the expedition (ref. 1).

E. The manoeuvring capacities of the R/V KNORR

When operating optical systems such as ARGO or ANGUS for the inspection of a structure, the manoeuvring capacities of the support ship are fundamental. The RN KNORR manoeuvrability was obtained by two cycloidal propellers: one forward and one aft. Whirling like vertical paddles these propellers drove the ship in any direction.

When towing at very low speed the forward propeller was only used in order to reduce the acoustic noise transmitted to the fish of the acoustic positioning system towed at the bow.

Owing to this propulsion it was possible to navigate precisely either ARGO or ANGUS when flying a few meters above the wreck 4000 meters below our ship. Moreover with the R/V KNORR it was possible to take into account several constraints including wind, current and also limitations due to the towing cable which was on the side of the ship.

4. R/V LE SUROIT LEG 1 (1st July to 21st July 85)

When arriving on the search area July 9, the intensity of the current was higher than expected.

The surface current of 3 knots imposed the direct expedition were the towed sonar SAR of IFREMER and the towed optical vehicles ARGO and ANGUS of WHOI (Woods Hole Oceanographic Institution). For the time, SAR and ARGO systems were used intensively in 85. Since then, they have been largely used for scientific missions. New deep sea explorations tools have also been developed since 85 which contribute to push the limits of the knowledge of our subsea environment.

Résumé: Le RMS Titanic a sombré tragiquement au cours de la nuit du 14 au 15 avril 1912. ar owing to the skill of LE SUROIT officers and crew.

Owing to the surface current, the U-turns at the end of each profile were practically impossible.

It was then decided to recover the vehicle on board the ship at the end of each profile before the U-turn and then to launch it again after U-turn.

This manoeuvre was performed in good surface conditions during this first leg thus enabling the team to get accustomed with the SAR operation.

5. R/V LE SUROIT LEG 2 (July 24, August 9)

After a short logistic stop at Saint Pierre et Miquelon, the R/V LE SUROIT headed back to the search area for its second leg. Our U.S partners directed by D.R. Ballard had joined us for this second leg. The towing operations were carried on corridors 3 and 4. As during the first leg we were organized in

three watches in order to permit twenty four hours a day operations.

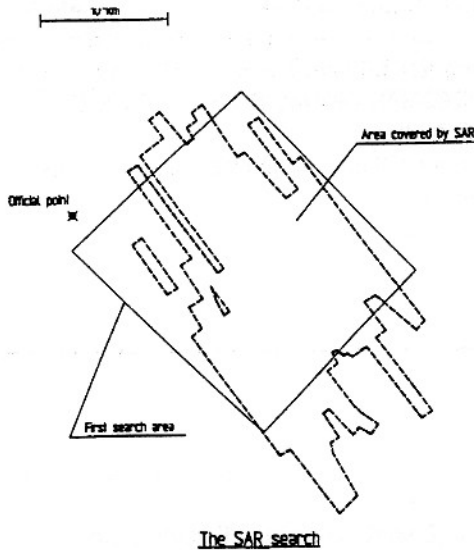
While working on corridor 3 the weather became stormy so we had to interrupt our towing at 4 000 meters depth owing to the risk of cable overloading.

The SAR vehicle was then towed during that days at a safety depth of 1 000 meters.

At the end of this second leg 300 km² of the sea bottom area were covered and no trace of the wreck was clearly identified inside this area.

Some anomalies mainly magnetic were detected in the canyon but not related with apparent sonar echoes.

The search team transferred onto the R/V KNORR for the next leg.



6. R/V KNORR LEG 3 (August 15, Sept. 9)

After placing a new transponder net linked to the previous one, the first work was to eliminate the potential targets collected in the center of the SAR search area.

The ARGO, owing to the manoeuvrability of the RV KNORR, was driven precisely above the sea floor of the canyon which was quite an achievement at this depth and no trace of man made objects were detected.

We then decided to extend the search area to the Eastern part of the SAR mosaic while ensuring an overlapping at the limit of the SAR acoustic images including the part of the initial search area which has not yet been covered.

In the mean time, the surface current caused by the eddy current of the Gulf Stream had decreased to one knot. This factor and the high manoeuvrability of the R/V KNORR fitted with cycloidal propellers allowed us to choose the direction of our profiles. Like on the R/V LE SUROIT three teams worked 24 hours a day.

In the middle of this leg a part of the towing cable got damaged owing to a manoeuver of the winch at high speed. Because of this damage, the usable part of the cable was limited in length and our towing speed was thus reduced to one knot but once again the exceptional manoeuvrability of the

R/V KNORR permitted to optimize the search so as the skill of the teams piloting the vessel and the ARGO system.

During profile number 6, some artefacts have been detected at short range by the sonar of the ARGO, we exceptionally made a slight modification to our search strategy by doing an intermediate profile between our one nautical mile spaced profiles without result.

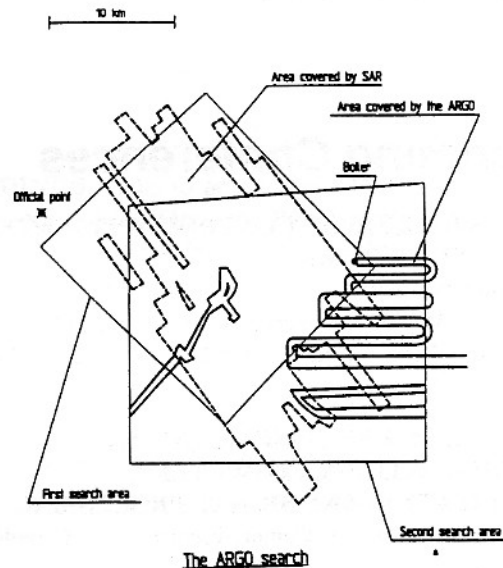
The first of September, as we approached the last part of our extended search area and as we were also crossing the limit of the first search area, the first objects were detected and the image of a boiler appeared a few minutes later. This boiler was characteristic of that of the RMS Titanic.

So in a few minutes the detection and the identification were obtained. We were on the site of the RMS Titanic Tragedy.

The search was then stopped and the ARGO was recovered to prepare the survey phase to follow in the 4 days that were left before the end of the campaign.

During the survey phase, the ARGO vehicle permitted to localize the different parts of the wreck and a large area of debris.

In order to document our discovery the deep towed photographic sled, the ANGUS, was deployed and thousands of precisely positioned still pictures were taken, both of the bow and in the debris field including the damaged stern.



7. THE RESULTS OF THE 85 EXPEDITION

The photographs and the video documents give a good idea of the state of the main components of the wreck.

The bow is in a relatively good state.

The damaged stern was almost 400 meters south of the bow and surrounded by a debris field.

These documents contributed to the history of the RMS Titanic and its associated tragedy. (ref. 2)

The operational capacities of our towed vehicles were established in a spectacular way throughout the expedition so was the skill of the professional who operated them with such high team spirit.

The RMS Titanic discovery expedition has also been val-

orized by a detailed geological interpretation of the site's environment (ref. 3)

8. RECENT DEVELOPMENTS

Since then those tools have been used intensively and with confidence to fulfill the scientific objectives which they have been built for.

For the Titanic search the SAR covered a distance of 360 Km since then it has totalised over 10 000 Km of deep sea survey and this vehicle has been perfected by adding new sensors.

A new magnetometer has now been integrated within the vehicle frame and a seismic flute could be towed behind the SAR vehicle according to the requirements of the scientific mission.

The ARGO system was completed with the JASON remotely operated vehicle (ref. 4) which conducted several operations on the ridges, where hydrothermal vents are present, and which has localized archeological wrecks.

Within IFREMER a new remotely operated vehicle (ROV 6000, ref. 5) with extended capacities is under construction for 6000 meters depth operations.

The deep sea exploration means keep progressing thus

contributing to extend our knowledge of the subsea environment.

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(Ref. 2) R.D. Ballard - J.L. Michel

"How we found the TITANIC" - National Geographic Vol 186 - N°6 December 85, p.696-719.

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(Ref. 5) M. Nokin

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Upcoming Conferences

IFAC WORKSHOP ON CONTROL APPLICATIONS IN MARINE SYSTEMS

Trondheim, Norway 10-12 May
Contact: CAMS '95 Secretariat, Norwegian Institute of
Technology, Dept. of Engineering Cybernetics, N-7034,
Trondheim, Norway

IEEE PACIFIC RIM CONFERENCE ON COMMUNICATIONS, COMPUTERS, VISUALIZATION AND SIGNAL PROCESSING

The Victoria Conference Center, Victoria, B.C. Canada
May 17-19, 1995
Contact: IEEE PACRIM CONFERENCE, Dept. of
Computer Science, P.O. Box 3055 MS 7209, Victoria, B.C.
V8W 3P6 Canada

COASTAL OCEAN SPACE UTILIZATION '95

Yokohama, Japan May 30-June 2, 1995
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Japan

SUSTAINABLE AQUACULTURE '95

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THE THIRD THEMATIC CONFERENCE ON REMOTE SENSING FOR MARINE AND COASTAL ENVIRONMENTS

Seattle, Washington 18-20 September 1995
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Fax: (313) 994-5123

OCEANS 95 MTS/IEEE

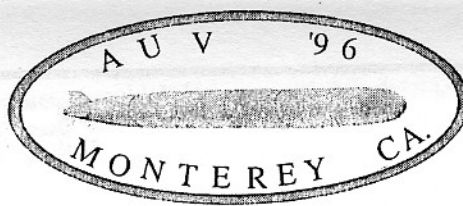
San Diego, California 9-12 October 1995
Contact: Bob Wernli, (619) 553-1948, Fax: (619) 553-1915,
wernli@nosc.mil

OCEAN CITIES

Monaco Nov. 20-23, 1995
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CALL FOR PAPERS

SYMPOSIUM ON AUTONOMOUS UNDERWATER VEHICLE TECHNOLOGY

June 3-6, 1996, Monterey, California

The *IEEE Oceanic Engineering Society* is sponsoring a symposium on Autonomous Underwater Vehicle Technology to be held in Monterey, CA. at the Hyatt Regency Hotel on June 3-6, 1996. The objective of the Symposium is to disseminate knowledge of recent technological advances in the field, to be a focus for the current state of the art including identification of technology shortfalls and to provide a forum for discussion of new relevant ideas.

TOPICS

The Symposium will focus on topics that are related to the AUTONOMOUS OPERATION OF UNDERWATER VEHICLES. These include but are not limited to :

Sensors and Multi-Sensor Fusion
Navigation, Rendezvous and Docking
Modeling and Simulation Methods
Energy Systems
Vehicle Design and Control
Biological Models
Multiple Cooperating Vehicles

Communications and Telemetry
Imaging Techniques and Systems
Mission Control and Software Architectures
Autonomous Manipulation
New Concept Vehicles for Mine Countermeasures
Oceanographic Sampling Networks
Mission Scenarios

The Symposium will include Tutorials on June 3, a **VIDEO PROCEEDINGS**, visits to area technical attractions including the Naval Postgraduate School AUV Test Facility and Virtual Reality Laboratory and the Monterey Bay Aquarium Research Institute Laboratories at Moss Landing. Other area attractions include Stanford University and NASA AMES Research Center. Tourist attractions include the Monterey Aquarium, Carmel and the Big Sur Coastline.

ABSTRACTS

Prospective authors should submit a proposed title and an abstract (300-500 words) by Email, with a cover sheet containing title author(s) names, addresses with one author named as the point of contact including phone and fax numbers. Since acceptance is by review of abstracts, it would be helpful if authors would describe the problem addressed, solutions obtained and its importance to the subject of the conference. Abstracts should be submitted to :

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The following deadlines have been established and it is important that authors adhere closely to these dates.

Abstracts (Electronic Copy) Due:
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September 1, 1995
December 15, 1995

February 1, 1996
March 1, 1996

INSTITUTE OF ELECTRICAL AND ELECTRONIC ENGINEERS
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IEEE-USA States Positions on Health-Care Information Technologies, Precollege Education

WASHINGTON, Jan. 10 — The United States Activities division of The Institute of Electrical and Electronics Engineers Inc. (IEEE-USA) has released position statements on developing health-care information technologies and reforming precollege education in math, science and technology. "The Role of Information Technologies in Health Care Reform" is a new position developed by IEEE-USA's Health-Care Engineering Policy Committee; "Precollege Education in Mathematics, Science and Technology in the United States" is a revision of a 1989 position formulated by IEEE-USA's Precollege Education Committee.

The new health-care position calls for the development of a uniform national health-care information system. According to the statement, "Information technologies offer a vital means of enhancing the quality of patient care, increasing access to universal care, and lowering overall costs within a national health-care program."

IEEE-USA recommends that health-care reform legislation provide for such a system through these four steps: funding construction of a national information infrastructure; building a computer-based record system; using national laboratories to help develop the system and devise security measures to safeguard patient privacy; and accelerating technology transfer from government to industry to enhance health-care delivery.

The new system would feature a health security card — much like an ATM card — to allow access by both providers and consumers to information about health coverage through an integrated national network. The national health information infrastructure, according to the statement, would also

become the foundation for a new high-technology health-care delivery system which would include telemedicine, telepresence, teleradiology, telepathology and telesurgery — and which would represent potential new international markets for the U.S. health-care industry.

The IEEE-USA precollege education position paper cites the urgent need for a technologically literate work force in order for the U.S. to remain competitive in the global marketplace. The statement calls on engineering organizations to create local coalitions with business, educational institutions and government to work for a national goal of scientific and technological literacy for all. These organizations should support curriculum reform, the new national mathematics and science standards, better teacher training, alternative accreditation for science and engineering professionals who wish to become teachers, and greater accountability for educational excellence on the part of administrators and teachers, according to the paper.

For a copy of "The Role of Information Technologies in Health Care Reform," contact Bernadette Concepcion of IEEE-USA at 202-785-0017. For "Precollege Education in Mathematics, Science and Technology in the United States," contact Bessie Burch, also at 202-785-0017.

The IEEE is the world's largest technical professional society, with an international membership of some 320,000 electrical, electronics and computer engineers, and computer scientists. IEEE-USA promotes the professional careers and technology policy interests of IEEE members in the United States.

Three IEEE Fellows Receive National Medal of Technology

WASHINGTON, Jan. 10 — Three Fellows of The Institute of Electrical and Electronics Engineers Inc. (IEEE) received the National Medal of Technology from Vice President Gore during a Dec. 19 ceremony at the U.S. Commerce Department in Washington. Joel S. Engel, Richard B. Frenkiel and Dr. Irwin M. Jacobs were among four individuals recognized by the President for extraordinary achievements in the commercialization of technology. The winners met with President Clinton at the White House following the awards presentation.

U.S. Secretary of Commerce Ron Brown congratulated the medal recipients for their singular contributions to the national welfare and the public good. "You vividly demonstrate the best in American tenacity, raw talent and pioneering spirit — and what such qualities can create. And, importantly, you are builders of industries and employers of thousands of Americans," he said.

Engel and Frenkiel were honored for their fundamental contributions to the theory, design and deployment of cellular mobile communications systems during their collaboration in

the late 1960s at Bell Laboratories. Engel and Frenkiel designed the basic cellular system architecture and solved such complex problems as how cellular telephone systems pinpoint vehicles and how they relay calls from cell to cell. Their work was directly responsible for multiplying mobile communications capabilities one-thousandfold and generating today's \$13-billion cellular industry.

Jacobs was cited for his leadership in developing and commercializing digital wireless communications over the past 25 years. Among other achievements, the chairman and CEO of Qualcomm Inc. created Code Division Multiple Access — adopted as a U.S. digital cellular standard — providing increased capacity, quality and services, and bolstering the U.S.

position in the international telecommunications marketplace. This technology — in addition to supporting wireless fax and data — provides a basis for personal communications services and wireless local-loop applications, which promise to revolutionize everyday communications and bring telephone service to hundreds of millions of currently unserved people worldwide.

The nation's highest honor in technology, the National Medal of Technology was established by Congress and first awarded in 1985. The program is administered by the U.S. Department of Commerce's Technology Administration, with the President providing final approval for all awards.

Endangered Federal Tech-Policy Programs Defended at IEEE-USA National Forum

WASHINGTON, Jan. 10 — Supporters of federal funding for technology development urged participants at a Washington technology-policy forum to defend programs threatened by the new Republican congressional majorities. The 1994 National Forum, sponsored by the United States Activities division of The Institute of Electrical and Electronics Engineers Inc. (IEEE-USA), was held Dec. 12-13 at the Johns Hopkins University Applied Physics Laboratory in Laurel, Md.

Speakers from federal agencies, industry and Capitol Hill emphasized the early success of some Clinton-sponsored technology-development programs and presented a bleak picture of the U.S. high-technology sector without federal partnerships. Brian Belanger, deputy director of the National Institute of Standards and Technology's Advanced Technology Program (ATP) — slated for extinction on a GOP list of suggested cuts to fund the Contract With America — argued that industry needs ATP in order to foster economic growth and to create more high-wage jobs for engineers and scientists. According to Belanger, by cost-sharing high-risk technological development with potentially high payoffs, ATP helps realize projects that are either too expensive or risky for private industry to finance alone, or would otherwise be "limping along with less than critical mass."

Gene Banucci, CEO of Advanced Technology Materials Inc. (ATMI), presented his company as a success story of federal partnership with small high-technology business. Through the Small Business Innovation and Research (SBIR) program and partnerships with larger companies, ATMI has grown from just an idea to a thriving high-tech manufacturer which has developed new products in the environmental equipment, industrial-diamond production and flat-panel display areas — while producing high-wage jobs (average salary: \$47,000) for more than 100 employees.

Dwight Duston, director of innovative science and technology at the Ballistic Missile Defense Organization (BMDO), offered dual-use technology programs as a way to create government-industry partnerships in an era of federal budget

restraints. According to Duston, "Most technology is dual-use, even when it's not obvious." By pursuing a project intelligently, industry can commercialize its dual-use technology "on a shoestring" by partnering with the BMDO — with minimal government investment, and still supporting legitimate defense objectives, he said.

In spite of the litany of support at the forum for federal programs designed to boost U.S. economic competitiveness, Ken Jacobson, editor of *New Technology Week*, warned that enthusiasm for such programs is not shared by the leaders of the incoming 104th Congress. According to a key GOP staffer quoted by Jacobson, "ATP is in the cross-hairs." In the Republican view, programs such as ATP contradict its theory that the market is better than government in "picking winners and losers," and constitute unjustifiable expenditures after a voter mandate to cut government spending. Jacobson said that Clinton gave ATP a high profile as a prime example of his tech-policy approach; as a result, the new Congress may use it to demonstrate the proverb, "The nail that sticks up will be pounded down."

Jacobson asked participants to evaluate the importance of federal help for industry, before giving up on such programs. He cited the lack of R&D money in today's environment of corporate belt-tightening, the stripping of trade protections for American industry through the GATT treaty, and corporate reluctance to move into new technologies as forces which make necessary a federal role in promoting technological development. But he also expressed a fear that industry will be seduced by short-term benefits in the GOP tech-policy approach — such as R&D tax credits and a cut in capital-gains taxes — and will capitulate on programs such as ATP which promise more distant payoffs. Jacobson warned attendees, "People are coming to the Hill with their minds made up. If they're not changed fast, they're not going to get changed." He concluded, "If you people care about it [government-industry partnerships], then some of the next voices heard should be yours."

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