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The Solar Ocean Energy Liaison

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Solar OCEAN ENERGY Liaison

INCORPORATING
The OTEC Liaison

VOLUME 5 NUMBER 7
July 1981

DOE'S OTEC FUNDING FOR FY 1982 SET AT \$25 MILLION

As of mid-August, US Department of Energy funding for OTEC for Fiscal Year 1982 seemed certain at \$25 million, with a \$6.3 million budget earmarked for the Pilot Plant PON, Phase I. Reconciliation between the House and the Senate arrived at the \$25 million total in early August, with the appropriation process expected to be completed by the end of FY 1981 (September 30th).

Awards for Phase I (the exact number as yet undetermined) are expected in September, but final contracts are not expected to be signed until late fall, following negotiations with the awardees. This was the time frame predicted by this publication in our August 1980 issue. The final budget of \$25 million was also predicted, in our March and May issues.

In a letter to OE's editor dated August 5th, Congressman Norman E. D'Amours, Chairman of the House Subcommittee on Oceanography, advised that the House, on July 24th, voted 244-104 in favor of HR 4144, the Energy and Water Appropriations Bill funding OTEC at a level of \$29.3 million in FY 1982. This included \$6.3 million "for Phase I and commencement of Phase II of the design competition for an OTEC pilot plant."

Congressman D'Amours' letter further stated: "It should be noted that in the Appropriations Committee's report to Congress, the Committee wrote that it was their intention in supporting the OTEC study activities to be carried out in Fiscal Year 1982 to encourage and assist industry in preparing the necessary data for possible presentation to private financing of pilot-plant construction. It is Congress's intention to fund OTEC in order that ocean industries will, in future years, be able to obtain the necessary private capital to construct OTEC plants."

OTEC LICENSING REGULATIONS FINALIZED AND PUBLISHED

The National Oceanic and Atmospheric Administration (NOAA) has published the final regulations for the licensing of OTEC facilities and plantships. This final rule, which appeared in the July 31st, 1981 Federal Register, established details of a licensing system for ownership, construction, location, and operation of OTEC facilities affiliated with the United States. Copies of the document can be obtained from the NOAA Office of Ocean Minerals and Energy, 2001 Wisconsin Avenue Northwest, Washington DC 20235.

HAWAII AWARDED MAJOR NEW OTEC PROJECT

Washington DC: Senator Spark Matsunaga (D-Hawaii) announced July 1st that the National Oceanic and Atmospheric Administration (NOAA) has selected the Hawaiian Dredging and Construction Company, a subsidiary of the Dillingham Corporation of Honolulu, as the lead company for the \$7.6 million Ocean Thermal Energy Conversion (OTEC) cold-water-pipe at-sea project. This is the second largest OTEC project ever awarded, and the largest directly involving a Hawaii firm, said Matsunaga.

A \$600,000 contract has been let for the design phase of the project. The NOAA Office of Ocean Technology and Engineering Services, which will oversee the test, noted that an estimated \$7 million has also been allotted for pipe construction, platform alterations, instrumentation, deployment and testing of the pipe, and data analysis. The pipe itself will be 10 feet in diameter and 1,000 feet long and will be built out of fiberglass.

"Although at first the Reagan Administration was not aware of the potential OTEC has for the nation, there seems to be growing acceptance of the concept, not only for electricity, but also for fertilizer production, hydrogen, and synthetic fuel," Matsunaga remarked. "Approval of this major project is certainly a promising signal that support is building within the Administration for this renewable energy alternative."

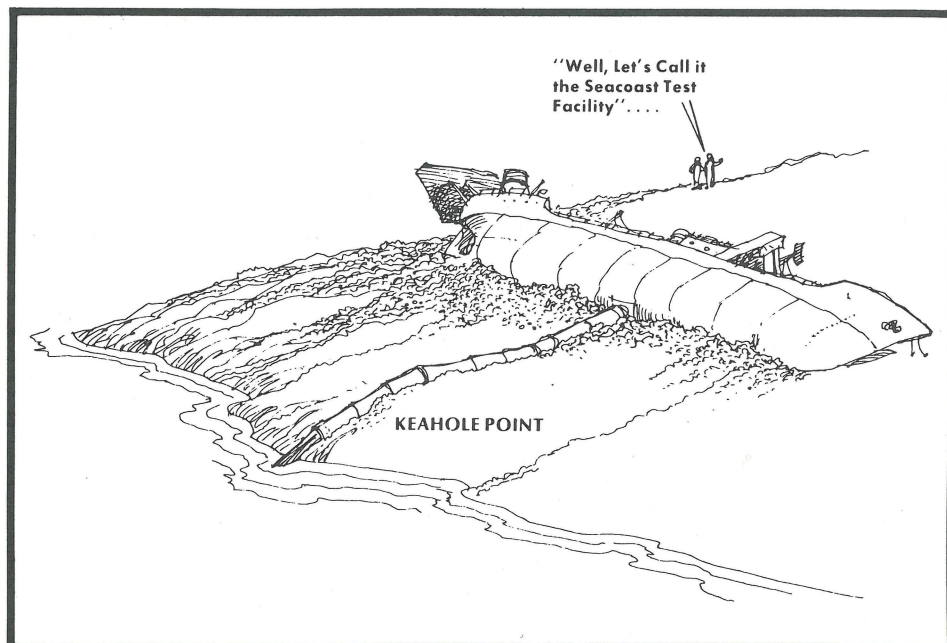
"House action last week provided a sum of \$25 million to carry on the OTEC program in Fiscal Year 1982. Earlier last month the Senate also had authorized \$25 million for ocean systems."

"One of the high-priority expenditures recommended for appropriation by Congress is \$6.3 million to carry out Phases One and Two of the Department of Energy Program Opportunity Notice to let out conceptual design studies for a 40-megawatt OTEC pilot plant," said Matsunaga.

Nine proposals were submitted, with three identifying Hawaii as the test site. The Dillingham Corporation is in separate consortia with General Electric and TRW/Ocean Thermal Energy Corporation for the Program Opportunity Notice competition.

"To assist in these design efforts, it was necessary for the at-sea test of the cold-water pipe to be approved," the Hawaii lawmaker explained.

(continued on Page 2)



[See "Cartoon Credit", Page 2]

Solar OCEAN ENERGY Liaison

INCORPORATING
The OTEC Liaison

AN INTERNATIONAL NEWSLETTER
ENGAGED AS LIAISON FOR ALL
FORMS OF SOLAR ENERGY FROM
THE SEA, INCLUDING:
OTEC
(OCEAN THERMAL
ENERGY CONVERSION)
WAVE - TIDAL - CURRENT
OFFSHORE WIND - BIOMASS
SALINITY GRADIENTS

VOLUME 5 NUMBER 7
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EDITOR/PUBLISHER
Richard Arlen Meyer

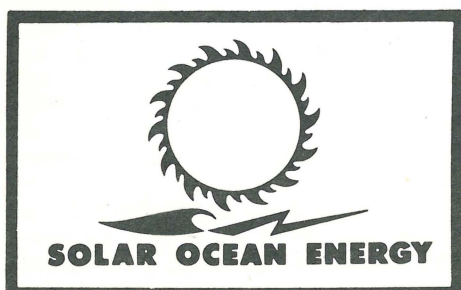
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(continued from Page 1)

The objectives of the test are: (1) to scale at 1/3 an OTEC pilot plant (40-megawatt size) floating platform, pipe, mooring system, and oceanographic loading (waves and currents); (2) to validate the OTEC cold-water-pipe design methodology; and (3) to demonstrate fiberglass-reinforced-plastic technology for large-diameter OTEC pipes. The results of the test will be supplied to the designers of floating-platform OTEC pilot plants.

Hawaiian Dredging and Construction will be working with Ershigs Incorporated (Bellingham, Washington), pipe construction; Guralnick and Associates (San Francisco), design and validation; SEACO Incorporated (Kailua, Hawaii), instrumentation; and Dillingham Maritime (Honolulu), platform conversion.



NAMES IN THE NEWS

Richard A. Frank, former administrator of the National Oceanic and Atmospheric Administration (NOAA), has joined the Washington law firm of Ginsburg, Feldman, Weil, and Bress.

Dr. Roger L. Potash, formerly with the Ocean Systems Division of Lockheed Missiles and Space Company for nine years, during which he acquired extensive OTEC R&D experience, has joined the firm of David J. Seymour Ltd, Naval Architects and Marine Consultants, as principal associate.

The Timothy Simons-Slattery Memorial Fund has been established in memory of the son of Pat Slattery of Ebasco Services, who passed away in April. Contributions to the Fund may be sent to Mr. Philip Anderson, Headmaster, Morristown-Beard School, Morristown, New Jersey 07960.

We extend our sincere condolences to the family of Dr. James R. Roney of the Princeton Energy and Environmental Research Company on the passing of Jim Roney, Jr. in July.



CARTOON CREDIT

The cartoon on Page 1 was forwarded to OE by M. Dale Sands, formerly of the Interstate Electronics Corporation and now a principal of Marine Ecological Consultants at 533 Stevens Avenue, Solana Beach, California 92075. Dale has done the lion's share of environmental studies on OTEC for several years.

In the cover letter with the cartoon, drawn by an Interstate artist, Dale says: "The Ocean Energy Converter/Seacoast Test Facility cartoon came to mind after a budget-cutting episode I was associated with some months back. Hope it brings some humor to your readers."

Thanks, Dale. We can use all the humor we can get!

OCEAN ENERGY COUNCIL NEW BOARD OF DIRECTORS

The Board of Directors of the Ocean Energy Council (OEC) has decided to expand to nine directors for a term of one year. The directors are elected as individuals active in the ocean-energy/OTEC community. Their affiliations, as indicated below, are for identification purposes only.

Jack F. Babbitt (Devco International Incorporated)

Richard E. Bell (Hawaiian Electric Company Incorporated)

Robert H. Douglass (TRW Incorporated)

E. Don Farthing (TRW Incorporated)

Evans J. Francis (Applied Physics Laboratory, Johns Hopkins University)

Malcolm S. Jones, Jr. (Ebasco Services Incorporated)

Richard A. Meyer (Solar OCEAN ENERGY Liaison)

Frederick E. Naef (Lockheed Missiles and Space Company)

Jay E. Yaffo (Ocean Thermal Corporation)

The present officers of the OEC are Frederick E. Naef, President, and Richard A. Meyer, Secretary/Treasurer. Myron H. Nordquist (Nossaman, Krueger, and Marsh) is Legal Counsel.

15TH LOSI CONFERENCE SET FOR HONOLULU OCTOBER 5TH-9TH

The 15th Annual Conference of the Law of the Sea Institute will be held from October 5th through 9th at the Prince Kuhio Hotel in Honolulu, with the theme "The Law of the Sea and Ocean Development Issues in the Pacific Basin".

One of the eight panels is entitled "Energy and Industrialization: The Ocean and Economic Development Strategies for Pacific Island States", with panel members including John Craven, Director of the Law of the Sea Institute, and Myron Nordquist of Nossaman, Krueger, and Marsh. OTEC will be a major topic of that panel as well as being dealt with in the others.

Further information can be obtained from LOSI, University of Hawaii, Holmes 401, Honolulu, HI 96822, (808) 948-6750.

VACATION NOTICE

The offices of *Ocean Energy* will be closed for vacation the week of August 10th. A temporary answering service will retain telephone messages during that period.

OCEAN ENERGY COUNCIL
BOX 57198 WASHINGTON, D.C. 20037

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Secretary/Treasurer

July 1, 1981

MYRON H. NORDQUIST
Legal Counsel

Mr. David Smith
Senate Commerce Committee
United States Senate
Washington, D.C.

Dear Mr. Smith:

With regard to your question about transferring the OTEC Development Fund into the Title XI General Fund, the Ocean Energy Council strongly recommends that the fund be left unchanged, as the full \$2 Billion will be required to support the development of this emerging industry.

Assuming a 40Mw plant can be built for \$5000/Kw (1980 dollars) and a 100Mw plant can be built for \$4000/Kw (1980 dollars), and assuming the full 87½% permitted under the Title XI program is applied, and allowing 10% per annum inflation, the mortgage for a 40Mw plant would be \$310M (1986 dollars), and \$943M (1989 dollars) for the 100Mw plant. If one provides for three 40Mw pilot plants in 1986, and two 100Mw commercial prototypes in 1989, the total draw against the OTEC Development Fund would be \$2.8 Billion - well in excess of the \$2 Billion provided by PL 96-320.

The intent of PL 96-320 was to create an OTEC Development Fund that would provide Title XI mortgage guarantees under qualification criteria that would be less rigorous than the criteria applied to mortgage guarantees under the General Fund. The special criteria were to reflect the high degree of institutional and financial risk faced by the pioneer OTEC plants, with special emphasis on stimulating follow-on investments that would meet the standard criteria of

Page Two (2)
Mr. David Smith
July 1, 1981

the General Fund. We expect that the special criteria will be established soon through negotiations between the initial applicants and the Maritime Administration.

One could reduce the size of the OTEC Development Fund by reducing the amount of debt guaranteed, or by reducing the number of plants to be covered. The first reduction decision should await the definitive economics that will develop during the first two phases of the DOE Pilot Plant program. The second reduction decision is crucial, because the OTEC Development Fund is absolutely essential to the creation of this new emerging industry. Because OTEC plants are subject to maritime law, conventional financing vehicles are inappropriate. To our knowledge, the OTEC Development Fund is the only available source of financing.

It is the view of the Ocean Energy Council that at least five plants will require Development Fund assistance to assure follow-on commercial development. As shown in the responses to the DOE Program Opportunity Notice, there are multiple sites (Hawaii, Florida, Virgin Islands, etc.) and multiple concepts (grazers, shelfbased, moored, etc.) to be addressed, and there will be several builder/owner/banker groups that will be learning to deal with OTEC technology and financing. In order to assure the full exploitation of site and concept combinations, and to assure the establishment of a broad competitive industrial base, our analysis concludes that at least five plants will be required, and should be supported through the initial investment experience.

One of the problems associated with creating new industries is the development of a relatively predictable investment environment. To undertake the development of OTEC plants today, investors need some assurance that capital will be available for construction during the 1983-1986 period for this type of opportunity. The creation of the OTEC Development Fund under PL 96-320, provides a significant incentive for private sector investment in the front-end development. As mentioned earlier, OTEC plants are subject to maritime law and consequently the purchase of a government guarantee through the Title XI program appears to be the only method to obtain commercial bank financing.

However, transfer of the Development Fund into the General Fund, less than a year after the act was signed, raises serious questions about the availability of that Fund in 1986. Transfer to the General Fund was not the intent of Congress when the OTEC

**OMB'S EFFORTS TO REDUCE
FULL \$2 BILLION OTEC
FUND RESOLVED**

A major facet of Public Law 96-320 was the creation of an OTEC Development Fund that would provide Title XI mortgage guarantees to aid financing of OTEC plants. This fund was established at \$2 billion.

However as part of the Reagan Administration's efforts to reduce the Federal budget, the Office of Management and Budget (OMB) proposed that the Fund be reduced to \$500 million, though the fund is "off budget"—meaning that its loan *guarantees* would not be direct expenditures.

The establishment of the full \$2 billion, as provided by law under the Carter Administration, is considered essential to the commercial development of OTEC, as it will enhance capital formation through the private sector.

Efforts to head off the OMB's attack on the OTEC Development Fund were undertaken by the Ocean Energy Council (OEC) and are epitomized in the accompanying letter from OEC President Frederick E. Naef.

OE understands that Fred's letter was directly responsible for the Fund's being reduced by only \$350 million, with the result that the Fund remains at the \$1.65 billion level.

We have published the letter in its entirety due to both its incisiveness and its significant relevance to the future of the US OTEC program.

**DENIS HAYES FORCED TO RESIGN
AS DIRECTOR OF SERI**

Denis Hayes, Director of the Solar Energy Research Institute (SERI) in Golden, Colorado for two years, was forced to resign in mid-June. The action was viewed as part of the Reagan Administration's continued attack on solar-energy and other renewable-energy advances made in recent years.

Hayes, often called "Mr. Solar Energy", was the first board chairman of the Solar Lobby and was one of the originators of Sun Day. Following his appointment as head of SERI—which came as a surprise and was viewed by many as an effort to quiet his efforts—he was quoted as saying: "I don't have a lot of patience with bureaucrats, and if things do get bottled up too long I am not beyond appealing over people's heads."

In a speech to SERI employees on June 22nd, he said: "My firing is just one small piece in an overall mosaic." And further: "I think it is not an overdramatization to say that this Administration—and in particular DOE Secretary Edwards—has declared open war on solar energy."

Of the over 900 employees at SERI, almost 400 are expected to be terminated by mid-fall of this year.

(continued on Page 4)

Development Fund was established, and it is the feeling of the Ocean Energy Council that such a transaction will establish a precedent that will result in additional incremental transfers. We are concerned that the Development Fund will be depleted fully before the OTEC industry is ready to apply for mortgage guarantees.

Page Three (3)
Mr. David Smith
July 1, 1981

Protection of the integrity of the Fund is essential to preserving its role as an incentive for private sector investment.

We trust this letter explains our position relative to the OTEC Development Fund, and we are prepared to meet with you for further discussions as required.

Very Sincerely Yours,



Frederick E. Naef
President

FEN:klv

US GOVERNMENT PROCUREMENT INVITATIONS AND CONTRACT AWARDS

Listed below are procurement invitations and contract awards related to OTEC in particular and ocean resources in general culled from the Commerce Business Daily. This is not to be construed, however, as a complete list.

Jun 3: Parametric Study on Seawater Reverse Osmosis Desalting Plants: RFP 0434 reinstated with proposal due date extended to July 1st, 1981. US Department of the Interior, Office of Water Research and Technology, 18th and C Streets Northwest, Washington DC 20240.

Jun 3: SPE Water Electrolysis Hydrogen Generation Development Program: Contract DE-AC-02-78-ET-26202, Modification A010 (cost plus fixed fee), \$97,910, awarded to General Electric Company, Direct Energy Conversion Programs, 50 Fordham Road, Wilmington, Massachusetts. US Department of Energy, Brookhaven Area Office, Upton NY 11973.

Jun 5: Examination of the Present Theoretical Understanding of the Nonlinear Aspects of Internal Waves: Negotiations are being conducted with the La Jolla

Institute, PO Box 1434, La Jolla, California 92038. See Note 46. Office of Naval Research, 800 North Quincy Street, Arlington, Virginia 22217.

Jun 5: On-Site Technical Monitoring of DOE's Small-Scale Appropriate Energy Technology Grants Program in the States of Hawaii and Nevada and the Western Pacific Islands During Government Fiscal Year 1982: The grants that are to be monitored are small-scale, energy-related technologies referred to as appropriate technology because they are appropriate to local needs and skills. The individual organization must be located in the state or vicinity of the monitoring. Persons desiring to receive a copy of RFP DE-RP03-81-SF-11458 should submit a written request. No telephone requests will be honored. Include two self-addressed labels. It is anticipated that the RFP will be available on or about June 15th, 1981. US Department of Energy, San Francisco Operations Office, 1333 Broadway, Oakland, California 94612, Attention Birdie Hamilton, Secretary, RFP DE-RP03-81-SF-11548.

Jun 9: Retrieve Specific Sets of Ocean Acre Biological Data from Smithsonian Institute Computer Data Bank: Quantity one job. For delivery to Receiving Office,

Naval Underwater Systems Center, New London Lab, Building 43, New London, Connecticut 06320. Solicitation N00140-81-Q-BX82 limited to The Smithsonian Institute, Washington DC 20560. Naval Regional Contracting Office Detachment, Building 11, Newport, Rhode Island.

Jun 15: California Shelf Physical Oceanography Circulation Model: This procurement is 100% set aside for small business. RFP AA851-RP1-24 to be issued on or about June 12th, 1981, closing July 13th, 1981. Pacific OCS. US Department of the Interior, Bureau of Land Management, Branch of Contract Operations, Code 851, 18th and C Streets Northwest, Room 2447, Washington DC 20240.

Jun 15: Conduct Multidisciplinary Oceanic Investigations of Tropical and Subtropical Regions, Including Physical Oceanography, Chemical and Biological Oceanography, and Underwater Acoustics: Contract of May 1981 (no RFP), \$267,014, awarded to the University of Miami, Roseniel School of Marine and Atmospheric Sciences, Miami, Florida 33149. Office of Naval Research, 800 North Quincy Street, Arlington, Virginia 22217.

Jun 17: Maintenance, Technical, Logistic, and Other Support for Marine Research Programs at the Naval Air Development Center Field Station in Key West, LF, and a Contractor-Furnished Deep-Water Facility at St. Christiansted, St. Croix, Virgin Islands: A wide spectrum of capabilities will be required, such as manning, operation, and maintenance of government-owned vessels ranging in size from small craft to a 135-foot LCU; shipping, care, and keeping of an extensive quantity of government-owned project equipment, including both open and closed specialized storage areas; capability to provide a variety of ship and aircraft services, crews, and equipment; marine engineering technical and skilled-labor personnel familiar with marine research operations. Services required will be in the Western Atlantic, Caribbean Sea, Bahamas, Gulf of Mexico, and related government installations. An indefinite-quantity contract is contemplated for a period of one year with an option to extend for two additional years. RFP N62269-81-R-0505 to be issued on or about June 26th, 1981, closing August 14th 1981. Naval Air Development Center (Code 84563), Warminster, Pennsylvania 18974.

Jun 17: Solar-MEC Development Program: Contract DE-AC-03-77-CS-34495, for \$74,703, awarded to the Institute of Gas Technology, 3424 South State Street, Chicago, Illinois 60616. US Department of Energy, San Francisco Operations Office, 1333 Broadway, Oakland, California 94612.

Jun 19: Industrial-Steam Users Sought for Solar-Energy Experiments: The US Department of Energy is preparing to issue a Program Research and Development Announcement (PRDA) to solicit the participation of industrial plants in Modular Industrial Solar Retrofit (MISR) Project

(continued from Page 4)

Field Experiments. Industrial plants with a continuous daytime demand for process steam of greater than 5,000 pounds per hour at pressures up to 250 psi, and located at sites having relatively-high insolation are good candidates for MISR experiments. Up to 20 awards of approximately \$30,000 each are anticipated for Phase 1, whose purpose is to familiarize industrial representatives with the MISR project and its hardware qualification tests and to prepare a design proposal for the interface between the plant and the pre-engineered MISR solar-energy system. Up to 10 awards are anticipated, on a cost-share basis, for Phase 2, which will consist of purchasing, installing, and operating the MISR system to supply steam to an existing plant. After an operational period of

two years, it is anticipated that ownership of the system will revert to the industrial participant. Qualified proposers capable of performing all phases of this work on a contract or co-operative-agreement basis should submit a request for a copy of the PRDA to the address below by July 15th, 1981. This is not a Request for Proposal. Mr. O. W. Wehlander, US Department of Energy, Albuquerque Operations Office, Contracts and Procurement Division, PO Box 5400, Albuquerque, New Mexico 87115.

Jun 22: Research in Support of Ocean Acoustics Tomography: Negotiations are being conducted with Science Applications Incorporated, 1710 Goodridge Drive, McLean, Virginia 22102. Office of Naval Research, 800 North Quincy Street, Arlington, Virginia 22217.

Jun 25: Biological Process in the Water Column of the South Atlantic Bight: Contract DE-AS-09-76-EV-00936, modification to existing contract in the amount of \$218,500, awarded to Skidaway Institute of Oceanography, Savannah, Georgia. US Department of Energy, Savannah River Operations Office, PO Box A. Aiken, South Carolina 29801.

Jun 25: Investigation of the Scientific and Technical Principles Controlling the Practicability of Solar Ponds and Other Unusual Solar Energy Sources: Contract DE-AC-03-81-ER-30012, for \$229,719, awarded to SRI International, 333 Ravenswood, Menlo Park, California 94025. US Department of Energy, San Francisco Operations Office, 1333 Broadway, Oakland, California 94612.



