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Volume 2, Number 12 (December 1978)

The OTEC Liaison

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HOUSTON E.T.C.E. CONFERENCE:

- Low Attendance
- Distinguished OTEC Panel
- Was Claude Right, After All?

ON HOUSTON'S ETCE CONFERENCE

The second annual Energy Technology Conference and Exhibition (ETCE), held in Houston November 5th through 9th, was marked by surprisingly low attendance. Only about 1500 registered, compared to 3,000 at last year's meeting. At least 4,000 were expected at the 1978 meeting. Among the causes suggested for the poor turnout were low-level promotion (some OTEC attendees had no knowledge of the meeting as little as three weeks before, as was the case with TOL's editor) and, possibly, a cutback on travel allowances due to the downturn in the economy. Also, the Conference was unfortunately scheduled on Election Day.

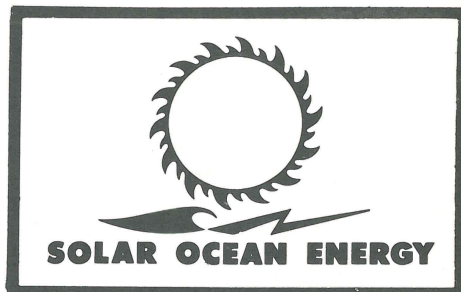
OTEC Turnout Double All Others

Nevertheless a full day's schedule of OTEC meetings was held—technical papers in the morning and a panel discussion (see below) in the afternoon. During the morning session this writer did a head count of concurrent sessions, finding groups of 20, 32, and 27, two of 30, and one of as few as 12 persons in attendance. The OTEC ses-

Portsmouth, New Hampshire, one of the two major contractors to DOE on submarine power-transmission cables, was of special interest. Readers will remember that DOE's in-house assessment of OTEC, published in the November issue of TOL, stated: **The mainland market hinges on the successful development of high-voltage, high-power, underwater bottom and riser cable technology.** And... the cable effort should receive higher priority.

Traut's report was characterized by his statement that "no similar technology exists today", referring to underwater cables carrying substantial amounts of electric power that are subject to continuous motion. Traut said that research in that area is underway. He went on to say that 1800 feet was the maximum depth of similar power cables as of today, but that these were not subject to motion and that "very little research has been done on flexing of power cables". But while questions remain, their best projections "appear promising". However this editor wonders if the extensive technology of overhead power-transmission cables, subjected to constant motion by heavy winds, has been applied. One

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FRENCH OTEC PROGRAM UNDER WAY

Completely Independent of EUROCEAN Planning

The following report was received by TOL in late November from Philippe Marchand, Chief of Energy Service of the Centre National Pour l'Exploitation des Oceans in Paris. Mr. Marchand pointed out in his accompanying letter that the French OTEC program is completely independent of that of EUROCEAN. TOL is still awaiting the report from EUROCEAN (see the August issue of TOL).

FRENCH PROGRAM ON OTEC

Ocean Thermal Energy Conversion seems to be one of the most attractive sources of solar energy.

Clean, concentrated, abundant, and renewable, OTEC will probably be competitive in the near future, especially in isolated equatorial locations where energy costs are very high. Tropical islands of the OTEC zone are generally dependent on fuel and sometimes on freshwater imports.

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sion had over 60. Thus, while the OTEC session had an excellent comparative showing, it was no secret that the session organizers, presenters of papers, and panel members were disappointed by the unexpectedly poor general turnout.

Distinguished OTEC Panel— And Some Revelations

The morning session saw delivery of general information most of which would not be newsworthy to readers of this publication. However both Robert Cohen and William Sherwood of DOE brought listeners up to date on the Government's OTEC program, illustrating their presentations with a number of design concepts not previously released. (TOL will reproduce some of these photographs and drawings in succeeding issues.)

The Status of Power Cables

A paper delivered by Richard T. Traut of Simplex Wire and Cable Company of



DOE's Dr. Robert Cohen addressing the ETCE morning session, with M.D. Kelleher of the Naval Postgraduate School as Vice-Chairman and O.M. Griffin of the Naval Research Laboratory, Chairman, in the background.

The OTEC Liaison

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ENGAGED AS LIAISON FOR THE
COMMUNITY OF OCEAN THERMAL
ENERGY CONVERSION

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SUBSCRIPTION RATE INCREASE IN 1979

Due to inflationary increases in the cost of paper, printing, postage, and mailing, subscription rates for The OTEC Liaison will be raised to \$95 annually on all new subscription orders and renewals received after January 1st, 1979. Until then the current published rates will be in effect: \$80 for one year (12 issues), \$140 for two years (24 issues)—a saving of \$20. Colleges and universities: \$70 for one year (12 issues), \$120 for two years (24 issues)—a saving of \$20.

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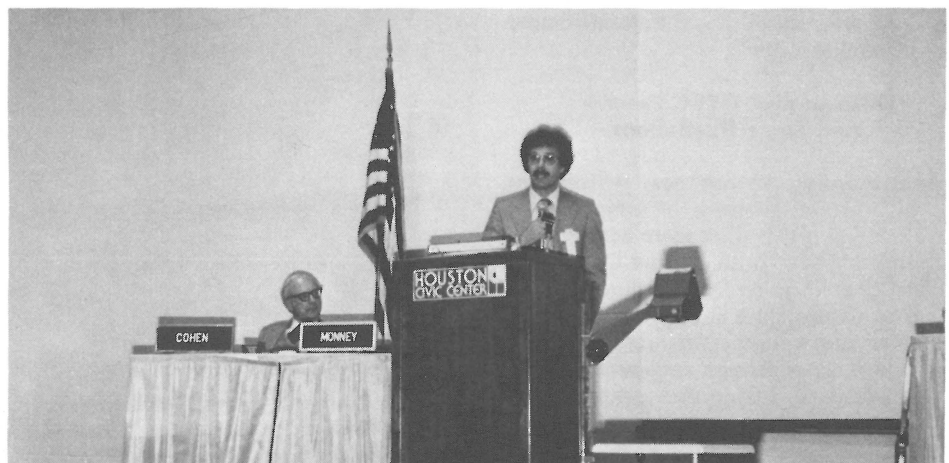
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concept currently under consideration is the use of a sub-surface buoy, whereby the submarine cable is supported some distance away from the floating plant, reducing but not eliminating motion. Tests on varying submarine-cable constructions using a variety of materials are now underway, with results anticipated before the end of 1979.



Richard T. Traut of Simplex Wire and Cable addressing the ETCE morning session.

Coincidentally, an award was given at the November Houston conference to Dr. Jin S. Chung, Staff Engineer with Lockheed Missiles and Space Company, for last year's best all-around technical paper: *A Motion Analysis of a Riser Upper Joint Interacting With a Floating Vessel*. Dr. Chung is working with Lockheed's ocean mining program, and his paper was of special interest to DOE's Bob Cohen as potentially providing some answers for the submarine-cable problem. This fortunate accidental meeting of two different but related technologies will likely prove mutually beneficial, and is still another example of the benefits of utilizing the state-of-the-art experience of the vast offshore industry in development of OTEC.



Dr. Neil Monney of the US Department of Commerce, Chairman of the ETCE Panel Discussion, with Robert Cohen, Vice-Chairman, looking on.

Westinghouse, Open Cycle and Helicopter Blades

During the afternoon session, a distinguished panel of experienced OTEC engineers and researchers was brought together. (See photograph in this issue.) While the audience was unfortunately small, useful dialogue was exchanged. Each of the panel members provided an outline of his organization's activities in OTEC development. Eugene Barsness of Westinghouse presented an overview of that firm's expanding work in open-cycle, announcing a technical breakthrough in their studies: the adoption of helicopter-blade technology for open-cycle turbine blades, as a result of Westinghouse's technical exchanges with the Vertol Helicopter Division of Boeing Aircraft Corporation. In a post-conference phone conversation with Barsness, he stated that Westinghouse was "very enthusiastic" about open-cycle, pointing out that it would eliminate a lot of the problems which have been plaguing closed-cycle, including biofouling and corrosion difficulties. He added that "it gets away from having to come up with a tube material that will stand up to seawater". While open-cycle is a more complex cycle in some areas, it does not require the long-range testing of closed-cycle systems, and has the added feature of providing fresh water at low cost, a badly-needed resource for many areas that would be served by OTEC plants.

Two other presentations by the panel included the conclusion that land-based or hybrid plants were most advantageous due to their construction economies and the elimination of problems of motion involving both the cold-water pipe and submarine cables. Thus Claude's original experimental work, utilizing open-cycle in a land-based plant, apparently has greater merit than was recently believed. More detailed reports on these innovations and current research results will be published in TOL early in 1979.

(continued from Page 1)

Small and middle-size shore-based OTEC plants seem to be the best answer to such energy needs.

According to the new 200-mile economic zone, France controls about 8% of the areas suitable for OTEC. Electrical needs are generally low in these French islands named "DOM/TOM" (Department and Overseas Territories), such as Polynesia, the West Indies, New Caledonia, Comores, and Reunion. Power within the range of 1 MWe to over 10 MWe is generally required.

Everybody knows that the first stage of the OTEC story is French. The OTEC idea was first proposed by the Frenchman d'Arsonval in the late 19th Century, and its efficacy was demonstrated by Georges Claude in France, Cuba, and Brazil. A lot of work was done by the national company Energie des Mers in connection with the 2 x 3.5 MWe Abidjan project off the Ivory Coast. Tests were successfully carried out of major components such as the cold-water pipe (laying of a 150-by-2.5-meter pipe under 300 meters of water in 1955), turbine, evaporator, deaerator, and condenser for the open cycle. The decision to build a 2 x 3.5 MWe shore-based plant failed for no evident economic reasons. The Abidjan studies were utilized for Guadeloupe (1959), but the plan to build an OTEC facility in Guadeloupe was given up due to the low cost of oil at that time. Historically speaking, it can be said that the French experience in the OTEC field is very broad.

With the current high cost of oil, the offshore technological gap, and the need to look for new sources of energy, it now seems necessary to develop OTEC, a system which looks feasible and promises to be cost-competitive in the near future.

The French program aims to build a shore-based pilot OTEC plant in the 1 to 10 MWe range. Studies are being managed by CNEXO (National Center for the Exploitation of the Oceans), the Government agency in charge of the French OTEC program, which will be conducted in three phases:

Phase 1: Feasibility study.

Phase 2: Design of the pilot "ETM-1" (ETM means Energie Thermique des Mers).

Phase 3: Actual construction of the pilot ETM-1.

The first phase, expected to take about 15 months and cost \$1.5 million, began in

November. It will include three separate studies:

(1) **A general review of possible French OTEC sites** in order to select the most suitable in DOM/TOM from the standpoint of oceanographical, meteorological, and geographical data; economic aspects; and future energy needs in the 1 to 10 MWe range. After that, it is planned to make a world review of possible 1 to 10 MWe OTEC sites to appreciate the potential market.

(2) **Technical and economic feasibility of a 1 to 10 MWe open-cycle floating plant.** This floating unit could be beached. CNEXO has selected a group of French industrial firms: CGE (Compagnie Generale d'Electricite), Alstom-Atlantique, and ETPM (Entrepose-Travaux Petroliers Maritimes). This group, with a financial participation of 40%, will terminate that study in January 1980.

(3) **Technical and economic feasibility of a 1 to 10 MWe closed-cycle shore-based plant.** CNEXO has selected the Empain Schneider Group, particularly the three companies SGTE (Societe Generale de Techniques et d'Etudes), Creusot Loire, and Spie Betignolle. The financial participation of the firm required by CNEXO is also 40%. That study also will end in January 1980.

A decision to build the demonstration plant ETM-1 will be made in 1980 on the basis of the results of Phase 1. The feasibility study will help CNEXO to select a technology for ETM-1: choice of power with respect to the scale effect in the 1 to 10 MWe range, choice of open or closed cycle and floating (beached) or on-shore concept, selection of the most suitable French site, choice of laying method for the cold-water pipe. The design phase of the pilot ETM-1 will occur in 1980-81. As we can see, the pilot ETM-1 could be built in 1982-83.

In conclusion, the French OTEC effort involves primarily shore-based plants of 1 to 10 MWe, adapted to our needs in the DOM/TOM. We have not eliminated the open cycle, which can produce desalinated water, a particularly attractive by-product for numerous islands. At the beginning of the program, it is expected to put French industry in a position to propose in the near future reliable small and middle-size OTEC power plants producing electricity (and fresh water) in equatorial islands.

● US Patent Number 4,104,883, entitled **Mass Transport Heat-Exchanger Method and Apparatus for Use in Ocean Thermal-Energy-Exchange Power Plants**, was issued August 4th. The inventor is Frederick E. Naef of Reston, Virginia, and the assignee is The United States of America as represented by the Secretary of the Navy, Washington DC.

● James Madewell, formerly of DOE, is now Vice-President of Value Engineering Company of Alexandria, Virginia, a major subcontractor to DOE's OTEC program.

● An article by Walter Sullivan entitled "Ocean-Energy Tests Nearing in Hawaii" appeared in the November 12th issue of **The New York Times**.

DOE TAKES CUSTODY OF OTEC-1 VESSEL

On Thursday, November 9th, the Department of Energy took over custody of the Navy Department's T-2 tanker *USNS Chepachet*, TAO-78, docked in Suisun Bay.

In a ceremony held on board the T-2 tanker, Joe La Grone, Manager of DOE's San Francisco Operations Office, accepted custody of the vessel for the Department.

News-media representatives were on board and received a briefing and tour conducted by the DOE staff.

The turbo-electric-driven tanker *Chepachet* will be converted into DOE's Ocean Thermal Energy Conversion test platform OTEC-1. The test platform will be used to evaluate components and systems in the OTEC program which are critical to generating electricity from the temperature differences between surface and deep-ocean water.

Global Marine Development Company of Newport Beach, California has been selected to design, build, and operate the nation's first floating test platform for extracting energy from warm ocean waters.

THORNE LEAVES DOE

The OTEC Liaison recently learned that DOE's Assistant Secretary of Energy Technology, Robert D. Thorne, has left his position. Confirmed only last May, Thorne was said to have left DOE by his own choice as of December 8th. Thorne was generally considered an advocate of OTEC.

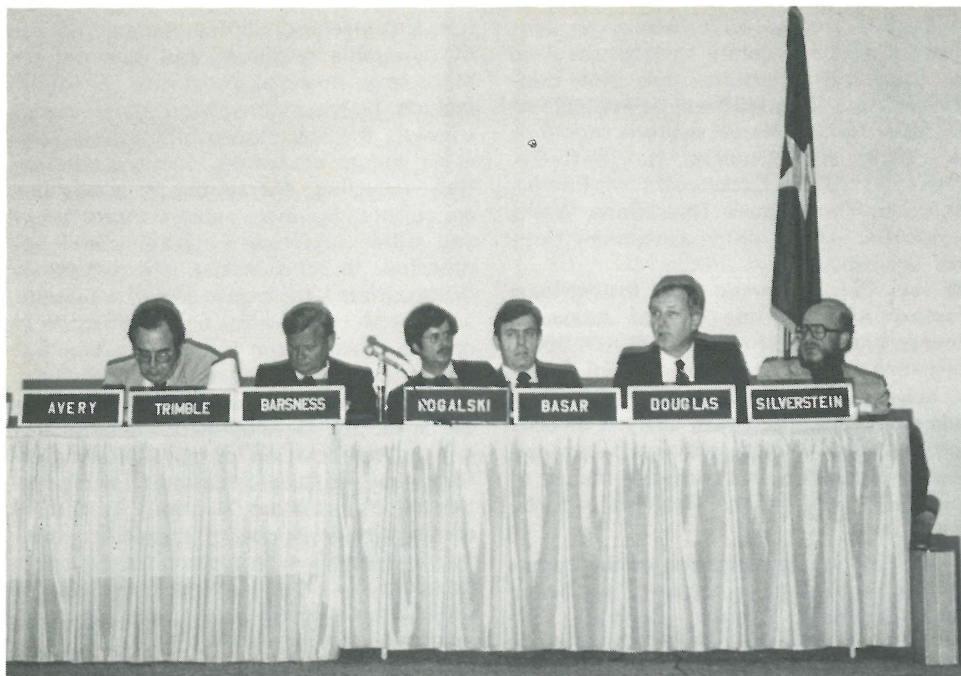
In an October 30th reply to a letter addressed to James R. Schlesinger, Secretary of Energy and head of DOE, written by Senator Spark Matsunaga of Hawaii, Thorne said: **I share your concerns about maintaining the strong momentum of OTEC development and eventual deployment, as well as your awareness of the potential of this technology to contribute to our nation's energy needs.** TOL expects to reprint the full content of both Matsunaga's and Thorne's letters in the January issue, which will deal with the political and economic issues surrounding OTEC.

UNDERSEA CABLE WORKSHOP

As suggested by DOE's in-house OTEC assessment (see the November issue of TOL), increasing attention is being given to undersea transmission cables.

Readers may therefore find it of interest to know about the **Undersea Cable and Connector Committee Workshop** to be held in San Diego February 7th and 8th under the auspices of the Marine Technology Society. The meeting's theme will be "Improving the Survivability of Underwater Cable and Connectors".

For further details contact William F. Stange, Marine Systems Division, Preformed Line Products Company, PO Box 91129, Cleveland, Ohio 44101, (216) 461-5200.



Members of the OTEC Panel at the ETCE conference. Left to right: William Avery, Applied Physics Laboratory of Johns Hopkins University (speaking); Lloyd Trimble of Lockheed; Eugene Barsness of Westinghouse; William Rogalski of Gibbs and Cox; Nedret Basar of Rosenblatt and Son; Robert Douglas of TRW; and Bennett Silverstein of the Office of Technology Assessment, US Congress.

NEXT YEAR: SEPARATE MTS AND IEEE MEETINGS

For the first time since 1974, the Marine Technology Society (MTS) and the Institute of Electrical and Electronic Engineers (IEEE) will hold separate meetings in 1979. MTS and IEEE have been jointly sponsoring annual meetings, the most recent being Oceans '78 (see the August issue of TOL). IEEE will retain this title, calling their next meeting, to be held next fall on the West Coast, Oceans '79.

MTS's Theme For 1979: Ocean Energy

The next MTS annual meeting, called Marine Technology '79, will be held at the Hyatt Regency Hotel in New Orleans October 10th through 12th, and will have a general theme of "Ocean Energy". Obviously, OTEC will be a major focus of that meeting.

Call For Papers

Abstracts of 250 to 300 words should be submitted to the Technical Program Chairman by **December 15th**. Authors will be notified of the Technical Committee's decision by February. To obtain an abstract submittal form and more detailed information, write to the Technical Program Chairman, Marine Technology '79, MTS, Suite 412, 1730 M Street NW, Washington DC 20036.

NEW CONTRACTS LET FOR COLD-WATER-PIPE DESIGNS

The preliminary designs for the cold-water piping system for OTEC plants will be developed by a TRW/Global Marine development team and a Science Applications/Brown and Root team. The National Oceanic and Atmospheric Administration announced contracts of \$573,918 and \$593,080 to the two teams respectively. The contracts should produce "detailed engineering designs" of the cold-water piping systems, with each contractor producing three preliminary designs of systems 30 feet in diameter and 3,000 feet long. NOAA's Office of Ocean Engineering handles this segment of the Ocean Thermal Energy Conversion program for the Department of Energy.

MILLER APPOINTED SOLAR OFFICE PROGRAM DIRECTOR

Dr. Bennett Miller has been named program director of DOE's Office of Solar, Geothermal, Electric, and Storage Systems under the Assistant Secretary for Energy Technology. Dr. Miller will provide overall management for the technology-development programs handled by the Office. He has been acting director of these programs since October 1977.

From 1976 to 1977 Dr. Miller served as director of the Office of Plans, Budgets, and Program Implementation for the Energy Research and Development Administration's Assistant Administrator for Solar, Geothermal, and Advanced Energy Systems, and directed ERDA's inexhaustible energy-resources study.

SIXTH ANNUAL OTEC CONFERENCE PLANS RESOLVED ANNOUNCEMENTS IN MAIL

The twice-delayed Sixth Annual OTEC Conference has now been firmed up. The four-day Conference (June 19th through 22nd) will be held at the Shoreham-Americana Hotel in Washington DC. Sponsored by the Ocean Systems Branch of the Division of Central Solar Technology of the US Department of Energy, it is being organized by the Applied Physics Laboratory of Johns Hopkins University. Carrying the theme of "Ocean Thermal Energy for the '80s", the Conference will include exhibits for the first time, as well as approximately 100 papers in four concurrent sessions, up to eight working groups, and three or more tutorials. An added feature will be tours and special programs for the families and friends of conferees.

The main purpose of the Conference, as quoted in the advance announcement, is to provide opportunity for information transfer and discussion of the national OTEC program—latest research, development, test results, status of engineering system, subsystem, and component designs. Strong emphasis will be placed on critical OTEC issues, including technical readiness for proceeding to pilot/demonstration plants and commercializations, financial and legal aspects of system operation, and international co-operation.

Even at this early date, some of the most respected organizations in the field have already agreed to participate. These include the American Oceanic Organization, IEEE Oceanic Engineering Council, International Association for Hydrogen Energy, National Energy Resources Organization, and Shipbuilders Council of America, among others.

Call for Papers

Titles and abstracts (about 400 words) are to be sent no later than January 5th to:

Dr. Gordon L. Dugger
Applied Physics Laboratory
Johns Hopkins University
Johns Hopkins Road
Laurel, Maryland 20810

Details regarding exhibit space are available from E. J. (Bud) Francis at the same address. Bud's telephone number is (301) 953-7100, Extension 537. Hotel reservations are available at:

Shoreham-Americana
2500 Calverts Street NW
Washington DC 20008
(202) 234-0700
(800) 228-3278 (toll-free)

● A meeting of all major OTEC contractors will be held in Washington DC January 23rd through 25th.

**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.

● **Nov 6: Comprehensive Assessment of New Energy Technologies:** Contract 68-01-4962 (WA 78-C280), 21 Sep 76, for \$71,272.21, awarded to Energy and Environmental Analysis Inc., 1111 North 19th Street, Arlington VA 22209.

● **Nov 8: National Energy Information Center Affiliate:** Contract EI-78-C-01-6285, for \$100,000, awarded to the University of New Mexico, Albuquerque NM 87131.

● **Nov 9: Studies of Food, Agricultural, and Energy Systems of the Dominican Republic:** Emphasis will be placed on analysis of the role of energy in the food and agricultural systems, and the changes in practices or technologies which would be desirable. Implications for US assistance programs should be considered. This program will be administered by BNL for the Agency for International Development (AID). Brookhaven National Laboratory, Upton NY 11973, Attn: Mr. A. J. Salvo, Building 355, (516) 345-3150.

● **Nov 13: PRDA 5052 Research and Development for Electrochemical Energy Storage Systems (EC-77-D-01-5052):** Contract EM-78-C-01-5052, \$127,200, awarded to the Mallory Battery Company, Tarrytown NY 10591. Contract EM-78-C-01-5157, \$57,780, awarded to Exxon Research and Engineering Company, Linden NJ 07036. Contract EM-78-C-01-5158, \$74,000, awarded to ESB Technology Company, Yardley PA 19067. Contract EM-78-C-5159, \$64,200, awarded to SRI International, Menlo Park CA 94025. Contract EM-78-C-01-5160, for \$114,599, awarded to Union Carbide, Tonawanda NY 14150. Contract EM-78-C-01-5161, for \$54,500, awarded to Globe-Union Inc., Milwaukee WI 53201. Contract EM-78-C-01-5162, \$97,532, awarded to Ceramtec Inc., Salt Lake City UT 84117. Contract EM-78-C-01-5163, \$80,300, awarded to Lockheed Missiles and Space Company, Palo Alto CA 94304. Contract EM-78-C-01-5165, \$73,780, awarded to Lockheed Missiles and Space Company, Palo Alto CA 94304. Contract EM-78-C-01-2295, \$51,000, awarded to Massachusetts Institute of Technology, Cambridge MA 02139.

● **Nov 14: Analytical Support from Contractors in Order to Evaluate Economic, Technical, and Energy Impacts of a Wide Range of Policies and Programs:** Flexibility and speed in accessing specific support services is essential because the need for analysis is often urgent and is constantly changing, and cannot be fully anticipated in advance. This contract package was de-

veloped to engage a contractor or contractors with the ability to meet the need for these quick-response task-order support services. This RFP will be available on or about 10 Nov 78. All requests should be in writing. RFP Contract EJ-78-C-01-6492(72) (313). Department of Energy, Office of Procurement Operations, Washington DC 20545, Attn: Document Control Specialist.

● **Nov 15: Economic and Institutional Factors Affecting the Use of Advanced Energy Systems:** RFP EJ-78-R-01-6663. Task-order contract anticipated for Office of Advanced Energy Systems Policy. Provide quick-response policy analysis on economic and other non-technical factors either conducive to or a barrier to the use of solar/renewable energy. Requests must be in writing.

● **Nov 21: An Investigation of the Potential for Technology Acceptance by Diverse Socio-Economic Groups:** Contract EW-78-C-20-0019, for \$50,000, to Galaxy Inc., Washington DC 20024.

● **Nov 24: Analysis of Economics Institutional and Environmental Studies:** Contract ET-78-C-03-2072, for an estimated \$72,147, awarded to Gruy Federal Inc., 1911 Jefferson Davis Highway, Suite 500, Arlington VA 22202. Department of Energy, 1333 Broadway, Oakland CA 94612.

● **Nov 27: Continued Advisory and Consulting Services in Oceanic Biology and Chemical Oceanography:** Negotiations are to be conducted with the American Institute of Biological Sciences, 1401 Wilson Blvd., Arlington VA 22209.

● **Nov 28: Fabrication, Integration, Testing, and Evaluation of an Improved Wave-riding Analyzer Satellite Communicator:** Contract NA-79-QA-C-00105, \$99,500, awarded to Louis C. Adamo/Dataware JV, 533 Stevens Ave., Solana Beach CA 92075. NOAA Data Buoy Office, National Space Technology Laboratories, NSTL Station MS 39529.

● **Dec 4: Design of Cold-Water Pipe System for OTEC:** Contract 78-A-01-4141, for \$573,918, awarded to RW Defense and Space Systems Group, Redondo Beach CA 90278.

● **Dec 4: Design of Cold-Water Pipe System for OTEC:** Contract 78-A-01-4142, for \$593,080, awarded to Science Applications Inc., La Jolla CA 92039.

● **Dec 4: Support Academy Forum on Development of Ocean Resources:** Contract 78-A-01-1340, \$50,000, awarded to National Academy of Sciences, Washington DC 20418.

● **Dec 4: Study: Federal Policies and Private Investment in Technological Change:** Contract 78-A-01-3600, for \$440,000, awarded to Charles River Associates, Boston MA 02116.

● **Dec 8: Grant Program for Small-Scale Energy-Related Appropriate Technology for the Northeast Region:** Sol. 01-79-CS10104, 23 Feb 79. Energy-related appropriate technology is small in scale and decentralized, utilizing local materials, la-

bor, and ingenuity. It makes maximum use of renewable resources, and does not require large financial investment. Examples include biomass conversion, solar energy (passive, thermal, photovoltaic); wind energy; energy education; energy conservation; recycling; energy use in appliances, agriculture, buildings, and transportation; and other small-scale, locally-useful approaches. In other words, it is technology "appropriate" to local cultural, economic, and social conditions. Topics must be in one or more of the following categories: (a) Concept development, i.e. the development of a new idea or application for an old idea. (b) Development. Includes any one or combination of the following efforts to evaluate the feasibility and practicality of proposed solutions in specific community-level energy problems: studies, investigation, hardware development, experimental tests or operational tests. The project must be directed toward the production or improvement of a useful product, but does not include manufacturing or production engineering. (c) Demonstration: the testing of a system or technique under operational conditions to show that commercial application is technically, economically, and environmentally feasible. Those eligible to submit applications are individuals, local non-profit organizations and institutions, state and local agencies, Indian tribes, and small businesses residing or doing business in Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Rhode Island, Vermont, Puerto Rico, or the Virgin Islands. Proposed projects must be performed in one of the listed areas. Program Announcement EW-79-G-42-0500. Due date 23 Feb 79. (339) Appropriate Technology Small Grant Program, Northeast Regional Manager, DOT/TSC, DTS-151, Kendall Square, Cambridge MA 02142.

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BEST WISHES FOR
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Copies of two Louis Harris surveys of important relevancy to OTEC and other alternative solar-energy programs have been received by TOL. Pertinent excerpts are (from the February 17th, 1977 survey) **The leader was "expanding work on solar energy", considered "very important" to 69% of the public in the next 10 years and to 66% over the next 25 years,** and (from the June 1st, 1978 survey) **By 83% to 12% people favor co-operation to "develop alternate fuel sources", and By 94% to 2% an overwhelming majority would like to see "work on solar energy expanded". Long-term, there is no doubt that solar energy is the highest priority among Americans today.**

[Editor's note: Based on the above statistics, it is apparent that the Administration and Congress need to be convinced of the wishes of the American public. It has been suggested that proponents of all of the alternative solar-energy options join in presenting a collective voice to make these views clear to the Federal Government. As far as OTEC is concerned, the first step would be the organization of an OTEC Industrial Council or Trade Association, with the promise of joining forces with other alternative solar-energy organizations. Results of the questionnaire on the formation of an OTEC organization will be published in an early issue of TOL.]