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The Solar Ocean Energy Liaison

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Solar OCEAN ENERGY Liaison

INCORPORATING
The OTEC Liaison

VOLUME 3 NUMBER 12
December 1979

QUESTIONNAIRE RESULTS DETERMINE PLANNING FOR 7TH ANNUAL OCEAN ENERGY CONFERENCE JUNE 2ND-5TH

A questionnaire distributed by Gibbs and Cox Incorporated, organizers of the 7th Annual OTEC/Ocean Energy Conference, has been received by SOEL. Major results are published below.

WHAT IS THE PREFERRED LOCATION FOR THE CONFERENCE?

Washington DC	51%
Hawaii	12%
Puerto Rico	6%
Miami	4%
Other	27%

HOW LONG SHOULD THE CONFERENCE LAST?

2 days	6%
3 days	55%
4 days	36%
5 days	3%

SHOULD THE CONFERENCE BE REFORMATTED TO CONCENTRATE ON FEWER HIGH-LEVEL PAPERS?

Yes . . . 87% No . . . 13%

DID THE LAST CONFERENCE ATTRACT THE RIGHT AUDIENCE?

Yes . . . 67% No . . . 33%

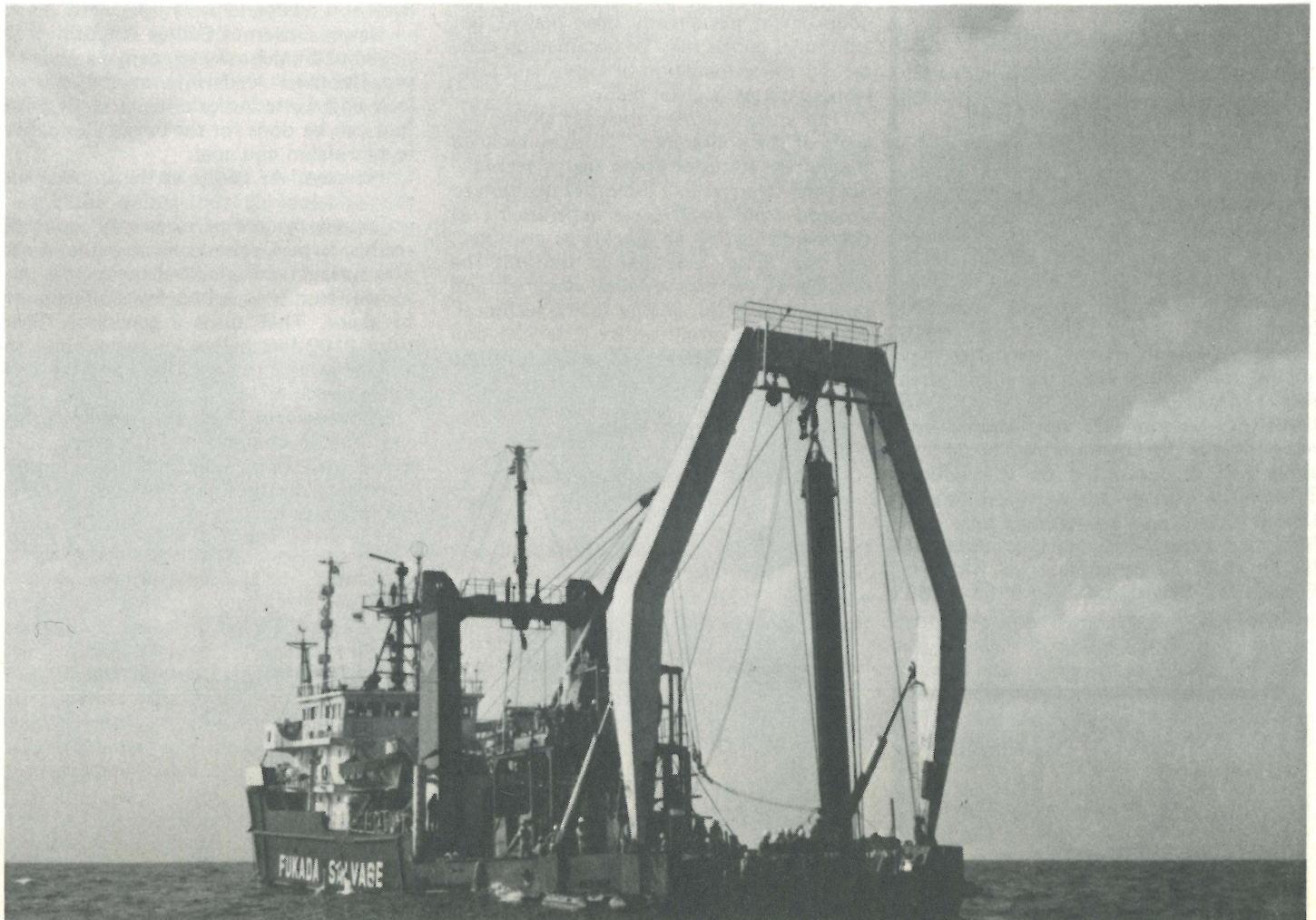
DID THE LAST CONFERENCE MEET YOUR EXPECTATIONS?

Yes . . . 71% No . . . 29%

WHAT AREAS SHOULD BE EMPHASIZED IN THE NEXT CONFERENCE?

OTEC	34%
Practical Issues	15%
Commercialization	13%
Waves and Currents	11%
Cold-Water Pipe	8%
Power System	8%
Institutional, Legal	7%
Cable	4%

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The above photograph, illustrating cold-water-pipe deployment in a mid-October experiment, was recently received by Solar OCEAN ENERGY Liaison from Japan. Additional photographs and related stories appear in this issue.

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 3 NUMBER 12
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EDITOR/PUBLISHER
Richard Arlen Meyer

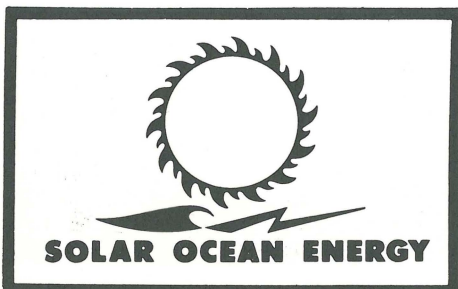
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PRINCIPAL COMMENTS AND SUGGESTED CHANGES

Improve quality of technical papers;
stress accomplishments, new material.

Less technical detail.

Less scientific, more practical
overview papers.

Shorten program,
reduce number of papers.

Fewer parallel sessions.

Broaden participation;
less talking to ourselves.

More media coverage.

Emphasis should be on
moving ahead (demonstration).

Continue emphasis on OTEC.

Based on the above feedback, the meeting will be called the 7th **Ocean Energy Conference** (eliminating the difficult acronym of OTEC), and will again be held at the Shoreham Hotel in Washington DC, June 2nd through 5th. The detailed announcement has already been mailed, but additional copies may be obtained by contacting this publication or Gibbs and Cox, whose address is given below.

The announcement includes among the goals of the conference "... to summarize the current status of ocean energy technology, and to arrive at a definitive position to proceed from small-scale experiments to commercialization as quickly as possible", and that it is "essential to transmit the message of the technological readiness and potential of ocean energy to the technical, academic, industrial, utility, financial, and institutional interests" as well as to the general public.

Call For Papers

DEADLINE FOR SUBMISSION OF ABSTRACTS IS FEBRUARY 14TH

Contact Robert J. Scott, Gibbs and Cox Incorporated, 2341 Jefferson Davis Highway, Suite 1020, Century Building, Arlington, Virginia 22202, (703) 979-1240.

DOE AWARDS NEW BIOFOULING CONTRACT

The Department of Energy recently awarded a \$40,000 contract to the Naval Coastal Systems Laboratory, Panama City, Florida, to test the effects of biofouling countermeasures on OTEC heat-exchanger tubes.

TRANSCRIPT OF CBS NEWS PROGRAM ON OTEC WITH WALTER CRONKITE

For those of you who did not see the November 26th, 1979 broadcast on CBS Evening News, with Walter Cronkite's brief mention of Hawaii's Mini-OTEC project, we present the following excerpts from the transcript. SOEL thanks David Mager of Pacific Power and Protein Incorporated for this information.

Cronkite: One trouble in paradise is the lack of oil wells; but there are volcanoes, sugar cane, the ocean, and the wind. As Barry Petersen reports in our continuing series on the environment—"The Earth Revisited"—Hawaii may lead the way in meeting energy needs with resources at hand.

Barry Petersen: Paradise. Gentle trade winds and lush tropical growth. But paradise threatened. It takes thirty million barrels a year of increasingly expensive oil to fuel these islands—every drop imported. There are no oil wells here, no coal mines either. By 1990, Hawaii's oil bill could be a billion dollars. But islanders, and not oil companies, may be reaping the payoff by then, for by then Hawaii could be the nation's first energy-independent state.

[Editor's note: A short discussion ensued regarding Hawaii's possible use of biomass and wind energy.]

Hawaii Governor George Ariyoshi: If we did some of these things, perhaps we could provide some leadership at the national level and try to indicate the kinds of things that can be done for the use of alternatives to petroleum and coal.

Petersen: As exotic as the tropical sun, this odd-looking contraption could be a major new source of electricity, using the earth's largest solar collector, the ocean. The surface water is 80 degrees. It is used to heat ammonia, with a low boiling point, to vapor. That turns a generator. Then, from 2100 feet below, icy water cools the ammonia back to liquid form and the cycle starts over.

A Frenchman tried this a half-century ago; but he couldn't make it work, so he gave it up. But then, he didn't have modern electronics, or the use of plastics, or OPEC for inspiration.

This experiment, funded in large part by Lockheed and the State of Hawaii, provides the electricity to power itself, a few lights, and a TV set on board. Backers say it proves such a system can work.

Project Manager Hank White: It really could have a very significant impact on the energy requirements for particularly underdeveloped countries, and perhaps provide 20% of the United States' energy needs by the year 2000.

Petersen: Hawaiians, more than most, no longer believe the oil spigot will flow forever. Instead, the energy future here is the wind and the sun and the sea.



Closeup view of the ship used by the Japanese OTEC team in recent experiments. Note the heat exchangers, top center.

FIRST AT-SEA TEST OF OTEC COMPONENTS IN JAPAN

In response to cables to Japanese firms and researchers to clarify their current OTEC work (see related story on this page) *Solar OCEAN ENERGY Liaison* received the following comments from Dr. Haruo Uehara, Department of Mechanical Engineering, Saga University, who heads Japan's OTEC program:

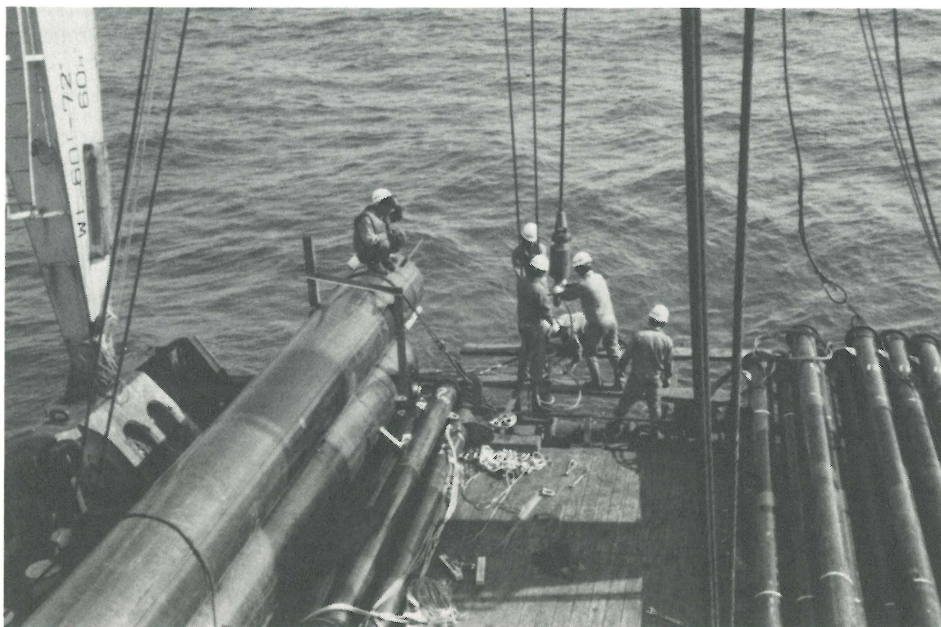
On October 11th, 1979 I made an OTEC experiment about 50 kilometers distant from land in the Japan Sea. The team for this experiment consisted of many companies, including the Tobishima Construction Company, Tokyo Shibaura Electric Com-

pany Ltd., Hisaka Works Ltd., Nippon Kōkan K. K., Fukada Salvage & Marine Works Company Ltd., Namura Shipbuilding Company Ltd., and Torishima Pump. Of course Saga University carried out this experiment at the head of the team.

Unfortunately, we could not light up because of bad weather; but we could generate electric power and get valuable data.

I will publish the results of this experiment in detail in the near future.

Solar OCEAN ENERGY Liaison has requested these results, and will publish the pertinent excerpts when received.



Japanese crew prepares cold-water pipe for deployment.

LATEST WORD ON JAPAN'S OTEC DEMONSTRATION PROJECT

In the November issue of *SOEL* we reported a story that appeared in the Japanese press of a decision by the Government of Japan to proceed with an OTEC demonstration project. The report, appearing in *The Japan Times*, indicated firm plans to build a 100-kilowatt (gross) plant off the island of Nauru. However two letters from Japan have informed us that the project is merely in the planning stage.

(We mistakenly described Nauru as a Japanese island. However Nauru is actually an independent nation, and the world's wealthiest country due to its abundant fertilizer resources.)

Yutaka Seya, the Director and General Manager of the Project Operation Center of the Tokyo Electric Power Service Company Ltd., advises us that investigative and developmental work for the project is still under way, that the planners have not finalized their engineering concepts, and that no target date has been set.

Also, a December 28th letter from Dr. Haruo Uehara, who heads OTEC research in Japan, tells us that the project is merely in the planning stage at present and is not yet under construction.

WAVE ENERGY

"NODDING DUCK" WAVE ENERGY CONVERTERS RECEIVE FUNDING

Edinburgh University of Scotland has recently initiated additional studies of the "nodding duck" type of wave-energy converters under a grant of 400,000 pounds. (See the October issue of *Ocean Energy* for a complete story on wave energy.)

Until now, most research into this type of wave-energy conversion has been with single ducks in a controlled environment, such as wave tanks.

The new research will focus on long strings of ducks in the open ocean.

FIFTH OPEN MEETING OF OCEAN ENERGY COUNCIL SLATED FOR MARCH 6TH

The Fifth Open Meeting of the Ocean Energy Council (OEC) will be held Thursday, March 6th, from 4:45 to 7 pm, in Room 2168 of the House Rayburn Office Building in Washington DC.

The meeting is sponsored by OEC and the University of Virginia Center for Ocean Law and Policy, and the principal topic will be OTEC legal issues. Robert B. Krueger, Senior Partner of Nossaman, Krueger, and Marsh, will speak.

OEC meetings are open to all. If you are planning to attend please advise Fred Naef, (702) 872-5947, or Bud Francis, (301) 953-7100.

INTERNATIONAL CALENDAR

Listed below are conferences and symposiums pertinent to solar ocean energy. These have been gleaned from various solar, energy, and oceanographic publications. Major meetings recently completed are still listed for the benefit of readers who may wish to contact conference organizers for reports of proceedings.

Jan 14-15: Solar Energy in the '80s, London, UK. Topics include solar applications for buildings, industrial plants, economics, electricity, agriculture, and social, economic, and political implications. Info: Heliotechnic Associates International, 5 Dryden Street, Covent Gardens, London WC2 E9 NW.

Jan 16-18: 9th Symposium on Ocean Exploitation—Technology and Methods, Hotel George V, Paris France. Topics include energy and raw materials, living matter, underwater activity, and pollution prevention and control. Info: Colloque Asteo, 19 Avenue du President Wilson, 75116, Paris, France.

Jan 30-Feb 1: Third Conference on Ocean-Atmosphere Interaction, Los Angeles, California. Sponsored by the American Meteorological Society. Info: Evelyn Mazur, AMS, 45 Beacon Street, Boston, Massachusetts 02108.

Feb 3-7: Energy Sources Technology Conference and Exhibition, Hilton Hotel, New Orleans, Louisiana. Sponsored by the American Society of Mechanical Engineers. Topics include the production of offshore structures, subsea production systems, oil and gas facilities, and ocean-energy, wind, and solar technologies. Info: Paul Drummond, ASME Petroleum Division, 345 East 47th Street, New York, New York 10017, (212) 644-8074.

Feb 12-14: Sixth FDA Science Symposium, Southern University, New Orleans, Louisiana. Theme: Aquaculture: Public Health, Regulatory, and Management Aspects. Info: Dr. Charles Kimble, Office of Health Affairs, HFY-31, Food and Drug Administration, 5600 Fishers Lane, Rockville, Maryland 20857.

Feb 28-29: Synfuels Industry Development Seminar, Stouffer's National Center Hotel, Washington DC. Info: Martin Heavner, Government Institutes, 4733 Bethesda Avenue NW, Washington DC 20014, (301) 656-1090.

Mar 9-11: Eighth Annual Meeting of the National Ocean Industries Association, L'Enfant Plaza Hotel, Washington DC. Theme: The 1980s—Decade for Ocean Development. Info: NOIA, Suite 410, 1100 17th Street NW, Washington DC 20036, (202) 785-5116.

● **Mar 13-14:** Third International Conference on Thermo-electric Energy Conversion, University of Texas at Arlington, Arlington, Texas. Sponsored by the Institute of Electrical and Electronics Engineering, University of Texas at Arlington. Info: K. R. Rao, University of Texas at Arlington, Arlington, Texas, (817) 273-2671.

Mar 24-26: Seventh Energy Technology Conference and Exposition, Washington DC. Info: ET7 Program Chairman, Government Institutes, 4733 Bethesda Avenue NW, Washington DC 20014, (301) 656-1090.

Mar 31-Apr 2: Short Course in Preparation of Environmental-Impact Statements, The George Washington University, Washington DC. Info: Continuing Engineering Education, GWU, Washington DC 20052.

Apr 21-23: American Power Conference, Palmer House, Chicago. Sponsored by the Illinois Institute of Technology. Info: R. A. Budenhofer, Illinois Institute of Technology, 3300 South Federal Street, Chicago, Illinois 60616, (312) 567-3196.

● **May 5-8:** 1980 Offshore Technology Conference, Houston, Texas. Info: OTC Exhibits Manager, OTC Headquarters, 6200 North Central Expressway, Dallas, Texas 75206.

May 19-23: Fifth International Congress on Marine Corrosion and Fouling, Barcelona, Spain. Info: Secretariat of the Congress, Tilesa, Londres 41, Madrid 28, Spain.

● **Jun 2-5:** Seventh Ocean Energy Conference, Shoreham Americana Hotel, Washington DC. Sponsored by the US Department of Energy. Theme: Ocean Energy: A Time for Action. Info: Gibbs and Cox Incorporated, 2341 Jefferson Davis Highway, Suite 1020, Century Building, Arlington, Virginia 22202.

Jun 2-6: 1980 Solar Jubilee Meeting of the American Section of the International Solar Energy Society, Phoenix, Arizona. Theme: 25 Years of Sun at Work. Info: American Technological University, Box 1416, Killeen, Texas 76541.

Jun 8-15: World Conference on the Future of Offshore Structures, University of Delaware, Newark, Delaware. Sponsored by the United Nations Institute on Training and Research and the Center for the Study of Marine Policy at the University of Delaware. Info: Gerard J. Mangone, Director, Center for the Study of Marine Policy, University of Delaware, Newark, Delaware 19711.

Jun 10-14: Third Exhibition on Solar Energy and New Energy Sources, Marseilles, France. Info: Foire Internationale de Marseilles, Service SETSO, Parc Chanot, 13266 Marseilles Cedex 02.

Jun 19-22: International Exhibition and Meeting on Solar Energy and Rational Utilization of Energy, Genoa, Italy. Info: Fiera di Genova, P.le J. F. Kennedy, 16129 Genoa, Telephone (010) 595651, Telex 271424 Fierge.

Jun 23-26: Third World Hydrogen Energy Conference, Tokyo. Info: Tokyo Ohta, Conference Chairman, Japan Convention Services Incorporated, Nippon Press Center Building, 2-2-1, Uchisaiwal-cho, Chiyodaku, Tokyo 100, Japan.

Aug 6-10: 1980 Canadian National Conference, Vancouver, British Columbia. Theme: Forging the Solar Transition. Info: S. F. Leslie, Technical Papers Chairman,

Solwest 80 Conference, 504 Davie Street, Vancouver, British Columbia V6B 2G4.
● **Sep 8-10:** Oceans '80, Seattle, Washington, an international forum on engineering in the ocean environment in the next decade. Sponsored by the Institute of Electrical and Electronic Engineering and others. Info: Oceans '80, Institute of Electrical and Electronic Engineering, Incorporated, PO Box 9847, Queen Anne Station, Seattle, Washington 98109.

Sep 24-25: Intermarltec '80—International Conference on Marine Sciences and Ocean Engineering, Hamburg, Federal Republic of Germany. Info: Hamburg Messe und Congress GmbH., Congress-Organisation, Postfach 30 23 60, D-2000, Hamburg 36, Federal Republic of Germany.

● **Oct 6-8:** Marine Technology Conference and Exposition, Shoreham Americana Hotel, Washington DC. Theme: Decade of the Oceans. Info: MT '80, Marine Technology Society, 1730 M Street NW, Washington DC 20036.

US GOVERNMENT PROCUREMENT INVITATIONS AND CONTRACT AWARDS

Listed below are contract awards and procurement invitations related to solar ocean energy culled from the **Commerce Business Daily**. This is not to be construed as a complete list.

● **Dec 14:** Conduct Oceanographic Measurements off the Southeast Coast of Puerto Rico at a Depth of 2,000 Meters: RFP 4503910. The University of California Lawrence Berkeley Laboratory (LBL), an operating contractor of the Department of Energy, is soliciting proposals for a fifteen-month program of ocean-current data gathering and processing at a possible OTEC site in the ocean waters off Puerto Rico. To be considered, proposals must be postmarked not later than January 18th, 1980. University of California Lawrence Berkeley Laboratory, 1 Cyclotron Road, Berkeley, California 94720, Attn: F. W. Miller, Purchasing Department, Building 930, (418) 486-4564.

Dec 18: Support for Determining Energy, Economic, and Environmental Trade-offs: Modification 2 to Contract 68-01-5845 (RFP WA-79-C131), for \$148,488, awarded to ICF Incorporated, 1850 K Street NW, Suite 950, Washington DC 20006. Environmental Protection Agency, 401 M Street SW, Washington DC 20460.

● **Dec 27:** Test of Biofouling Countermeasures on OTEC Heat-Exchanger Tubes: Contract DE-A102-79-CH-00135.A006, for \$40,000, awarded to the US Department of the Navy, Naval Coastal Systems Laboratory, Panama City, Florida 32407. US Department of Energy, Chicago Operations and Regional Office, 9800 South Cass Avenue, Argonne, Illinois 60439.