Ocean thermal energy "feasible"

All one really needs to generate electricity is a temperature difference, whether between the boiler and condenser in a conventional steam plant or between two great land masses, to create winds that turn a propeller-driven generator. Scientists have long known that the greatest heat reservoir on earth is the sea, but only recently have practical, though small-scale devices been made to extract energy directly from this vast resource (SN: 4/13/74, p. 242). Now a study submitted to the Energy Research and Development Administration (ERDA) concludes that large-scale commercial power plants can be built, using ocean thermal generators to provide a "significant portion of U.S. electricity needs by 1990."

The study was conducted by a team of engineers from TRW, Global Marine Development, and United Engineers and Constructors. TRW program manager Robert H. Douglass Jr., discussed the findings with SCIENCE NEWS.

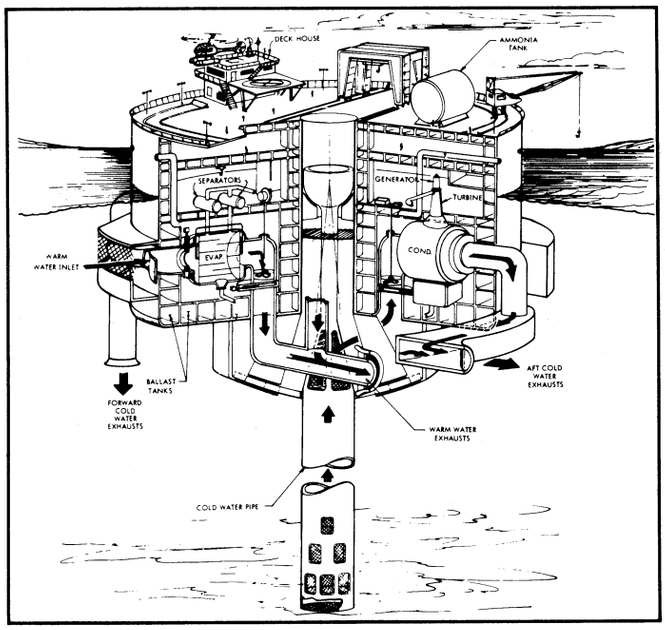
The generation of electricity using the temperature difference between water pulled up from ocean depths and water found at the surface is now technically feasible, he says, and is ready to move into the experimental stage. With a little luck—and perhaps a billion dollars of Government R&D funding—some 20,000 megawatts of installed generating capacity could be provided by 1990. This figure is comparable to the amount of nuclear power now being generated (after a much longer period of development) and the use of ocean thermal energy would involve comparatively little environmental risk.

As the industry engineers envision it, the plant would include a 17-story floating concrete hull, from which a 50-foot diameter plastic pipe would extend down about 4,000 feet to bring cold water from the sea bottom. The temperature difference between surrounding surface water and that from the pipe would be about 40 degrees F.—enough to boil and then recondense ammonia to drive electric generators. Expelled jets of waste water could be used to hold the platform in place against a 1.5-knot current or 70-knot wind.

The overall design is a relatively conservative one, steering a middle course between the more speculative projects envisioned by enthusiastic thermal-energy advocates and the yawning skepticism of the financial community, which demands to see a working prototype before sinking hundreds of millions of dollars into a commercial venture. Rather than relying on hoped-for technical advances that could render the project much less expensive, the industry engineers have taken what Douglass calls a "brute force approach," hoping to demonstrate feasibility with present technology.

The heat exchangers, for example, would be built with titanium—an expensive but very reliable material in the corrosive ocean environment. To keep the internal channels free from growing algae, the team proposes circulating rubber balls throughout the system. Less expensive ideas may come with further research, such as specially coated aluminum piping to replace the titanium, but the push now is towards certainty and a beginning.

The new system, as proposed, should be competitive with conventional plants operating with fuel (residual, No. 6) at $17 a barrel. The current rate is about $15 and during the oil embargo, it rose to $25. Also, the platform would be large enough to house an additional factory to use some of the generated electricity. □



Cutaway of proposed ocean-thermal energy converter (OTEC). Cold water enters from bottom; warm water from top. Ammonia is used to drive turbine.

More public access to NAS information

Philip Handler, president of the National Academy of Sciences, last week announced a new policy permitting greater public access to information generated by study committees of the National Research Council, the operating agency for the NAS, the National Academy of Engineering and the Institute of Medicine. The council's governing board is in the process of drawing up specific guidelines to implement the new policy.

The guidelines will establish the right of public access to the minutes or transcripts of meetings of study committees, copies of documents submitted to the committees and other reports and comments received. Only classified information, trade secrets and personal matters will be exempted.

In addition, committees will be encouraged to hold open meetings during the initial stage of a study project to receive data and opinions from the public. If the final report is likely to generate popular interest, a final public session will be held for presenting a committee's findings.

Executive and working meetings of committees will remain closed to the public. The new guidelines culminate a gradual change in academy policy begun during Handler's first term as president. □

The apotheosis of Fred Whipple

Planets used to be named after gods—major ones after major gods, minor ones after minor gods. Now the astronomers are naming them after each other. The latest to be so exalted is Fred L. Whipple, Phillips Professor of Astronomy at Harvard University. The asteroid now named Whipple was discovered on plates taken February 2 by Richard McCrosky and Jerome Shao of the Smithsonian Astrophysical Observatory. Other astronomers with namesakes in the asteroid belt are William C. and George P. Bond (Bondia), Edward G. Pickering (Pickeringia) and Harlow Shapley (Shapleya). There is also an astronomer's mother—Whipple's. In 1933 he named Celestia after her. □

The Getty Prize

The first John Paul Getty Award for Wildlife Conservation has been awarded to Felipe Benavides for saving the vicuna from extinction; the recipient donated the entire $50,000 to the game preserve he helped set up. Getty was pleased enough with public reception of the award to offer another one for next year. Many conservationists hope the prize will become a permanent feature. □