

Ocean Law Memo

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SEABED MINING, OCEAN THERMAL ENERGY CONVERSION, AND AQUACULTURE: NEW FEDERAL LEGISLATION

During 1980 Congress added three new laws to the ocean and coastal legislation of the 1970's. They are the Deep Seabed Hard Mineral Resources Act ("Seabed Mining Act"), the Ocean Thermal Energy Conversion Act ("OTEC Act"), and the National Aquaculture Policy, Planning and Development Act ("Aquaculture Act"). Implementation of the Seabed Mining Act has begun and the first applications for exploratory licenses are expected to be submitted in the near future. Implementing regulations for the OTEC Act have been published, but implementation of the Aquaculture Act depends more on future Congressional appropriations decisions. The long-range implications of all three laws are significant. This Ocean Law Memo summarizes the major provisions of all three acts and discusses important issues raised by them.

DEEP SEABED HARD MINERAL RESOURCES ACT

In June, 1980, Congress passed the Deep Seabed Hard Mineral Resources Act.¹ The Act was intended to improve the investment climate for private ocean mining interests during the interim period prior to the effective date of a Law of the Sea treaty to be adopted by the U.N. Conference on the Law of the Sea (UNCLOS). At the time of passage, it appeared likely that such a treaty would someday regulate seabed mining on an international level. The domestic Deep Seabed Mining Act may have increased in importance now that the Reagan administration has stalled U.S. participation in UNCLOS negotiations, pending review in particular of the proposed treaty's seabed mining provisions.

The Act deals with the mining of manganese nodules, fist-sized lumps of minerals found primarily on the deep seabed in international waters at depths of 12,000 to 20,000 feet. The nodules contain manganese, iron, nickel, copper and cobalt. Some estimates place the potential supply of nodules as high as 1.5 trillion

tons. Manganese, cobalt and nickel are considered to be "strategic" to U.S. industrial and national security interests, because they are used to impart strength and temperature and corrosion resistance to steel alloys. The U.S. currently imports virtually all of its supply of these metals from a handful of foreign sources, many of them in the Third World. The Act is premised on the belief that the U.S. must develop its own source of these "strategic" minerals to ensure a supply in the event of worldwide shortages, price dislocations or political disruptions.

It was Congress' view that substantial investment and a relatively long lead time are needed to develop fully the technology and capability necessary for commercial exploitation of the nodule resource. Congress feared that this private investment would not take place because of the uncertainty as to the nature of an UNCLOS treaty regime and the degree of seabed access the treaty rules would provide to investing U.S. companies. Therefore, Congress enacted this legislation with the stated purposes of both encouraging the completion of a Law of the Sea treaty and creating a domestic legal regime to encourage private investment and technology development. The Act also creates an interim regulatory program to ensure that ocean mining is conducted in a manner which conserves the resources, protects the environment and promotes safety at sea.

RELATIONSHIP OF THE ACT TO A FUTURE LAW OF THE SEA TREATY

The Act provides that any future Law of the Sea treaty to which the U.S. becomes a party will supersede the Act, but only to the extent that the two legal regimes are inconsistent with each other. Congress included several provisions in the Act addressing fears expressed by U.S. miners about a future international treaty.

¹30 U.S.C. § 1401.



The Act clearly states Congress' intent that any future Law of the Sea treaty shall provide U.S. citizens with "assured and non-discriminatory access" to mineral beds under reasonable terms and conditions. Congress also intended that a Law of the Sea treaty shall provide "security of tenure" to U.S. miners by recognizing their right to continue mining or exploration activities begun prior to the effective date of an international agreement. However, the Act provides that the U.S. will not be liable for any impairment in the value of investments sustained as a result of U.S. participation in an international agreement.

The Act purports to recognize the principle that the mineral resources of the deep seabed are the "common heritage of mankind." This concept is central to the philosophy behind the UNCLOS negotiations. However, the official U.S. understanding of this principle undoubtedly differs significantly from that of many Third World nations involved in UNCLOS negotiations. The Act provides for a revenue sharing trust fund to be created by taxing mining revenues at a rate of .75% of the fair market value of commercially recovered minerals. This fund is to be used to share mining revenues with other nations in the event that an international deep seabed mining treaty is completed.

The Act takes the position that in the interim before a Law of the Sea treaty, any nation has the right, as part of the freedom of the high seas, to recover nodules from international waters. The Act expressly states that the U.S. makes no claims of sovereignty over or ownership of areas or resources of the deep seabed in international waters. The nodules are thus viewed as there for the taking by any U.S. citizen complying with the Act or by any other nation, as long as the mining nations do not unreasonably interfere with the right of other nations also to use the high seas and recover nodules or similar resources.

THE APPLICATION PROCESS

The Deep Seabed Mining Act requires a U.S. miner to obtain a license from the Administrator of NOAA to explore for nodules and a permit before the miner may engage in commercial recovery. Each license or permit gives the holder the exclusive right to explore or mine a specific area, but only as against other U.S. citizens. As interpreted by the U.S., present international law does not prohibit a foreign miner, in exercise of freedom of the seas, from exploiting the same area.

An applicant must demonstrate financial and technical ability to mine the resource and to meet all obligations that may be imposed, such as environmental protection measures. A work plan must be submitted

with each application which details the area to be explored or mined, the methods to be used, and the measures taken to protect and monitor the environment.

The Administrator of NOAA is required to issue a license or permit to any qualified applicant for the area requested, with some exceptions. For instance, a license or permit must be denied if it is found that commercial recovery of nodules from the area will result in unavoidable and significant adverse environmental effects.

The exploration licenses will be issued to qualified applicants on a first come, first served basis. The holder of a ten-year license to explore a specific area will then have preference to secure the permit to commercially recover nodules from the explored area.

The Administrator of NOAA is directed to consult with Regional Fishery Management Councils prior to issuance of any license or permit if it appears that a fishery resource could be adversely affected. In contrast to certain other federal legislation, the Deep Seabed Mining Act makes no provision for the approval by or consultation with coastal states prior to license issuance. Deep seabed mining may have at least some indirect effects on coastal areas of the U.S., because the Act requires any shore-based processing of minerals to take place in the U.S.

MULTINATIONAL VERSUS INTERNATIONAL MINING REGIME

Former U.S. Ambassador to the U.N. Conference on the Law of the Sea, Elliot Richardson, has stated that "the mining industry itself recognizes that only a treaty regime can meet its requirements for exclusive rights to particular mine sites." However, there has been a shift in emphasis with the current administration. Secretary of the Interior James Watt has suggested that "if the present Law of the Sea draft were adopted, the U.S. deep seabed mining industry would collapse for want of a secure investment climate." Government and mining interests fear that a Law of the Sea treaty might require the mandatory transfer of technology, set unreasonable limits on site selection and production, and worst of all, might not recognize the right of miners to continue operations begun prior to the treaty. These fears have led the U.S. to withdraw from active treaty negotiations pending review of the proposed treaty. Under these circumstances, the Deep Seabed Mining Act's "reciprocating states" provision² may become more important.

The "reciprocating states" provision

²30 U.S.C. § 1428.

allows the Administrator of NOAA to designate other nations as reciprocating states, if they meet certain criteria. The U.S. and the designated nations would coordinate their respective license and permit programs to avoid conflicts over mining areas. To become a reciprocating state, another nation must create a domestic regulatory system for its miners that is compatible with the U.S. Act and that respects licenses and permits issued by the U.S. West Germany recently enacted seabed mining legislation similar to the U.S. approach.

The "reciprocating states" provision would make it possible for the U.S., together with other technologically advanced nations such as Japan, France, West Germany and the United Kingdom, to create a reciprocating states regime to regulate ocean mining as an alternative to an international regime under a Law of the Sea treaty. A multinational reciprocating states system may be viewed by some as more favorable to U.S. and private mining company interests, because it would eliminate conflicts between the handful of nations with ocean mining capability and, at the same time, avoid obligations and restrictions likely to be present under a Law of the Sea treaty international system.

The multinational reciprocating system --or a "mini-treaty" among the mining nations--would also have drawbacks, however. The other nations of the world could still claim rights to the deep seabed nodules as part of the "common heritage of mankind," a principle which the U.S. recognizes in some form. The U.S. would also lose the strategic benefits of other provisions of the proposed Law of the Sea treaty, such as right of passage through the world's international straits. And, of course, there would be a loss of goodwill between the U.S. and much of the Third World. Extensive seabed claims by coastal Third World nations would be another possible consequence of the mini-treaty or reciprocal approach.

ENVIRONMENTAL PROTECTION

Commercial recovery of nodules will impact the ocean environment in several ways. Some mining methods likely to be used may stir up and distribute sediments and other debris in the lower part of the water column. A surface plume of bottom debris will result when nodules are collected at the ship and the finer debris is dumped back in the ocean. Heavy metals found in the sediments could be taken up into the food chain at this point and eventually become accumulated in the larger predator species such as tuna. The clouding of the water and the increase in surface nutrients may affect fish larvae and fish migrations. It is even possible that

heavy metals from the bottom sediments could undergo thermal or chemical alteration at the surface, with toxic results to some marine life. There will also be additional surface discharges of solid and chemical wastes if the nodules are processed by factory ships at sea.

Because of these and other potential impacts, the Act directs NOAA to expand and accelerate its Deep Ocean Mining Environmental Study (DOMES), in an effort to collect basic scientific baseline information on the ocean environment. Section 1419(c) of the Act directs NOAA to prepare a programmatic environmental impact statement (PEIS) for any large area of the world's oceans, if NOAA in consultation with other federal agencies determines such a study to be necessary. The Act requires a PEIS for the large region of the ocean where the first mining is likely to occur. A final PEIS, covering an area between Hawaii and the mainland, was released in Sept. 1981. It said most of the possible impacts mentioned above are of low probability or limited extent. A site-specific EIS must be prepared by NOAA for each license or permit to be issued, discussing possible impacts in the specific area covered by the individual license.

The Act also provides that uniform conditions and restrictions shall be placed on all permits and licenses as necessary to assure protection of the environment. Individualized restrictions and conditions may attach to any individual permit if required to meet a special need for environmental protection in a specific area. Even after a permit is issued, NOAA may modify its terms and conditions as required to minimize environmental impacts. NOAA must require new permit holders and existing permit holders, where practicable, to use the best available technologies whenever mining activities pose a significant threat to the environment.

Other environmental laws also apply to deep seabed mining. For instance, the Act declares that any vessel used in the recovery or processing of manganese nodules is subject to the Clean Water Act and its permit requirements for pollution discharges from point sources.

MISCELLANEOUS PROVISIONS

Section 1412 may benefit the U.S. shipping industry by requiring that all mining vessels and at least one transport vessel for each mine site be documented under the laws of the U.S. This section also requires, with limited exceptions, that any land-based processing of nodules take place in the U.S. These provisions were enacted despite criticism that their protectionist nature might place unnecessary restraints on the mining companies, which are often multinational in composition.

Finally, the Act also contains "citizen

suit" and attorneys fees provisions. This allows persons with a "valid legal interest" to sue to enforce the provisions of the Act and authorizes the court to award attorneys fees as part of the relief granted.

OCEAN THERMAL ENERGY CONVERSION ACT OF 1980

Congress intended the Ocean Thermal Energy Conversion Act (OTEC)³ to create a stable legal regime which would encourage the commercial development of OTEC facilities by private industry, while at the same time protecting the environment and the interests of other users of the high seas. The Act was also intended to ensure that any OTEC licensing by the federal government is consistent with the federally approved state coastal management plans of affected states.

Ocean thermal energy conversion is solar energy technology which utilizes the temperature differential between warm ocean surface waters and cold, deep waters to produce electricity. The warm water is used to heat and vaporize a low boiling point working fluid, which expands within a closed system and turns an electricity generating turbine. Cold water from a depth of approximately 1000 meters is continuously pumped to the surface and used to cool and recondense the working fluid.

The OTEC principle can be applied most efficiently in the warmer areas of the world's oceans where the temperature differential between surface and deep waters is 20°C or more. The areas under U.S. jurisdiction which are most likely to utilize OTEC for power generation are the southeastern U.S., the Gulf of Mexico region and the islands of Hawaii, Puerto Rico, Guam, the U.S. Virgin Islands and American Samoa. The most probable types of OTEC facilities are shore-based power facilities, moored stationary power facilities connected to the shore by submarine transmission cables, and OTEC plantships. The plantships will cruise slowly through the world's warmer oceans, using the electricity generated to refine metals like aluminum or to produce energy intensive fuels and chemicals.

OTEC facilities bring cold water to the warm surface and thereby may create a thermal plume which could disrupt the thermal gradient in an area of the ocean. A licensing system is desirable because by planning the location of facilities, it helps prevent the thermal plume produced by one facility from disrupting the thermal gradient necessary to power another OTEC facility.

THE LICENSING PROCESS

The National Oceanic and Atmospheric

³42 U.S.C. §§ 9101-67.

Administration (NOAA) is the federal agency to which Congress has given primary authority over the OTEC program. NOAA published rules and regulations in the Federal Register on July 31, 1981, which implement the Act and govern the issuance of OTEC licenses.

The Act provides a "one stop" application process for all the federal authorizations required to put an OTEC facility into operation, with the exception of Coast Guard vessel documentation requirements. Because the "one stop" application serves many purposes, a variety of information must be submitted. The required environmental data take the form of an assessment of likely environmental impacts. Each licensee is required to monitor the environmental effects of its OTEC operation and to submit a plan for an environmental monitoring program along with the license application.

Other environmental legislation may also apply to an OTEC facility, therefore the implementing regulations require the applicant to submit in the application the information necessary to comply with such laws. Some of the laws which might apply to a given OTEC are the Coastal Zone Management Act, the Endangered Species Act, and the various water pollution discharge and dumping permits required by the Clean Water Act and the Marine Sanctuaries Act.

In addition to the mandatory one stop application for federal authorizations, NOAA's regulations also provide a voluntary Consolidated Application Review (CAR) process. The goal of the CAR process is to reduce the time needed to obtain any necessary state or local authorizations or permits, and to promote communication and cooperation among the various levels of government and the applicant.

An application fee of \$250,000 has been set by NOAA, which reflects the agency's estimate of the administrative costs of processing an application.

ENVIRONMENTAL PROTECTION

The basic approach to environmental protection taken by NOAA is to assess and respond to the environmental impact problems of each particular OTEC facility or plantship on an individual basis. Necessary measures to protect the environment will be included as conditions or terms in the individual license. NOAA has taken the position that existing environmental laws and regulations are adequate to protect the environment. Therefore, NOAA does not specify any detailed technical environmental or plant design measures. The environmental effects caused by redistribution of large volumes of cold water are still uncertain in part, but the agency expects impacts to be minimal when compared

to other power technologies.

Section 9117 of the Act mandates NOAA to conduct an environmental assessment study of the entire OTEC program and to collect baseline environmental data for use in monitoring potential impacts. The Act also requires that an Environmental Impact Statement be prepared for each individual OTEC license application. The environmental assessment study, the individual EIS and the information submitted by the applicant will aid NOAA in devising any necessary conditions or terms to be included in the individual license. The regulations also require that NOAA conduct a review of each licensed OTEC facility or plantship at least every three years to determine if any terms or conditions of the license should be revised or modified.

FEDERAL-STATE CONSISTENCY

Federal-state consistency provisions contained in sections 9111 and 9115 are another important feature of the Act. They provide that the governor of each "adjacent coastal state" with a federally approved state coastal zone management program in good standing pursuant to the Coastal Zone Management Act of 1972, can stop a federal OTEC license from being issued if in the governor's view the application is inadequate or inconsistent with the state's coastal management program.

This consistency requirement takes on added significance now that industry indicates that land-based plants will play a larger role than originally envisioned. States are likely to be concerned with such problems as the destruction of habitat for pipelines and cables, entrainment of marine life by pipes, and the release of biocides used in cleaning pipes.

A coastal state is automatically designated an "adjacent coastal state" by the Act if it is linked by transmission cable to an OTEC facility or a facility or plantship operates in the state's territorial waters. Other states may request "adjacent coastal state" status from NOAA if the risk of damage to their coasts is equal to the risk imposed on another state required to be so designated. Adjacent coastal state status may also be requested if the thermal plume from a proposed OTEC facility is likely to disrupt the thermal gradient at locations which could reasonably be used for OTEC plants linked to the state making the request.

Adjacent coastal state status is crucial to any state seeking a larger role in OTEC licensing. Only adjacent coastal states with federally approved coastal plans can require OTEC licensing to be consistent with state coastal goals. Other states may only make their views

known to NOAA. Narrow federal interpretations of similar adjacent coastal state provisions in the federal Deepwater Port Act of 1974 have generated some controversy.

The Coastal Zone Management Act of 1972 also contains consistency provisions with slight differences. This leads to the question of how the two acts are to be reconciled on consistency issues. For instance the OTEC Act provides that no permit will be issued if the governor objects that the license is inconsistent with the approved state coastal program. The Coastal Act has a similar provision, but also has an administrative appeals process to handle such cases. NOAA takes the position that the OTEC Act supercedes the Coastal Zone Management Act, but only to the extent that the two acts are actually in conflict.

LAND-BASED OTECS

An OTEC facility located on shore would require warm and cold water pipes extending into the ocean. Only the pipes themselves would meet the Act's definition of "OTEC facility" which includes any integral part of a facility utilizing the OTEC principle which is located "seaward of the high water mark." The Act also requires documentation of the facility by the U.S. Coast Guard as a prerequisite to licensing. A problem results because the Coast Guard does not normally document buildings or pipes, and therefore neither the facility nor the pipes could be licensed. It is NOAA's position that Congress intended land-based OTECs to be licensed, at least to the extent that integral parts of the facilities (the water pipes) are seaward of the high water mark. NOAA and the Coast Guard have therefore decided to recommend an amendment removing the documentation requirement as a prerequisite for licensing the waterpipes of land-based plants. The one drawback to this solution is that without documentation the waterpipes could not receive the loan guarantees from the Maritime Administration to which documented OTECs are entitled.

MISCELLANEOUS PROVISIONS

The Act requires that every vessel used to transport products from an OTEC plantship must be documented under the laws of the U.S. This may benefit the shipping industry as well as help to maintain high standards for transport vessels.

Another provision requires OTEC licensees to reimburse fishermen for fishing gear sacrificed to avoid damaging submarine cables, provided that the fishermen took reasonable precautions beforehand.

The OTEC Act, like the Deep Seabed Mining Act, contains "citizens suit" and attorneys fee provisions. These provisions encourage enforcement of the Act by interested parties.

CONCLUSION

If OTEC proves to be an economical source of power, it will have several beneficial features. It does not directly consume fuel, and it may be relatively non-polluting. However, a study done by the Congressional Research Service at the request of Sen. Lloyd Bentsen (D-Texas) rated OTEC very low in its potential to contribute to the nation's energy supply by the year 2000. The study stated that complex cost and engineering problems remain to be solved before widespread commercialization can take place. However, the General Accounting Office and others have pointed out that the OTEC principle may be of greater value than originally envisioned. The OTEC principle provides a variety of alternative applications suited to different locations and uses. Other possible OTEC systems include one which would produce fresh water as a by-product and an open ocean mariculture project using the OTEC principle to increase the nutrient content of low productivity waters.

NATIONAL AQUACULTURE ACT OF 1980

Unlike the two Acts discussed above, the National Aquaculture Act of 1980⁴ does not establish a licensing and regulatory framework. The Aquaculture Act instead places the federal government in an informational and advisory role with respect to state, local and private interests. The Act requires the Secretaries of Agriculture, Commerce, and Interior to establish a National Aquaculture Development Plan. The plan is to pinpoint the aquatic species that have significant potential for commercial production and what types of information and research are necessary to develop this potential.

The Act sets up an interagency aquaculture coordinating group consisting of the heads of twelve federal agencies or their designees. This group will oversee the collection and dissemination of information, and recommend specific federal actions to encourage aquaculture. Key functions of the group are to coordinate all federal activities affecting aquaculture and to make sure such activities are consistent with the purposes of the Act.

The Act requires the interagency group to prepare two studies. A Capital Requirements Study is to document and analyze any capital constraints which hinder aquaculture development and to evaluate what role federal financial assistance does or could play in removing these constraints. Originally Congress had envisioned a larger and more direct role for the federal government, which included loan guarantees and insurance programs to encourage aquaculture. A veto

of the earlier legislation led to the present Act, which emphasizes study of the restraints on aquaculture rather than costly expenditure programs.

A Regulatory Restraints Study is also required by the Act. This study is to identify federal and state laws and regulations which may hinder commercial aquaculture. Aquaculture involves the use of fresh or salt water and often takes place on the coast or in or around estuaries and rivers. Therefore, an aquaculture project often involves a variety of state and local planning, land use and permit programs. The concern expressed is that if these regulatory programs fail to account for the unique needs and benefits of aquaculture, they may prove to be insurmountable barriers to would-be aquaculturists. A goal of the Act is to encourage planners and regulators on all levels to facilitate the development of aquaculture. For example, Oregon Land Conservation and Development Commission Land Use Planning Goal 16 governing estuary management expressly mentions aquaculture and provides guidelines on how it is to be handled in estuary planning and management.

The degree to which the Aquaculture Act will be implemented is uncertain at this time due to the Reagan administration's current budget-cutting efforts. Various aquaculture programs were identified early for possible cuts. The Act itself, however, remains as a strong expression of the value of aquaculture and the need for increasing its role in the U.S.

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⁴16 U.S.C. § 2801.