

RIVALRY AND COORDINATION IN MARINE HARD MINERALS REGULATION

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ABSTRACT

Marine hard minerals are being promoted for potential contribution to national supply. The timely and efficient development of these potential public resources could be distorted by rivalrous federal agency behavior in the multiple agency framework that includes both the Commerce and Interior Departments. The importance of marine hard mineral development may be exaggerated as agencies bid for constituency and seek to expand jurisdictional domain. Alternatively, impediments may be created by duplication of effort, confusing signals, false starts, and diversion of resources to rivalrous activities. Under some conditions, however, competition between agencies can serve as a check on regulatory excesses and can provide valuable diversity of information to policymakers.

BACKGROUND

Interest in the exploration and development of potential hard mineral resources in a marine setting has been heightened by the Presidential creation of a U.S. Exclusive Economic Zone (EEZ) as well as by exciting recent discoveries of new classes of actively accruing mineralizations at certain offshore sites (Broadus, 1984; Rona, 1984; USGS, 1983; Hatem, 1983). Although Congress has established the development and augmentation of minerals resources as an important national goal, there are indications that the effective development and management of these opportunities could be hampered by inadequately coordinated or rivalrous agency behavior in a multiple-agency management framework.

Jurisdictional ambiguities and interagency rivalry have been striking features of marine hard minerals management in the United States. This fact is well recognized by participants in the process, but it seldom has been subject to public discussion and academic analysis. Actually, such ambiguities and rivalries can be expected in any situation where one agency has general management responsibility for a medium where resources are found (such as ocean space) while another agency manages a class of resources (such as hard minerals) that might be extracted from that medium. Our discussions with officials in other governments, for example, suggest that similar situations have been experienced in at least France, Colombia, and the Peoples Republic of China.

In the U.S. case, with hard minerals found on the continental margin and on the deep seabed, at least two federal agencies may have the statutory authority to construct comprehensive management frameworks that regulate prospection, exploration, and exploitation (McManus, 1983). These two agencies are characterized briefly in Figure 1. Under the Outer Continental Shelf Lands Act (OCSLA), the Secretary of the Interior is authorized to lease lands of the outer Continental Shelf (OCS) for hard mineral development (43 U.S.C. 1337 (k) [1976 and Supp. IV 1980]). Within the Interior Department, the Minerals Management Service (MMS) has been assigned this function (MMS, 1983b). Under the Deep Seabed Hard Minerals Resources Act of 1980 (DSHMRA), the National Oceanic and Atmospheric Administration (NOAA) of the Department of Commerce is authorized to license or permit private firms to explore or exploit areas of the deep seabed (defined in the Act to be seaward of the continental shelf) on an interim basis pending entry into force of a Law of the Sea (LOS) Convention or, on an alternative basis, pursuant to an effective reciprocating states mini-treaty (30 U.S.C. 1401 et seq. [Supp. V 1981]).

Although there is an apparent clear division of responsibility at the continental shelf boundary, the actual division is in fact uncertain. The exact extent of the U.S. outer Continental Shelf has not been officially delimited, so questionable jurisdictional boundary definitions may have to be decided on a costly case-by-case basis. Further, with the presidential proclamation of a U.S. Exclusive Economic Zone (EEZ), yet another enclosure has been created. Although the exact extent to which the EEZ may create jurisdictional overlaps between Commerce and Interior has not been determined, there seems to be little doubt that such overlaps will in fact exist (McManus, 1983).

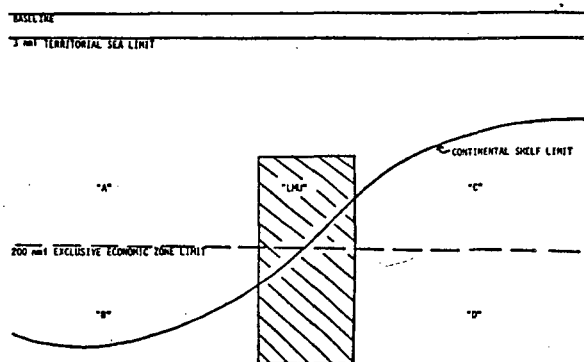
Implementing legislation for establishment of the EEZ has been drafted (H.R. 2061, 1983; S. 750, 1983). Details are not yet in place, however, and some observers argue that legislation is not even required at this time (Ocean Science News, 1983). An effort to resolve jurisdictional overlaps between NOAA and Interior agencies surely will be made in drafting the EEZ legislation. Some progress in that direction already has been achieved, in fact, between USGS and NOAA (Byrne and Peck, 1983, 1984). Some ambiguities about the agencies' roles and relationships still do exist, however, and are likely to persist.

FIGURE 1: COMPARISON OF AGENCY ROLES

	<u>NOAA</u>	<u>MMS</u>
AGENCY MISSION:	Exercise leadership in developing a national oceanic and atmospheric program of research and development; coordinate scientific and technical resources with the technical and operational capabilities of other government agencies and private institutions; continue liaison with other agencies to ensure that environmental questions are dealt with in their totality.	Full responsibility for managing Interior's energy revenue accounting program and the OCS oil and gas leasing program; responsible for hard rock minerals leasing activities in U.S. offshore areas as part of a program that permits exploration, development, and mining of a wide variety of non-energy mineral resources.
PARENT AGENCY:	Department of Commerce.	Department of the Interior.
ENABLING LEGISLATION FOR MARINE HARD MINERALS:	Deep Sea Hard Minerals Resources Act of 1980 (30 U.S.C. 1401 et seq.). "DSHMRA".	Outer Continental Shelf Lands Act (43 U.S.C. 1337(k)). "OCSLA".
RESOURCE:	"Hard mineral resource" or "any deposit or accretion on, or just below, the surface of the deep seabed of nodules which include one or more minerals, at least one of which contains manganese, nickel, cobalt, or copper."	"Any mineral other than oil, gas, and sulphur." (Oil, gas, and sulphur are covered under other provisions of the OCSLA.)
AREA OF JURISDICTION:	"Deep seabed" and "ten meters of the subsoil" beyond the continental shelf and beyond areas of foreign national jurisdiction (which are located beyond the continental shelf and which are recognized by the United States).	"Any area of the outer Continental Shelf not then under lease" and within 200 nmi "pending completion of a study of the limits of U.S. continental shelf jurisdiction" (48 Fed. Reg. 2450 (1983)).
AREAS OF JURISDICTIONAL AMBIGUITY:	Areas beyond the continental shelf, but within the EEZ of the United States; promotional activities; research activities.	Areas on the outer Continental Shelf, but beyond the 200 nmi EEZ limit; promotional activities; research activities.
REGULATORY PURVIEW:	Exploration for and commercial recovery of hard mineral resources of the deep seabed; environmental assessment of hard mineral resource development; conservation of hard mineral resources; protection of environmental quality; promotion of the safety of life and property at sea; encouragement of the continued development of recovery technology.	Bonus bid mineral leases; royalties, rentals, and other terms and conditions prescribed by the Secretary of the Interior; management of post-lease exploration, development, and production activities.
ACCESS PROVISIONS:	Grant "licenses" to explore and "permits" for commercial recovery of hard minerals of the deep seabed.	Competitive bonus bid leases or other kinds of lease systems to be determined.

The jurisdictional aspects can be depicted as shown in Figure 2. Area "A" in this figure, located on the continental shelf and within 200 nmi of the baseline from which the territorial sea is measured, is clearly within the jurisdiction of MMS for hard mineral leasing purposes. Area "D", located seaward of the continental shelf break and the 200 nmi limit, falls clearly within the jurisdiction of NOAA for "nodules" exploration licensing and commercial recovery permitting purposes. The principal areas of apparently overlapping authority, jurisdictional ambiguity, or undefined responsibility are: (1) any OCS areas (area "B") that may exist beyond the 200 nautical mile (nmi) EEZ (see MMS, 1983a); (2) any areas that may exist within the 200 nmi EEZ but beyond the limit of the OCS (area "C"); and (3) any "non-nodule" resources that may exist beyond both the 200 nmi EEZ and the limit of the OCS.

FIGURE 2: JURISDICTION OVER AREAS OF POTENTIAL MARINE HARD MINERAL RESOURCES



Although DSHMRA is specific in its application to "nodules" as a hard mineral resource, it is possible that the Act could be interpreted or amended to apply to any potential hard mineral resource seaward of the continental shelf or exclusive economic zone. See, for example, the domestic seabed mining laws of France (21 I.L.M. 808-14 [1982]), the Soviet Union (21 I.L.M. 551-53 [1982]), and the United Kingdom, Section 1(6), (20 I.L.M. 1217-27 [1981]), and the United Nations Convention on the Law of the Sea, Art. 162(2)(c)(11), (A/CONF.62/122 [7 October 1982]).

Apart from unresolved questions of geographical jurisdiction, a real problem may arise in cases represented by the hatched area in Figure 2 labelled "IMU" (for "logical mining unit") where an area of minimum efficient size for economic exploitation of a resource spans constructed legal and geographic boundaries. Since the "IMU" area may overlap both areas "A" and "D" (as well as areas "B" and "C"), it is clear that both agencies may have jurisdiction over a portion of a potential resource.

Even if such ambiguities are satisfactorily resolved for geographical issues, they will be more difficult to unravel for the respective promotional, research and development (R&D), and support responsibilities of Commerce and Interior.

THE ROLES OF INTERIOR AND COMMERCE

Interior has had the statutory authority to manage marine hard minerals on the outer Continental Shelf since the enactment of the OCSLA in 1953. Interior has promoted domestic marine hard mineral development since the 1960's. In accordance with the Mining and Minerals Policy Act of 1970 (P.L. 91-631), Interior has been responsible for encouraging private development of domestic mining, mineral and metallurgical research, and reclamation methods. In 1975, Interior established an Ocean Mining Administration (OMA) to coordinate ocean mining efforts within the department, including marine geological research activities conducted by the U.S. Geological Survey (USGS) and studies on the environmental effects of manganese nodule metallurgical processing by the Bureau of Mines. Interior actively supported domestic deep seabed legislation in the late 1970's, until DSHMRA was passed giving NOAA primary management authority over deep seabed marine hard minerals. Interior's MMS has prepared an environmental impact statement (EIS) for a proposed lease sale of presumed marine polymetallic sulfide (MPS) deposits associated with the Gorda Ridge within the EEZ off California and Oregon (MMS, 1983c) and has initiated a similar process toward leasing areas of ferromanganese crusts in the EEZ offshore Hawaii (MMS, 1984). MMS had prefaced its Gorda Ridge EIS notice with a jurisdictional claim for the management of marine hard minerals on the U.S. outer Continental Shelf (MMS, 1982, 1983a).

NOAA's marine minerals responsibilities originated with the organization of the agency in 1970. At that time, the Marine Minerals Technology Center of Interior's Bureau of Mines was transferred to the new agency in the Commerce Department. In September of 1975, an Office of Marine Minerals (OMM) was established in NOAA. OMM's responsibilities ranged from environmental assessment and resource evaluation to industrial assistance. OMM's primary efforts were directed at the Deep Ocean Mining Environmental Study (DOMES) and an evaluation of the potential effects of metallurgical processing of manganese nodules in the coastal zone (Lane, 1977). In 1980, the enactment of DSHMRA placed NOAA in the lead role as regulator of deep seabed hard mineral development. That same year, NOAA initiated research cruises on MPS deposits (Malahoff, 1983). A five-year research program was designed to facilitate industrial evaluation of the commercial promise of MPS (Duane, 1982), but this appears to have been modified to emphasize more basic scientific study of the hydrothermal vent systems. NOAA's marine hard mineral management authority is administered through its Office of Ocean Minerals and Energy (OME).

Because of the relatively primitive state of knowledge about marine hard minerals and the embryonic stage of their development as economic resources, a major share of management activity in the near-term will necessarily involve programs of scientific research. Agency roles and responsibilities overlap significantly in the area of scientific research. Recently, as shown in Figure 3, major advances appear to have been made between NOAA and USGS with regard to the recognition of individual and overlapping agency

responsibilities for research in the water column, beneath the ocean floor, and on the ocean floor (Byrne and Peck, 1983). Even more recently, NOAA and USGS have agreed through a memorandum of understanding to complement each other's activities in a bathymetric survey of the EEZ (Byrne and Peck, 1984).

retard efforts to develop the area's resource potential. On the other hand, if the resource can be independently developed and exploited by separate parties, each may accelerate its own development activities in order to recover as much as possible before the other: the well-known "common pool" effect.

FIGURE 3: NOAA-USGS AGREEMENT



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
Washington, DC 20230
THE ADMINISTRATOR

June 29, 1983

Mr. Dallas L. Peck
Director
Geological Survey
United States Department of
the Interior
Reston, Virginia 22092

Dear Dallas,

Thanks for your letter of June 17, 1983, concerning the Memorandum of Understanding about sea floor activities. I agree we should reiterate the agreement you and I have about division of responsibilities.

I have fine-tuned your comments of June 17 to reflect what I believe you and I agreed to some time ago.

NOAA has primary responsibility for the water column; the United States Geological Survey has primary responsibility for sediment and rock investigations beneath the ocean floor. Both agencies have responsibilities for processes operating on the ocean floor. We recognize that each agency may carry out research in the areas of the other's primary responsibility, in addition to conducting research and other activities for which each agency has primary responsibility.

If you agree, please sign below so that we can make copies available to both of our troops. Thanks.

Sincerely,

John V. Byrne

Dallas L. Peck
Director, USGS



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tradition of service to the Nation

In spite of such advances in mutual understanding, it appears that NOAA and Interior may continue to share jurisdiction over a common industrial constituency. Preliminary indications show that, in several cases, those private firms that are already dealing with NOAA on manganese nodule development are the same firms that have shown interest in potential MPS resources. A recent General Accounting Office study reveals that such firms may be looking to MPS development as a supplementary or alternative source of returns to their investments in seabed mining technology (GAO, 1983).

EFFECTS OF MULTIPLE AGENCY MANAGEMENT

Where areas containing potentially valuable natural resources are subject to jurisdictional ambiguity or dispute, as in internationally contested territorial claims, the pace of resource development activities is subject to two somewhat offsetting effects. Jurisdictional uncertainties can impose additional costs—via increased uncertainty, dispute management, and the possibility of interrupted tenure—that will discourage and

Similar effects might be expected in a multiple-agency management context, where jurisdictional turf is in dispute. Impediments may be created by duplication of effort, confusing signals, false starts, and diversion of resources to rivalrous activities. Alternatively, the importance of marine hard mineral development may be exaggerated as agencies bid for constituency and seek to expand jurisdictional domain. In general, agencies of the federal government increasingly have been characterized as organizations that seek to maximize their own jurisdictional domains—individual responsibilities, budgets, and constituent support—through the expansion of programs and geographical jurisdictions (Hoagland, 1983; Baden and Stroup, 1981; Niskanen, 1980; Self, 1977; Seidman, 1975; Niskanen, 1971; Rourke, 1969).

An ambiguous division of jurisdictional responsibility, or multiple systems of rules and regulations covering a single resource or activity, can burden a potential resource with additional costs that postpone the time when it will be developed and employed for the country's economic benefit. This might be true especially in a case such as marine minerals where significant uncertainties are already present about the physical operating environment. Private firms must be expected to be reluctant to commit investments and establish long-term activity plans in an uncoordinated, and potentially burdensome, legal environment for domestic marine hard mineral development.

Under certain conditions, however, some jurisdictional overlap and managerial rivalry can be beneficial, both for the agencies' industrial constituency and for the quality of public policymaking. Especially in the early stages of an evolving legal regime, private interests who are contemplating investment in resource development may find enhanced access and greater scope to influence agency decisions when more than one agency is centrally involved in the process. Similar benefits also may be enjoyed by other involved interests, such as environmental organizations. Simply put, this is the advantage of competition over the "monopoly" of single agency management (Niskanen, 1980).

Where the allocation of public funds and the selection of research agendas depend critically, as they do for marine hard minerals, on scant scientific knowledge, it is especially important that public decisionmakers have both accurate scientific information and balanced appreciation of its significance. It is difficult to arrange meaningful communication of relevant scientific information to public policymakers (Carnegie Institution of Washington, 1983a, 1983b). It is even more difficult when a single agency is providing the information and stands to gain or lose

in its own interests by the way in which the information is presented and interpreted (Broadus and Bowen, 1983). An organizational response to this problem is diversification of information sources and decentralization of discretionary decisionmaking (Arrow, 1970). A competitive system of checks and balances can thereby be attained through interagency overlap and rivalry.

Interagency competition for responsibilities thus may be beneficial by increasing accountability (Leman, 1984a). Beneficial results of competition have been observed between Interior's Bureau of Land Management and the Fish and Wildlife Service with respect to National Wildlife Refuges, between Interior's Bureau of Reclamation and the Army Corps of Engineers with respect to the King's Valley Project in California, and in other cases (Leman, 1984b).

Multiple agency management responsibility can also enhance flexibility in the face of uncertainty and can provide increased scope for coordinated combination of different agency strengths and specialties for work with which both are familiar. The scale and timing of marine minerals resource development is surrounded by uncertainty. A complex, and still poorly defined, variety of functions will be necessary to convert this resource potential into a flow of economic supplies. Premature monopolization of all these functions by a single agency could sacrifice the benefits of multiple agency management at a time when they seem most essential. With proper planning and study, it should be possible to achieve these benefits with a minimum of the adverse effects of multiple-agency management.

Examination of individual agency strengths and larger missions can provide valuable insight toward a determination of effective roles. Programs to augment long-run minerals supplies seem more likely to succeed in the Interior Department. Interior has a long history and rich experience in national minerals survey and assessment activities, and it is intimately familiar with the operations of the U.S. mining and metals industry. MMS is well equipped to devise access methods for EEZ marine hard minerals through leasing systems and post-lease management of exploration, development, and production activities. USGS is accomplished in the conduct of geological surveys and in the generation of mineral resource estimates. Programs to promote progress specifically in marine science and technology, on the other hand, might be managed more comprehensively and coherently through the Commerce Department. NOAA's mission includes a useful understanding of the physical processes at work in the marine environment along with development and dissemination of expertise in capabilities for economical operations within ocean spaces. Especially through its research laboratories, NOAA is quite capable in assessment of the marine environment. Where jurisdictions overlap, use of various coordinating mechanisms, such as the MOU, can further strengthen and define agency roles. Clearly, a major contribution remains to be made by academic scientific research, whether funded by the managing agencies, by other government sources such as the National Science Foundation or the Office of

Naval Research, or by private sponsorship.

CONCLUSIONS AND EXTENSIONS

At this early stage in the development of the resource potential of marine hard mineral deposits, exclusive assignment of all management responsibilities to a single agency could be a costly move. Some competition between agencies can serve as a check on regulatory excesses, increase accountability, and provide diversity of information to policymakers. Some redefinition of agency roles, however, would appear to be timely and useful. This can be accomplished partially through interagency cooperative mechanisms, and significant progress has been achieved through those channels. Still, legislative initiative may be required to resolve some existing ambiguities.

Several areas of research that could prove productive in analyzing the effects of rivalry and coordination in marine hard minerals management are being pursued at Woods Hole. First, an effort is being made to gain more detailed understanding of the former and existing roles and responsibilities of the relevant agencies. Examination of analogous cases of multiple agency jurisdiction is a second area of promising inquiry. Third, insights may be gained by analyzing the management of marine hard minerals in the United States explicitly as a common pool resource allocation problem. This should be particularly productive if it can be cast in the framework of a "principal-agent" relationship. A more detailed specification of the conditions favoring overlapping responsibilities, and of the trade-offs with the adverse effects of agency rivalry and ambiguity, also would be useful.

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