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Environmental Implications of Developing the Nonliving Resources Situated in the Exclusive Economic Zone of the United States

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ESSAY

Environmental Implications of Developing the Nonliving Resources Situated in the Exclusive Economic Zone of the United States

*John Warren Kindt**

ABSTRACT

This Essay provides an overview of some of the environmental issues arising from mineral mining in the United States exclusive economic zone (EEZ). Professor Kindt points out that the United States establishment of a 200-mile EEZ, and the concomitant interest in mining the minerals found within it, prompted concerns over the environmental consequences of mining activities. Professor Kindt summarizes the guidelines for mining of hard minerals recently promulgated by the Department of the Interior (DOI) and examines the House of Representatives counterproposal, the National Seabed Hard Minerals Act of 1989 (NSHMA 1989). He notes that a prime difference between the two regulatory schemes centers on whether the process for the exploration and development of seabed hard minerals should be competitive or non-competitive. Professor Kindt advocates a compromise that will accommodate developmental activities while providing adequate environmental safeguards.

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I. INTRODUCTION

This Essay is designed to highlight some of the overall environmental issues associated with mineral mining within the "exclusive economic zone" (EEZ)[1] of the United States. The exclusive economic zone is generally defined as an area extending 200 nautical miles seaward from a country's coastal baselines that establish the territorial sea.[2] This overview of some of the environmental issues associated with exploiting the mineral resources situated on the ocean floor of the EEZ hopes to provide some perspective on the interface between marine mining and marine pollution.

A historical review of ocean mineral resources reveals that manganese nodules, one of the more important resources, were first recovered from the ocean floor in 1873 by the research vessel *H.M.S. Challenger*.[3] The black, small, potato-shaped manganese nodules are so named because of their high manganese content—approximately twenty-five percent.[4]

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1. Since a coastal state's rights within its exclusive economic zone are not really "exclusive," the better terminology is just "economic zone." Regardless of this determination, the utilization of the terminology "exclusive economic zone" is more widespread. *See* United Nations Convention on the Law of the Sea, *opened for signature* Dec. 10, 1982, arts. 55-75, U.N. Doc. A/CONF.62/122 [hereinafter LOS Convention], *reprinted in* 21 I.L.M. 1261, *and in* UNITED NATIONS, THE LAW OF THE SEA: UNITED NATIONS CONVENTION ON THE LAW OF THE SEA AND FINAL ACT OF THE THIRD UNITED NATIONS CONFERENCE ON THE LAW OF THE SEA, U.N. Sales No. E.83.V.5 (1983).

2. *Id.* art. 57 (Breadth of exclusive economic zone).

3. OFFICE OF TECH. ASSESSMENT, U.S. CONGRESS, MARINE MINERALS: EXPLORING OUR NEW OCEAN FRONTIER 3 (1987) [hereinafter MARINE MINERALS].

4. *See* NAT'L OCEANIC & ATMOSPHERIC ADMIN. [NOAA], U.S. DEP'T COM., DEEP SEABED MINING: REPORT TO CONGRESS 1-2 (1987) [hereinafter SEABED REPORT]. The 25 to 29% manganese content of the nodules was reported for nodules found in the Clarion-Clipperton Zone, which is in international waters. By comparison, preliminary data

Since the voyage of the *Challenger*, researchers have discovered manganese nodules throughout the ocean. However, interest in these nodules did not increase significantly until the period following the Second World War. By applying new ocean exploration techniques and technological advances developed for the military during the war, oceanographers began to recognize that manganese nodules covered a large portion of the ocean floor.[5] Commercial interest in the potential mining of manganese nodules began in the late 1950s and early 1960s. Fueled both by the increased post-war demands for metals and by new data on the mineral composition of the nodules, industry took an increasing interest in the prospects for the deep seabed mining of manganese nodules.[6] As was the case during the late 1970s, however, the commercial mining of manganese nodules appeared throughout the 1980s to be uneconomical,[7] and experts expected this situation to persist at least until the twenty-first century.[8]

In addition to concentrations of manganese (approximating fifteen to twenty-nine percent), the nodules also contain strategic minerals. While different locations have nodules with various concentrations of these strategic minerals, a representative sample of nodules found in the Pacific Ocean contained: (1) nickel (1.3 percent); (2) copper (1.1 percent); and (3) cobalt (0.2 percent).[9] Despite their high manganese content, manganese nodules were at one time to be mined primarily for their nickel content. Thus, the seabed mining of manganese nodules was highly dependent on the demand and supply of nickel. During the 1980s, however, the other strategic minerals gained in relative importance.[10]

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on the manganese content of nodules found within the United States Atlantic EEZ revealed lower concentrations that approximated 15%. *See* Kaufman, *Nodules, Crusts, and Polymetallic Sulfides in the EEZ: Economic Potential of Hard Mineral Resources*, in THE EXCLUSIVE ECONOMIC ZONE SYMPOSIUM: EXPLORING THE NEW OCEAN FRONTIER 149, 150 & Table I (M. Lockwood & G. Hill eds. Oct. 2-3, 1985).

5. *See* MARINE MINERALS, *supra* note 3, at 3.

6. *Id.*

7. Larson, *Deep Seabed Mining: A Definition of the Problem*, 17 OCEAN DEV. & INT'L L. 271 (1986).

8. *See University of Virginia's Twelfth Annual Seminar*, OCEANS POL'Y NEWS, Apr. 1988, at 2 [hereinafter *Annual Seminar*] (Council on Ocean Law) (discussing current prospects for ocean mining).

9. SEABED REPORT, *supra* note 4, at 2. This data reflected the general mineral content of nodules found in the east-central Pacific Ocean; the preliminary data reported the mineral content of nodules found on the Black Plateau of the Atlantic EEZ of the United States as follows: (1) nickel (0.50%); (2) copper (0.10%); and (3) cobalt (0.30%). Kaufman, *supra* note 4, at 150, Table I.

10. *See, e.g.*, SEABED REPORT, *supra* note 4, at 4 (discussing strategic interests);

This analysis of mining activities in the EEZ of the United States is especially pertinent as a practical test of the common and traditional viewpoint that the ocean exhibits an unlimited pollution assimilative capacity.[11] Among academics concerned with the environment, this viewpoint has been the minority one for a number of years, and although it continues to lose adherents, this misperception keeps reappearing.[12] Portions of the ocean have already been documented to be under severe stress.[13]

The environmental considerations involved in seabed mining have become increasingly important since President Reagan's 1983 proclamation on the EEZ[14] and the concomitant congressional and administrative activity the proclamation prompted. By declaring a 200-mile exclusive economic zone, the United States established jurisdiction over more than 2.3 million square nautical miles (approximately 2 billion acres).[15] The EEZ, of course, extended United States control over all of the marine resources within 200 nautical miles of the United States coastline. Unfortunately, this EEZ remained largely unexplored, as did the EEZs of many other countries. Although there was little public data throughout the 1980s that revealed the extent of the manganese nodules within this EEZ, the Pacific EEZ of the United States possessed the potential for providing an alternative source of nodules to those found in international waters. Although the EEZ is known to contain many mineral resources[16] (e.g., sand, gravel, gold, phosphorite beds, and cobalt crusts), the focus of this analysis will be only on manganese nodules and the environmental consequences of their development.

In mid-1988 and early 1989 the Department of the Interior (DOI) promulgated final rules for the mining of hard minerals (i.e., those other

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MARINE MINERALS, *supra* note 3, at 9 ("The strategic importance of several minerals in the seabed . . . could make future economic considerations secondary to national security.").

11. Kindt, *International Environmental Law and Policy: An Overview of Transboundary Pollution*, 23 SAN DIEGO L. REV. 583, 584 (1986).

12. *See id.* at 584-85.

13. *See, e.g.*, 1 J. KINDT, MARINE POLLUTION AND THE LAW OF THE SEA 4-7 (1986).

14. Exclusive Economic Zone of the United States of America, Proclamation No. 5030 (1983), 3 C.F.R. 22 (1984) [hereinafter EEZ 1983 Proclamation], *reprinted in* 16 U.S.C. § 1453 (Supp. III 1985).

15. MARINE MINERALS, *supra* note 3, at 3 & n.2. Other commentators have calculated the EEZ of the United States to be 3.9 billion acres, but this larger estimate included some of the former Pacific Trust Territories that are no longer United States possessions. *Id.* at 3, n.2.

16. *Id.* at 10-12 & Figures 1-3; *see* Kaufman, *supra* note 4, at 149-51.

than oil, gas, and sulfur) within the outer continental shelf (OCS) of the United States.[17] The DOI based its authority to regulate the mineral resources of the EEZ on section 8(k) of the Outer Continental Shelf Lands Act of 1953 (OCSLA).[18] In anticipation of the DOI's actions, a bill entitled the National Seabed Hard Minerals Act of 1986 (NSHMA 1986)[19] was introduced in the United States House of Representatives to counter the DOI's desire to regulate hard mineral resources in the EEZ of the United States. The NSHMA 1986 was an outgrowth of a working group composed of coastal states, mining enterprises, and environmental groups.[20] Unfortunately, the conflicting interpretations of developmental goals vis-a-vis environmental goals reflected by these two regulatory approaches were prompted in large part by a dearth of scientific data on the environmental aspects of mineral mining within the EEZ of the United States.

II. THE EXCLUSIVE ECONOMIC ZONE OF THE UNITED STATES

With the 1983 presidential proclamation on the exclusive economic zone,[21] the United States became the fifty-ninth country to establish an economic zone.[22] The EEZ consisted of all areas extending seaward from United States coastal states out to 200 nautical miles.[23] Within the EEZ, the United States claimed sovereign rights over all living and non-living resources. The EEZ's legal status in international law was based specifi-

17. *See* Geological and Geophysical (G&G) Explorations of the Outer Continental Shelf, 30 C.F.R. § 251.1 (1989) (codifying 53 Fed. Reg. 25,242, 25,256 (1988)); Prospecting for Minerals Other Than Oil, Gas, and Sulphur, 30 C.F.R. § 280.0-280.17 (codifying 53 Fed. Reg. 25,242, 25,256-260 (1988)); Outer Continental Shelf Minerals and Rights-of-Way Management, 30 C.F.R. § 256 (1989) (codifying 54 Fed. Reg. 2042, 2049 (1989)); Leasing of Minerals Other Than Oil, Gas, and Sulphur in the Outer Continental Shelf, 30 C.F.R. § 281 (codifying 54 Fed. Reg. 2042, 2049-56 (1989)); Operations in the Outer Continental Shelf for Minerals Other Than Oil, Gas, and Sulphur, 30 C.F.R. § 282 (codifying 54 Fed. Reg. 2058, 2067-80 (1989)). For a discussion of the differences between the EEZ, the geological OCS, and the jurisdictional OCS, see MARINE MINERALS, *supra* note 3, at 7, Box 1-B.

18. Ch. 345, 8(e), 67 Stat. 462 (1953) (codified as amended at 43 U.S.C. § 1337(k) (1982)).

19. H.R. 5464, 99th Cong., 2d Sess. (1986), 132 CONG. REC. E2973 (daily ed. Aug. 15, 1986) (statement of Rep. Lowry), *reintroduced as* National Seabed Hard Minerals Act of 1988, H.R. 1260, 100th Cong., 1st Sess. (1987), 133 CONG. REC. E635 (daily ed Feb. 25, 1987) (statement of Rep. Lowry).

20. *See infra* note 69.

21. EEZ 1983 Proclamation, *supra* note 14, at 22.

22. MARINE MINERALS, *supra* note 3, at 3.

23. EEZ 1983 Proclamation, *supra* note 14, at 23.

cally on customary international law, as codified in the 1982 Convention on the Law of the Sea (LOS Convention).[24] The EEZs of many countries, including that of the United States, remained largely unexplored.

The United States specifically claimed "sovereign rights for the purpose of exploring, exploiting, conserving and managing natural resources, both living and non-living, of the seabed and subsoil and the superjacent waters."[25] Although the United States claimed the 200-mile EEZ, each United States coastal state maintained jurisdiction over analogous resources within the United States territorial sea.[26] Since both the federal government and each individual coastal state held an interest in the EEZ, the management of EEZ resources constituted a joint federal-state problem.

Nearly seventy percent of the mineral resources within the EEZ was located on the United States continental shelf areas; the United States has controlled these resources since 1945. Control of the mineral resources on the continental shelves can be traced to the Truman Proclamation of 1945[27] and was codified by the OCSLA.[28] Thus, the establishment of the EEZ actually added only those mineral deposits located beyond the OCS, yet within the EEZ, to the United States resource base. In any event, United States establishment of the EEZ greatly increased

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24. LOS Convention, *supra* note 1, arts. 55-75.

25. EEZ 1983 Proclamation, *supra* note 14, at 23. *See also* LOS Convention, *supra* note 1, arts. 56-68.

26. For domestic purposes the territorial sea consisted of a three nautical mile belt surrounding each coastal state of the United States, except Texas and Florida, where jurisdiction extended approximately nine miles (three marine leagues). MARINE MINERALS, *supra* note 3, at 4, Figure 1-1. Coastal states gained jurisdiction of the three nautical mile belt surrounding their coasts via congressional action in the Submerged Lands Act of 1953. 43 U.S.C. §§ 1311-1315. Of course, the territorial sea of the United States was extended to 12 nautical miles in 1988 via a presidential proclamation. Nothing in the proclamation "extends or otherwise alters existing Federal or State law or any jurisdiction, rights, legal interests, or obligations derived therefrom." *Territorial Sea of the United States of America*, Proclamation No. 5928, 54 Fed. Reg. 777 (1989).

27. The Truman Proclamation of 1945 actually consisted of two documents; specifically, *Policy of the United States With Respect to Coastal Fisheries in Certain Areas of the High Seas*, Proclamation No. 2668, 3 C.F.R. 68 (1943-1948), *reprinted in* 1 NEW DIRECTIONS IN THE LAW OF THE SEA 95 (S. Lay, R. Churchill & M. Nordquist eds. 1973) [hereinafter NEW DIRECTIONS] (implemented by Exec. Order No. 9634, 3 C.F.R. 437 (1943-1948 Compilation)); *Policy of the United States With Respect to the Natural Resources of the Subsoil and Sea Bed of the Continental Shelf*, Proclamation No. 2667, 3 C.F.R. 67 (1943-1948), *reprinted in* 1 NEW DIRECTIONS, *supra* at 106 (implemented by Exec. Order No. 9633, 3 C.F.R. 437 (1943-1948 Compilation)).

28. 43 U.S.C. §§ 1331-1356.

interest in both the non-living and living resources within the EEZ.[29]

A. *Environmental Impacts of Mineral Mining in the Exclusive Economic Zone*

Historically, the United States had limited direct experience with offshore mineral mining, and therefore it was difficult to estimate the environmental impact of the potential commercial mining of minerals within the EEZ. Since the mining of manganese nodules within the EEZ would probably be conducted in a manner similar to that for mining nodules in international waters (i.e., deep seabed mining), experts anticipated similar environmental impacts. In this context, various United States agencies collected a large amount of environmental data pertaining to the EEZ and the impacts of mining operations therein. Unfortunately, much of this data was scattered throughout the files of these agencies, and only a small portion of the data has become publicly available.[30] Regardless of this problem, the wealth of environmental data collected during the Deep Ocean Mining Environmental Study (DOMES) conducted by the National Oceanic and Atmospheric Administration (NOAA) in the late 1970s and early 1980s should provide a useful starting point for assessing the potential adverse environmental effects of offshore mineral mining (especially the mining of manganese nodules). Since much useful environmental data already existed by 1987, one laudable recommendation involved collecting the relevant data in a centralized compendium for all interested parties to utilize as plans were considered for initiating substantial mining activities within the EEZ.[31]

The basic scenario for manganese nodule mining involved the removal of nodules from the ocean via a collector that was either driven or pulled along the ocean floor. Nodules, along with "near bottom" water and sediment, would then be transported to the ocean surface, unless the machinery permitted sediment discharge at an earlier point. It was, therefore, expected that life on the seabed would be directly disturbed or destroyed by the mechanical mining effort.

A second concern involved the ensuing "rain of fines" or benthic plume (a type of particulate pollution) caused by the return of sediments that filtered down from the collection equipment to the sea floor during the process of lifting nodules to the ocean surface. Theoretically, such particulate pollution was expected to affect marine life even outside of

29. MARINE MINERALS, *supra* note 3, at 6.
30. *Id.* at 21.
31. *Id.* at 21-23.

the mined area.[32] Although environmental data predicted that the rain of fines would dissipate relatively rapidly and cause relatively little long-term adverse environmental effects to the water column and the animals dwelling therein, some were of the bottom-dwelling organisms, especially filter-feeding organisms, were likely to be affected adversely.

A third potential adverse effect consisted of a "surface" plume caused by the direct discharge of material from the mining ship during the at-sea processing of manganese nodules. Hypothetically, the surface plume could adversely affect organisms residing at or near the ocean surface, especially those organisms close to the mining ship or those marine animals attracted to the mining ship by its presence. This surface discharge could contain seabed sediment along with trace metals, processing chemicals, and cold, deep ocean water. Thus, in addition to the more traditional forms of marine pollution, thermal shock to surface-dwelling organisms, especially fish larvae and plankton, was likely to be a problem. As of 1989, the available environmental data for deep seabed mining had not changed, to any significant degree, any of the analyses or conclusions found in the environmental studies and reports of the early 1980s.[33] By extrapolation, the data from the environmental studies involving deep seabed mining were postulated as applying to similar mining efforts within the EEZ—at least in the absence of more site-specific data for the EEZ areas.[34]

B. *The Regulatory Regime Established by the United States Department of the Interior*

Final rules governing activities relating to the exploration, prospecting, and leasing of OCS minerals other than oil, gas, and sulfur were promulgated in 1989 by the Minerals Management Service (MMS) of the Department of the Interior.[35] The DOI based its authority to govern the minerals resources of the EEZ on the OCSLA[36] and on President Reagan's 1984 State of the Union Address.[37] President Reagan charged

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32. Data on the potential adverse environmental effect of the mining of manganese nodules came from the NOAA-sponsored DOMES and the ensuing follow-up efforts. *See generally, id.* at 236-45.

33. *See generally, id.* at 215-45.

34. *Id.* at 20-21 (discussing probable effects and noting experience with shallow activities).

35. *See supra* note 17, and accompanying text.

36. Fischer, *Two Alternatives in National Governance of Marine Hard Minerals in the U.S. Exclusive Economic Zone*, 19 OCEAN DEV. & INT'L L. 287, 289 (1988).

37. The State of the Union: Address Delivered Before a Joint Session of the Congress, 20 WEEKLY COMP. PRES. DOC. 87, 91 (Jan. 25, 1984) [hereinafter *1984 State of*

the Department of the Interior to "encourage careful, selective exploration and production of . . . vital [United States] resources in an Exclusive Economic Zone within the 200-mile limit off [the United States coast]—but with strict adherence to environmental laws and with fuller State and public participation."[38] While in the past the OCSLA was applied primarily to gas and oil resources, the OCSLA did contain a small section that applied to mineral resources other than oil, gas, and sulfur in the OCS. This section authorized the Secretary of the Interior:

> to grant to the qualified persons offering the highest cash bonuses on a basis of competitive bidding leases of any mineral other than oil, gas, and sulphur in any area of the outer Continental Shelf not then under lease for such mineral upon such royalty, rental, and other terms and conditions as the Secretary [of the Interior] may prescribe at the time of offering the area for lease.[39]

On the basis of this authority, the DOI established a separate office, the Office of Strategic and International Minerals within the MMS, to implement regulations regarding the mining of OCS "hard" minerals (i.e., minerals other than oil, gas, and sulfur).[40]

In mid-1988, the MMS published the first in a series of three final rules to establish a regulatory and leasing program for the governance of OCS hard minerals.[41] The first rule established requirements not only for geophysical and geological prospecting activities, but also for scientific research of the OCS hard minerals.[42] The promulgation of these rules marked the first time the United States had implemented provisions to oversee marine scientific research outside the United States territorial sea.[43] These restrictions did not, however, generally apply to foreign re-

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the Union Address]; *see* Fischer, *supra* note 36, at 289.

38. *1984 State of the Union Address*, *supra* note 37, at 91.

39. 43 U.S.C. § 1337(k) (1982).

40. Fischer, *supra* note 36, at 289.

41. 30 C.F.R. §§ 251, 280; *see supra* note 17.

42. *Id.* With a few exceptions, all prospecting activities required a permit. *Id.* § 280.3(a). Subject to some restrictions as outlined in § 280.3(c)(1), all research activities could be conducted without a permit as long as explosives were not utilized and the activity did not involve the drilling of a borehole of more than 300 feet below the ocean floor. *Id.* § 280.3(b). The rules differentiated research activities from prospecting activities in that the findings from scientific research had to be made accessible to the public "at the earliest practicable time." *Id.* § 280.2 (Geological and geophysical (G&G) scientific research).

43. *U.S. Regulations on Marine Scientific Research*, OCEANS POL'Y NEWS, Aug. 1988, at 1 [hereinafter *U.S. Regulations*] (Council on Ocean Law).

searchers.[44] Previous multilateral agreements,[45] specifically the 1958 Convention on the High Seas[46] and the 1958 Convention on the Continental Shelf, theoretically governed research activities in the EEZ by foreign researchers.[47] By comparison, the rules required those foreign nationals who desired to "prospect" in the EEZ of the United States to do so through a United States subsidiary or to incorporate in the United States.[48]

Permits for prospecting activities and for some types of scientific research activities were to be granted for a period of not more than three years and could be extended for up to two additional years.[49] The regulations also called for the permit applicant to submit along with the application a detailed plan for those activities requiring a permit.[50] As part of the detailed activity plan, the applicant was required to document the "[a]nticipated environmental consequences of each proposed activity,"[51] as well as submit a proposed plan to mitigate any adverse environmental consequences of those activities.[52] If permit activities were to be conducted in any environmentally sensitive areas, the applicant had to submit an environmental monitoring plan.[53]

Some experts in these issue areas concluded that these regulations were "far less onerous" to the scientific research community than the regulations the MMS originally proposed.[54] Regardless of this determination, researchers still objected to the increased amount of government regulation of scientific research activities.[55]

In early 1989 the MMS promulgated the second and third parts of its framework for governing the OCS hard mineral resources. The second

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44. *Id.*

45. *Id.* at 1-2.

46. *Opened for signature* Apr. 29, 1958, 13 U.S.T. 2312, T.I.A.S. No. 5200, 450 U.N.T.S. 82 (entered into force Sept. 30, 1962).

47. *Opened for signature* Apr. 29, 1958, 15 U.S.T. 471, T.I.A.S. No. 5578, 499 U.N.T.S. 311 (entered into force June 10, 1964). *See generally* LOS Convention, *supra* note 1.

48. *U.S. Regulations*, *supra* note 43, at 2. The differentiation between "researching" and "prospecting" activities was specified in 30 C.F.R. § 280.2. *See supra* note 42.

49. 30 C.F.R. § 280.4 (1989); *see supra* note 17.

50. 30 C.F.R. § 280.6(a) (1989).

51. *Id.* § 280.6(a)(6). Section 280.10 details those activities that typically would not create a significant adverse environmental impact and therefore would be excluded from environmental monitoring. *Id.* § 280.10.

52. *Id.* § 280.6(a)(7).

53. *Id.* § 280.6(a)(8).

54. *U.S. Regulations*, *supra* note 43, at 2.

55. *Id.*

part of the MMS framework specified the final leasing conditions and procedures,[56] while the third part established postlease (1) discovery; (2) delineation; (3) development; and (4) production guidelines for OCS minerals other than oil, gas, and sulfur.[57]

The second part established the regulatory framework under which the MMS would conduct development lease sales, governing such issues as: (1) the qualifications of a given lessee;[58] (2) the types of minerals for which a lease would not be granted;[59] and (3) the general procedures for conducting a lease sale.[60]

The third part of the MMS system governed the activities conducted by the lessee and provided that those activities had to be carried out in accordance with the lessee's approved plan.[61] The third part outlined procedures to provide for the protection of the marine environment,[62] including: (1) provisions to ensure the minimalization or avoidance of any adverse environmental impacts on a lease-specific basis;[63] (2) measures to ensure, if necessary, the collection of additional baseline environmental data prior to the approval of activities;[64] and (3) regulations to ensure adequate measures to monitor environmental effects.[65]

The framework the MMS promulgated for the development of the hard mineral resources of the OCS was a direct extension of the OCSLA and the regime devised for the leasing of oil, gas, and sulfur resources. Historically, these regulations provided for the leasing of areas by a competitive bidding system that generated funds for the United States Treasury with no revenue sharing between the federal and state governments; the system was also designed to operate without government subsidy.[66] To increase state participation in hard mineral leasing, the MMS called for the early formation of a joint federal-state task force to investigate the

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56. 30 C.F.R. §§ 256, 281 (1989); *see supra* note 17.

57. 30 C.F.R. § 282 (1989).

58. *Id.* § 281.4.

59. *Id.* § 281.8(a).

60. *Id.* § 281.11-281.23. These procedures included provisions for: (1) joint federal and state coordination (§ 281.13); (2) the tract size to be offered (§ 281.15); (3) the bidding system to be used (§ 281.18, 281.20-281.21); (4) the length of the lease (§ 281.19); (5) royalty payments and bonuses (§ 281.26-281.33); and (6) provisions for the assignment, transfer, suspension, or termination of leases (§ 281.40-281.47).

61. *See id.* § 282.20-282.27.

62. *Id.* § 282.28.

63. *Id.* § 282.28(a).

64. *Id.* § 282.28(b).

65. *Id.* § 282.28(c).

66. Fischer, *supra* note 36, at 292-93.

various aspects of the program as it developed.[67] This process also provided for joint federal-state efforts to produce environmental impact statements for specific mineral deposits jointly determined to be of sufficient value to justify a lease sale.[68]

Several interest groups questioned the authority of the MMS to promulgate rules covering the hard mineral resources of the EEZ, as well as the practicality of adapting the legislation established for oil, gas, and sulfur development to govern hard mineral exploitation.[69] Some groups not only objected to the bidding system and the up-front payment of cash bonuses delimited under the OCSLA, but also argued that for undeveloped resources (e.g., hard mineral resources), the MMS framework did not bolster such a commercially speculative endeavor.[70] Beyond these considerations, some interested parties queried whether the environmental guidelines proposed by section 8(k) of the OCSLA were adequate to govern marine hard mineral mining.[71] Similarly, others raised questions over the adequacy of the MMS provisions for monitoring environmental effects, as well as for preventing or mitigating potential adverse environmental effects.[72]

C. *The Seabed Hard Minerals Act*

To counter the regulatory regime proposed by the MMS to govern the hard mineral resources of the OCS, several interest groups joined forces in 1986 to propose legislation creating an alternative regulatory regime. This proposed legislation, the National Seabed Hard Minerals Act of 1986,[73] was subsequently reintroduced as the National Seabed Hard

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67. *Id.* at 293.

68. *Id.*

69. H.R. 1260, *supra* note 19, § 102(a) (1987); H.R. REP. NO. 1103, 100th Cong., 2nd Sess. 23-25 (1988); *Annual Seminar*, *supra* note 8, at 2; *Interior Department's Proposed Regulation for Marine Minerals Mining on the OCS*, OCEANS POL'Y NEWS, May 1987, at 12 (Council on Ocean Law); *U.S. Regulations*, *supra* note 43, at 2.

70. H.R. REP. NO. 1103, *supra* note 69, at 24; NAT'L ADVISORY COMM. ON OCEANS & ATMOSPHERE, A REPORT TO: THE PRESIDENT AND THE CONGRESS 16 (13th Ann. Rep. 1984).

71. H.R. REP. NO. 1103, *supra* note 69, at 24.

72. *Id.* at 24-25.

73. National Seabed Hard Minerals Act of 1986, H.R. 5464, *supra* note 19, *reintroduced as* National Seabed Hard Minerals Act of 1988, H.R. 1260, *supra* note 19, *reintroduced as* National Seabed Hard Minerals Act of 1989, H.R. 2440, 101st Cong., 1st Sess. (1989), 135 CONG. REC. E1812 (May 22, 1989) (statement of Rep. Jones). As of January 1990 there was no companion bill in the United States Senate. For comparison and historical background, see Deep Seabed Hard Mineral Resources Act of 1980, 30 U.S.C. §§ 1401-1473 (1982 & Supp. V 1987), *amended by* Pub. L. No. 178, § 1, 103

Minerals Act of 1989 (NSHMA 1989) and was based on the diverse interests of several groups, including: (1) environmental groups; (2) mining and industry representatives; and (3) certain coastal states.[74] The NSHMA 1989 proposed a separate management regime for governing the hard marine minerals of the EEZ. This regime was to be separate from the OCSLA management framework and was to include the entire EEZ. The NSHMA 1989 gave coastal states a much larger role in the policy and management decisions involving the development and production of marine minerals in the EEZ. It granted more authority to the NOAA, especially in research and environmental activities, than the MMS regulations originally granted. The NSHMA 1989 also included several significant provisions involving: (1) the establishment of joint federal-state consultation and dispute settlement task forces;[75] (2) the creation of a comprehensive environmental monitoring program including the establishment of "stable reference areas;"[76](3) a requirement for the preparation of an environmental impact statement (EIS)[77] prior to the issuance of a permit;[78] (4) a "priority of right" granted to the first applicant that fully complied with the licensing requirements for a particular site;[79] (5) significant coastal state power over the granting of a federal mining license;[80] (6) the payment of a 12.5% royalty based on the gross value of recovered minerals;[81] and (7) the contribution of fifty percent of all royalty payments to the United States Treasury, with the remaining royalties distributed among those coastal states affected by the mining activity.[82]

Several provisions in the NSHMA 1989 created concern at the DOI, and accordingly the DOI requested a hiatus in the deliberations being conducted by the House Committee on Merchant Marine and Fisher-

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Stat. 1297; 26 I.R.C. §§ 4495-4498 (1989). *See also Reauthorizing the Deep Seabed Hard Mineral Resources Act of 1980*, H.R. REP. No. 175, 101st Cong., 1st Sess., pt. 2 (1989) (report accompanying H.R. 2120).

74. H.R. REP. No. 1103, *supra* note 69, at 25-26; Fischer, *supra* note 36, at 294.

75. H.R. 2440, *supra* note 73, §§ 202, 204, 308.

76. *Id.* § 203.

77. Any major federal action that significantly affects the quality of the environment requires an EIS. National Environmental Policy Act of 1969, 42 U.S.C. § 4332(2) (1982).

78. H.R. 2440, *supra* note 73, § 306.

79. *Id.* § 302.

80. *Id.* §§ 307, 308(a)(1)(E).

81. *Id.* § 308(a)(2)(A). A royalty rate of less than 12.5% could be established if deemed appropriate because of economic factors. *Id.* at § 308(a)(2)(B).

82. *Id.* § 316.

ies.[83] One of the DOI's main concerns was that the NSHMA 1989 proposed a non-competitive process for both the exploration and the development of seabed hard minerals.[84] Such a management system was delimited as "a significant departure from the *competitive* provisions of the OCSLA."[85]

While re-evaluating and reviewing the system proposed under the NSHMA 1989, the DOI maintained its official position that section 8(k) of the OCSLA contained sufficient authority for the DOI to regulate seabed hard mineral resources.[86] The DOI maintained this position from the inception of the legislation in 1986, and it argued that the regulations already promulgated under section 8(k) were adequate to govern all of the exploration and development activities associated with exploiting the seabed hard minerals.[87] The DOI noted, however, that the issue involving the allocation of regulatory responsibility within the federal government was part of a review that the DOI was conducting.[88]

Proponents of the regulatory scheme included in the NSHMA 1989 apparently preferred a priority-of-rights access system, because the economic feasibility of developing seabed hard minerals included factors that involved high risk.[89] Given the scientific uncertainties and economic vicissitudes of this type of offshore development, the priority-of-rights access system was designed to encourage and enhance the development of seabed hard minerals. The non-competitive elements subsumed in such an access system caused the DOI to pause, however, and then to proceed cautiously with its review process. The DOI concluded that before it could endorse the priority-of-rights access system, it was "essential that alternative structures of competitive and noncompetitive systems, as well as the circumstances in which these systems might be applied, be examined more fully within the Administration."[90] Given the historical delays and debates in delimiting any seabed development regime for hard minerals, and given the traditional slowness that often characterizes reviews conducted by the federal government, the United States seabed mining industry of 1990 was justifiably chagrined and disheartened.

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83. Letter from James M. Hughes, Deputy Assistant Secretary, United States Department of the Interior, to United States Representative Walter B. Jones, Chairman, House Committee on Merchant Marine and Fisheries (Nov. 6, 1989).

84. *Id.*

85. *Id.* (emphasis added).

86. *Id.*

87. *Id.*

88. *Id.*

89. *Id.*

90. *Id.*

Even so, the economic nonviability of developing United States seabed hard minerals throughout 1990 provided fortunate lead time for the development of a regulatory model that would appropriately interface environmental safeguards with the high-risk nature of the seabed mining industry.

III. CONCLUSION

Since considerable amounts of hard minerals were supposedly situated in the EEZ of the United States, one could expect that a lengthy debate would occur involving the conflicting management frameworks reflected in the DOI and NSHMA 1989 approaches toward regulating the development of the hard mineral nonliving resources in offshore areas. The potential royalties that such offshore development activities could generate fueled the debate between the coastal states and the federal agencies. This debate, however, was more intense and long-lasting than originally anticipated. The non-competitive access system proposed by the NSHMA 1989 raised the issue of whether the United States seabed mining industry gained too much flexibility based on the high-risk nature of investing in offshore development. By comparison, the development of offshore oil, gas, and sulfur had proceeded relatively well under a competitive system, but the technology was also more certain, and the anticipated profit margin was larger.

In any event, the trend in 1990 was tilting toward the enactment of a management framework separate from the traditional framework modeled on the OCSLA mechanisms for governing offshore development of oil, gas, and sulfur. A modified (perhaps only slightly) version of the NSHMA 1989 was inching toward enactment. Hopefully, the eventual regime for regulating the exploitation of hard mineral resources in offshore areas will not become obsessed with the competitive versus non-competitive debate, because in such a scenario environmental safeguards often receive inadequate attention. It is essential that the compromise regime likely to result from this debate contain provisions that accommodate developmental activities while continuing to maintain appropriate environmental safeguards.