


The Continental Shelf: Resources, Boundaries, and Management

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The Continental Shelf



Resources, Boundaries, and Management

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THOMAS A. GRIGALUNAS
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Editors

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PREFACE

The 1945 Truman Proclamation asserted control over the nonrenewable natural resources of the U.S. contiguous Continental Shelf. That position was subsequently adopted by coastal States and the principle was more fully developed in the 1958 and 1982 Law of the Sea Conventions. In the intervening years numerous governmental initiatives have been enacted by the United States and other countries, providing a policy framework for dealing with Continental Shelf issues. Yet after 40 years, important issues remain concerning the jurisdiction, management, and distribution of the benefits and costs of exploiting Continental Shelf resources.

In order to summarize the complex yet fundamental issues which must be addressed in assessing the Continental Shelf, one could suggest the following:

1. What are the oil and gas resources of the Continental Shelf, where are they, and how much is there?
2. How can these resources best be exploited, especially those in deep water or in hostile or environmentally sensitive areas?
3. What is the economic value of the oil and gas resources of the Continental Shelf, and how sensitive are these estimates to changes in oil and gas prices?
4. What role can Continental Shelf oil and gas be expected to play in national energy policy?
5. How should the resources of the Continental Shelf be managed? This issue includes not only the rate, size, and order of lease sales but also the terms under which leases are granted.
6. How will gains and losses be distributed? This issue encompasses, among other things, the determination of international boundaries; resolution of state/federal resource ownership conflicts; the setting of leasing terms; and the evaluation and resolution of adverse environmental effects.

The above issues and others were addressed in detail in this conference, which examined the resources, boundaries and management of the Continental Shelf. The conference, in five separate sessions, examined various issues, moving from the general to the specific and from a primarily international perspective to a domestic focus. We began with a broad view of resources, concepts of boundaries, and basic public policy considerations. We next turned to a more detailed consideration of boundary disputes and their impact on shelf management. The papers in this session drew upon recent international experiences, including boundary issues facing the United States.

vi The Outer Continental Shelf

The following session of the conference addressed a variety of important jurisdictional issues. Following a historical review of the jurisdictional implications of major domestic federal legislation, specific attention was given to the re-authorization of the Coastal Zone Management Act, the sharing of OCS oil and gas revenues with coastal States and issues concerning resolution of the Section 8(g) dispute between the federal government, and several coastal states, most notably Louisiana and Texas.

The final two sessions of our conference focused on U.S. OCS oil and gas policy. The first of these dealt with the development of economic and environmental information used as building blocks for the Interior Department's Proposed Five-Year OCS Oil and Gas Leasing Program for the period mid-1986 through mid-1991. The final session consisted of a panel discussion during which a variety of perspectives were presented on domestic leasing policy.

The subject matter of this year's conference was both timely and important. We were fortunate to have such a distinguished group of speakers and conference participants to share in what was a very productive meeting.

THOMAS A. GRIGALUNAS
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* * * * *

Please Note: These proceedings do not include the transcribed discussions as in past proceedings. The participants were invited to comment on any session. The two comments included here were the only ones received in writing.

ACKNOWLEDGEMENTS

A great deal of effort, by a great many people, goes into the planning and production of any conference and its follow-up proceedings. All of them I thank for their efforts, while some of them I will specifically mention. We were fortunate to have as planning committee members: Thomas A. Grigalunas, Conference Chair and Professor of Resource Economics at the University of Rhode Island; Lewis M. Alexander, Director of the Center for Ocean Management Studies, the University of Rhode Island; Richard Burroughs, Assistant Professor, Graduate Program in Marine Affairs, the University of Rhode Island; and Robert Bowen of the Environmental Science Program at the University of Massachusetts. Without their help in the planning process and as session chairs, the conference would not have addressed such a wide scope of topics nor run as smoothly as it did. Many thanks. Were it not for the speakers and participants there would be nothing to put into print. Critically important to any project are the funding sources. We gratefully acknowledge funding support from: U.S. Department of the Interior: Minerals Management Service and U.S. Geological Survey; the American Petroleum Institute; and the National Oceanic and Atmospheric Administration: Sea Grant.

This has been a particularly difficult year for the staff of the Center for Ocean Management Studies. We have been without a secretary for nearly the entire process beginning with the planning and ending with the production of these proceedings. I would like to especially commend Carol Dryfoos Hunter for her efforts to rise to the occasion to keep this office functioning. Fortunately for us, her coordinator duties and abilities were preceded by secretarial skills that she called upon in our hour of need. I would also like to acknowledge and thank her for her copy editing of these proceedings. Another in our office that deserves our gratitude for her painstaking typing of these proceedings is our student helper, Susan Bolduc. I would like to thank a number of students from the Graduate Program in Marine Affairs who helped with the transportation logistics. And finally, a special thank you to Ned Beaver, Stephen Ciesluk, and the staff of the GSO Computer Center for their time and effort to develop the camera ready copy of these proceedings.

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The Center for Ocean Management Studies was created in the fall of 1976 for the purpose of promoting effective coastal and ocean management. The Center identifies ocean management issues, holds workshops and conferences to discuss these issues, and develops recommendations and research programs to resolve them.

PART ONE

International Resources and Public Policy: An Overview

Exploitation of the oil and natural gas resources of the Outer Continental Shelf (OCS) can confer substantial economic benefits and enhance the national security of those countries fortunate enough to control these resources. Indeed it is difficult to give examples of other publicly-controlled assets that represent more potential national wealth than the oil and natural gas deposits that can be received from the OCS. It is precisely because these resources are so valuable that the legal and political maneuvering of coastal nations and states to delineate boundaries in order to establish control over OCS oil and gas takes on the importance that it does.

Despite the importance of OCS oil and natural gas, the ability to estimate the magnitude of hydrocarbon resources under the sea floor without extensive drilling is limited at best. Those who set down in writing their best estimates of oil and gas resources do so at their own peril.

A major purpose of the OCS Lands Act Amendments of 1978 (OCSLA) was to encourage the expeditious exploration for oil and natural gas in federal waters. Of course, different people have different views concerning how OCS hydrocarbon resources can best be managed under the OCSLA, and we shall hear several different perspectives on this issue in this session and those which follow.

One issue of interest concerns the extent to which OCS oil and gas operations might interfere with or harm other uses of the ocean such as commercial fishing or might result in adverse coastal effects. In the United States these concerns are specifically addressed in the OCSLA. One of the speakers in the first session will relate the United Kingdom's experience in assessing and dealing with conflicts between commercial fishing and coastal land uses and the offshore oil and gas industries in the North Sea.

2 *International Resources and Public Policy*

This session is intended to provide: (1) an overview of Continental Shelf resources, focusing on United States oil and gas; (2) evolving definitional issues of international boundaries; and (3) public policy concerns with balancing multiple uses. Our panel includes three excellent speakers, and we are indeed fortunate to have them with us.

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CHAPTER 1

A Senator's Overview of Continental Shelf Issues

THE HONORABLE CLAIBORNE PELL
United States Senate
Washington, D.C.

INTRODUCTION

It is a pleasure to be with you today to participate in the Ninth Annual Conference sponsored by the Center for Ocean Management Studies. The subject of this year's conference, "The Continental Shelf: Resources, Boundaries, and Management" is quite interesting, but might have been cast somewhat differently if the President had consented to sign the Law of the Sea Treaty when it was opened for signature on December 10, 1982. Perhaps the title of today's conference would have been something like "The Implications for Management and Exploitation of the U.S. Continental Shelf with Entry into Force of the Law of the Sea Convention."

Much to my regret, the opportunity for the U.S. to sign the treaty has passed, since the treaty was closed to signatures in December, 1984. Of course should President Reagan, or more likely some future President, decide to become a party to the treaty, the U.S. could always accede to it. I continue to believe that at some point in time the U.S. will become a party to a comprehensive Law of the Sea Treaty since it is so clearly in our national interest. President Reagan himself, after a year-long assessment of the then-draft convention, recognized that "most provisions of the draft convention (were) acceptable and consistent with United States interests."

During the two years that the treaty was opened for signature some 159 countries chose to sign, including some of our closest allies. To date only 18 nations have ratified the treaty—a far cry from the 60 required before the treaty will enter into force. In the meantime, the Preparatory Commission, commonly referred to as the PrepCom, continues its work of drafting the rules and regulations which will govern deep seabed mining. Here too the U.S. has passed up an important opportunity to participate in the work of the PrepCom as an observer, which we are entitled to do by virtue of our signature of the Final Act of the Conference.

Some critics of the treaty may argue that the United States has survived quite nicely without such a treaty to date, and that therefore our participation is really unnecessary. They might even point to the recent resolution of an ocean-related dispute between the U.S. and Canada as indicative of the fact that other avenues are available to the U.S. to resolve ocean-related problems.

You will recall that in October, 1984, the International Court of Justice (ICJ) finally rendered its decision on the boundary dispute between the U.S. and Canada in the Gulf of Maine after three years of consideration of that case. We resorted to the ICJ after years of effort to resolve it bilaterally failed. We and one of our closest allies were forced to turn to a third party to resolve a long-standing, ocean-related dispute which had become an increasing irritant to our overall relations.

Unfortunately, the decision by the ICJ was less than a total victory for the United States since it rejected the U.S. assertion to total jurisdiction over the resource-rich Georges Bank. Nor was it a total victory from the Canadian perspective since it also rejected their claim to the entire northeastern half of the Georges Bank. Not unexpectedly, and in keeping with past practice, the Court essentially split the difference between the two claimants leaving the U.S. with jurisdiction over approximately 75 percent of the Bank and Canada with 25 percent of the Bank. Even with this final resolution of the boundary issue, the problem of how to manage joint fishing stocks still remains to be worked out between the U.S. and Canada. I believe that this, too, will take years before it is ultimately resolved.

While it is true that this boundary dispute has been resolved, it is hardly the model of how to handle most productively and efficiently every ocean issue that arises. I firmly subscribe to the view expressed by the former Secretary General to the United Nations, Kurt Waldheim, namely, that "the nations of the world cannot sensibly or safely face the future without a regime of law and order for the sea ... (nor can they) entertain any illusions that unanimity of practice on all aspects pertaining to the peaceful uses of ocean space will develop in the absence of a general rule of Law."

THE PROBLEM OF CREEPING JURISDICTION

States' unilateral assertions of ever-advancing claims to the Continental Shelf have been a serious problem for the United States and the world community as a whole in the absence of a multilateral and definite agreement on the matter. The United States is, in part, responsible for the creeping jurisdictional claims in this area. In 1945, recognizing the future importance of offshore oil and gas deposits, President Truman made a unilateral declaration, the so-called Truman Proclamation, reserving to the United States the exclusive rights over the nonrenewable resources of our Continental Shelf beyond our territorial sea. As one would have expected, this set the stage for other nations to assert, as well, seaward extensions of their national jurisdictions.

LAW OF THE SEA CONFERENCES

The need to reconcile the ever-growing number of newly asserted rights by States over portions of the oceans with existing international law led to the convening of the first United Nations Conference on the Law of the Sea in 1958, and to the successful negotiation of four conventions dealing with various aspects of ocean law, including the Convention on the Continental Shelf. This convention attempted to codify the rights of the coastal States over their continental shelves. However, what resulted was a very open-ended definition of what those rights are. This has led to confusion, overlapping claims, and conflict.

Yet it was not until 1982, with the conclusion of the Third United Nations Conference on the Law of the Sea (LOS), that the world community was able to agree upon a framework for resolving the ambiguity of this definition. The provisions in the treaty on this subject which finally emerged, after nine years of negotiations, are a microcosm of what the conference attempted to do with respect to

other ocean issues, namely to construct a carefully balanced tradeoff between the interests of coastal States and those of the larger world community. In this particular case, articles 76 and 77 of the treaty recognize the interests of some 40 coastal States whose continental shelves extend beyond 200 miles by recognizing the jurisdiction of these coastal States up to 350 miles where the natural prolongation of the Shelf is truly vast. At the same time, the treaty also recognizes the interests of the world community by balancing the explicit extension of the jurisdiction of certain coastal States with a provision which would require these States to share up to 7 percent of the revenue from the development of resources beyond 200 miles with other nations.

Some critics of the treaty were unhappy with the revenue-sharing provision of the treaty, suggesting that this is nothing more than a grab by the developing world. It is quite easy, in fact, to pick out this provision or that provision in the 192-page text for criticism. I happen to agree with Ambassador Elliot Richardson—the LOS negotiator during the Carter Administration—who observed that, “any treaty that can win widespread acceptance is bound to have costs as well as benefits — Its measure is whether it serves all our interests as well as or better than those interests would be served in a treatyless world.”

With respect to the revenue-sharing provision of the treaty, it was not the developing world which first decided that some form of revenue-sharing should be the price for granting coastal States increasing jurisdiction over the far reaches of their continental shelves beyond 200 miles. In 1970 during the deliberations of the United Nations Seabed Committee it was the U.S. Representative who first proposed that a so-called “trusteeship zone” be established on the outer edge of the Continental Shelf beyond 200 miles. This zone would have been administered by the coastal State both for itself and for the international community with royalties to be paid into a new international fund. That proposal was not accepted and the ambiguity of the outer limits of the Continental Shelf continues to exist today, and will until the Law of the Sea Treaty enters into force.

JURISDICTIONAL UNCERTAINTY AND RESULTING RISKS

Unfortunately, so long as the U.S. remains outside of the treaty, even with its entry into force, U.S. jurisdiction over the outer limits of our continental shelves will remain ambiguous. I say this because I do not concur with the President's premise that he can pick and choose from the treaty's provisions, as if from a bowl of cherries, declaring those which he favors as “customary international law” and those which he does not as “contractual obligations” binding only on those who become parties to the treaty. Quite to the contrary, the provisions of the treaty which deal with the Continental Shelf illustrate clearly that this document has been carefully crafted as a “package deal” of rights and obligations which must be adhered to in its entirety, lest States' practices vis-a-vis the oceans revert to anarchy. The U.S. can clearly be challenged if it asserts jurisdiction over our continental shelves up to 350 miles but refuses to participate in the revenue-sharing aspects of the treaty.

While the United States might be successful in defending its assertions to jurisdiction over our Continental Shelf beyond 200 miles by virtue of the fact that we are dealing with an area that is relatively close to home, it will not be so simple in the case of other ocean interests which may occur thousands of miles from our shores. This will be especially the case where navigation interests are concerned. The President seems to have forgotten, when embracing the premise that customary international law is sufficient protection for U.S. ocean interests, that three earlier Presidents viewed customary international law as too uncertain and changeable to guarantee protection of U.S. interests. They chose instead to participate in

multilateral efforts working toward the establishment of conventional international law—law based upon formal international agreement—which would be subject to change only through an agreed-upon formal amendment process.

While the U.S. may assert its rights to the newly-defined Continental Shelf, the possibility of legal actions by other States is not going to create the appropriate environment for the maximum exploration and exploitation of the resources located on the far reaches of our Continental Shelf—resources which we believe to be significant although the estimates of the quantities of these resources have varied widely. In 1984, the U.S. Geological Survey estimated that possible, although not yet discovered, oil and gas resources off the east coast of the United States might amount to 5.7 billion barrels of oil and 24.7 trillion cubic feet of gas. A May 2, 1985 study by the Office of Technology Assessment is less optimistic with respect to the quantities available, citing figures recently developed by the Minerals Management Service which reduce the USGS estimates by roughly 50 percent. In any event, we will not know for sure until companies carry out extensive exploration activity. Yet, I very much doubt that companies are going to take the chance of investing billions of dollars to recover these resources from the outer edges of our Shelf if rights to do so are subject to legal challenge.

THE FUTURE OUTLOOK

For the time being, the U.S. has chosen to pursue its oceans policy outside of the framework of the Law of the Sea Treaty. Over the longer term, once the treaty has entered into force, it will become increasingly difficult to protect U.S. ocean interests if we continue to pursue such a policy. This will be most unfortunate since I believe that the oceans' will become increasingly important to our well-being. The report of the Stratton Commission in 1966 on U.S. Oceans Policy expressed this view best: "How fully and wisely the United States uses the sea in the decades ahead will affect profoundly its security, its economy, its ability to meet increasing demands for food and raw materials, its position and influence in the world community, and the quality of the environment in which its people live." Clearly, if nations of the world cannot agree on common goals for the peaceful use and exploitation of the oceans' riches, including those found on the outer limits of our continental shelves, then we as citizens of the world will be less secure, and our lives made poorer as resources on land become increasingly scarce.

CHAPTER 2

Offshore Resources: Present, Past, Future

DON KASH

Professor

Science and Public Policy Program

University of Oklahoma

Norman, Oklahoma

A few weeks prior to my invitation to give the opening paper at this conference I had the pleasure of listening to a lecture by Professor H. William Menard (Scripps Institution of Oceanography) on the development of tectonic plate theory. One portion of Bill's lecture traced the major events in the development of that theory. At each turning point, Bill would describe the facts available at the time and then suggest the conclusions that appeared to follow from those facts. He would then note that the apparent obvious conclusions were not the ones which were at the time derived from those facts.

In today's presentation I'd like to adopt the same style in reviewing the offshore oil situation. My presentation will be divided into three parts: first, a description of where we stand today; second, a sketch of what has occurred over the last decade and a half; and third, some suggestions concerning where I think we should go from here.

WHERE WE ARE TODAY

In 1985 the U.S. is consuming roughly 15.5 million barrels of oil per day. Of that amount, roughly one-third is being imported. Most projections indicate that the level of imports will increase between now and the year 2000. The primary cause of increased imports will be declining domestic production. Estimates of domestic U.S. production for the year 2000 range from a low of 4 million barrels per day to a high of 9.2 million barrels per day. Estimates of U.S. imports in the year 2000 range from 7 million to 10 million barrels per day. Most projections suggest that increased imports will mean greater U.S. dependence on Middle Eastern oil sources.

Although estimates of future U.S. oil production vary, they all project continuing decline. Declining production poses two problems. First, it makes the nation increasingly susceptible to a third oil disruption. Second, it contributes to the nation's balance of trade problems. Although a third disruption is not generally seen as a major threat given the present world oil glut, we need to remind ourselves that the previous two disruptions were also unlikely events that happened. Few perceive the Middle East as more stable today than it was in the past, and Middle Eastern

instability was the trigger for the previous two disruptions. The spreading influence of Islamic fundamentalism is a force we little understand, but it certainly does not add to the stability of that area. Although present discussions of the U.S. trade deficit focus little attention on the cost of oil imports—they cost us \$50 billion in 1984 and will almost certainly grow—restricting import growth is powerfully attractive.

Eleven percent of domestic U.S. production is now coming from the OCS. Estimates suggest that somewhere between 21 percent and 41 percent of undiscovered, producible oil will come from offshore sources. Further, most estimators believe that the offshore has the highest potential for giant new fields. Most of this potential is thought to be offshore Alaska and in deep water. In truth, if oil is produced in those hostile areas, their contributions are likely to be significant since only large production will be able to justify the expenditures required to produce that oil. Thus, the OCS is a great unknown with regard to the nation's oil production future. Reducing that uncertainty would be particularly attractive. If large new discoveries result, they will be positive contributors to both the nation's economic well-being and its national security. Alternatively, if there is little or no oil to be had from the offshore, the sooner the nation knows it the better since we will either need to modify our posture with regard to imports or, alternatively, work at developing domestic substitutes.

One other major point needs to be made about where we are. The nation is committed to environmental protection. By this I mean that there is a built-in societal commitment to environmental protection that will be sustained for the foreseeable future. First, Americans are now environmentalists. They are environmentalists because they generally perceive that environmental degradation is threatening to their health and wellbeing. Second, protection of the environment has now been broadly written into the law and translated into regulations. These environmental laws are here to stay because they are the manifestations of the broad public attitudes I just mentioned. To underline this, let me note that I can find few people who believe there is anything like majority sentiment in the Congress for major modifications of environmental laws. Third, we are committed to the environment because there is a broad range of governmental agencies committed to environmental protection and there are organized and sustaining groups outside government that exist wholly or in part for the purpose of environmental protection.

HISTORICAL SKETCH

What, if anything, does the experience during the last decade and a half with offshore oil and gas have to tell us about how we should proceed from the present into the future? First, our experience with searching for oil and gas over the last 15 years has been strikingly disappointing. Two significant new OCS fields have been found: 1) Point Aguillo, California; and, 2) the new field in the Beaufort Sea. Although they are significant, their total addition to the nation's reserves is probably only about 20 percent of that added by the North Slope discovery. East coast exploration has been a total disappointment and the offshore Alaska efforts, to date, are less than encouraging. This experience has led the Minerals Management Service to reduce 1981 USGS estimates of offshore oil resources by 55 percent from 27 billion barrels to 12.2 billion barrels.

The search for new offshore reserves over the last 15 years has occurred in a context of continuing controversy. This controversy was particularly intense from the time of the Santa Barbara blowout until the late 1970s. In the late 1970s, the opposing forces began to establish some accommodations and we saw lease sales occurring with increasing predictability and stability. Beginning in 1981, the level of

controversy increased again with the adoption by Secretary of the Interior James Watt of a new five-year leasing program which proposed to offer for lease all of the acreage within broad planning areas covering approximately one billion acres of federal offshore lands.

Although the controversy over offshore oil and gas activities has had many facets, it has primarily focused on what areas should be leased and the terms of that leasing. The controversy was driven by two broad public concerns: 1) the perceived need for new oil sources; and 2) the perceived need for environmental protection. The controversy was especially intense over efforts to lease off California and in frontier areas, particularly Alaska and the east coast. This controversy led to an endless string of law suits, the ultimate passage of a major revision of the Outer Continental Shelf Lands Act, the establishment within the Interior Department of an Environmental Studies Program, much more stringent safety and environmental regulations, and, finally, the new leasing program based on broad planning areas.

When one reviews this history of controversy, what strikes you is that it involved a tremendous amount of wasted effort. The effort was wasted because we found so little oil. Both those concerned with finding energy and those concerned with protecting the environment could, it turns out, have used their resources much more effectively in other arenas.

If someone from Mars were to come down and look at this history, he or she would almost certainly come to a single and a simple conclusion. Major effort and cost could have been saved if the leasing of offshore oil and gas resources involved a two-phase process, that is, an exploration phase and a production phase. The perception of the environmental threat flowing from offshore oil and gas operations assumes oil will be discovered and produced.

Under the system that has been and remains in place, offshore acreage is leased under terms that authorize both exploration and production. Efforts to protect against potential environmental degradation coming from oil discovery and production, then, must be mobilized at the leasing stage.

If the efforts over the last decade-and-a-half to understand and mitigate environmental threats from offshore oil production had been restricted to those instances where producible oil was discovered, the savings in time, money, passion, and psychic energy would obviously have been substantial. We, of course, didn't know this. But does this experience have any lessons for us for the future? In the abstract, the lessons are quite obvious. The nation should put in place a leasing program which separates exploration from production. The major focus on environmental studies and designing mitigation actions should come after it has been determined that producible oil and, therefore, a potential threat exists.

Although this approach seems compellingly obvious and would appear to be in the interest of everyone involved, the facts are that everyone involved is opposed to such a system. The industry doesn't want to touch such a system with a 10-foot pole. There is absolutely no enthusiasm for this approach within the Department of the Interior. Those states with a primary concern with the environment are opposed. The environmental interest groups are opposed. In sum, on this issue the otherwise contending parties are in unanimous agreement. How can this unanimity be explained? All of the participants in the system see themselves as getting some benefits out of the present arrangements. Difficult as it sometimes is to get the leases and authorization to go ahead with exploration and production, the present system assures the oil industry that if they find oil they can go ahead and develop it. Those who are concerned about the environment, on the other hand, are fearful that if there is a split between leasing and production stages, once oil has been discovered there will be no stopping the production. In sum, no one wants to take a gamble on an

unknown set of arrangements. In a legalistic, bureaucratic society, the known is almost always preferable to the unknown.

Finally, what does our experience over the last decade-and-a-half tell us about the safety of offshore operations? The answer is clear and compelling. Offshore operations have been carried out with strikingly few accidents. In truth, the record is a good bit better than could be expected from activities carried out by human beings. Where there is evidence of adverse environmental and social impacts from offshore operations, those impacts have been short-term and minimal. In truth, offshore operations have had significantly fewer impacts of an adverse kind than onshore oil and gas operations.

Why has the record been so good? Most offshore operators appear to believe that safe, accident-free operations are in their best interests. The potential for costly repercussions from serious accidents are so widely perceived within the industry that any other course of action would be contrary to its self-interest.

Second, the Department of the Interior's regulatory program has improved significantly and has had the effect of putting a floor under the quality of operations. This regulation has meant that those industry operators who may not be committed to high-quality performance have nonetheless been required to perform well.

WHERE SHOULD WE GO FROM HERE?

The OCS program should be oriented toward an elephant hunting goal. Government should pursue a strategy of encouraging industry to carry out exploratory drilling in those areas judged to have the highest potential for discovering giant and super-giant fields. The record of the last 15 years indicates that predrilling exploration technology in frontier areas remains a highly imprecise art. Experts do not agree on where the great potential is.

Given the limits of predrilling exploratory activities, the OCS program should encourage industry to carry out exploratory drilling in those areas where the industry thinks the greatest potential is. In principle, allowing the industry to select and lease tracts in large planning areas at its discretion as proposed in Secretary Watt's five-year schedule seems to meet these standards. Unfortunately, that program, because of the way it was implemented has generated much more opposition than seems to me to be warranted. Nonetheless, that opposition and the concerns about the new leasing program are facts and therefore some modification seems to be in order.

According to the Minerals Management Service, depending upon which definition of theirs one wants to use, there are somewhere between 250 million and 500 million acres with high potential. Given that is the case, the planning areas used for leasing should be restricted to the broad boundaries of those high potential areas. Once again the message is that the leasing program ought to be defined so as to reduce or eliminate controversy over areas where no one thinks there is any oil or gas anyway. Many of the areas where the states, the environmental interest groups, or the military are opposed to leasing can be eliminated without any real restriction in the pursuit of hydrocarbons. To the extent that this restricted leasing could eliminate some of the controversy, it should be followed.

This, of course, takes us back to something like the nominations process that was in place before the new leasing program. The difference, however, should be that nominations follow structures rather than consisting of the accumulation of specific blocks.

The second thing that needs to be done is that the Federal Government should think through undertaking a second-round leasing program. Recall that I indicated

earlier my belief that we need to accelerate a program which will find and produce oil or alternatively convince us that the potential for additional large discoveries on the offshore is slight. In areas such as along the Atlantic coast, where a first round of leasing and exploration has been carried out, my sense is that the Federal Government should provide incentives for getting the industry to go out on a second round of exploratory testing. Such an effort probably means that the Federal Government should move away from a leasing approach which requires large front-end bonuses. It seems to me to be in the national interest for the Federal Government to think about some kind of leasing program which has the characteristics of those used by the British and the Norwegians. That is, companies should be allowed large acreage under terms that over a fixed period of years require substantial portions of that acreage be returned to the Federal Government. This approach encourages rapid exploration since companies naturally will want to retain the most promising acreage.

So far as the Minerals Management Service is concerned there are two things that I think are important. First, funding should be continued for an Environmental Studies Program sufficient to give the environmental interest groups and the states confidence that a serious effort to understand potential adverse effects and how those might be mitigated is being conducted. Second, so far as its regulatory program is concerned, the Minerals Management Service needs to maintain a high professional regulatory capability. Assuming that oil in producible quantities is found in the frontier areas, it will be necessary to utilize technologies that are different than those presently in use. The Minerals Management Service needs to be able to stay abreast of these developments and develop a regulatory inspection system which maximizes the safety and reliability of this new technology. This requires on the part of the Minerals Management Service a high quality, professional organization and the capability to operate with flexibility.

I underline the regulatory point for two reasons. First, I believe regulation of operations has done more to protect the environment than all of the environmental studies and lease stipulations put together. Second, in a period of regulation bashing, the risks to all parties in weakening the regulatory program needs to be underlined.

In conclusion, it is my great hope that during this period when we have both an oil surplus and the beginning of a new dialogue among those concerned with the environment, the Department of Interior, and the industry we may establish some workable procedures for the future.

CHAPTER 3

The Continental Shelf: Evolving Definitional Issues

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INTRODUCTION

It has been said that to understand the man, one must know his memories and that the same is true of a nation. If that is the case, then it would seem appropriate (if not necessary) to provoke a few institutional memories when considering evolving definitional issues with respect to the Continental Shelf. It is with that in mind that I turn briefly to the history of Continental Shelf theory.

This paper is divided into four parts. In the first part I will examine the history and evolution of Continental Shelf theory as customary international law. Subsequently, the 1958 and 1982 Conventions will be examined with respect to this issue, and, finally, I shall make some comments on U.S. policy on the Shelf, as a non-signatory to the treaty.

HISTORICAL EVOLUTION

Reference herein to the concept of the Continental Shelf is meant to refer to the recognition of the Shelf as a legal entity rather than as a geological phenomenon. Although the geological Shelf's existence has been known from the earliest days of ocean exploration, legal consequences of that phenomenon did not arise until recently. Perhaps the earliest evidence of attempts to regulate activities relating to the Shelf was the Portuguese prohibition against trawling by steam vessels over the Shelf to protect fisheries resources in 1910.¹ While other instances followed, the United States, as early as 1918, refused to recognize any legal rights with respect to its own Shelf.² The United States continued to show interest in the Shelf until the early 1940s, when the technology for extracting petroleum from submerged lands began to evolve. While President Roosevelt, as early as 1937, had shown interest in claiming extended jurisdiction to protect the fisheries in the Pacific, it was not until 1943 that Harold Ickes recommended to Roosevelt that a study be done to lay the groundwork "for availing ourselves fully of the riches in this submerged land (The Continental Shelf extending some 100 or 150 miles from our shores) and in the waters over them."³ This began the process which led to the now famous Truman Proclamation

of 1945, asserting that "the United States regards the natural resources of the subsoil and seabed of the Continental Shelf beneath the high seas but contiguous to the coast of the United States as appertaining to the United States and subject to its jurisdiction and control."⁴

This proclamation contained elements that were subsequently to become law...natural prolongation and the concept of coastal State jurisdiction over the natural resources of the Shelf. While the proclamation itself made no reference to the outer limit of the Shelf claimed, the accompanying press release⁵ stated that "Generally, submerged land which is contiguous to the continent and which is covered by no more than 100 fathoms (600 feet) of water is considered as the Continental Shelf."

As might have been expected, the Truman Proclamation triggered a series of similar claims by other countries. Between 1945 and 1955, ten nations declared some form of Continental Shelf jurisdiction.⁶ Despite growing practice, it would yet be some years before it could be said with assurance that the doctrine had been absorbed into law. Early jurists were cautious. In *Petroleum Development (Qatar) Ltd. v. Ruler of Qatar*,⁷ in 1950, Lord Radcliffe decided that a concession granting to the Anglo-Persian Oil Company sole oil and gas rights "throughout the Principality of Qatar" did not include "the sea-bed or subsoil or any part thereof beneath the high seas of the Persian Gulf contiguous with such territorial waters, which sea-bed and subsoil are more particularly mentioned in the aforesaid Proclamation..." And a year later, in *Petroleum Development Ltd. v. Sheikh of Abu Dhabi*,⁸ Lord Asquith was to say that despite the desirability of such a doctrine in law, it had not yet taken on the hard delineations required of a formal legal doctrine. Lord Asquith did not rule out the possibility, even probability, that such a doctrine might subsequently emerge. The somewhat inchoate nature of the doctrine was noted by some writers of the day.⁹ But the point in time at which a principle crystallizes into a rule of customary international law is difficult to discern in most cases. In any event, it was only a few years later when the principle was incorporated into treaty by the adoption of the 1958 Continental Shelf Convention.¹⁰ The mere adoption of a principle into a treaty, however, does not resolve the question of that principle's status in customary law, at least in the absence of a clear expression by the parties showing that to be their intent. That is, the parties might either have been codifying prior custom, or developing new law, binding only upon them. It was not until 1969 that the International Court of Justice had cause to look at this question.¹¹

In the *North Sea Continental Shelf* cases, the precise dispute involved maritime boundaries on the Shelf, but in the course of resolving the dispute, the Court was drawn into a consideration of the state of the law regarding the Shelf in 1958. While rejecting the contention that article 6 of the convention reflected a rule of customary international law in 1958, the Court suggested that articles 1, 2 and 3 (article 1 deals with the outer limit) "...were then (in 1958) regarded as reflecting or as crystallizing, received or at least emergent rules of customary international law." This view was based on the fact that the Convention did not permit reservations to those articles, a rationale that rests on rather shaky ground. However, this somewhat cautious opinion shows at least the probability that in 1958 the Continental Shelf doctrine had found a home in the law. With this background in mind, let us proceed to a consideration of the 1958 Convention.

THE 1958 GENEVA CONVENTION ON THE CONTINENTAL SHELF

The 1958 Conference struggled with a number of difficult definitional problems regarding the Shelf. The first was the way in which to define in legal terms the outer limit of the Shelf. During the conference, and in the International Law

Commission (ILC) meetings preceding it, there was an amount of confusion resulting from the failure to recognize that there is a distinct difference between speaking of a geological shelf, and the legal language used to establish jurisdictional rights. Thus, attempts were made to define the latter utilizing physical attributes, such as depth. The depth test, standing alone, was found to be insufficient to establish outer jurisdictional limits due to the fact that many countries, having little or no physical shelves, viewed themselves as disadvantaged by such an approach. This fact is well reflected in the work of the ILC. In its 1951 draft, the ILC used only the "exploitability" test: that is, the outer limit of the shelf was limited only by the technology of exploitation. At that stage, the Commission was of the view that a pure depth test would be unstable. In 1953, the Commission reconsidered the issue and abandoned the exploitability test (favored by narrow-shelf countries) in favor of a fixed depth of 200-meters, because, they said, the 1951 test lacked precision. It was not until 1956 that the depth and exploitability criteria were combined.¹² It was this combined test that found its way into the treaty as article 1.¹³

Much has been written on the meaning and application of this article. One helpful presentation of the issues raised can be found in a 1958 U. N. Secretariat study.¹⁴ That study posed and discussed the following questions:

1. Can the whole submarine area of the high seas become part of the Continental Shelf?
2. What is the relation between the criterion of depth and the criterion of exploitability?
3. What is the meaning of the criterion of exploitability?

The first question has long since been laid to rest. While the language used in the article could lend itself to the interpretation that as technical capability develops, and enables exploitation to march seaward, the coastal State may correspondingly extend its jurisdiction across the ocean floor until it encounters the limit of similarly extended jurisdiction of the coastal State opposite. Such an interpretation, however, ignores the "adjacency" requirement and disregards the geographical phenomenon of the Continental Shelf suggesting contiguity.

As to the second question, three interpretive possibilities arise. First, the two criteria could be considered to be independent of each other. If that were so, the exploitability criterion would control since in all cases it would have to be satisfied. On the other hand, the two could be complementary, which would mean that the coastal State would automatically have jurisdiction to 200 meters, and beyond that, to the limit of the exploitability test. Finally, the exploitability criterion could be subordinate to the depth test, and, if so, the coastal State would be able to extend exploitation activities if begun inside the 200-meter line. Conventional wisdom seems to support the second interpretation.

The meaning of "exploitability" has never been very clear, most likely because in 1958, technology was not forcing the issue and there were no conflicts requiring resolution of the problem. The Secretariat study did, however, pose the appropriate theoretical questions. Would exploitation by one nation at a depth in excess of 200 meters automatically extend Continental Shelf jurisdiction for all coastal States? Would the exploitation of one resource beyond that limit automatically extend jurisdiction for another resource to the same depth? At what point in the process does exploration end and exploitation begin? Fortunately, these questions have been more theoretical than real.

Article 1 is also silent on the matter of how to deal with irregularities in the Shelf, such as depressions, troughs or canyons. The Norwegian Trench is an example

of the first. The irregularity in the Cabot Strait is of the second kind, and canyons abound along the Atlantic Seaboard of the United States. Logically, unless otherwise agreed, depressions should not be viewed as interrupting Shelf jurisdiction, unless they are vast. The treatment to be accorded troughs is less clear. Canyons are normally viewed as a part of the slope, and thus cause no real problems.¹⁵

A further definitional issue concerning the 1958 Convention relates to the rights that a coastal State may exercise with regard to the resources of the Shelf. Article 2 is the controlling article:

1. The coastal State exercises over the Continental Shelf sovereign rights for the purpose of exploring it and exploiting its natural resources.
2. The rights referred to in paragraph 1 of this article are exclusive in the sense that if the coastal State does not explore the Continental Shelf or exploit its natural resources, no one may undertake these activities, or make a claim to the Continental Shelf, without the express consent of the coastal State.
3. The rights of the coastal State over the Continental Shelf do not depend on occupation, effective or notional, or any express proclamation.
4. The natural resources referred to in these articles consist of the mineral and other non-living resources of the seabed and subsoil together with the living organisms which, at the harvestable stage, either are immobile on or under the seabed or are unable to move except in constant physical contact with the seabed or the subsoil.

Most of this language is quite clear. The coastal State's rights are exclusive whether utilized or not. All minerals on or beneath the Shelf are included, thus by implication Shelf jurisdiction does not extend to non-mineral objects, such as wrecked ships, that may be upon the Shelf.¹⁶ Living resources are more problematical. Clearly, the Conference intended that the relatively permanent sedentary species on the Shelf should fall within coastal State jurisdiction. Clams, oysters, sponges and the like clearly fall into this category. The words "constant physical contact," however, create difficulties in accurately classifying some other species such as crabs and lobsters. This causes disagreements. For example, while the U.S. views crabs as creatures of the Shelf, that claim has for years been rejected by Japan. Likewise, the U.S. views its northern lobsters as sedentary species, but at one time took the negotiating position that the spiny lobsters on the Bahamas banks were not because they could, it was said, "jump farther." Prior to the adoption of the 200-mile fishing zone, such definitional uncertainties caused very practical negotiating problems. In the case of Japan, its refusal to accord sedentary status to the King crab in the Bering Sea complicated conservation negotiations between the two countries, frustrating the U.S. objective of terminating Japanese crab fishing in the area.

Finally, there is the matter of construction of installations and structures on the Shelf. Paragraph 2 of article 5 of the Convention provides that:

...the coastal State is entitled to construct and maintain or operate on the Continental Shelf installations and other devices necessary for its exploration and the exploitation of its

natural resources, and to establish safety zones around such installations and devices and to take in those zones measures necessary for their protection.

Paragraph 4 of the same article makes clear that while these installations and devices fall under coastal State jurisdiction, they do not have the status of islands and thus have no territorial sea of their own. Furthermore, they may not unjustifiably interfere with navigation or fishing, nor may they interfere at all with fundamental scientific research. Any installation which is abandoned or disused "must be entirely removed."

This text makes reference only to those installations and devices necessary for the exploration and exploitation of natural resources. It is silent with respect to other types of construction, such as the emplacement of defense-related structures, or the construction of artificial islands. Since, it can be argued, such installations or construction are not prohibited by the text, a coastal State may establish them if it desires. This interpretation is supported, at least beyond the territorial sea, by the general provisions regarding the freedom of the high seas. While the high seas convention does not specifically mention such construction on the Shelf, the article 2 listing of freedoms is not meant to be exclusive and at least a credible argument can be made for the right to construct them on the Shelf.¹⁷

Less clear, under international law, is the right of the coastal State to exercise criminal and civil jurisdiction over foreign nationals at such sites. The United States Congress, apparently sensitive to this element of uncertainty, has been careful in the past to limit U.S. jurisdiction to resource-related activities. One example of such legislation is the Outer Continental Shelf Lands Act (OCSLA).¹⁸ This act, consistent with the Convention, declares it to be the policy of the U.S. that the subsoil and seabed of the outer Continental Shelf appertain to the United States and are subject to its jurisdiction, control, and power of disposition. It extends the Constitution and laws and civil and political jurisdiction of the U.S. to the subsoil and seabed of the outer Shelf, and to all artificial islands and fixed structures which may be erected thereon "for the purpose of exploring for, developing, removing, and transporting resources therefrom."¹⁹ And the act extends the authority of the Secretary of the Army to prevent obstruction to navigation (through his permitting power) on the outer Shelf as though it were navigable waters of the United States.²⁰

A federal court, interpreting this statute, confirmed the congressional intent to exercise jurisdiction only over resource-related activities. In *U.S. v. Ray*,²¹ the court held that it was illegal to construct an artificial island on the Continental Shelf of the U.S. outside of the territorial sea without a permit from the Corps of Engineers, and that the court's equitable powers encompassed injunctive relief to halt such construction. To reach this result, since the island in question was not destined for resource recovery as such, the court relied on the fact that the island was being constructed of dredged coral and sand, and hence was an exploitation of the mineral resources of the Shelf.

The distinction between resource and non-resource jurisdiction was emphasized in a later case, *U.S. v. Alexander*.²² Under Sec.5(a) of the OCSLA, the Secretary is authorized to issue rules and regulations "in order to provide for the prevention of waste and conservation of the natural resources of the Continental Shelf." Pursuant to that section, the Secretary issued a regulation prohibiting persons from damaging coral without a permit. Alexander was convicted for a violation of that regulation when he damaged a coral reef while engaged in a marine salvage operation. On appeal, his conviction was reversed. The appellate court said that the Secretary had statutory authority to regulate only resource-related uses of the Shelf, and thus this regulation under which Alexander was convicted was invalid.

Another example of Congressional restraint with respect to installations on the Shelf is found in the Deepwater Ports Act of 1975.²³ This act, authorizing the construction and licensing of offshore ports, deals, *inter alia*, with the problem of exercising civil and criminal jurisdiction over foreigners, by prohibiting foreign vessels from calling at such installations unless the foreign State involved agrees to recognize the jurisdiction of the U.S. over the vessel and its personnel while at such port. By this means, the Congress avoided the question whether, under Continental Shelf doctrine, it could exercise such jurisdiction, substituting therefore an international agreement as the legal basis for such exercise.

THE 1982 UNITED NATIONS CONVENTION ON THE LAW OF THE SEA

We now turn to the 1982 Convention.²⁴ While this convention resolves some of the problems of the 1958 treaty discussed above, it also created some new ones. To begin the analysis, let us see how the new treaty deals with the question of the outer limit of the Shelf. Article 76 is the key article. The demarcation of the outer boundary took on a significance different from that in 1958. Because the outer limit now demarks the boundary between national jurisdiction and the seabed area covered by Part XI of the treaty, the open-ended definition of the 1958 Convention (depth/exploitability) was no longer acceptable. It was necessary to create a more precise legal description of where this line would fall in order to avoid potential disputes with the International Seabed Authority (ISA). In 1958, this was not the case. Because of the more limited technology of the time, exploitation was not pressing seaward at a very rapid rate, and, secondly, there was no opposing seaward regime for deep seabed mining, as represented by ISA. But recognizing the need for a more precise definition is not the same as achieving agreement on such a formula. There were differences in views. Because States with the broadest geological margins included both developed and developing States, this issue did not take on the "north-south" or "developed-developing" alignment so apparent in the deep seabeds negotiations. Rather, the contestants in this debate were the broad margin States (referred to as the "Margineers") on the one hand, and, primarily, the land-locked and geographically disadvantaged States (LLGDS), on the other. As could be expected, the Margineers sought to extend their Shelf jurisdiction as far seaward as possible, while the LLGDS sought to maximize the area of the "common heritage of mankind" by limiting such broad claims.

The Single Negotiating Text (SNT) contained but a single paragraph on the subject. This paragraph was drafted to clarify the notion that coastal State jurisdiction over the Shelf extended to at least 200 nautical miles from baselines, but beyond that throughout the natural prolongation of the land mass to the edge of the continental margin. At this stage, the term "margin" was not defined, and because of this, it was quite clear that this simple definition of the Shelf could not command a consensus. The debates during the Caracas session of the Conference in 1974 revealed a sharp division of views. African States, with the exception of Mauritius (a broad margin State) generally advocated the position taken by the Organization of African Unity (OAU) against jurisdiction beyond 200 nautical miles. The same type of opposition came from the LLGDS and Japan. States arguing for broader jurisdiction included numerous Latin Americans, Asians, Western Europeans, and Canada, Australia, New Zealand, and Mauritius.²⁵

The debate continued in the Third Session of the Conference at Geneva in 1975, and in the Fourth Session in New York in 1976. During these debates, some new ideas began to emerge. There was growing support for a compromise between the two extreme positions by allowing broad jurisdiction, but creating an obligation to share some revenues from mineral exploitation beyond 200 miles. The precise

formulation for such revenue-sharing was yet to emerge, although some early suggestions were made. While some States preferred a system of profit sharing, the U.S. proposed one based upon a percentage of the value of production at the well head. Also, during these meetings, debate was held over the formulation of the outer limit, and it was at Geneva that the U.S. proposed a formula that would permit the coastal State to set the outer limit of the margin within 60 nautical miles of the foot of the slope.²⁴

While the debates began to show growing support for the elements of a final formulation, this support was not strong enough to result in a new text. As a result, the SNT formulation was carried forward in the Revised Single Negotiating Text (RSNT)²⁷ and the Informal Composite Negotiating Text (ICNT).²⁸ In New York, in 1977, a further refinement of the definition of the outer limit began to emerge when support appeared for the so-called "Irish formula." Under this formula, the outer limit of the Shelf would be determined at 200 miles or by a distance criterion from the base of the slope (U.S. proposal) or by a depth of sediment test.²⁹ When the First Revision of the ICNT³⁰ emerged, it contained the results of these negotiations, and the new article represented the solid basis for a compromise solution, only to be slightly modified in subsequent texts.

The Informal Composite Negotiating Text, Rev. 1 contained a definition of "margin" and placed more precise limits on the outer edge of the margin by the use of the combined U.S. and Irish formulations. With regard to the Irish formula, or thickness of sediment test, it should be understood that the broad margin States intended this formula to be applied from seaward toward the shore, while the U.S. proposal is applied seaward from the foot of the slope. The distinction is important, because it is possible that the thickness of sediment test could be met in some areas at several different indications along a line projecting seaward from the coast. By beginning seaward, and working in, the result would be that the outer limit of the Shelf would be located at the point farthest seaward at which the test is met, regardless of whether this would enclose a point or points shoreward that would not meet the test.

This revision also dealt with the view of some that the Irish formula, standing alone, was too generous. During the Seventh Session, for example, the Soviets had proposed an additional limitation: that while coastal State jurisdiction over the Shelf could extend beyond 200 miles, in no case could it do so beyond an additional 100 miles, or up to 300 miles all told. The Soviet proposal did not suggest how the limit should be ascertained in the area between 200 and 300 miles.³¹ The Soviet suggestion was to be further modified, and emerge in this revision as a subsequent cutoff for the Irish at 350 miles from the baselines or 100 nautical miles from the 2,500-meter isobath. This revision also provided for the establishment of a boundary review commission which would receive and review limits declared by the coastal State in accordance with the Convention, and would make recommendations to those States. The limits set by the coastal State after taking these recommendations into account would be final and binding. The Commission was seen as a necessary mechanism to achieve international stability of limits. A further problem had been raised with regard to the treatment of oceanic ridges, and this was noted as a footnote to the text.

This problem was generated by a misunderstanding of the 2,500-meter plus 100-mile cutoff of paragraph 5 of article 76. A misapplication of this formula might be used by some States to claim extension of Continental Shelf jurisdiction over large areas of oceanic ridges formed of oceanic crust, particularly mid-ocean ridges, even though these ridges in point of fact were part of the deep seabed. This situation resulted in a Soviet proposal to limit the Shelf in areas of oceanic ridges of whatever origin to a maximum of 350 miles. The Margineers countered with a similar proposal, but narrowed the definition of the area of applicability to ridges formed

only of oceanic crust (i.e., mid-ocean ridges).³² The resulting negotiations, in which both the Soviet and U.S. delegations were heavily involved, resulted in further changes at the end of the Ninth Session when the ICNT, Rev. 2³³ was issued.

Two changes were made. First, the last sentence of article 76, paragraph 3 was amended to read: "it does not include the deep ocean floor *with its oceanic ridges* or the subsoil thereof" (emphasis added). Secondly, a new paragraph 6 was added reading:

Notwithstanding the provisions of paragraph 5, on submarine ridges the outer limit of the Continental Shelf shall not exceed 350 miles from the baselines from which the breadth of the territorial sea is measured. This paragraph does not apply to submarine elevations that are natural components of the continental margin, such as its plateaux, rises, caps, banks and spurs.

The last sentence requires some explanation. Through much of the negotiations, focus was upon two distinct kinds of submarine phenomena: the continental margin proper and oceanic ridges. These are geologically distinct. The amendment to paragraph 3 was added to make it clear that it was not the intention to extend coastal State jurisdiction to anything but formations that were true geological prolongations of the continental land mass. Oceanic ridges, being geologically different, were excluded from such jurisdiction. But some were of the view (in particular, the USSR) that there was a third underwater formation that was yet different from the first two. These formations, it was argued, were ridges that extended seaward from a continental margin but were not geologically the same as that margin. An example of such a ridge that was alluded to was the Walrus (or Walvis) ridge on the West Coast of Africa. To deal with any objection to this conceivable extension of coastal State jurisdiction, the 350-mile cutoff was added. To make absolutely clear that this cutoff did not apply to similar formations that in fact were geologically the same as the margin, the reference to plateaux, etc., was added.

This, of course, creates new problems of interpretation. Geologically similar formations are often given different names on charts, leading to confusion over exactly what a "cap" or "spur," for example, might be. The U.S. was of the view that the exclusion would apply to the Chukchi Cap north of Alaska (Fig. 1). To emphasize this, Ambassador Richardson put the following statement on the record in Plenary Session on April 3, 1980:

Our support for the proposal regarding the Continental Shelf contained in Ambassador Aguilar's report rests on the understanding that it is recognized--and to the best of our knowledge there is no contrary interpretation that features such as the Chukchi plateau situated to the north of Alaska and its component elevations cannot be considered a ridge covered by the last sentence of the proposed paragraph--

There were no contradictions to this statement.

Article 76 is to be read, and its provisions applied, in the order in which they appear. Thus the provisions of paragraph 4 are to be applied first. If the application of that paragraph does not result in a limit beyond 200 nautical miles, that ends the issue, and no subsequent provision can serve to extend the jurisdiction of the coastal State beyond the 200-mile limit permitted by paragraph 1. If the application of

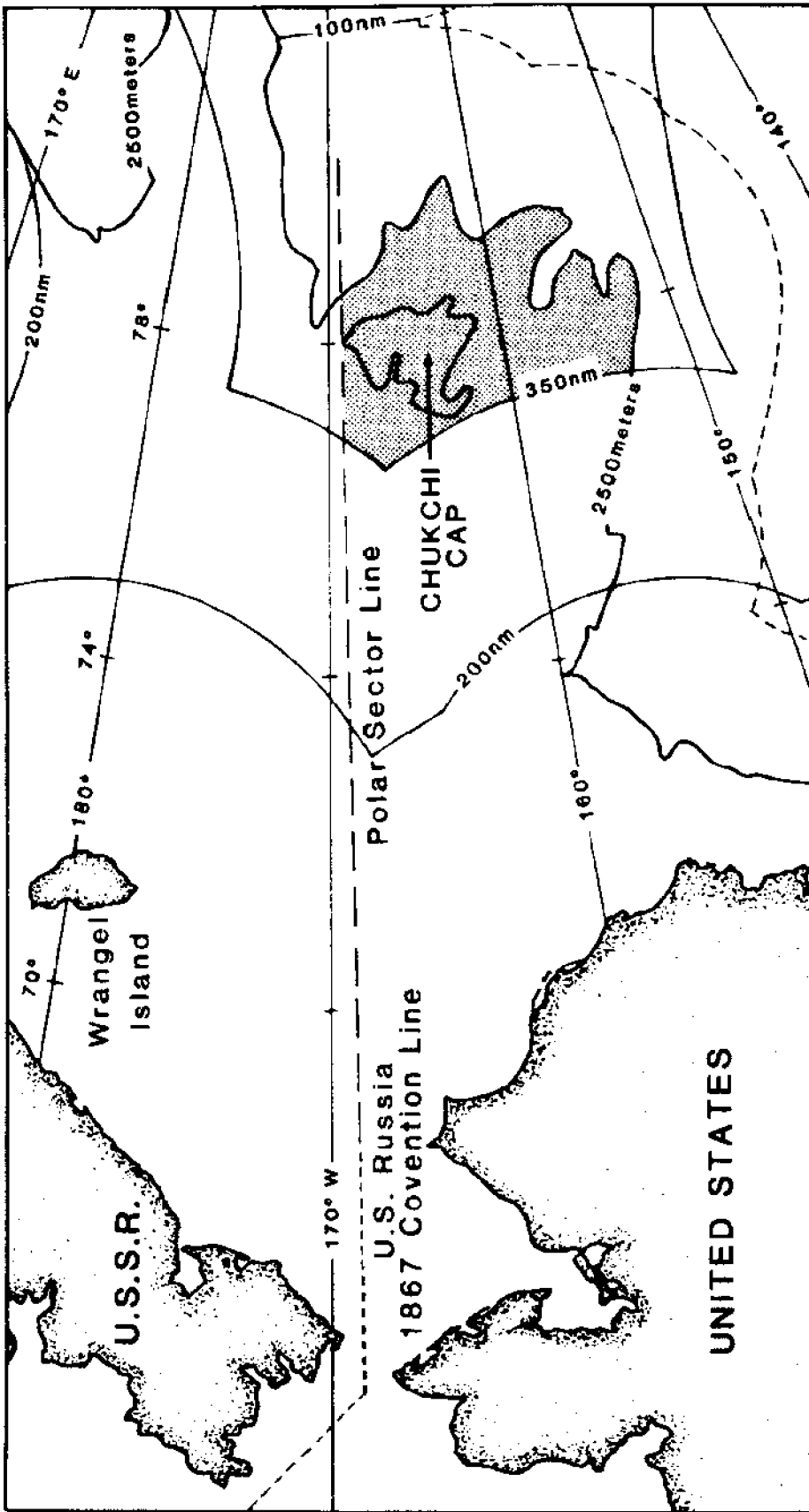


Figure 1. The excluded Chukchi Cap: an example of the U.S. perspective.

paragraph 4 does result in a shelf seaward of 200 miles, then the additional limits are applied in sequence, where appropriate, to establish the final limit.

The only remaining change in the text was to appear in the Draft Convention (Informal Text) (DCIT)³⁴ in 1980. This change, relating to the functions of the boundary review commission, changed somewhat the relationship of the commission with the coastal State. The prior text specified that before setting the final limits, the coastal State should "take into account" the recommendations of the commission. Both the U.S. and the Soviets felt this to be too weak, undercutting the importance of the commission's role. Accordingly, the text was changed to say that the final limits of the coastal State must be "on the basis of" the commission's recommendations. While the commission can set no limits against the wishes of the coastal State, this change at least adds substance to the role of the commission in this process.

Linked closely to the question of the outer limits of the Shelf, as previously mentioned, was the question of revenue-sharing on the outer Continental Shelf. Very early in the negotiations, it became abundantly clear that there would be no consensus on a relatively broad coastal State jurisdiction over the Shelf unless some form of revenue-sharing was a part of the package. During the Caracas session of the conference, there was little formal discussion of the package, although proposals incorporating one or another version of the principle were tabled by the U.S. and the Netherlands.³⁵ During the Third Session, the U.S. elaborated further on its ideas, and suggested a schedule of payments that would call for payments after the first five years of production beyond 200 nautical miles. The proposal suggested 1 percent of the value of production at the site, increasing by 1 percent each year thereafter until the tenth year, and from then on at the level of 5 percent. Illustratively, the U.S. explained that, assuming a field producing 700 million barrels of oil through a 20-year depletion period, and assuming a value of \$11 per barrel, the total revenue would be \$140 million per field.³⁶ At the conclusion of the Third Session, the SNT emerged containing an article which imposed a basic obligation to make payments from production beyond 200 miles. The rate of payment, however, was left blank, since it did not yet appear that agreement had been reached on this issue. The payments were to be made to the International Authority, which would also decide the extent to which developing countries would be obliged to make such payments.

The Fourth Session produced the RSNT which further refined the formula by incorporating the five-year moratorium and the principle of an annual increase for the sixth to the tenth years, but, again, the rate of increase was left blank, to be further negotiated. In 1977, the ICNT appeared, which included the rates proposed initially by the U.S. However, discussions during that session indicated substantial support for higher rates.³⁷ In addition, the ICNT introduced the thought that a developing country which is a net importer of the mineral produced from its Shelf should be exempt from making payments with respect to that mineral. This formulation was not popular with some delegations, particularly that of the United States which was of the view that removal of large areas of Shelf from the revenue-sharing obligations would severely limit the total revenues available for distribution.³⁸ A proposal by the United States that developing coastal States be given an option of remaining within the revenue-sharing system, paying in contributions and receiving benefits, or of staying out of the system, neither paying nor receiving benefits, did not receive sufficient support to be inserted in the texts.³⁹ The ICNT, Rev. 1, issued in 1979, produced the final version of the revenue-sharing provision. It was identical except that the maximum was increased to seven percent in the twelfth year.

Only one or two comments need be made with respect to these provisions. First, the obligation to pay shares of revenues is a coastal State obligation and not one falling upon the actual exploiter of Shelf minerals. Whether that State wishes to pay

this obligation from its general revenues or pass it along to the exploiter is a matter for its internal law. Because exploitation beyond 200 miles is not likely to be substantial for some years to come, this is not a pressing problem, and the sums involved will be small for the same period. Second, in the final text, the obligation is to be paid "through the Authority" and not to the Authority. This means that the Authority will serve as the distribution mechanism, but the funds will not become a part of the Authority general revenues. The Council of the Authority is charged with recommending to the Assembly rules, regulations and procedures "on the equitable sharing of financial and other economic benefits derived from activities in the Area and the payments and contributions made pursuant to article 82, taking into particular consideration the interests and needs of the developing States and people who have not attained full independence or other self-governing status".⁴⁰ This language was one of the factors in the United States' decision not to sign the treaty.⁴¹

Most of the other provisions contained in the Continental Shelf chapter are self-explanatory. Some of the prior problems remain. The language concerning the rights of the coastal State over the Continental Shelf⁴² was taken from the 1958 Convention, thus the same definitional problems are present, although they are greatly ameliorated by the introduction of the exclusive economic zone concept. Some further comment is required, however, with regard to the question of installations on the Shelf, previously discussed in connection with the 1958 Convention.

Article 80 of the Convention provides that: "Article 60 applies *mutatis mutandis* to artificial islands, installations and structures on the Shelf." Article 60, found in Part V of the treaty dealing with the exclusive economic zone, reads in part:

1. In the exclusive economic zone, the coastal State shall have the exclusive right to construct and to authorize and regulate the construction, operation and use of:
 - (a) artificial islands;
 - (b) installations for the purposes provided for in article 56 and other economic purposes;
 - (c) installations and structures which may interfere with the exercise of the rights of the coastal State in the zone.
2. The coastal State shall have exclusive jurisdiction over such artificial islands, installations and structures, including jurisdiction with regard to customs, fiscal, health, safety and immigration laws and regulations.
3. Due notice must be given of the construction of such artificial islands, installations or structures, and permanent means for giving warning of their presence must be maintained. Any installations or structures which are abandoned or disused shall be removed to ensure safety of navigation, taking into account any generally accepted international standards established in this regard by the competent international organization. Such removal shall also have due regard to fishing, the protection of the marine environment and the rights and duties of other States. Appropriate publicity shall be given to the depth, position and dimensions of any installations or structures not entirely removed.

8. Artificial islands, installations and structures do not possess the status of islands. They have no territorial sea of their own, and their presence does not affect the delimitation of the territorial sea, the exclusive economic zone or the Continental Shelf.

As can be seen, this article specifically addresses some of the problems raised by the 1958 Convention. In the first place, the scope of the provision was enlarged to include artificial islands, giving the coastal State the clear right to construct them and to exercise jurisdiction over them. This jurisdiction is not limited to artificial islands constructed for resource purposes, nor is the right to construct them. With respect to installations and structures, however, the right to construct them is limited to those established for the purposes provided for in article 56, and reference is made to economic objectives. Article 56 assigns to the coastal State "sovereign rights" for exploration and exploitation of, *inter alia*, the seabed and subsoil of the exclusive economic zone. This is consistent with the provisions of article 77 which gives the coastal State sovereign rights over the Shelf for the purpose of exploring and exploiting its natural resources. It would seem, therefore, that in this Convention, as in 1958, the right to construct installations or structures, and to exercise jurisdiction over them remains a right related to natural resources, as defined by the treaty. The exercise of coastal State jurisdiction over installation and structures would have, of course, important military consequences, and for that reason, the language of article 60 was deliberately and carefully drafted. The coastal State would not have jurisdiction over installations and structures, either in the economic zone or on the Shelf having such characteristics.

The language concerning the removal of abandoned or disused installations or structures is changed in the new Convention. No longer is complete removal required. This change is in response to the new technologies developed to establish structures in ever deeper water at high costs. It was argued that complete removal may not be necessary to safeguard navigation, and the costs would be prohibitive. Accordingly, the language was changed to require removal only to the degree necessary "to ensure safety of navigation," and in connection with such removal, the coastal State is required to take into account generally accepted international standards established by the International Maritime Organization (IMO). The development of such standards, however, is not a precondition to the duty to remove, but they would be useful in assisting the coastal State in ascertaining the kinds of structures to be removed in various locations, and the degree to which they must be removed. It would be important to remember, however, that it was always understood that the term "navigation" includes submerged navigation, thus that factor should be considered when making these decisions. Preliminary discussions had begun among interested delegations with regard to a submission of proposed standards to IMO. It is to be hoped that these discussions would continue, and that IMO would take early action on any proposals that might emerge.

The final new provision of importance that emerged in the new Convention was article 83, relating to the delimitation of the Continental Shelf between States with opposite or adjacent coasts. This new provision states that delimitation shall be effected by agreement on the basis of international law, as referred to in article 38 of the Statute of the International Court of Justice, in order to achieve an equitable solution. The history and meaning of this provision is long and complex and has been the subject of other meetings. It will not, therefore, be discussed here. Suffice it to say that there is considerable jurisprudence on the subject.

I now turn to the final section of this paper, in which I discuss questions arising from the fact that the United States has not become a signatory to the Convention. What will her policies be?

U.S. SHELF POLICY AS A NON-SIGNATORY

The outlines of future U.S. oceans policy as officially promulgated are quite broad, leaving much of the detail to speculation. In his statement of July 9, 1982 the President stated that those extensive parts dealing with navigation and overflight and most other provisions of the convention are consistent with U.S. interests and serve well the interests of all nations. This theme was echoed in the Fact Sheet issued by the White House Office of the Press Secretary as an attachment to the President's proclamation of an Exclusive Economic Zone on March 10, 1983. It said, in part:

The President has also established clear guidelines for United States oceans policy by stating that the United States is prepared to accept and act in accordance with international law as reflected in the results of the Law of the Sea Convention that relate to traditional uses of the oceans such as navigation and overflight. The United States is willing to respect the maritime claims of others, including economic zones, that are consistent with international law as reflected in the Convention, if U.S. rights and freedoms in such areas under international law are respected by the coastal State.

With specific regard to the continental shelf, the Fact Sheet states:

Since President Truman proclaimed U.S. jurisdiction and control over the adjacent Continental Shelf in 1945, the U.S. has asserted sovereign rights for the exploration and exploitation of the resources of the Continental Shelf. Fundamental supplementary legislation, the Outer Continental Shelf Lands Act, was passed by Congress in 1953. The President's proclamation today incorporates existing jurisdiction over the Continental Shelf.

These statements, read together, may on first glance appear somewhat contradictory. The comment with respect to the Shelf seems to suggest that the continuation of U.S. policy toward the exploration and exploitation of the resources of the Shelf relies for its legal foundation upon the Truman Proclamation, and, presumably, the 1958 Continental Shelf Convention, to which we are still a party. In the strictest legal sense this is correct. We are not bound by the provisions of the 1982 treaty, but we are bound by the 1958 Convention. In addition, to the degree that the 1958 Convention reflects customary international law, that provides an additional legal foundation. In a recent letter,⁴³ Under Secretary of Defense Fred C. Ikle stated, "...we are all working for the same objective—maritime stability, and we are in full agreement that the best way to achieve that objective is to reinforce the customary international law status of the Convention's non-seabed mining provisions." The broader policy declaration with regard to the non-seabeds provisions of the treaty, however, would seem to suggest that the U.S. is prepared to respect the new treaty with regard to the Shelf, and will recognize claims by others based upon those provisions.

The distinction between relying on the 1958 Convention and the 1982 Convention could, if emphasized, be significant for the development of U.S. policy in the sense that the definition of the outer limit of the Shelf under the latter is more restrictive. Adherence to the article 76 approach to that definition would mean that the U.S. presumably would abandon any intention of claiming the "last grain of sand," a claim that arguably could be supported by the 1958 definition. However, from a policy perspective, it is not necessary to make that choice. Clearly the 1982 definition is compatible with that adopted in 1958, thus the U.S., even if it formally relied upon either customary international law or the 1958 Convention as its legal basis would be free to shape its claim in a way that is consistent with article 76. For many reasons, it would be wise to do so. As the Panel on the Law of Ocean Uses recently advised, the United States should refrain from making any claim exceeding article 76 limits because failure to respect that definition would create uncertainty, engender disputes regarding the regime of the Shelf, and would have the potential of inviting disrespect for other limits and rules set forth in the Convention. This would disrupt the stated objective of reinforcing generally the customary law status of the non-seabeds provisions of the treaty. Since the article 76 definition is generous enough to protect at least domestic production of Shelf minerals, it would seem foolhardy to risk disruption of other areas of the law of importance to U.S. national interests for a slight or moderate increase in Shelf jurisdiction.

Another question the U.S. will have to answer, although not in the near future, is whether it can, or should, avail itself of the services of the boundary review commission when, and if, that commission becomes operative. It is my view, as to the first question, that it can. While the U.S. is not a party to the Convention, nor a signatory, the provisions of the Convention and its annexes dealing with the subject are not limited to States Parties, but instead speak of submissions by coastal States.⁴⁴ Thus the services of the commission seem to be open to all coastal States, whether parties to the convention or not. This interpretation would be consistent with the purpose of the commission, which is to provide stability to the demarcation of jurisdiction between coastal States and the International Seabed Authority. Gaps created by preventing nonsignatories from making submissions would not serve this purpose.

With regard to the question whether the U.S. *should* make such a submission, there are two possible points of view. It could be argued that utilization of the commission, in the light of its objectives, might constitute an indirect recognition of the legitimacy of the deep seabed regime, a concept rejected by the U.S. On the other hand, international review of U.S. boundaries would be in the interest of the U.S. in that it would act as some restraint on extravagant claims of other States, and would give potential investors in activities on the Shelf a measure of security. On balance, the opportunity to utilize the commission should not be rejected out of hand. The decision need not be made now, and, if the required ratifications are not obtained, the question will of course be moot.

The question of U.S. policy toward revenue-sharing is much more difficult. Again, however, there is no urgency in addressing the issue. Yet its implications for overall policy and strategy is important enough to begin worrying about it. In looking back on the conference, it is clear that there would have been no consensus on the outer limits of the Shelf, if there had not been corresponding agreement on revenue-sharing. They were an important "mini-package" without which there could have been no consensus on the treaty as a whole. If the United States is serious about giving credence to the non-seabed provisions of the treaty, either as customary law, or emerging or crystallizing customary law, it would be extremely difficult to do piecemeal, selecting some portions and rejecting others. Technically, of course, it might argue that some provisions, being contractual in nature, like the duty to make

payments, cannot become customary law. While this might be appealing on the purely technical level, it may be bad policy.

On the other hand, the concept of distribution of Shelf revenues is closely tied to the concept of an international authority, an entity the U.S. would not wish to recognize. In that sense, there may be political resistance to U.S. participation in any revenue-sharing scheme. In weighing these considerations, the Panel on the Law of Ocean Uses concluded that the U.S. should accept the principle of revenue-sharing beyond 200 miles, on the theory that failure to do so might create uncertainty regarding global recognition of U.S. title to seabed minerals of the Shelf seaward of 200 miles sufficient to deter or slow investment.

If the principle of sharing is accepted in order to advance the entire package, eventually the question will be raised as to the mechanism that would be appropriate for doing so. Again, this issue need not be addressed for some considerable time in the future, but a few options do present themselves. Obviously, the U.S. would not wish to make payments through the Authority, as called for in the Convention. This is particularly true because of the reference, previously mentioned, to non-self-governing bodies. One option for the United States might be to approximate the treaty as closely as possible through the utilization of normal foreign aid channels. The Congress, in appropriating monies for foreign aid could take into account the level of exploitation on the outer Shelf along the lines of the formula contained in the treaty. While such a mechanism would not satisfy the specific provisions of the treaty, the U.S. would not be seen as reneging on an essential part of the package that was carefully negotiated.

The issue of installations presents no policy decisions for the U.S. It must not only exercise jurisdiction in accord with the treaty, which it will because it is in the U.S. interest, but it must insist that others do likewise. Policies with regard to the conduct of marine scientific research on the U.S. Shelf should be developed in a way that do not invite more restrictive such policies by other countries.

CONCLUSION

In this paper I have attempted to briefly analyze the evolution of Continental Shelf theory, to discuss the way in which the Third United Nations Law of the Sea Conference addressed certain definitional questions, and to make some recommendations for future U.S. Shelf policy. Whatever the future of the treaty itself, there was widespread recognition throughout the conference with respect to the acceptability and the desirability of the rules reflected in the nonseabed provisions. Whether international law now requires the application of any of them, these rules are workable and practical, and provide an excellent basis for the development of national policies on a global scale.

I view the shelf provisions of the treaty as a major key to the whole package. Surely, no deep seabed regime, whatever its content, could have been agreed to in the absence of a clear understanding of the extent and nature of coastal State jurisdiction. Oil and gas remain, for the foreseeable future, as important coastal State resources, and thus a resolution of these problems was an essential prerequisite to the conclusion of the conference and adoption of the treaty. Coastal States, whether signatories or not, must understand that to depart in any significant way from the rules contained in the treaty will only result in destroying any hope they might have for global recognition of the extent of their own claims. We will then return to the great offshore land grab, with all its attendant difficulties.

NOTES

- 1 Cosford, *The Continental Shelf* 1910-1945, 4 McGill L.J. 245 (1958)
- 2 In a letter to Mr. Frank Newton dated Sept. 10, 1918, Second Assistant Secretary of State Adze stated: "...the United States has no jurisdiction over the ocean bottom of the Gulf of Mexico beyond the territorial waters adjacent to the coast. Therefore, it does not appear possible for the United States to grant you the leasehold of other property rights which you desire." 2 Hackworth, *Digest of International Law*, 679 (1940).
- 3 4 Whiteman, *Digest of International Law*, 752 (1965).
- 4 Presidential Proclamation No. 2667 (September 28, 1945), 13 485 (1945).
- 5 White House Press Release, September 28, 1945, 13 *Dept. State Bull.* 484 (1945).
- 6 For a listing, see Knight, *Law of the Sea*, pp.9-28 (1980).
- 7 [1951] *Int'l L. Rep.* 161-163 (No.38).
- 8 Reproduced in 1 *Int'l & Comp.L.Q.* (1952) 247, 253-260.
- 9 For example: "[W]hile the unilateral declaration of the United States [the Truman Proclamation] cannot in itself create any new rights or any new rules of international law, it may be regarded as providing the seed from which such rights and rules may grow. It is submitted that general recognition and acceptance by states may perfect the rights claimed by the United States and establish new rules of international law based on the doctrine of the continental shelf." Vallet, *The Continental Shelf*, 23 *Brit.Y.B. Int'l Law* 333, 337 (1946). See, also, *Memorandum on the Regime of the High Seas*, prepared by the Secretariat of the United Nations for the International Law Commission (U.N. Doc. A/CNA/32)(1950); Anninos, *The Continental Shelf and Public International Law*, 140, 143, (1953).
- 10 Convention on the Continental Shelf, 499 U.N.T.S. 311, 15 U.S.T. 471, T.I.A.S. No. 5578.
- 11 *North Sea Continental Shelf Cases*, [1969] I.C.J. 4.
- 12 For more of this history, see *Study Prepared by the Secretariat of the United Nations for the Ad Hoc Committee to Study the Peaceful Uses of the Sea-Bed Beyond the Limits of National Jurisdiction*, U.N. Doc. A/AC.135/19, June 21, 1968.
- 13 Article 1 reads as follows:

For the purpose of these articles, the term "continental shelf" is used as referring (a) to the seabed and subsoil of the submarine areas adjacent to the coast but outside the area of the territorial sea, to a depth of 200 meters or, beyond that limit to where the depth of the superjacent waters admit of the exploitation of the natural resources

of the said areas; (b) to the seabed and subsoil of similar submarine areas adjacent to the coasts of islands.

- ¹⁴ *Supra*, note 12.
- ¹⁵ For further discussion, see *Scientific Considerations Relating to the Continental Shelf*, Memorandum by the Secretariat of UNESCO, U.N. Doc. A/CONF.13/2 and Add.1 September 20, 1957.
- ¹⁶ This was the view of the ILC as reported in its commentary to draft article 68.
- ¹⁷ See, in the regard, the Convention on the High Seas, 450 U.N.T.S. 82, 13 U.S.T. 2313, T.I.A.S. No. 5200.
- ¹⁸ 33 U.S.C. 1331 *et seq.*
- ¹⁹ 33 U.S.C. 1333(a).
- ²⁰ 33 U.S.C. 1333(e).
- ²¹ 423 F.2d 16 (1970).
- ²² 602 F.2d 1228 (1979).
- ²³ 33 U.S.C. 1501 *et seq.*
- ²⁴ Citations are to the *Official Text of the United Nations Convention on the Law of the Sea Annexes and Index* (United Nations, N.Y. 1983).
- ²⁵ See *Reports of the United States Delegation to the Third United Nations Conference on the Law of the Sea*, The Law of the Sea Institute Occasional Paper No. 33, Nordquist, Ed., at 72. (Hereinafter cited as *Report*).
- ²⁶ *Report*, at 98, 128.
- ²⁷ A/CONF.62/WP.8, 7 May 1975.
- ²⁸ A/CONF.62.WP.8/REV.1, 6 May 1976.
- ²⁹ *Report*, at 176.
- ³⁰ A/CONF.62/WP.10, 15 July 1977.
- ³¹ *Report*, at 210.
- ³² *Report*, at 334.
- ³³ A/CONF.62/WP.10/Rev.2, 11 April 1980.
- ³⁴ A/CONF.62/WP.10/Rev.3, 22 September 1980.
- ³⁵ *Report*, at 72.

³⁶ *Report*, at 99.

³⁷ *Report*, at 176.

³⁸ *Report*, at 150.

³⁹ *Report*, at 336.

⁴⁰ Convention on the Law of the Sea, Article 162(2)(o)(i).

⁴¹ In the President's statement of July 9, 1982, announcing his decision, one of the "problems" cited was "stipulations relating to mandatory transfer of private technology and the possibility of national liberation movements sharing in benefits." This concern was articulated more strongly by Ambassador James Malone before the House Foreign Affairs Committee on August 12, 1982. He said: "The convention would allow funding for national liberation groups, such as the Palestine Liberation Organization and the South West Africa People's Organization."

⁴² Convention on the Law of the Sea, Article 77.

⁴³ Letter to Louis Henkin, Chairman, Panel on the Law of Ocean Uses, dated 10 September 1984.

⁴⁴ See Convention on the Law of the Sea, Article 76(8) and Annex II.

CHAPTER 4

Aspects of Public Resource Policy in the North Sea

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INTRODUCTION

We are concerned at this conference with the resources on the Continental Shelf and related problems, among which are the need to balance conflicting interests and the impact that new developments may have on established practices. This contribution is focused on the Shelf of Western Europe and particularly around the United Kingdom. The resources of that area are obvious and well recognized. They include fisheries with an annual yield in the North Sea alone of 3-4 million tons, and oil, of which 2 1/2 million barrels per day were brought out last year making Britain the sixth largest producer. There are also other minerals although of considerably less importance—sand and gravel, coal, and potash. In addition, looking at the concept of a resource in its broadest terms, there is the use of the sea for waste disposal, transport, recreation and defense.

Demands on these diverse resources from both public and private sectors are complicated not only by conflicting interests within any one country, but also by differences in international attitudes and requirements. While it could not be claimed that the North Sea is unique in this respect, it is undoubtedly complex in being bordered by seven different countries. This complexity is enhanced by the existence of the European Economic Community which, while in one sense providing a coherent framework for expression of joint policy from many of the countries involved, adds another layer of negotiations which must be penetrated in attempting to resolve resource management issues in the North Sea.

This brief contribution does not attempt to cover the field in a comprehensive way. Instead, it examines the most obvious of the problems—the impact of oil development, and in particular, the Scottish experience on the potential disagreements between the traditional fishing industry and the requirements of offshore oil exploitation. Much has already been said and written about this. Activities began in the North Sea during the early 1960s with seismic prospecting, and 1964 brought the first full-scale work. We thus have over 20 years' experience in the area, and this does seem a good time to consider just where we stand.

SOCIO-ECONOMIC CONCERNS

Before turning to the detailed discussion of the interaction of oil and fisheries, it may be relevant to look for a moment at the broader issues of North Sea oil development. The background is that in recent years, half of the world's resources of offshore equipment and manpower have been deployed in the North Sea, mostly in U.K. waters. To deal with the oil we need a wide range of facilities—pipelines, land fall terminals, processing plants, storage, distribution and export installations, all on a massive scale. It was, of course, recognized that the discovery and development of oil could produce social, economic and environmental conflicts. On the socio-economic side, a major concern was that the sudden expansion of activity would have damaging effects particularly at the interface between land and sea where oil was brought ashore.

This has not occurred, I believe, thanks to careful planning long before the oil began to flow. After a study of the entire coastline of Scotland, specific conservation zones were designated where oil developments would not be encouraged, and preferred development zones were indicated where it was proposed that the oil industry should seek to confine its onshore facilities (Fig. 1). Where the oil was led into the coast in areas of relatively low population density, the policy was to isolate the main oil-related activities in selected areas so that there was minimum disturbance of the local population.

Thus, in the Orkney Islands one relatively small area was proposed for oil operations, and, in fact, the oil reception terminal was located on an island close to but well separated from the main two (Johnston, 1981). Further north, at the Shetland Islands, with a normal population of approximately 17,000, the terminal receiving most of the oil from the richest fields in the North Sea is built well away from the capital, Lerwick (Fenwick, 1981). It is worth noting that this Shetland terminal at Sullom Voe is the largest oil transit port in Europe, constructed for a consortium of 30 oil companies, costing over £800 million and handling 1.4 million barrels of oil per day from ten separate oil fields. One potential problem arose from the massive influx of immigrant labor for construction work. This labor force was accommodated either in cruise ships moored in the vicinity or in specially built villages, well provided but temporary, which, now that the construction phase is over, have been taken down and the land returned to its original use. The main lasting impact at Shetland has turned out to be a significant improvement in communications by air and road, in harbor facilities, and in education and social activities, but the essential character of the community has not been damaged.

A similar favorable situation holds where oil was brought ashore or handled on the Scottish mainland near large towns. Here, careful planning and landscaping of terminals and reception facilities has resulted in the minimum of impact along the coasts. Thus the pipeline from the Forties field makes its landfall north of Aberdeen and continues overland to Edinburgh, a distance of more than 200km, with little attention drawn to its presence. It joins a tank farm in the Edinburgh area which is landscaped almost to invisibility from the public view, and the underwater pipeline to the tanker terminal offshore means that no undue prominence is given to the exportation of oil in the Firth itself.

ENVIRONMENTAL PROTECTION

It seems reasonable to conclude then, after more than a decade of oil exploitation in the North Sea, that the policies in relation to socio-economic aspects of offshore oil have worked well. The other aspect which initially was a potential cause for concern was possible impact on the marine environment. The U.K. policy in this

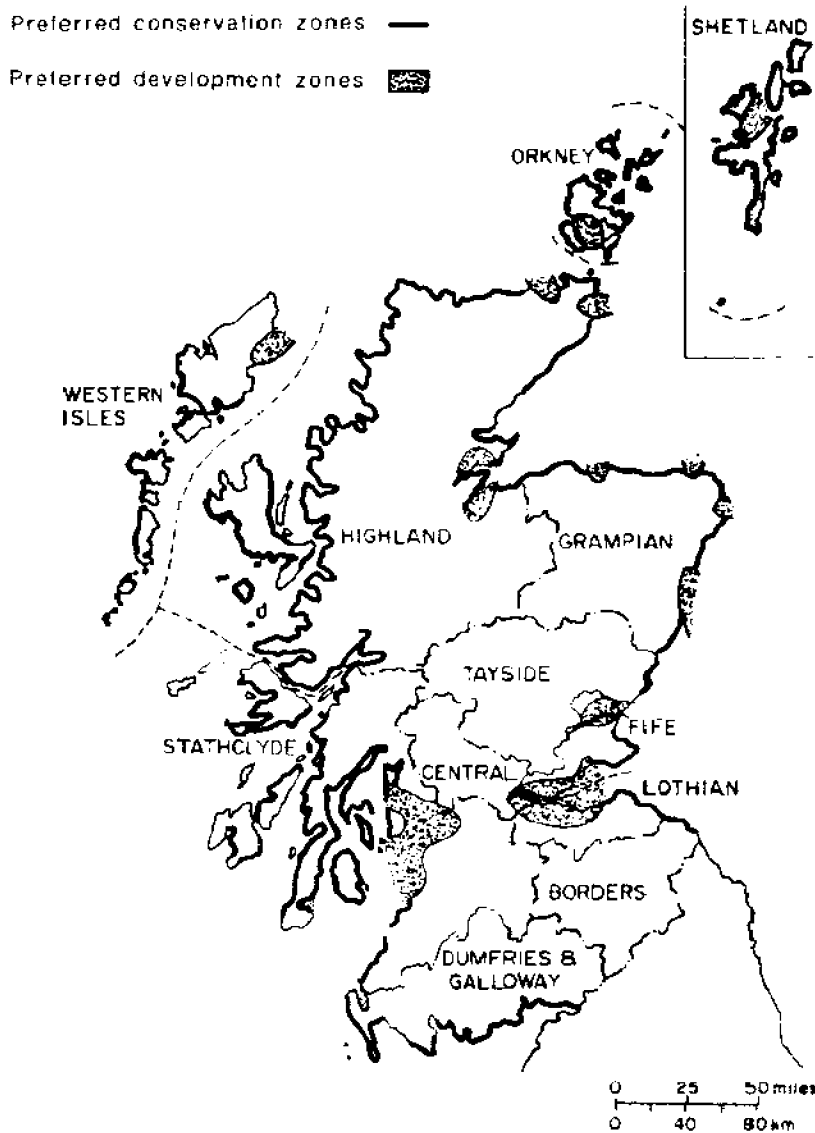


Figure 1. The Scottish conservation and development zones for oil industry activity. Onshore oil facilities are encouraged in development zones and discouraged in conservation zones.

field in the early days was clear—to develop North Sea oil with the speed required by the nation, but at the same time to harmonize industrial and environmental interests.

This policy of environmental protection was and is applied through the whole spectrum of oil operations. On the purely pollution side, a formalized framework of legislation has been developed which controls effluents (Johnston and Morris, 1980), and procedures for dealing with spills and incidents. In a more general context, the policy requires careful specification of all equipment and technical operations and

rigorous inspection and enforcement of regulations. It has resulted in the establishment of codes of practice tailored to individual areas, so that oil-related activities are all conducted in a way which minimizes impacts and interference with fisheries.

The components of one of these codes of practice, applying to the inner part of a large bay on the Scottish east coast is shown in Table 1. It deals with everything from the initial seismic surveys through to the clean-up of supply vessel routes and general good housekeeping practices. I would not suggest that this concern for fisheries and the marine environment on the part of the oil companies would necessarily be enthusiastically maintained without continuous surveillance and pressure, but in the existing circumstances the concern does exist and it is effective. This is partly achieved and focused by a consultative group of government officials, oil industry representatives and fishermen which meets at frequent intervals and examines common problems. A major part of the group's activities is to consider immediate problems causing conflict between the oil and fishing industries. The meetings serve both as a channel of communication and as a safety valve and they do lead to the making of executive decisions. In particular, there is the consideration of loss or damage to fishing gear, and loss of fishing time attributed to oil-related activities. A fishing skipper who feels he has losses due to offshore oil operations may claim for compensation. Over the past ten years, the number of such claims has been around 90 per year with an overall annual compensation of about {{904}}L 150,000.

Table 1

Components of Code of Practice Between
Fishing Organizations and the Oil Industry.

Appointment of coordinating officer
Notification of seismic surveys
Drilling proposals
Drilling in progress
Settlement of claims
Post-drilling requirements
Suspended wells
Buoys
Supply vessels
Cleaning up of supply routes
Safety zones
Good housekeeping practices

A number of other items seemed, in the early days, likely to cause problems. The flaring of excess gas, for example, was much in the headlines. The control of this was, of course, a major policy issue, since it represented a significant loss of energy, but it raised other issues as well. Ashore at the terminals there was an obvious nuisance, in the form of sooty deposits, to local residents if the flare was not burned properly, while on the platforms at sea it was thought to do great damage to populations of migrating birds. But studies showed that concern for the latter was unfounded and careful management of flare conditions on shore removed the soot problem. Also, it was felt that the greatly increased traffic in supply boats to and

from the offshore installations would so disrupt the harbors that fishing would be affected. Again, this fear has proved to be exaggerated, and it has been possible to develop harbors to accommodate all needs. Indeed, it is interesting that the changing pattern of fishing activities in recent years resulting largely from the establishment of 200-mile EEZs, has led to a northward shift in the center of fisheries in the U.K. so that now the major ports are in Scotland. Indeed Peterhead, one of the smaller towns north of Aberdeen, has not only thrived as a result of oil-related activities, but has also so extended its fisheries that it has become the top port in Europe.

It is of interest that when exploitation of oil started, it was felt by many that a significant early conflict with fisheries would develop in terms of marine pollution. Now, many years later, it is clear that this has not so far materialized and it seems unlikely to do so. Since drilling started there has been one major wellhead blow-out (in the Ekofisk field) when some 30 thousand tons of oil were lost, and a large number of minor spills have been recorded at sea and around terminals, but the impact has been negligible. Apart from direct pollution, the other major source of conflict between the oil and fishing industries which I have already referred to, was that of interference, since there is no doubt that fishermen are at a disadvantage from oil rigs and pipelines disputing their use of the seabed, and from oil-related debris disrupting their activities. This interference, however, has not assumed the proportions that were expected, and it now seems to be accepted by the fishing industry that the various mechanisms which have been set up at the interface of oil and fisheries to assess problems, to evaluate claims and to provide compensation are effective.

It should be noted that the consultative group not only deals with current problems but also looks ahead to identify future issues. One major matter that is at present attracting attention is the treatment of abandoned pipelines and offshore installations at the end of their effective life. International law, in the form of the Geneva Convention of 1958 and later, some provisions of the Law of the Sea, require removal of abandoned installations to prevent unjustifiable interference with navigation, fishing or other marine users or to avoid pollution. Studies underway at present suggest that all shallow-water platforms will need to be totally removed to insure safety of navigation. It will probably be cheaper to remove deep-water concrete platforms entirely, but deep-water steel platforms could be partially removed by cutting and dismantling. However, there is the possibility that abandoned installations may attract and concentrate fish and shellfish and studies are underway to examine the advantages of maintaining selected units. Pipelines, of which there are more than 180 in the North Sea extending to over 3000km, would be either totally removed or trenched and buried. The costs of platform removal are calculated to be about the same as installation costs, while removing pipelines would run to one-half to two-thirds of their cost of installation, so substantial financial considerations are involved. Progress towards agreement on removal policies will be another measure of the success of the consultation.

As a result of these interactions, the tension that originally existed between the fishing and oil industries has been replaced by a mutual respect and by cooperation to solve problems. While there has so far been no major confrontation, the price of this satisfactory condition, as already noted in the context of interference, is seen as constant attention. The situation is a dynamic one. Novel approaches and techniques are always being introduced, and as the wells mature, the nature and volume of their effluents change, so that new problems emerge. It may be instructive to look in detail at one of the current issues and how it is being resolved—the use of drilling muds.

DRILLING MUDS

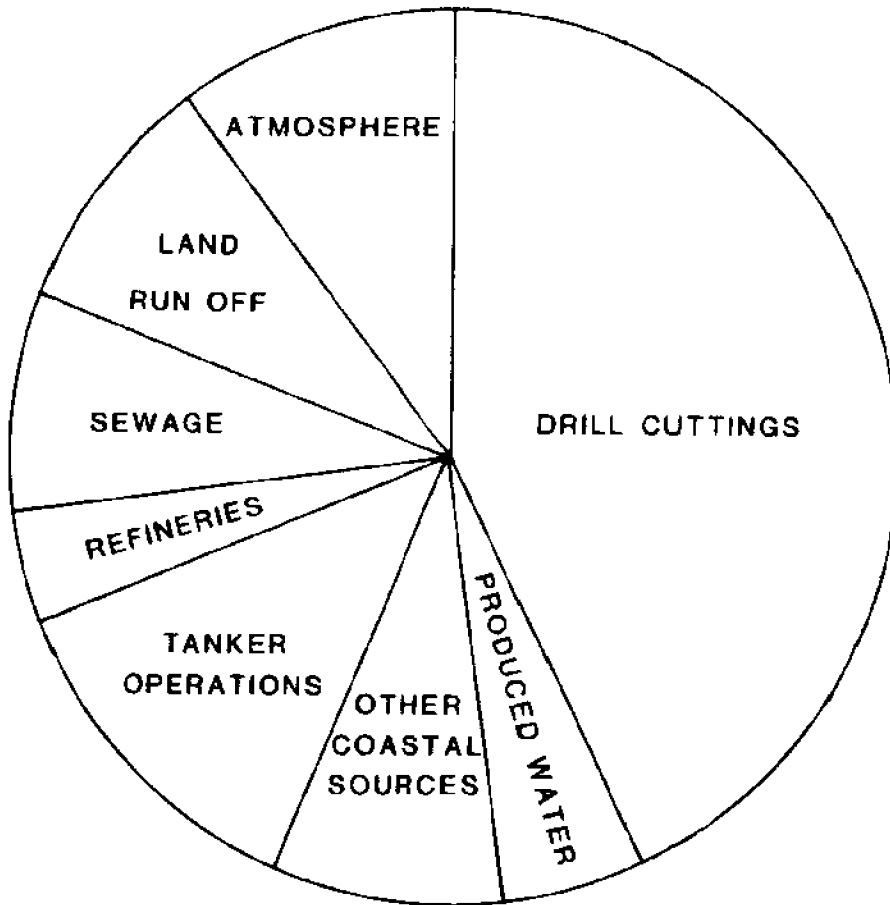
Drilling muds serve several functions in oil exploitation—they provide cooling, lubrication, and hydraulic power, their weight helps to control reservoir pressure and the rock cuttings are brought to the surface in the mudflow. When muds along with cuttings are returned to the platform, they are subjected to various treatments to separate the valuable muds from the cuttings. The muds can then be re-used and the cuttings from water-based mud operations returned to the sea, along with any residual mud. The environmental effects of this disposal have been documented in earlier studies in California and the Gulf of Mexico which show that large quantities of mud and cuttings disposed of around rigs have an immediate smothering effect on the bottom fauna but that piles of the material eventually become colonized by burrowing and encrusting organisms, and constitute a viable habitat. More studies, on the east coast of the USA, confirmed this (Menzie *et al* 1980), and in particular the work of Maurer *et al* (1981) on polychaete feeding guilds suggested significant adverse effects would not be expected.

In the early drilling in the North Sea, muds were suspended in a water base, but there are several circumstances in which an oil-based mud offers substantial advantages over a water-based mud. For example, some rock types can absorb water and swell, causing instability in the bore hole. Oil-based muds combat this and also provide better lubrication and speed up the drilling operation, particularly in cases where deviational rather than vertical drilling is required, and especially in deep water. For these reasons, there has been an increasing preference for oil-based rather than water-based muds. It became obvious in the North Sea that while rigorous controls were exerted on the concentrations and amounts of oil discharges in water effluents, much larger quantities of oil were getting into the environment via the disposal of muds (Fig. 2). Thus the final washed cuttings ready for discharge may contain 6-17 percent weight of diesel oil (Blackman *et al* 1982). In 1983, of 223 wells drilled on the U.K. shelf, 65 used oil-based muds so that about 18,000 tons of oil were discharged associated with the cuttings (Davies *et al* 1984).

Studies in the North Sea show that the biological effects of oil-based muds depend on the hydrography of the area and on the way in which disposal had been operated. In general, effects detected were on the benthic macrofauna with the elimination or severe reduction of animals close to the discharge and a clear gradient of effect away from the center.

The conclusion from detailed studies in a range of North Sea fields is that the first 500m around a rig discharging oil-based mud shows a strongly affected benthos with oil in sediments at 1000 times the background level; 200-2000m is a transitional zone, and beyond that there is no observed effect, although out to about 4000m hydrocarbon levels may get up to ten times the background level. We are thus detecting an effect on benthos in the 2km zone round these rigs.

As a result of this work it became clear that the existing regulations to control oily discharges required revision. In November 1984 the U.K. Department of Energy, the government department responsible for the offshore control of rigs, brought into operation an amendment to the Prevention of Oil Pollution Act 1971, so that it is now an offense to discharge any oil used in oil-based drilling muds on the U.K. Continental Shelf without an exemption from that department. The conditions under which an exemption will be issued prohibit the discharge of whole muds, require the use of efficient solids control equipment for low toxicity muds, and specify additional treatment equipment where diesel-based muds are used. Analyses of the oil content of discharged cuttings are required, and an approved toxicity test must be conducted on both the whole mud and the base oil before a low toxicity mud is



TOTAL APPROX 44,000 TONNES PER ANNUM

(based upon Royal Commission 8th Report)

Figure 2. Estimated Annual Oil Input to the North Sea (x10³ tonnes).

acceptable. Further, a defined seabed sampling program must be approved and undertaken before oil-based muds can be used in all but single exploratory wells.

PROBLEM SOLVING

This approach to the control of oil pollution from drilling muds in the North Sea is new and we have yet to assess how effective it will be. However, in the context of our discussions this morning, I think the interesting feature is the process by which the new regulations were developed. First government scientists recognized in the increasing use of oil-based muds a potential source of pollution. A group of scientists from government and industry then worked together to produce an objective assessment of the problem. A regulation that would minimize damage to the marine environment but would permit the use of non-water-based muds where

necessary was established, thus producing a reasonable solution and minimizing conflict between different interests.

In conclusion, I would say that through constant attention to detail by all concerned and the maintenance of open channels of communication, it has been possible to permit the oil industry to establish itself in the North Sea and to develop without major impact on traditional activities.

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COMMENT

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Professor Kash has very interestingly suggested that offshore leasing should be carried out in two separate stages: exploration leasing and production leasing. This has been a common procedure with petroleum concessions abroad but might have some problems in application to the U.S. offshore. I hope that in his written paper Professor Kash will indicate more specifically the mechanisms he would propose under such a procedure for: (1) the competitive award both of exploration leases and production leases; (2) for providing the winners of exploration leases with sufficient assurance of production rights to give them an adequate incentive to spend the huge sums necessary for exploration; and (3) satisfying the customary desires of the government (and the public) for large initial bonus payments even before granting only exploration leases.

PART TWO

International Boundaries: Impacts on Shelf Management

The subject of this session concerns the impact of international boundary delimitation on the management of Continental Shelf resources—issues that are critical to our continued successful development of the shelf's mineral wealth. These questions take on their importance for one rather straightforward reason. If we are to develop effective, if not comprehensive, management strategies for the Continental Shelf and its resources, it is necessary to be able to characterize the nature of those resources. What are the resources, where are the boundaries, and to whom do the resources belong? Since substantial resources are located in areas of boundary dispute, it is easily argued that a determination of such boundaries is a prerequisite to the rational evaluation of management strategies.

However, these are not issues with the promise of easy or early resolution. They raise complex and difficult questions of legal interpretation, historic use, and international politics. Further, given the number of unresolved boundary disputes, the ambiguity of the shelf provisions in the United Nations Convention on the Law of the Sea, and the set of rather intriguing rulings handed down recently by the International Court of Justice, it is also clear that these issues will remain for our consideration for some time to come.

To discuss these issues, we have a most distinguished panel.

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CHAPTER 5

Delimiting Continental Shelf Boundaries

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The law of Continental Shelf boundary delimitation is entering a new phase in its evolution. For the first time, there are court decisions affecting not only shelf boundaries beyond territorial limits but boundaries in the water column as well. In both the Guinea/Guinea Bissau and the U.S./Canada Gulf of Maine Cases, the courts were asked to consider maritime boundaries for all purposes, and in each case the opposing parties, in their arguments, drew on previous practice relating to shelf claims. During this session we shall learn of what transpired during these two deliberations, but first I would like to consider briefly what the international law of Continental Shelf boundaries appears to have been at the conclusion of the Tunisia/Libya Case and just prior to the decisions on maritime boundaries for all purposes.

THE INTERNATIONAL LAW OF CONTINENTAL SHELF BOUNDARIES

The three bases for the establishment of Continental Shelf boundary law seem to be (1) convention law, (2) judicial decisions, and (3) State practice. The first delimitation of a Continental Shelf boundary occurred in 1942 in the Gulf of Paria, through an arrangement between Venezuela and the United Kingdom acting for its then territory, Trinidad. The boundary was based on agreement and did not follow the equidistance principle.

Convention Law

Three years later, in the Truman Proclamation, asserting U.S. jurisdiction and control over the natural resources of its contiguous Continental Shelf, it was stated that the boundaries of the U.S. Continental Shelf with its neighbors would be determined in accordance with "equitable principles"—a term which then, as now, appears subject to various interpretations. The first Continental Shelf boundary actually based on equidistance was delimited between Norway and the United

The 1958 Geneva Convention on the Continental Shelf—to which the U.S. is a party—states, in article 6, that the Continental Shelf boundaries between opposite and adjacent States shall be determined by agreement. “In the absence of agreement, and unless another boundary line is justified by special circumstances, the boundary is the median line....” Note that this provision makes no reference to equitable principles as a factor in the delimitation process.

During the ensuing 27 years since the Continental Shelf Convention was adopted, there have been three important Court decisions affecting Continental Shelf boundaries, scores of bilateral agreements, and a new Law of the Sea Convention text. The 1982 Law of the Sea Convention, which treats the boundaries of both continental shelves and exclusive economic zones, states in article 83, “The delimitation of the Continental Shelf between States with opposite or adjacent coasts shall be effected by agreement on the basis of international law, as referred to in article 38 of the Statute of the International Court of Justice, in order to achieve an equitable solution.” Gone is any reference to the median line, and in the place of “special circumstances” we now have a call for an “equitable solution.” The reference to article 38 of the International Court of Justice (ICJ) Statute offers few, if any, useful guidelines for procedures to be followed in the delimitation process.

Judicial Decisions

Of the Court decisions, the first, chronologically, was the 1969 North Sea Continental Shelf Case; this probably was the most important of the three in establishing criteria for Continental Shelf delimitations. In this case, the Court found that delimitation should be effected “by Agreement in accordance with equitable principles, and taking account of all the relevant circumstances.” The Truman Proclamation’s “equitable principles” are thus revived, and the “special circumstances” of a decade earlier, are now “relevant circumstances.” While it is difficult when reading the decision to distinguish between what the Court felt were “relevant circumstances” as compared with “equitable principles,” the decision did identify certain “considerations,” applicable to this area of the North Sea, which, the Court believed, mitigated against the mandatory use of an equidistance line. These considerations have been cited as arguments in subsequent third-party settlements. They are, briefly:

- 1) *proportionality*. “A final factor to be taken account of” the Court wrote, “is the element of a reasonable degree of proportionality which a delimitation effected according to equitable principles ought to bring about between the extent of the continental shelf appertaining to the States concerned, and the lengths of their respective coastlines.”
- 2) *natural prolongation*. The decision states delimitation should be effected “in such a way as to leave as much as possible to each Party all those parts of the continental shelf that constitute a natural prolongation of its land territory into and under the sea, without encroachment on the natural prolongation of the land territory of the others.”
- 3) *configuration of the coast*. “The land dominates the sea; it is consequently necessary to examine closely the geographical configuration of the coastline of countries whose continental shelves are to be delimited....what is unacceptable in this instance is that a State should enjoy continental shelf rights

considerably different from those of its neighbors simply because in the one case the coastline is markedly convex in form and in the other it is markedly concave, although the coastlines are comparable in length."

- 4) *unity of deposits*. "(I)t frequently occurs," the Court opined, "that the same deposit (of the natural resources of the seabed and subsoil) lies on both sides of the line dividing the continental shelf between two States, and since it is possible to exploit such a deposit from either side, it is reasonable to take (this factor) into consideration in the course of negotiations for a delimitation."

The Court did not feel that these factors were the only ones to be taken into account in shelf delimitations. Rather, it wrote "(T)here is no legal limit to the considerations which States may take account of for the purpose of making sure that they apply equitable procedures, and more often than not it is the balancing-up of all such considerations that will produce this result rather than reliance on one to the exclusion of all others. The problem of relative weight to be accorded to different considerations naturally varies with the circumstance of the case."

To the list of "considerations" developed in the North Sea Cases, several others have been added through later decisions. In the 1977 Anglo-French Arbitration Award, the Court dispensed with the dichotomy which seemingly had existed earlier between equidistance and other methods of delimitation by adopting an "equidistance-special circumstances rule" which had the object of delimiting a boundary in accordance with equitable principles, without arguing whether or not an equidistance line could, under certain conditions, be in itself equitable. Beyond this, a principal consideration adopted was that of giving half effect to basepoints which might otherwise exert a disproportionate effect on the location of an equidistance line.

Off Britain's Cornwall coast, the Scilly Islands form, together with the French island of Ushant, to the southeast, the final basepoints for any equidistance line delimited seaward from the western end of the English Channel. The Court noted that the Scillies project considerably further westward than does Ushant, and that the United Kingdom and France abut on the same Continental Shelf with coasts of roughly similar length in relation to the shelf. Moreover, the Scillies are a group of islands with little land territory and a population of less than 3,000. Consequently, the Court held that the additional projection of the Scilly Islands into the Atlantic constituted an element of distortion material enough to justify a boundary other than that of equidistance.

In the Tunisia/Libya Case, the Court identified another consideration which might be taken into account, namely the coastal front concept. Borrowing from the 1969 decision's statement that "the land dominates the sea," the 1982 Court found "...the factor of perpendicularity to the coast and the concept of prolongation to the general direction of the land boundary are...relevant criteria to be taken account of in selecting a line of delimitation calculated to ensure an equitable solution."

Two other considerations that the Court alluded to in the Tunisia/Libya Case are the conduct of the parties, and economic considerations. Conduct of the parties was seen here as "indicia of the line or lines which the Parties themselves may have considered equitable or acted upon as such--if only as an interim solution affecting part only of the area to be delimited."

The reference to economic considerations had to do with the presence of oil wells in an area to be delimited. Such presence may "depending on the facts, be an element to be taken account of in the process of weighing all relevant factors to achieve an

equitable result." This obviously is not a reference to the relative economic dependence of coastal communities on the resources of the area in question.

At this point in time, three questions seemed to pose themselves; and these questions could also pertain to maritime boundaries for all purposes. First, is each Continental Shelf boundary case unique, or can some principles of equity be developed which would be relevant for a series of situations? In the Tunisia/Libya judgment, the Court wrote "Clearly each continental shelf case in dispute should be considered and judged on its own merits, having regard to its peculiar circumstances; therefore, no attempt should be made here to overconceptualize the application of the principles and rules relating to the continental shelf." In other words, it is unwise to develop a "shopping list" of equitable principles from which a Party can pick and choose in order to bolster its argument. Yet, despite this, the 1982 Court did indeed rely on principles laid down in earlier ICJ decisions.

A second question is that of fairness. In their decisions the courts repeatedly argued against equal divisions of areas or of shelf resources. Nor were they concerned with distributive justice, but rather with the norms of international law. Yet, when reading these and subsequent judgments of the courts, one cannot help but wonder what the underlying motives for some of the courts' reasonings may have been.

Third, is the apparent dichotomy between equitable principles and an equitable solution. Have courts reached a point where, in maritime boundary delimitations, they "pronounce the application of the law to the facts produced by the line they selected, after which they offer *post hoc* justifications?" In the Tunisia/Libya judgment, the Court expressly stated that the result, not the means, should dominate the decision. In its decision, the Court wrote:

Since the Court considers that it is bound to decide the case on the basis of equitable principles, it must first examine what such principles entail...The result of the application of equitable principles must be equitable...It is the result which is predominant; the principles are subordinate to the goal...(Thus) the term "equitable principles" cannot be interpreted in the abstract; it refers back to the principles and rules which may be appropriate in order to achieve an equitable result.

State Practice

A third source of law is State practice. Two questions are important here: (1) have States, in their bilateral agreements, supported the considerations which the courts held to be relevant to the establishment of equitable solutions?; and (2) are there any new principles which have evolved from State practice which the courts did not identify?

There are relatively few examples of bilateral agreements supporting the court's considerations. One notable exception is the French/Spanish agreement on their common boundary in the Bay of Biscay. In this case, the delimitation is based on proportionality between the lengths of the artificial coastlines decided upon by the two parties and the respective areas of Continental Shelf allotted to each country in the Bay of Biscay.

Partial effect was given to islands in the Iran/Saudi Arabia, and Italy/Greece maritime boundary agreements; and in several South American arrangements, lines were drawn roughly perpendicular to the general direction of the coast. But in none of the bilateral settlements has a non-equidistance line been drawn on the basis of

natural prolongation, concavity or convexity of one of the countries' coasts, or of unity of shelf deposits.

NEW BOUNDARY DELIMITATION PRINCIPLES

So far as new principles are concerned, the important ones seem to be, first, the use of joint economic development zones, as between Japan and the Republic of Korea; and second, deciding upon different boundaries for the shelf and the water column, as was done between Australia and Papua New Guinea. A number of what might be termed "technical adjustments" have been made in bilateral agreements. Among these are creating artificial coastlines from which to measure the boundary, shifting slightly the turning points of a line, exchanging small areas within the boundary zone, and "smoothing out" an otherwise circuitous line. Another technique is to describe arcs of circles about islands located close to an equidistance boundary, the breadth of the arc being equal to the State's claimed territorial sea. The island is otherwise ignored in the delimitation.

WHAT APPLIES TO ALL-PURPOSE BOUNDARIES?

Where did all of this leave us in the summer of 1984, just before the first decisions were handed down by ICJ panels on boundaries for all purposes? For one thing, it might have seemed that parties to all-purpose boundary adjudications felt that the shelf arguments still prevailed and that to these could be added new considerations affecting the water column. In the U.S./Canada Case, for example, the United States, in its Memorial, alluded to proportionality, natural prolongation, configuration of the coast, unity of deposits, the coastal front concept, and the conduct of the parties. The Canadians, arguing for an equidistance line, invoked the disproportionate effect small land features (Cape Cod and Nantucket) would have on an equidistant line, as well as economic considerations. In its judgment, the Court considered only the factor of proportionality, as modified by granting half effect to a small Canadian coastal island.

The International Court of Justice clearly has its task cut out for it in seeking to mold the law of Continental Shelf boundary delimitations into the larger framework of delimiting boundaries for all purposes. Persons interested in these matters must await the first decision to be handed down by the full Court on all-purpose maritime boundaries, in order to determine how much of the Continental Shelf judgments are still relevant within the new legal framework.

CHAPTER 6

U.S. Boundary Delimitation Problems and Practice

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It is a pleasure for me to be with you today to share with you some thoughts on U.S. Boundary Delimitation in practice and discuss the significant mainland boundary problems with our neighbors in light of that practice.

EXTENDED JURISDICTIONAL ZONES

Establishment of extended zones of jurisdiction over off-shore areas by coastal nations has become accepted international practice in the past decade. Fishery zones or exclusive economic zones (EEZs) of 200 nautical miles breadth have been proclaimed by approximately 100 coastal nations. Within these zones, they assert exclusive rights to resources—both living and non-living—found in the water column and on or under the seabed. Additionally, contemporary international law recognizes the assertion by coastal States of jurisdiction over the full extent of its Continental Shelf (as opposed to water column). This jurisdiction is not necessarily limited to a breadth of 200 miles.

The extension seaward of coastal State resource jurisdiction reflects, among other things, growing interest in offshore minerals, particularly hydrocarbons. This interest is a product of increased demand for domestic supply of such resources and technological advances permitting resource activities at increasingly greater water depths.

Orderly and rational offshore resource development—particularly with respect to the Outer Continental Shelf—requires that there be precise definition of the areas in which such development may occur. Uncertainty over ownership or title can be a major deterrent to resource exploration and development. Where the continental shelves or other maritime jurisdictions of neighboring States overlap, delimitation of maritime boundaries between these zones is required in order to establish the precision and certainty necessary for marine resource uses and exercise of other maritime activities as well. It has been estimated that establishment of 200-mile zones creates

the need to determine more than 300 such boundary situations (including U.S. territories and possessions).

Delimitation of maritime boundaries is required between countries where coastlines are adjacent or opposite, that is to say, where the permissible extent of their exclusive economic zones or continental shelves overlap. To cite examples involving the United States, the coastlines of the United States and Mexico are adjacent on the Pacific coast, while the coastlines of the United States and Cuba are opposite. There are boundary situations which include both opposite and adjacent elements, as is the case in the Gulf of Mexico between the U.S. and Mexico.

U.S. POLICY AND PRACTICE

Under international law, the basic obligation with respect to delimitation of unsettled maritime boundaries is that the boundary be fixed by agreement between the nations involved. It is U.S. policy that its maritime boundaries be established by agreement in accordance with equitable principles. The means by which equitable results may be achieved varies according to the particular maritime boundary in question. The negotiation of agreed maritime boundaries in cases where such boundaries are unsettled, therefore, is detailed and complex involving a wide range of legal, political, economic, historical, geological and geographic factors. The aim, however, is to achieve mutually agreed boundaries.

In examining in detail what constitutes current U.S. policy and practice in "establishing its maritime boundaries by agreement in accordance with equitable principles," I shall make a few general statements and follow up by an examination of selected aspects of the Gulf of Maine Case. This examination, in focusing on what constituted the major elements of the U.S. position submitted to the Special Chamber, will reveal what the U.S. considered to be "relevant circumstances" or "special circumstances" to lead to an equitable result. Unfortunately, the Chamber did not see fit to endorse them. Although granted that the elements were selected to apply to a particular set of (to the U.S. appealing) circumstances, I still believe them revealing as to how the U.S. might approach other bilateral boundary issues in the future. In light of recent discussions with the Dominican Republic regarding the U.S. Puerto Rico/Dominican boundary delimitation, I will also hazard the belief that future boundary bilaterals shall be multi-use and multi-faceted, reserving, as it were, usufructs in perpetuity notwithstanding resolving a boundary otherwise sovereign for all purposes.

First, I believe the United States, as a general policy principle, will prefer to establish a single boundary in common ocean space frontiers to be dispositive for all purposes *e.g.*, Continental Shelf and EEZ jurisdiction. Although granted that, academically speaking, arguments may be made militating for different results in each category, as a practical matter it is not a feasible real-world result. How can the United States tell a fishing vessel the boundary for fishing for coastal species is Line A, while telling perhaps the same vessel that when trawling for sedentary species the boundary is Line B? Such a scenario will lead to wretched enforcement problems and miserable evidentiary ones. Any boundary resolution should ideally be based on a well-reasoned functional approach.

Second, given the difficulty inherent in distinguishing for practical purposes between the resource jurisdictional aspects of the EEZ and shelf regimes in the LOS Convention, it is unreasonable to distinguish between those regimes by means of independent boundaries. This is particularly true within 200 miles of the coasts, where of course the vast majority of offshore commercial activity will take place.

A trend toward this result can be seen in the *compromis* of the Parties in the Gulf of Maine case, wherein both asked the Court to determine a "single maritime

boundary," valid for all purposes. This case therefore is different in a significant aspect from all cases decided by the International Court of Justice (ICJ) before, including the recent judgment in the Libya/Malta case, in that all cases heretofore determined the Continental Shelf boundary without prejudice to the EEZ. The case is significant, given the tremendous amount of EEZ practice which has recently become customary law. The Special Chamber in a case of first impression could have gone far in promoting the rational development of EEZ practice and boundary delimitation, particularly insofar as it could favorably influence continental margin delimitation, especially in adjacency situations, which, with the exception of our USSR boundary in the Bering and Chukchi Seas, constitute the bulk of our boundary disputes. Unfortunately the Special Chamber chose not to do so but rested on sterile ground, reiterating without clarification or guidance geographic facts leading to equitable results.

Before examining the U.S. position in the case insofar as it reflects the tangible contemporary U.S. approach to equitable delimitation, let me mention a second U.S. policy in large part deriving from the failure of the Chamber to heed us. The United States will in all probability not agree again to arbitration in advance in boundary delimitation disputes, particularly insofar as a single boundary will dispose of all sovereign and jurisdictional rights. Where this was the trend before the Gulf of Maine Case it has in my view been reinforced.

ICJ DELIMITATION CRITERIA

On the eve of the Gulf of Maine Case, ICJ Continental Shelf delimitation judgments had been based on: (1) Article 6 of the 1958 Shelf Convention stressing the need for agreement, and equidistance, unless another boundary is justified by special circumstances; (2) the 1969 North Sea Continental Shelf Case judgment, stressing natural prolongation as the applicable criterion; (3) the 1975 Anglo-French Channel Islands Award, providing for no limitation in the number of special circumstances which could be taken into consideration which might require deviation from an otherwise purely equidistance solution; (4) article 83(1) of the 1982 LOS Convention, somewhat reversing the 1958 article 6 order of priority, requiring that delimitation be effected by agreement on the basis of international law to achieve an equitable solution; and (5) the Tunisia/Libya judgment, stating there to be no limit on relevant circumstances which may be taken into consideration in order to apply equitable principles.

As I interpret the decision, in the Gulf of Maine Case the United States submission can be considered an example of what we considered to be the relevant circumstances to be taken into consideration in any application of equitable principles. In that this was to be a single boundary valid for all purposes, both EEZ and shelf, the U.S. believed that concepts which gave rise to the EEZ as a juridical phenomenon should be taken into consideration in the delimitation. First, the United States developed as a relevant circumstance the unity of deposit of resources on Georges Bank. The ICJ had already referred to the unity of resource deposits as a special circumstance to be taken into account in its 1969 North Sea Continental Shelf Case judgment. The U.S. posited in furtherance of this circumstance that resource and management conservation would be promoted were the unity of the resources on Georges Bank preserved. As a second relevant circumstance the U.S. underscored the desirability of avoiding international disputes. The third special circumstance proposed by the United States was the need to protect the environment.

These three propositions, fundamental to U.S. thinking, were successively rejected by the Special Chamber. Rather, the Chamber primarily relied on purely surface geographic facts, configuration and other criteria in its Award. It ignored the

interrelationship between the EEZ and Continental Shelf regimes, particularly resource interdependencies. The Special Chamber rejected the need to minimize the potential for international disputes, in that there was no rule of law that a boundary should make it possible to insure optimum conservation and management of living resources and at the same time reduce the potential for international disputes. It also found it "unrewarding" to look to general international law to provide a ready-made set of rules that can be used for solving any delimitation problems that arise.

This unimaginative, unresponsive and unconstructive approach has in my mind made it extremely unlikely that the United States shall again resort to binding arbitration. In effect all U.S. policy and practice developed during the past years was politely, albeit summarily, rejected. Agreement on unitary boundaries in the future will almost surely be worked out between the Parties. The recent June 3, 1985 Libya/Malta Continental Shelf Award of the full Court, provides little solace. To my mind it results in yet another unpredictable result. Although the Court elaborated five familiar principles as governing criteria, its application of them leads to a result I think we would be unhappy with were it to apply to U.S. boundaries.

CREATIVE SOLUTIONS

Given the above track record, I believe in the future we shall reach agreement bilaterally in more creative, and in a certain sense, less traditional approaches. A case in point is the recent U.S./Dominican Republic maritime boundary negotiations. In view of the traditional division in which all attributes of sovereignty and jurisdiction of a State fall on one side of a line, the negotiations delimiting the maritime boundary between the Dominican Republic and Puerto Rico take into account shelf and EEZ aspects, weighing competing interests and recognizing use conflicts satisfactorily while at the same time establishing a single maritime boundary.

Basically, under the 1983 draft, the United States would secure permanent access for U.S. recreational and small-scale fishermen to the parts of the Dominican Republic EEZ that are of greatest interest to U.S. fishermen. In addition, the United States would receive about one-half of the disputed area as well as areas north and south of Mona Passage which it previously had not claimed. The principal *quid pro quo* for the Dominican Republic would be jurisdiction over all of Cabo Engano, 20 square nautical miles of which we currently claim.

Such a creative "reservation of use" or usufructuary approach has as a precedent the more embracing innovative approach adopted by Australia and Papua New Guinea in the Torres Strait Treaty. In an area marked with special geographic features, interdependent life styles of the local inhabitants who are ethnically distant, and presence of islands belonging to Australia which are in instances well within three miles of the Papua New Guinea coast, an early attempt to arrive at a single maritime boundary did not result in a workable or jurisdictional situation (both sides, it is interesting to note, considered—but rejected—referring the dispute to the ICJ). Rather, a Protected Zone was established in a defined area of the Strait, the principal purpose of which was "to protect the traditional way of life and livelihood of the inhabitants including their traditional fishing and free movement." In the aftermath of the U.S. position in the Gulf of Maine Case, it is instructive to note that another purpose of the Protected Zone was to preserve the marine environment. A Joint Advisory Council was established to insure the effective working of the Zone. Lines delineating seabed jurisdiction differ from those establishing fisheries jurisdiction. As to pollution and marine science research jurisdiction, referred to as "residual jurisdiction," each Party exercises full jurisdiction with the concurrence of the other

Party and both consult with a view to reaching agreement on the most effective method of application of measures.

The Treaty is highly provocative and may well prove a litmus for a future U.S. approach with its neighbors on delimitation issues.

POTENTIAL U.S. BOUNDARIES

Assertion of a 200-nautical-mile resource jurisdiction by the United States—first in establishment of the Fishery Conservation Zone of March 1, 1977, and later in President Reagan's Exclusive Economic Zone Proclamation of March 10, 1983—has, as noted, created approximately 30 potential maritime boundaries to be delimited by the United States; 10 offshore of one or more of the 50 states and 20 offshore of U.S. territories. Technically speaking, this need first arose with the 1945 assertion of U.S. Continental Shelf jurisdiction. But until recently, activities on the Continental Shelf in most of these areas were not immediately contemplated. Today, of course, we face a much different situation.

For the purposes of our discussions today, I would like to concentrate upon those boundary situations which bear upon the new five-year Outer Continental Shelf (OCS) oil and gas leasing program. It is important that U.S. maritime boundary positions be reflected, where appropriate, throughout the five-year program. At this stage, this matter relates most specifically to the descriptions of potential planning areas for the new program.

With this in mind, I would like to describe briefly where we stand with regard to the delimitation of maritime boundaries between the United States and Canada, the Soviet Union, Mexico, and Cuba and the Bahamas.

CANADA

The United States and Canada share maritime boundaries in four areas: the Gulf of Maine region, between the New England states and the Canadian maritime provinces; the Beaufort Sea off Alaska and the Yukon Territory; the area of the Dixon Entrance, between Alaska and British Columbia; and off the Strait of Juan de Fuca, between Washington and British Columbia.

Gulf of Maine

The major emphasis with respect to the Canadian boundaries has been upon the boundary in the Gulf of Maine and over Georges Bank (Fig. 1) which has been the subject of a two-year adjudication before a special chamber of the International Court of Justice (ICJ) in the Hague. On October 12, 1984, the Court announced its decision.

At stake in the case, was maritime jurisdiction over an area between 13,000 to 18,000 square nautical miles in size. At the center of the dispute was jurisdiction over the northeastern half of Georges Bank, containing rich fishing grounds and hydrocarbon potential. During the dispute, the United States maintained that it was entitled to a boundary line that would retain all of Georges Bank under United States jurisdiction, whereas Canada sought a boundary that would divide the Bank in half, leaving all of the northeastern portion under Canadian jurisdiction. The Canadian position was based on their version of where an equidistant line should be drawn. We contended that as a matter of equity, the U.S. was entitled to the entire area of Georges Bank because of the centuries-old fishing activities of U.S. fishermen compared to the relatively recent activities there of Canadian fishermen.

The Court found that neither side's boundary position was justified. It established a line that crosses Georges Bank essentially midway between the claims of

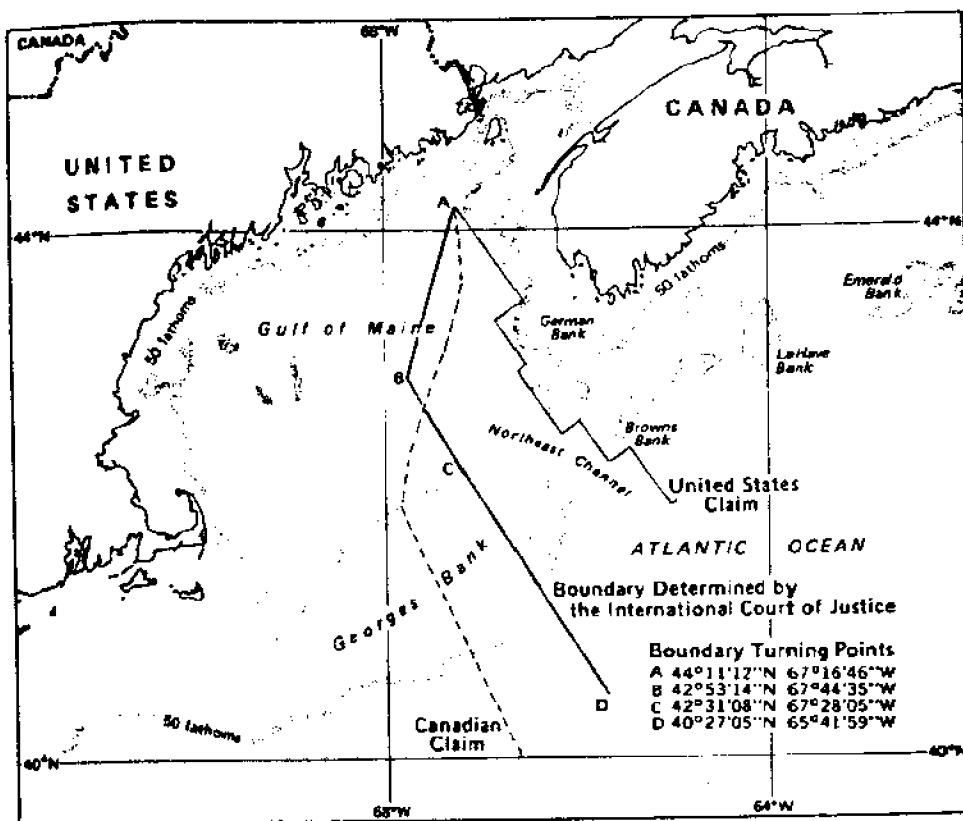


Figure 1. United States-Canada Gulf of Maine maritime boundary determined by the International Court of Justice.

the two States. Although the United States did not proceed with any resource development activity in the disputed area, Canada had in fact issued some permits in 1964, which of course, no longer have any validity in the U.S. area. The line is now in force. Implementation of that new boundary has taken place in the atmosphere of cooperation that generally characterizes U.S.-Canadian relations. A remaining problem is the Continental Shelf boundary beyond the 200-mile EEZ. The Court left this to be negotiated between the U.S. and Canada.

The other three maritime boundaries with Canada await settlement. To a large degree, consideration of these boundaries was overshadowed by the Gulf of Maine proceedings.

Beaufort Sea

With respect to the Beaufort Sea in the Arctic, the United States and Canada have enunciated differing principles as the appropriate basis for the maritime boundary. In 1977, the United States, in establishing the limits to which it would enforce its 200-nautical-mile fishery conservation zone and Continental Shelf, described those limits as an equidistant line (equidistant from the U.S. and Canadian coastlines). Canada, on the other hand, argued that the international land boundary, which runs along the 141° meridian of west longitude, should be the maritime boundary. This

results in the existence of an area in the Beaufort Sea which each country believes to be under its jurisdiction. This is illustrated in Figure 2.

Dixon Entrance

In the Dixon Entrance between British Columbia and Alaska, a dispute exists over the status of the waters. Canada views the waters within the entrance to be entirely Canadian, while the United States believes that a maritime boundary is required. In

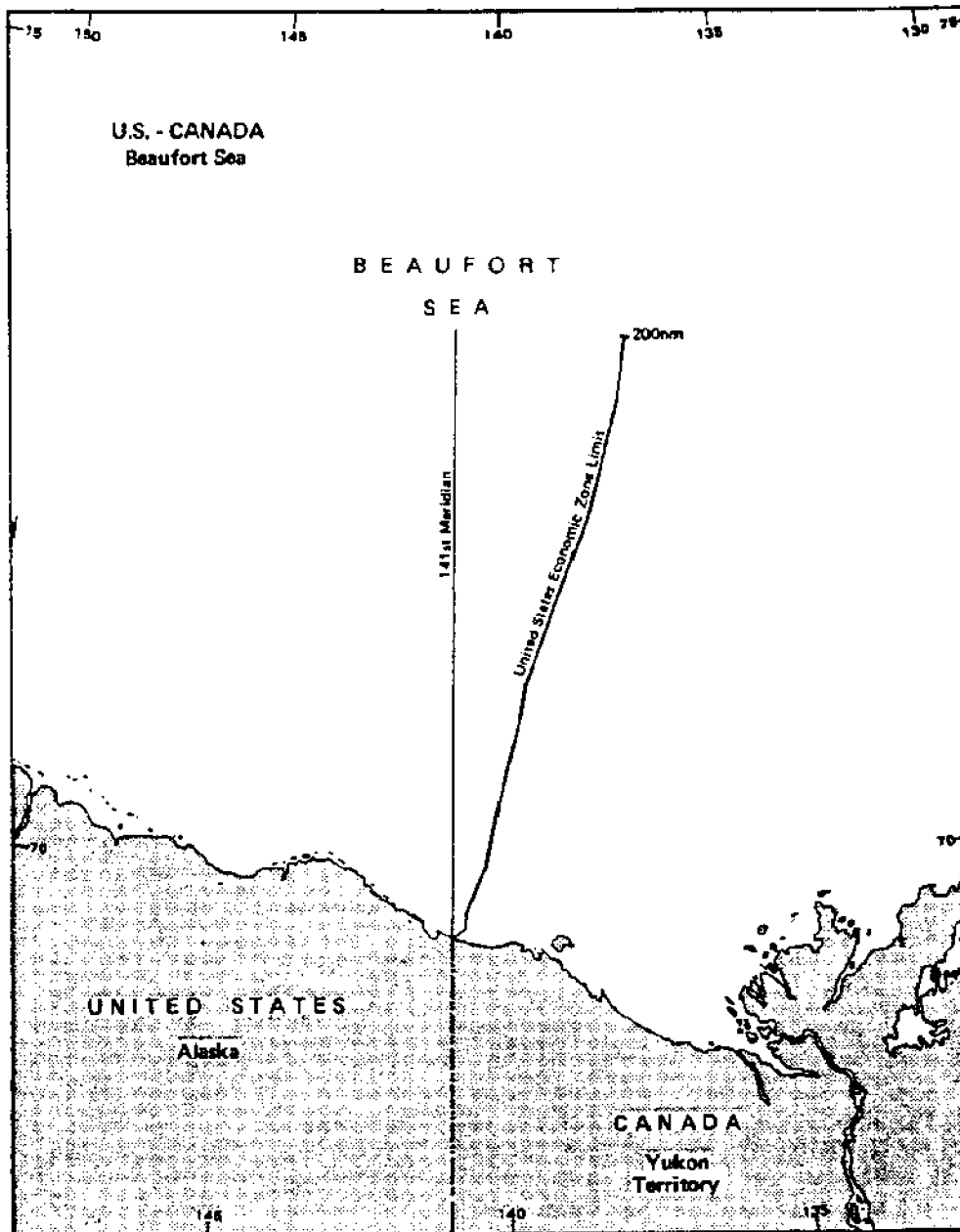


Figure 2. United States-Canada claimed boundaries in the Beaufort Sea.

establishing the limit of its fisheries enforcement in this area, the U.S. applied the equidistance method.

The dispute in the Dixon Entrance relates to interpretation of the so-called A-B Line, which was referred to in the Alaska Boundary Tribunal Award of 1903. As is illustrated in Figure 3, the A-B Line runs from the mouth of the Portland Channel to Cape Muzon, Alaska. Based on the 1903 award and earlier treaties, the United States takes the view that the A-B Line is not a maritime boundary and serves only to determine sovereignty over land. Therefore, the United States is entitled to claim maritime jurisdiction in the Entrance. Canada argues that the A-B Line is a maritime boundary and that all waters south of it in Dixon Entrance are subject to Canadian jurisdiction. With respect to the areas offshore of the Dixon Entrance, the United States has indicated that the equidistance method should be applied in determining the maritime boundary.

Juan de Fuca

With respect to the area seaward of the Strait of Juan de Fuca, both countries have indicated that the equidistance principle should be applied in delimiting the maritime boundary. There are minor technical discrepancies in the methodology of applying equidistance relating to charts and base points. These differences are so slight that they do not even show up on a page-sized map.

SOVIET UNION

The 200-nautical-mile zones of the United States and the Soviet Union overlap in three areas: the North Pacific Ocean, the Bering Sea and the Chukchi Sea north of the Bering Strait. The 1867 Convention ceding Alaska, established the maritime boundary between the United States and the Soviet Union. Figure 4 shows our depiction of the 1867 Convention Line. This is the longest maritime boundary in the world, extending over 1800 miles in length.

The advent of extended fisheries jurisdiction out to 200 nautical miles in 1977 first brought out the need for clarity on the maritime boundary in these areas. In 1977, the United States and the USSR confirmed that they intended to act with full regard to treaties between them and would respect the 1867 Convention Line in exercising their fisheries jurisdiction. (On March 10, 1983, President Reagan proclaimed a United States Exclusive Economic Zone, which utilizes the same coordinates as the former 200-mile fishery zone, and on February 18, 1984, the Decree of the President of the Supreme Soviet of the U.S.S.R. on the Economic Zone was issued. Both countries presume their 1977 understanding to apply to their new 200-nautical-mile zones.)

Fisheries enforcement incidents in 1977 led the United States to believe that the USSR might be depicting the 1867 Convention Line in a different manner from the U.S. depiction. While no chart was attached to the 1867 Convention, the United States practice has been to depict the Convention Line by arcs of great circles (a straight line on a globe), a practice which it believes best effectuates the intentions of the negotiators of the 1867 Convention and its purpose, the ceding of territory and dominion. (Such a depiction represents the shortest distance between two points on a globe, something that would be natural to have been intended in such a cession.) The Soviets were informed of this view in 1977.

In 1981, the first of four talks to date on the maritime boundary, the Soviet Union informed the United States for the first time that it depicts the 1867 Convention Line as a rhumb line (a straight line on a mercator projection). This difference results in an wedge-shaped area which each country considers to be under

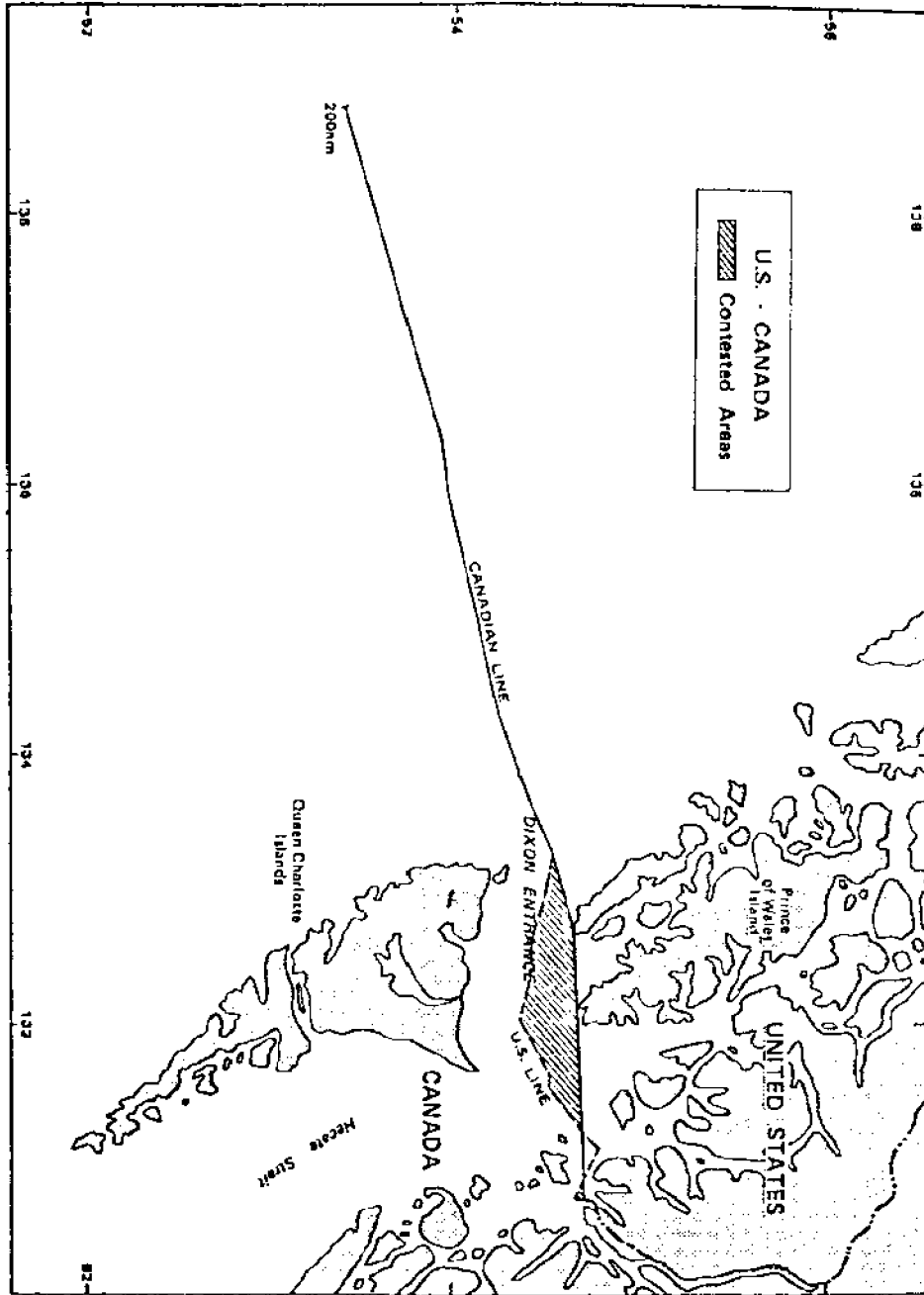


Figure 3. The Dixon Entrance showing the United States-Canada contested area.

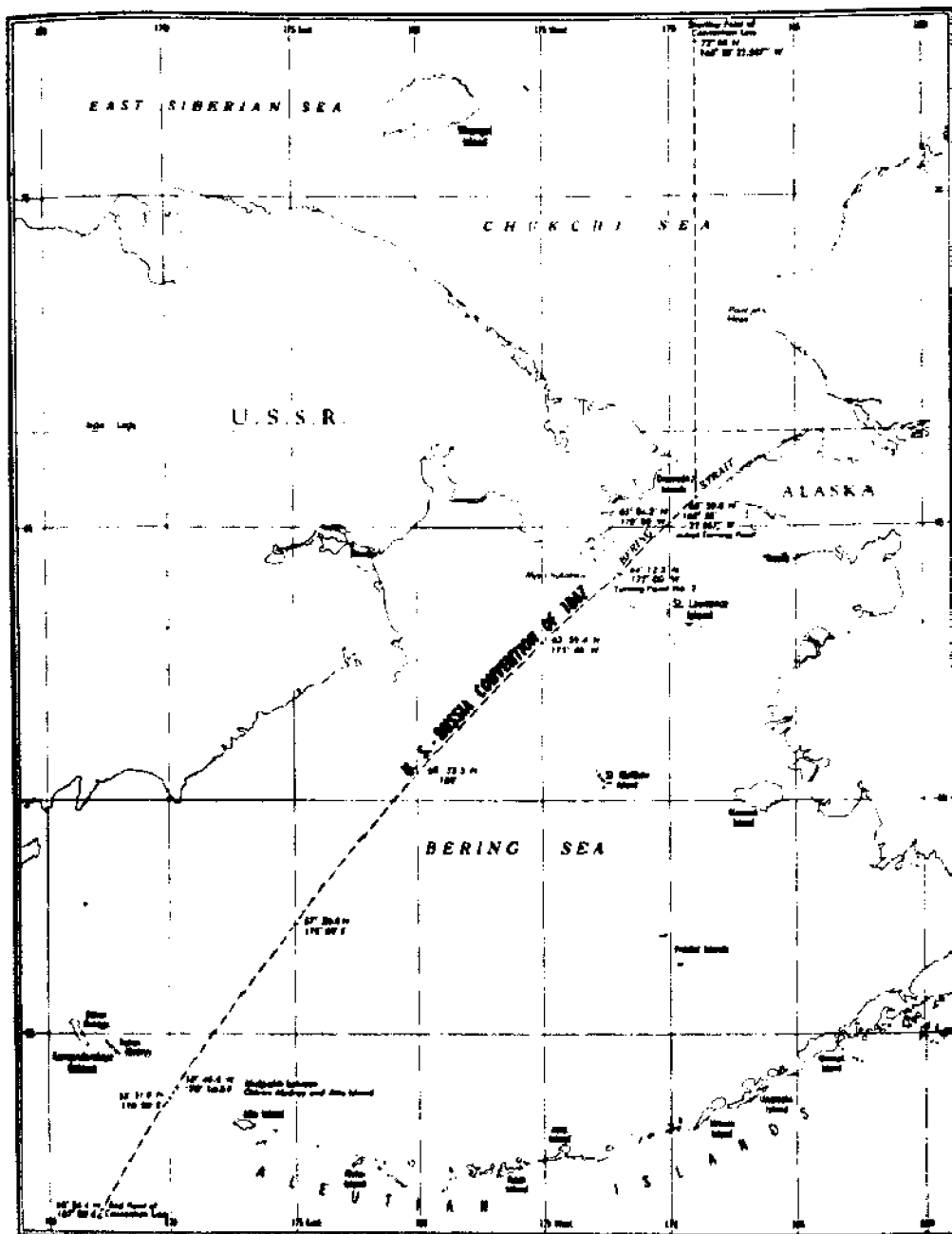


Figure 4. United States-Russia Convention of 1867 line.

its exclusive maritime resource jurisdiction. These talks, the most recent of which took place during the summer of 1984 in Moscow, have focused on the correct depiction of the line and interpretation of the 1867 Convention. As noted by President Reagan in September 1984, the United States has proposed a fair and equitable resolution to the issue. Both countries have agreed in principle to continue their talks, though it cannot be predicted when they shall resolve their differences on the 1867 Convention Line. Continental Shelf resources, of course, are an important

factor. At stake is part of the vast potential of the Navarin Basin and the Chukchi Plateau.

U.S. OCS LEASE SALES OFF ALASKA

At this point, I should note that the current U.S. OCS leasing program in the Bering and Beaufort Seas has taken into account differences over the relevant U.S. maritime boundaries with the USSR and Canada. Three sale areas in the Bering and Chukchi seas potentially involve the 1867 Convention Line: the Norton Basin, the Navarin Basin and the Barrow Arch. Of these, only the Norton Basin and the Navarin Basin are affected by differences in the rhumb line-great circle line difference over the 1867 Convention Line. The March 1983 Norton Basin lease sale was not affected by the difference in the Convention Line. The area proposed for Navarin Basin Sale 83 did include areas subject to the Soviet claim on its side of the rhumb line depiction of the 1867 Convention Line. In the Beaufort Sea, the Diapir Field Sale 87 includes areas between the United States claimed equidistant line and Canada's claim of the 141° w. longitude meridian.

After careful study and consultation with the Department of State, the Department of Interior, as stated in its March 16, 1984, final notice of sale for Navarin Basin Sale 83 (April 17, 1984), established special procedures for the tracts being offered between the two depictions which were clearly identified on protraction diagrams. These procedures provide that the highest bidders on these tracts meeting statutory criteria would be identified and the bid deposit placed in escrow. No bids will be accepted nor leases issued unless the United States determines that it is in its best interests. After the expiration of five years, if a bid has not been accepted, the highest bidders may elect to withdraw the bid money by giving notice within 60 days after such expiration. In all, highest bidders were identified for 17 tracts in the area of special procedures.

As noted above, in the Beaufort Sea, the affected OCS area is the Diapir Field. As set out in its final notice of sale of July 23, 1984, for purposes of Sale 87 (August 22, 1984), the Department of Interior, in consultation with the Department of State, adopted similar procedures as in Navarin Basin Sale 83, for the area between the equidistant line and the Canadian claimed line contained in the lease sale offering.

We believe that the procedures adopted in both the Navarin Basin and the Beaufort Sea (Diapir Field) lease sales are fully consistent with United States rights and obligations under international law. Further, our approach supports U.S. claims to the areas in question, yet does not prejudice mutually acceptable resolutions. In both instances, the USSR and Canada were informed in advance of the sale procedures. The procedures are specifically designed to provide flexibility in resolving the maritime boundary differences, while maintaining the U.S. position. The United States is fully committed to reaching a settlement with both the USSR and Canada and believes that the procedures it has adopted serve well to manage the issue effectively.

MEXICO

Maritime boundaries between the United States and Mexico, in both the Pacific and the Gulf of Mexico, were delimited in a treaty signed in 1978 but not yet ratified. (The 1978 Treaty incorporated provisional lines agreed to by the two governments in 1976.) The boundaries, both in the Pacific Ocean and the Gulf of Mexico, are based upon the equidistance method, giving full effect to islands. At the time of conclusion of the Treaty, it was agreed that the boundary would be delimited in those marine areas which are within 200 nautical miles of both coasts. Therefore,

there is a gap of approximately 129 nautical miles between the two segments of the boundary in the Gulf of Mexico. This area is beyond the 200-nautical-mile Exclusive Economic Zone of each country and has not yet been delimited.

As I mentioned, the U.S.-Mexico Boundary Treaty has not received Senate advice and consent to ratification. When the Senate Committee on Foreign Relations received testimony on this treaty in June, 1980, concerns were raised about the proposed boundary in the Gulf of Mexico. These concerns focused on the seabed resources of the Gulf and the methods by which the maritime boundary was developed. The suggestion was made that the method of boundary delimitation should be the calculation of an equidistant line "between the base of continental slope lines to the north and to the south." No effect would be given to any coastlines including that of islands. As a result the boundary is pushed northward in the southern part of the Gulf off the Yucatan Peninsula. However, the reverse is true in the Pacific where the line sweeps significantly southward because of the proximity of San Clemente Island.

While the Senate Foreign Relations Committee favorably reported the U.S.-Mexican agreement to the full Senate, enough concern was raised on the floor to defer final decision on the treaty until there was additional information about the potential of non-living resources in the boundary region. The pertinent area in the middle of the Gulf consists of very deep water, with depths ranging from 1,800 to 2,000 fathoms (10,000 to 12,000 feet)—about two miles of water column. Some believe that there is significant hydrocarbon resource potential in the central region of the Gulf of Mexico. However, relatively little is known with certainty about the geological formations in this deep water region. The U.S. and Mexico have agreed provisionally to apply the boundary line set out in their 1976 agreement pending ratification of the treaty.

Lease sales in all three areas of the Gulf of Mexico, the eastern, central, and western, take account of this provisional boundary. As noted, there is an area in the central Gulf, beyond 200 nautical miles from both coasts, which remains to be delimited.

CUBA

Following extension of U.S. fisheries jurisdiction to 200 nautical miles in 1977, technical discussions between the United States and Cuba were held to delimit the maritime boundary. These discussions were able to resolve quickly technical issues relating to the correct cartographic positioning of the Cuban coastline. A more complex question arose in relation to the baselines from which to measure the offshore jurisdiction of each country.

The United States measures its territorial sea and other maritime zones from a low-water line, as depicted on officially recognized charts. The Cuban government, however, claims a straight baseline system around its coast. Under international law and under appropriate geographical conditions, the United States recognizes the right of coastal States to establish straight baselines. According to article 4 of the 1958 Convention on the Territorial Sea and the Contiguous Zone, a straight baseline system is appropriate only "in localities where the coastline is deeply indented and cut into, or if there is a fringe of islands along the coast." There are areas along the Cuban coast where straight baselines meet the criteria in article 4, but the northern coastline is neither indented nor fringed with islands. Use of the Cuban straight baselines in the final calculations of the boundary would have produced a line further to the north, with, in our view, an inequitable division of the maritime area in question.

During the technical discussions, comparable artificial "construction lines" were drawn along the southern Florida coastline. An equidistant line was then calculated

by use of the Cuban straight baselines and the artificial construction line of the United States. Another equidistant line was calculated by use of the relevant base points on the low-water line of the coasts of the two countries. A third line was then created between those two lines, which was not equidistant, but which divided equally the area between them. The final boundary represented a negotiated settlement based on equitable principles. The two countries signed a maritime boundary agreement on December 16, 1977. The treaty was submitted to the United States Senate on January 19, 1978, and was subsequently favorably reported out by the Foreign Relations Committee in 1980. Full Senate action, however, has stalled over questions relating to the broader issue of U.S.-Cuba relations. The treaty still awaits action in the Senate, and pending such action, we are observing the boundary line on a provisional basis.

BAHAMAS

There have been no formal negotiations between the United States and the Bahamas regarding the maritime boundary. Two-hundred-nautical-mile zones from both countries overlap in the Straits of Florida and in the region of the Blake Plateau, an area of the Continental Shelf which extends off the southeastern coast of the United States. Neither the U.S. nor the Bahamas have elaborated formal positions on the location of the maritime boundary. The delimitation of this boundary, therefore, awaits future action.

Sales in the South Atlantic area need to reflect United States maritime boundary interests. The area now under consideration for sale 90, to take place in 1986, does not include tracts affected by a potential boundary between the United States and the Bahamas.

CONCLUSION

As I noted at the beginning of my presentation, the 1982 Law of the Sea Convention provisions concerning delimitation of boundaries do not contradict earlier 1958 Continental Shelf Convention provisions. Both article 76 and article 83 are consistent and elaborate on the earlier Convention provisions. The U.S. is comfortable with this approach and is engaged in constructive discussions where such issues arise worldwide. Boundaries are essential for orderly and rational offshore resource management. The U.S. is committed to this goal.

CHAPTER 7

Guinea/Guinea Bissau Case Study

INTRODUCTION

On February 14, 1985, three Judges of the World Court in the Hague handed down their decision in the Guinea/Guinea Bissau Case. The case was noteworthy in several respects. It was the first case ever in which two sub-Saharan African States had submitted a dispute of any kind to international arbitration or adjudication. The commitment to arbitrate survived major governmental changes in both countries, including a military coup in Guinea. Finally, the case showed how an oil company and a government, working together, can bring about the peaceful and expeditious resolution of a boundary dispute, thereby permitting the parties to proceed with the development of natural resources.

This case, like most contemporary boundary disputes, was triggered by oil. Now that the case is over, Guinea and Guinea Bissau have one of the only settled maritime boundaries in Africa. From start to finish, the case took less than two years, which compares very favorably with other cases such as Libya/Tunisia which took almost six years, Sharjah/Dubai which took five years, the recently decided Libya/Malta Case which took seven years, and the Beagle Channel Case which now appears to be over some 14 years after the parties submitted it to arbitration.

We will review the Guinea/Guinea Bissau Case from start to finish. We are fortunate to have with us Mr. Frank Walsh, who was the General Manager of the oil operation in Guinea from the inception of the boundary dispute through its conclusion. Mr. Walsh will describe how the dispute arose and the events that led up to the signing of the agreement to arbitrate—the “*compromis d'arbitrage*.” I will then describe the preparation and presentation of the case and mention some of the practical problems we encountered during the course of the arbitration. Then Dr. Alexander, who appeared as an expert witness for Guinea, will say a few words about the technical presentations made to the Court. Finally, Myres S. McDougal, Sterling Professor of Law Emeritus at Yale Law School, will describe the award and its implications for the law of maritime boundaries. Professor McDougal, who has been instrumental in creating much of the international law that governs maritime boundaries, presented Guinea's opening arguments during the oral proceedings at the Peace Palace.

ROBERT F. PIETROWSKI, JR., ESQ.
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Washington, D.C.

LEADING TO A "COMPROMIS D'ARBITRAGE"

FRANK WALSH

General Manager

Societe Guineenne Des Hydrocarbures

Conakry

Republic of Guinea

First, I would like to give you my personal views on certain aspects of the boundary dispute between the Republic of Guinea and the Republic of Guinea Bissau, or to make it simple, Conakry vs. Bissau—the names of the respective capitals. I will set the stage and establish how the dispute developed and how I became involved in it. Second, I will recite certain pertinent historical facts and talk about the evolution of the dispute up to its arbitration phase. Third, I will derive a few remarks that could be of general applicability.

BACKGROUND

For many years I have been involved in international business, mostly in oil and mostly in acquisition of oil permits. Most of my dealings have been in French-speaking countries in Africa. I was on the periphery of four boundary cases and I have been directly and deeply involved in one, the Conakry/Bissau affair. In the late seventies and early eighties, international oil exploration was booming. Demand was high and the price of crude was high. In brief, it was a hot exploration climate. In mid-1979, I was involved in the acquisition by Union Texas Petroleum Corporation of a large permit offshore Guinea-Conakry.

As you might expect a thorough project evaluation was conducted. Among the factors considered were the geological merits, of course, but also the economics of the play, the political and business environment, and the size and precise limits of the permit area. When you consider the amount of money that must be invested in order to find oil, you can appreciate that any project evaluation team does a very thorough job. The team also must "sell" that project to each level of management, all the way to the final authority—not where the buck stops but where the buck comes from.

Eventually, a document setting forth the agreed-upon views of both parties was negotiated, in Conakry, with the Ministry of Mines and Geology. This "convention" was signed and duly ratified by the National Assembly in early 1980.

Conventions and similar documents such as concession agreements represent a negotiated equilibrium between the desires of the signatories. First of all, they grant a specific permit area for a period of time, then address other factors such as work obligations, taxation, distribution of profits, ways and means of conducting business, etc.

SIGNIFICANT CHARACTERISTICS OF THE GUINEA CONVENTION

A Unique Joint Venture

First, the Convention established a rather unique form of joint-venture, a Guinean Societe d'Economie-Mixte between the Foreign Partners and the Republic of

Guinea in co-ownership. The Minister of Mines and Geology would be the Chairman of the Administrative Council of that Societe, and a general manager, named and appointed and removable by the Foreign Partners, would execute the jointly agreed-to work programs financed solely by the Foreign Partners.

The joint venture called for a symbiotic relationship between partners. Training would be provided for the Guinean counterparts of each American employee. Learning would take place through exposure. The constant flux of technology and oil management procedures would offset in part the isolation of Conakry from the rest of the world.

Contractual Work and Ramifications

The second pertinent aspect of the Convention was the contractual work obligation, which had two phases. For the first two years, so many miles of marine seismic and exploration work would be executed, followed by an option to relinquish the permit, to withdraw or formally declare the intent to drill an exploratory well within the next two years.

During the summer of 1980, Union Texas planned and directed a seismic reconnaissance campaign which was duly executed. In the course of it, an innocuous incident took place that was to have dire consequences.

The Minister of Mines and Geology of Conakry in an action entirely separate from our joint venture, had contracted with a non-American aerial reconnaissance firm to conduct an aerial survey of the entire country, both onshore and offshore. The non-American local manager of that firm took it upon himself to go to Bissau to request authorization to implant a navigation station on the Island of Orango. Bissau adopted a hostile posture, claiming that the water in which unsaid firm was to conduct its survey was theirs, theirs alone and that no one was to conduct a survey of any kind in those offshore areas. There were news media reports of mobilization of the Armed Forces, of a march onto the land boundary—of the Air Force being placed on alert, etc., and I, personally, and the American Oil Company, were of course erroneously accused by Bissau of having precipitated a boundary dispute.

Meanwhile, the seismic campaign having been completed, I returned to the home office in Houston and discussed the situation with management. There was little or no recourse against the aerial firm. We had great confidence in our project evaluation. Further, we felt protected and secure under the provisions of the convention, which guaranteed the limits of the permit area. But the vituperations of Bissau had been picked up by the State Department. The U.S. Ambassadors to both Bissau and Conakry had reported the happenings.

In essence, the issue now was that a disputed area had been created by Bissau; and Union Texas Petroleum, an American corporation, held petroleum rights in that disputed area. The State Department, as it logically and diplomatically does in all similar cases, had but one recourse which was to inform Union Texas that there was a boundary dispute; there were threats and menaces; protection could not be given to American nationals or American interests; ergo cease all activities in the disputed area until the dispute is settled. For illustrative purposes note that in 1983, as Petro Canada moved a rig onto their Senegalese permit, Bissau which also claimed that area sent in their last two MIGs to scare away the platform—it worked. On the way back to the airport both MIGs crashed, out of fuel.

That position of the State Department was not, of course, an endorsement nor a judgment on the merits of the dispute, nor should it have been. But it did create a conflict for us in that we could no longer execute our full contractual obligations under the convention.

DEVELOPMENT OF A POSITION

To support the veracity of our position and simultaneously to develop negotiation arguments for our joint venture partner in Conakry, i.e., the government, a legal opinion was sought from outside counsel. As mentioned previously, I had been on the periphery of other boundary disputes in other parts of the world and in that connection had become acquainted with Mr. Pietrowski. Mr. Pietrowski and his firm were subsequently retained by Union Texas to prepare an opinion on the boundary which would assist the government in its efforts to reach a negotiated settlement of the dispute. That legal opinion was delivered to the Administrative Council of the Societe in March 1981. The cost thereof was treated as an additional acquisition/exploration cost with, of course, many regrets as to its necessity. I was deeply involved in the research, translation, analysis and compilation of that document. Mr. Pietrowski and I unearthed archives from Paris to London, Lisbon and Washington.

During the years 1981, 1982, and 1983, several negotiation sessions took place between the two sovereign governments. The legal opinion was, in the main, the oil company's primary contribution. However, the chief negotiator for Conakry was Ismael Toure. He was also the Minister of Mines and Geology, and the Chairman of the joint venture, so by the convention: "my boss."

Increasingly, he sought my advice on the boundary matter. My foremost concern, of course, was the proper execution of the contractual obligations under the convention and the preservation of the permit in its original dimensions. I tried to remain highly sensitive to the fine line between meddling in sovereign matters and my fiduciary obligations under the convention. I explained to Minister Toure that arbitration was not merely three wise men sitting around a coffee pot and settling a family quarrel but rather an event grave in political implications and loaded with economic consequences, not only in oil but in any other commercial ventures in which Guinea was then or could become involved.

In the summer of 1981 we executed a second seismic campaign, planned and ordained in Houston, to detail the results of the previous year. There was no overlap between the zone which we considered to be of interest and the alleged disputed area. The execution of the campaign was quite peaceful.

In late spring 1982, Union Texas farmed out a large percentage of its interests under the convention to Superior Oil Company. I continued on as general manager of the joint-venture in Conakry.

That summer, in August 1982, at a meeting of the Administrative Council in Conakry, the Foreign Partners lifted the drilling option and officially declared their intention to drill a well during calendar year 1983, after the completion and interpretation of a short highly detailed seismic program to be executed immediately and completion of the logistical support base then in full construction.

Again, we executed what had been planned by Houston. Notwithstanding the most extreme claim of Bissau, the site of the seismic activity was still quite a distance from the alleged contested area. Nonetheless I was invited to come to the U.S. Embassy where the Ambassador informed me of "rumblings" in Bissau, as reported by his colleague there. Maps in hand, I showed that we had heeded the request of Washington.

TWO CRITICAL HAPPENINGS

The responsible Minister of Bissau, Cruz Pinto, came to Houston on or about December 8, 1982, to offer his petroleum prospects to the industry. While he was in

town, he was told that the companies operating in Guinea had "planned no activity north of the 225° demarcation line claimed by Guinea Bissau as the true boundary."

Secondly, perhaps with a causal relationship, on December 29, while I was in Houston, Conakry's Minister of Mines and Geology, Ismael Toure, signed a document with Cruz Pinto, in Bissau, whereby the two Guineas agreed to submit the boundary dispute to arbitration. The negotiations had failed to resolve the dispute and both governments had chosen to refer the matter to an international arbitration tribunal.

The decision to go to arbitration was not without disadvantages. By going to arbitration, Guinea clearly jeopardized the limits of the permit area that were guaranteed by the convention. In fact, we now had a non-permit permit. If you keep in mind that size alone is an important element in the evaluation of the economic parameter of a play, you can understand that this document signed in Bissau inherently upset the balance between petroleum risks and eventual economic benefits; that very balance which had been so carefully negotiated and agreed to at the time of the convention. Also, that document was executed without consultation or coordination with the Foreign Partners and worst of all without benefit of proper legal counsel. We, the Foreign Partners, could no longer fulfill our obligations vis-a-vis the Guinean Partner. We negotiated a suspension of the drilling obligation until final settlement of the dispute and a document to that effect was signed at a meeting of the Administrative Council in August 1983.

THE ARBITRATION

The agreement to arbitrate, the precise questions to be decided, and certain procedural aspects of the arbitration were set forth in a document, the "Compromis d'Arbitrage," signed in Bissau on February 18, 1983. The arbitrators rendered their decision on February 14, 1985, three days short of two years, perhaps setting a record for such action.

The two superbly-qualified lawyers of this panel who participated in the arbitration will address the legal happenings of these two years. I have merely set the stage.

OTHER TIMELY EVENTS

I should perhaps also note several other events that occurred during these challenging times. There were changes of government in each of the two countries involved, both brought about by practically bloodless coup d'Etat. The worldwide petroleum exploration climate went from hot to cool as a result of the economics evolution.

All of this started in 1979 with one oil company negotiating on friendly business terms with one sovereign government. That's two entities. Then came a catalyst, the aerial surveying acrobat; his visit to Bissau precipitating a very harsh White Paper and a bona fide boundary dispute—that's number three and four. Then came the State Department; that's number five.

Then the legal opinion, that's six. The Compromis, the legal teams, the *ad hoc* tribunal, the judges, the friendly meddlers, the press, that's seven, eight, nine entities, etc.

Each and every one nibbled at the control of the permit area, obstructed, in many ways, the execution of the work obligations, and destabilized the negotiated equilibrium of the convention.

Meanwhile, as the years were going by, money was invested in normal exploration activities and logistical preparation for the first well, the exploration climate turned cold, the play that had begun in euphoria became a bit of a headache.

the good became less attractive, the unattractive bad and the bad objectionable. Today, 5 1/2 years after signature of the convention, the obligation to drill a well is still unfulfilled.

RESULTS

So far, nothing has been lost but time, some money, and some opportunities. After the failure of the inter-governmental negotiations, arbitration was a far better solution than whatever was in second or third place. Peace has prevailed, the neighbors have remained friendly, and their respective struggle for development goes on. The joint-venture did work, and the Foreign Partners have done their part. The Guinean Partner has officially stated its happiness with the outcome of the arbitration.

In concluding, I would like to identify a few suggestions related to the subject matter of this case study. While these suggestions were inspired by this affair, they were not all foreseeably a part of it.

1. When faced with a boundary dispute, a decision to act or not to act must be made as early as possible—the earlier, the cheaper and perhaps the better. Regrettably, that decision must be based on value judgments and not on binary facts that can be cycled through a computer. This is a bit tougher than it seems; many uncontrollable factors will impact on the future; and the economic equilibrium may be affected.
2. If you decide to act positively, to stay on, do your utmost to bring in competent legal counsel as early as possible. Even the most developed countries, including the U.S., avail themselves of the services of the handful of international legal experts on boundary matters. Be cautious as to the selection of the judges who will sit on the Tribunal. Pay close attention to the educational aspects of arbitrating the dispute. These disputes are arbitrated in a legal and procedural context seemingly known by all but, in fact, mastered by very few.
3. Should it be necessary, depending on your part of the world, you may consider providing some or all logistical and coordination support, such as: research, geography, cartography, history, translations, typing, reproduction, aerial and satellite photography and interpretation thereof; and coordination of the legal and technical teams—most oil companies have such in-house capability, and providing that service will give you some control.
4. Treat a boundary problem as you would any other problem that impacts negatively on your permit—a dry hole, a blowout, a windfall profit tax, imposed changes in price or production rate, nationalization...If you work international oil, you should go at it with your eyes open.
5. Accept that today 75 percent of the world maritime boundaries are not finally settled by treaties and that the 25 percent that are may not be much better off. Think of Europe as mapped before World War I, after it, and as it is today.

6. The dispute will eventually be resolved. Your behavior, your contributions, will be remembered by the host country and may affect the nature and duration of your relationship. It is desirable to take a position and to stick with it.
7. If you have a contract or convention with one country, and another country disputes your permit area, don't ever, ever talk with the other country. First, you'd be meddling directly in relations between two sovereign nations, and second, you will be caught at it. Whatever you say will be used by the disputing party if they see some gain out of it.

As it stands today, the dispute between the two Guineas is over. There is a young, pragmatic, well-disposed new government in Conakry. Union Texas which begat Superior which begat Mobil is or are the highly capable and competent Foreign Partners in the joint venture. The permit is now a little bit smaller, perhaps, but there is security of tenure, which more than makes up for the lost area.

Recently Mr. Murray, President of Mobil, expressed his views in *Time Magazine* saying, and I paraphrase: now that oil supplies are plentiful, this is the time to look for more oil in this favorable exploration climate, so as to prepare for the future.

So perhaps everything is going to be for the best. I am thrilled to have been able to share in that adventure. I wish all concerned the best of luck.

LEGAL PERSPECTIVE ON THE GUINEA/GUINEA BISSAU DISPUTE

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In January of 1983, I was in Manila when I received an urgent telex from Mr. Walsh saying that Guinea and Guinea Bissau were about to sign an agreement to arbitrate and asking that I return to the United States at once to discuss the matter. Accordingly, I flew back to Washington, where I met with Mr. Walsh and members of the oil company's legal department. Because the contents of an agreement to arbitrate can have grave consequences for the ultimate outcome of the arbitration, we prepared a memorandum explaining what should be in the agreement, as well as what should not be in it. Mr. Walsh then took this memorandum and returned to Conakry, arriving there on the evening of February 18. He got there about six hours too late. Early the same day, the Governments of Guinea and Guinea Bissau had signed an agreement, submitting their boundary dispute to arbitration.

THE TRIBUNAL

The arbitration agreement itself did not name the judges who would decide the case, but instead allowed 30 days for the parties to agree on two judges, and for those judges to select a third judge to act as President of the tribunal.

As it turned out, it took several months for the tribunal to be constituted. Guinea nominated Judge M'Baye, who had recently been elected to the World Court from Senegal. This choice was acceptable to Bissau. Bissau nominated Mohammed Bedjaoui, Algeria's Judge on the World Court, and this was agreed to by Guinea. Judges M'Baye and Bedjaoui then selected Manfred Lachs, Poland's Judge on the World Court, to be President of the tribunal. The tribunal was thus constituted on October 14, 1983.

THE LEGAL TEAM AND STAFF

During the time that the tribunal was being constituted, the legal delegations of Guinea and Guinea Bissau were being assembled. I was asked to come to Conakry by Ahmed Sekou Toure, the President of Guinea. After discussing the case with the President and his advisors, we began to put together the team that would present Guinea's case. That team would eventually include lawyers from France, Switzerland and the United States—including Professor McDougal and his colleague from Yale Law School, Michael Reisman. We also brought in several geographers, including Dr. Alexander, who did much of Guinea's cartographical work and also appeared as an expert witness in the oral proceedings. And we were very fortunate to have the services of Stan Aquarone, who acted as a procedural and administrative consultant when we set up offices in the Hague. Stan had been the Registrar of the World Court for many years, and his advice on procedure and matters relating to the internal politics of the tribunal proved invaluable. Finally, because the case was being conducted in three languages, we retained translators, interpreters, and a special multilingual secretarial pool.

PREPARING THE CASE

Coordinating the work of various lawyers and experts who are scattered over four countries is obviously not the easiest of jobs. Fortunately, most of us, including Professor McDougal and Dr. Alexander, had worked together on other cases in the past. This fact contributed greatly to the overall efficiency of Guinea's preparation of the case. And, as it turned out, efficiency became critical because of the very short time periods established by the agreement to arbitrate. Under the terms of that agreement, the parties had a maximum of four months from the date on which the tribunal was established to file and exchange memorials and a maximum of three months from the date the memorials were exchanged to file counter memorials.

Guinea started the case with one major advantage: Guinea's lawyers, working for the joint venture in 1980, had completed much of the necessary research and preparation of arguments long before the case was formally submitted to arbitration. When France and Portugal pulled out of Conakry and Bissau, respectively, they left little behind in the way of documents. Consequently, virtually all of the colonial documents relating to the disputed offshore area were located in national libraries and government archives in Paris, Lisbon, London and Washington. Copies of all of these documents were obtained while we were preparing the opinion for the joint venture in 1980. Thus, a great deal of time was saved when we began preparation of the memorial. Also, ironically, some of the documents which were obtained in 1980 would have been unavailable after the dispute was formally submitted to arbitration.

This was due to the sensitivity in the French and Portuguese foreign offices to the political implications of the case, after the case was submitted to arbitration.

Guinea also started the case with two major disadvantages. First, its claim, on the surface, was somewhat implausible for several reasons. Whereas Bissau's claim was based on equidistance—the most frequently employed method of maritime boundary delimitation—Guinea's claim was based on a 19th century colonial treaty between France and Portugal. This treaty established the land boundaries between Portuguese Guinea and the surrounding French colonies, including French Guinea. It also referred to a line running out to sea for a distance of almost 90 miles along the parallel of 10° 40' north latitude. It was this line which Guinea claimed as its maritime boundary with Guinea Bissau. There was no precedent in the contemporary law of the sea for such a boundary.

The plain language of the treaty clearly could be construed to mean that the line described therein was intended to be a maritime boundary. But that language could also be construed to the effect that the line was not intended to be a boundary, but simply a line of reference for purposes of allocating islands. Unfortunately, the records of the treaty negotiations and the subsequent conduct of France and Portugal shed little light on the intended purpose of the line in question. None of the other 19th century treaties by which the European powers carved up Africa purported to establish a maritime boundary of any kind. Compounding the problem was the fact that Guinea itself did not claim the treaty line as a maritime boundary until 1980. Indeed, from 1964 until 1980, Guinea claimed an entirely different line as its maritime boundary.

The other major disadvantage confronting Guinea at the outset of arbitration concerned the oil concession. Boundary cases by their very nature invite the tribunal to compromise the overlapping claims. Yet Guinea did not claim beyond the northern limit of its oil concession. The concession was bounded on the north by the line described in the 1886 treaty and claimed by Guinea as its maritime boundary. Thus, to the extent that Guinea's claim would be compromised by the tribunal, Guinea was almost certain to lose part of its concession. Our job as Guinea's lawyers was to suggest to the tribunal a compromise that would do minimum harm to the concession, and would keep the area of interest within the jurisdiction of Guinea.

Guinea had appointed as its agent in the case its Minister of Justice, Dr. Sekhe Camara. As agent, Dr. Camara had overall responsibility for the case. However, Dr. Camara had participated in neither the negotiation of the arbitration agreement nor the boundary settlement negotiations. Nor had the government of Guinea ever been involved in an international arbitration of this type before. Therefore, in addition to preparing the case, we had to devote considerable time to educating the government about the arbitration process and what to expect in terms of a result.

AN UNEXPECTED COMPLICATION

The parties exchanged memorials in the Hague in January of 1984 and immediately began working on the countermemorials. Then, at about six o'clock the morning of March 26, I received a phone call from Michael Reisman who had just heard on the news that Guinea's President, Ahmed Sekou Toure, had died in the Cleveland Clinic of a heart attack. Telephone communication between Washington and Conakry is virtually non-existent, and even telex communication is problematic. We were able to contact the U.S. Ambassador in Conakry through the State Department and learned that Prime Minister Beavogui had assumed the role of Chief of Government, and that Ismael Toure, the President's half-brother, continued to serve as Minister of Mines & Geology.

Since Ismael had negotiated both the agreement to arbitrate and the oil convention, we assumed that the government would continue to honor its commitment to arbitrate, and we continued with our preparation of the case. But then on April 3, there was a coup in Conakry. The military had seized power. The country's borders were closed, the international airport in Conakry was closed, and all telex and telephone communications were suspended.

When news began to come out of Conakry, we learned that representatives of the new government had stated to the U.S. and French Ambassadors in Conakry that all international commitments made by the previous government would be honored. And as soon as the telex lines were opened, I received a cable asking us to come to Guinea to brief the new government on the arbitration. I phoned Manfred Lachs, the President of the tribunal, and told him that it appeared the new government would continue with the arbitration, but that certain delays could be expected as a result of the coup.

When I arrived in Conakry, I found that the new government had put the Attorney General, Mamadi Diawara, in charge of the case. After discussing the case with Mr. Diawara and his staff, Mr. Walsh and I briefed the Prime Minister and other members of the Military Council on the case. Once again, we had to go through the process of explaining what arbitration entailed, the problems inherent in Guinea's case, and how we planned to deal with them. Following this briefing, we received instructions to continue with the arbitration.

THE ARBITRATION PROCESS

I returned to Washington and we completed the countermemorial, which was filed at the Peace Palace in the Hague on June 8, 1984. The coup in Guinea had thus caused a delay of only three weeks in the arbitration.

The oral proceedings were conducted in two sessions. The first session ran from August 21-28, 1984, and the second session from September 10-15, 1984. During this time, we set up offices at a local hotel in the Hague. This arrangement permitted an around-the-clock operation.

Guinea presented its case in alternative terms. First Guinea argued that the 1886 treaty established a maritime boundary. Guinea then argued that the line described in that treaty—the parallel 10° 40' north latitude—also conformed to contemporary rules of law governing maritime boundary delimitations, in that it produced an equitable result in light of all of the relevant circumstances. Realizing that the tribunal would try and reach a compromise decision satisfactory to both parties, Guinea structured its arguments in a way which suggested a compromise that would leave the important part of the concession intact.

Bissau's lawyers argued—successfully, as it turned out—that the 1886 treaty was intended only to establish a land boundary and that the maritime limit described therein was intended to be used solely as a reference for the allocation of the Bijagos Islands to Portuguese Guinea. As to the maritime boundary, Bissau argued that the relevant rules of law required the application of the equidistance method.

Not surprisingly, the conduct of oil companies in and near the disputed area figured prominently in the case. We shipped boxes full of AAPG bulletins and Petroconsultants reports to the Hague for use in the oral proceedings. Maps showing the location of seismic work done in the area were placed in evidence. We repeatedly emphasized the investment that had been made by Guinea and the American oil companies in the concession area. We wanted to impress upon the tribunal that Guinea's concession was an accomplished fact which should not as a matter of policy be undone by the tribunal.

THE DECISION

The tribunal rendered its decision February 14, 1985. As anticipated, the decision was a compromise. The tribunal rejected Guinea's argument that the 1886 treaty established a maritime boundary. It also rejected Bissau's argument that equidistance was applicable. The tribunal delimited the boundary in two segments. From the coast seaward to a distance of about 50 miles, the tribunal adopted the line in the 1886 treaty, even though it had held that the treaty itself did not establish a maritime boundary. The remainder of the boundary was delimited as a straight line on an azimuth of 236°, which the tribunal perceived as being normal to the general direction of the coast. This result gave Guinea about 60 percent of the area in dispute and Bissau about 40 percent. Guinea retained about 80 percent of the disputed oil concession, including the entire area of interest.

LEGAL REASONING AND EXPERT TESTIMONY

I am going to ask Professor McDougal to comment on the legal reasoning employed by the tribunal, and the implications of the award for the solution of other maritime boundary disputes. Before doing so, however, I would ask Dr. Alexander to say a few words about the technical presentations made by the parties. Dr. Alexander appeared as an expert witness for Guinea, testifying to the effect that there was no precedent in State practice for the equidistance boundary claimed by Bissau.

We survived efforts of opposing counsel to have him disqualified on the novel theory that if he was on the payroll of Guinea's lawyers, he could not possibly be an objective expert. His testimony was instrumental in establishing that equidistance did not produce an equitable result when applied to the geographical situation of Guinea and Guinea Bissau.

TECHNICAL PRESENTATIONS

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MARITIME BOUNDARY MAPS

I would like to emphasize three points associated with the maps we used in the Guinea/Guinea Bissau case. First was the difficulty we encountered in finding an adequate base map which would show in some detail the coastal features of Guinea and Guinea Bissau, particularly in the area where their land boundary reaches the coast, and yet would also show the extension of the claimed maritime boundaries out

to 200 miles offshore. In the end we had to have a special map prepared by the cartographers we were using in Washington.

A second problem was related to agreement with the cartographers serving with the Guinea Bissau delegation as to the final map the Court would use in delimiting the boundary arrived at in the judgment. What ellipsoid would it be based on? What projection should be used? What about the vertical datum? There are French, British, Portuguese, and U.S. charts of the coastal area. Within the boundary area the coast is low and marshy and the features are subject to periodic change as sediment is deposited in the shallow waters by the Geba, Compony and other rivers, and then later is subjected to erosion. The exact location of coastal features, as shown on the various charts, was of particular importance to Guinea Bissau, since some of the features were used by them as basepoints in determining the equidistant type boundary—which they favored.

The third point is that we had with us at The Hague what I felt was a spectacular display of specially prepared maps, illustrating graphically the injustice which would be wrought on the people of Guinea, should the Court rule in favor of Guinea Bissau's boundary claim. Many of the maps were transparent overlays and I personally believe that our cartographic materials, some of which we managed to leave on display even after our presentations, may have helped our cause considerably. Guinea Bissau, I might note, had no special maps whatever.

One final comment. Maps are by no means neutral. Different projections show different perspectives of reality. Notions of concavity and convexity of a coastline can be displayed through judicious selections of end points of a curving line. Certain colors can carry a particular message. All this is part of what a geographer, many years ago, referred to as "Cartohypnosis."

THE EVOLUTION OF MARITIME BOUNDARY LAW

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INTRODUCTION

My commitment to Professor Alexander for today was simply to respond to what I might hear. I am grateful to Mr. Pietrowski and Mr. Walsh for having invited me into this Guinea/Guinea Bissau case. It was a fascinating case and to watch it unfold was a tremendous pleasure for a teacher. My assignment is to locate this decision in the larger context of all the different cases that were referred to this morning and to make projections into the future. In order to do this I will, in some measure, have to recount the same history that Professors Clingan and Alexander and Mr. Hoyle have given you. I will, however, give a very different emphasis to some of these cases.

It is my thesis that this law on boundary delimitation is not nearly as complicated or difficult as has been made to appear. The law has evolved in very

sensible and reasonably clear patterns. The problem is, however, an extraordinarily important one for the reasons we heard this morning: i.e., the probable future scarcity of oil and the importance of finding out as quickly as possible what resources there are in the oceans.

Let me say, preliminarily, that I can speak to you either as a hired gun or as a scholar. Frankly, I have played both sides of the street and still have clients on both sides. Hence, I think I can present the problem in a fairly objective way.

THE DEVELOPMENT OF BOUNDARY LAW

I would begin some 20 years ago. I had a client that happened to have many islands close to the shore of another State. This client wanted to establish that the boundary ran between these islands and the coast of the other State. We went into the precedents and the prior decisions and discovered that equidistance was predominantly the rule that was recommended in most decisions and in most writings. This recommendation extended from the seas even into internal waters, in the case of freshwater lakes and rivers. A median line between States with opposite coasts or an equidistance line between States with adjacent coasts were the recommended solutions. The reason given was that this produced equality in the disputed areas and hence a distribution that was equitable. You will find a lot of authority for this in the pleadings in the Norwegian Fisheries case and elsewhere.

North Sea Continental Shelf Case

Then along came the North Sea Continental Shelf case (the case much discussed earlier by Professor Alexander and Mr. Hoyle). That case demonstrated that equidistance was not always equitable. There was a concavity in the coasts that would make the share Germany would get completely disproportionate to what the Netherlands and Denmark would get if the equidistance principle was applied. In this case the Court rejected the equidistance principle, finding that it was not customary international law. The holding of the Court was, further, that article 6 of the Continental Shelf Convention had not become customary international law as against Germany. The Court rejected equidistance because, if projections were made from the sides of the three States involved, the areas of overlap of Continental Shelf in coastal confrontation would produce a most inequitable result as far as Germany was concerned. (Inequitable because of the size of Germany, the length of Germany's coast and many different features). The Court did not purport to state all of the factors that might affect equity. As Professor Alexander pointed out, it stated many factors but only as illustrative.

Incidentally, if you are interested in this history in addition to what was said this morning, Judge Gros in the Gulf of Maine case gave a concise history of the development. I mention this because I would differ with Judge Gros on his interpretation of the North Sea case. Judge Gros appears to say that the North Sea case reaffirmed equidistance. It did nothing of the kind. It explicitly rejected equidistance because of the concavity and the ensuing inequity. This doctrine of the case was that the decision should be in accordance with equitable principles. Another exposition of this history, if you are interested in more detail, is given by Judge Oda in the Tunisia/Libya Case. That opinion has an excellent history of the developments I am talking about. In any event, there is in the North Sea case an explicit rejection of equidistance and the promulgation of equitable principles as the customary law for the delimitation of certain sea boundaries.

United Kingdom/French Arbitration

The next important case was the UK/French arbitration involving areas in the English Channel. Again, there are certain points that require emphasis. Britain and France had agreed upon the equidistance principle at both ends of an area that had been undelimited. The Court had to delimit a segment between two segments where the States had already agreed upon equidistance. They had other problems beyond the first two or three segments involved, but I think the British argued this case less persuasively. They didn't argue, as some did 20 years ago, that the lines should be drawn between the island and the opposite coast. They agreed that the line should be drawn *behind* the Channel Islands not *between* the Channel Islands and France, and so the Court of course so held. The result of the decision was that the Channel Islands got no Continental Shelf. They got 12 miles which they would have gotten as underlying territorial sea. Hence this decision gave islands nothing in the way of a Continental Shelf. This was the first important decision to minimize what islands get.

Beyond the Channel itself, into the reaches of the Atlantic, the tribunal varied an equidistance line, giving partial affect to certain islands on both sides of the line. But the tribunal again said the law was equidistance as modified by special circumstances. This is a repetition of the provisions of article 6 of the 1958 Convention. Article 6 has separate provisions for adjacent States and opposite States, but if you parse out the words of both provisions it comes down that equidistance is the rule with special circumstances invoked to modify the line that equidistance indicates. I confess I made the mistake in studying this case for one client of saying, as the Court said in the UK/French case, that it makes no difference whether you say equitable principles or whether you say equidistance as modified by special circumstances. In the Guinea/Guinea Bissau case I discovered that there was a difference and I would like to share this understanding with you because I think it is important.

Equitable Principles or Equidistance Modified by Special Circumstances

As Mr. Pietrowski indicated, Bissau argued equidistance with a vengeance. They purported to accept equitable principles, but they told the tribunal that one has to begin with equidistance. The tribunal has to draw an equidistant line, then go through all the features of the context asking if this feature or that makes a difference. Should the tribunal alter the equidistant line because of this feature? They find that this feature does not alter the line. Then they go to the next feature and ask: should one alter the line because of this feature? Then they go to the third feature, the fourth, and the fifth. The result of this approach is that the cumulative impact of *all* factors upon equitableness is never examined in context.

In contrast, what Guinea recommended was that the tribunal look at all the features of the context that might affect equity and then choose an appropriate method to give effect to the line that the culmination of all the features would suggest as equitable between the parties. We did not want the tribunal to begin with an equidistant line and then cut out every feature one by one as alone being insufficient for requiring modification. The Court did accept Guinea's recommendation on this by not beginning with an equidistant line and by evaluating many factors.

There is one confusion about equidistance, repeated this morning, that I think I should clear up. Equidistance is not a criterion of equity. It is a method of drawing a line. It may in some cases indicate equality of division. In many cases, however, it does not indicate equity, as it does not in a concave situation. There are many

methods for drawing a line. One method is the perpendicular line as used partially in the Tunisia case. Another might be parallels of latitude or longitude.

The function of equitable principles is to point to those features of the context that may affect an equitable solution. There was a good deal of confusion about this in this morning's discussion. Equitable principles require the tribunal to look to the features that affect an equitable solution. One can refer to these features as *criteria* or as *principles*. It makes no difference. The equitable solution is what you come to after looking at all the features in their total context. There is no confusion in this language if you understand it. The confusion is in some measure introduced by the courts themselves. Thus, the courts keep repeating over and over "the court cannot alter nature." Of course "nature" has no meaning except through human perceptions and has no legal meaning except through legal concepts. Hence, a statement that courts cannot alter nature is just one of these noises that fill up opinions. Similarly, courts often say that they cannot do equity in fact. They suggest that what they seek are precise rules which will automatically insure equity. This again is a bunch of nonsense. It builds upon an old Austinian notion of law that gives judges little discretion in evaluating the features of a context. This is a notion of law that most people have abandoned today. Most people know that rules are always ambiguous, incomplete. The function of equitable principles is to point to features of the context that may effect equity in fact.

There is no machine that can grind out an equitable solution. What is an equitable outcome has to be a human judgment. That human judgment is less arbitrary if the tribunal systematically looks at all features in context and assesses their importance to an equitable outcome than if it makes a misguided effort, an illusory effort, to worship rules. The whole of the law of the sea is in fact based upon reasonableness as determined in context. H. A. Smith pointed this out years ago and Burke and I built a 1,000 page book upon it. This problem of boundaries is no different from any other part of the law of the sea. What I am trying to establish to you is, even though courts may not always recognize or admit it, we do have today a good law of the sea about boundaries built upon reasonableness and genuine equity.

Tunisia/Libya Case

To continue with the development of this law, after the UK/French decision the next important decision was the Tunisia/Libya case. The Tunisia/Libya case took up the prescription from the North Sea case that equitable principles were to be applied to achieve an equitable outcome. In the meantime this language had gotten into the 1982 Convention with respect to both the new economic zone and the Continental Shelf.

In the Tunisia/Libya case the Court said to forget the question of base lines. They did not care where the base lines were. The important lines were those in the general direction of the coasts. To reach an equitable outcome one needs to know what area is to be divided. What are the rough parameters of the area to be divided? Even though some of the boundary lines had not been drawn with respect to Malta, Italy and others, what was the probable area that the Court was asked to divide between Tunisia and Libya? Where did projections from the coast in this area overlap? The Court was not confronted with great concavity in this case. Hence it first drew a line that was roughly perpendicular to the general direction of the coast. It went out some distance following an old fishing line that the parties had observed. It regarded the way the parties had behaved, as a part of equity. As it got out a little further it said this is getting just a little too close to the coast on the left, so we will vary off of an equidistant line. It established a line that it thought produced a relatively fair decision between Libya and Tunisia.

Another point in this case I wish to emphasize is that the Court gave only half weight to the Kerkennah Islands. These are huge islands, much larger than the Bijagos Islands, off the coast of Tunisia. The Court gave only half effect to such islands in drawing its final equidistance line. The important point was the emphasis, all through the opinion, on equitable principles as pointing to features of the context that might affect equity. In this case the Court stuck pretty much to physical features.

Guinea/Guinea Bissau Case

Now we come to the Guinea/Guinea Bissau case. As counsel for Guinea, if I had been asked to contest the case further, I would have concentrated on the first half of the opinion where the tribunal disposed of the 1886 line. I think the tribunal did mishandle its interpretation of the 1886 line. The interpretation of international agreements is not, however, one of the problems that this conference is primarily concerned with and I will not linger on the point.

Let us turn to the second half of this opinion (which will I hope soon be made available to you in *International Legal Materials*). Here the tribunal sought to establish a line in accordance with the international law of the sea. The tribunal did follow the procedures for boundary delimitation that Guinea recommended rather than those recommended by Guinea Bissau. I have no desire to make invidious comment upon either the decision or the opinion. Judge Lachs, the President of the Tribunal, a former President of the International Court of Justice, is one of the world's greatest international lawyers. Judge M'Baye and Judge Bedjaoui are two of our most distinguished and deeply dedicated scholars and statesmen. The opinion in the case is highly sophisticated, exhibiting an extraordinary level of professional craftsmanship. I intend to criticize it in certain aspects in a few moments, but I want it known that I do tremendously respect the craftsmanship and creative statesmanship with which it was done.

The tribunal began by preliminarily identifying the area that had to be divided, and it focused upon the area that Guinea had recommended between certain parallels of latitude. The area selected projects outward from the land boundary between Senegal and Bissau in the north to that between Sierra Leone and Guinea in the south. This was roughly the area with which the tribunal had to concern itself.

The tribunal then considered what might be the relevant law, and ended up with the content of the 1982 Convention—that is equitable principles to achieve an equitable solution. It rejected equidistance as the relevant law and as the relevant beginning point. Its inquiry was not to begin and end with equidistance. It intended to examine *all* the relevant features of the context.

The first features of the context the tribunal examined were the geographic or physical. The coasts in question were of adjacency, not of opposite position. The coasts exhibited a concavity, just as in the North Sea case. The only quarrel that I might express is that the tribunal did not sufficiently emphasize this concavity. The 1886 Treaty line dropped down at least ten miles below the parallel of latitude that would run out from the land boundary between Guinea and Guinea Bissau. Counsel for Guinea thought ten miles down for two hundred miles out was enough concession to make for the presence of the Bijagos Islands. The tribunal, however, did not agree. It ran the line out to the island of Alcatraz, because everyone believed that island belonged to Guinea. It gave Alcatraz no territorial sea whatsoever to the north. The 1886 Treaty line was two miles north of Alcatraz. The tribunal did say it would give Alcatraz a 12-mile territorial sea to the west. Hence it ran its line for 12 miles beyond Alcatraz on the course of the the 1886 Treaty line. The tribunal proceeded then to drop a line roughly perpendicular to the general direction of the coast to

complete the required distance. One of the reasons the tribunal gave for drawing the line in this way was that any other line would encroach upon Bissau because Senegal might get a line running in the same general direction, perpendicular to the coast, against Bissau. Bissau was claiming a line on the parallel of latitude in the north, as Guinea was claiming in both the north and south. The line sought by Guinea would be an encroachment only if the tribunal assumed that the line between Bissau and Senegal was going to be something other than the parallel of latitude. The tribunal said that though Guinea had announced that it would give the parallel of latitude to Sierra Leone, that announcement might not necessarily stand. Guinea might change and drop its line down in the same perpendicular to the direction of the coast.

It should be noted, thus, that the tribunal in coming to its decision as to what was an equitable solution in this case presumed two lines that had not been authoritatively drawn. I would criticize the tribunal's perceptions of equity both on its failure to give complete effect to the tremendous concavity and for dropping this cut-off line on the basis of the two presumed lines that *might* ultimately be drawn very differently.

The tribunal came next to the criterion of proportionality. Guinea has a coast line about 20 miles longer than that of Bissau. The tribunal came up with exactly equal coast lines by measuring around the Bijagos Islands. This was to give an almost complete effect to these islands, instead of minimizing them as islands were minimized in the Tunisia/Libya case, in the UK/French case, and in other cases. The Bijagos Islands were given almost equality for determining proportionality in length of coastline.

Though I would disagree with the tribunal's evaluation of many features, I would emphasize that it did employ the correct approach. It began without pre-weightings, looking at all the potentially relevant features of the context. It then chose a method of delimitation that it felt would give effect to the significance of all these features. What it sought was a genuinely equitable solution as between the parties.

The Gulf of Maine Case

This brings us to the Gulf of Maine case. I have for a variety of reasons primarily studied the opinion of Judge Gros and read a number of articles. I have not parsed the majority opinion as carefully as I will eventually attempt to. But apparently the Court did state the law to be the same that we have just been talking about: equitable principles to reach an equitable outcome. I have heard this case discussed by counsel on both sides at least twice. I was at The Hague on another case (the Nicaraguan case) at the time the decision on the Gulf of Maine came down. The thing that astonishes me is that the ultimate line drawn was so nearly an equal division between the last claims of the parties. The Court would appear to have drawn the line, as someone suggested earlier, to "split the baby." The various features of the context could have been examined to justify this decision. This is the only way one could account for taking into account the Bay of Fundy for determining proportionality of coastline. Proportionality is supposed to depend upon the length of coasts that may overlap.

FUTURE LAW

In terms of future law I do not think the Gulf of Maine case adds much of importance. I think, contrary to what was said earlier, this will not be a precedent for future decisions. It could be the last case where one gets a unified hearing for a

Continental Shelf and a simple fisheries zone. The Court was not purporting to decide the new economic zone in the Gulf of Maine.

In the future the great run of cases may require consideration of unified boundaries. It is a little absurd to offer policies that treat differently resources in the water, on the seabed, and beneath the seabed, even as in the language of the 1982 Convention. The features that will be relevant to equity, to achieving an equitable solution with respect to the new economic zone will be somewhat different from those relating to the Continental Shelf alone. The courts will have to include more economic and social considerations. Thus far the courts have been very reluctant to consider economic features. In the Tunisia/Libya case they explicitly rejected such features, saying that these are too changeable. It can be expected that in the future, States will demand a comprehensive and systematic examination of *all* the relevant features of the context of any controversy.

CONCLUDING REMARKS

Let me in conclusion say a few more general words about the future. I do not despair of the future law of the sea as do some of our speakers. I am not sure that this 1982 Convention, as such, will ever become law, will ever be ratified by enough States to make it the law. I have grave doubts whether the United States will ever ratify. I happened to hear Senator Pell's concluding remarks when we came in this morning. I think he is about as far from reality now as he was on the value of a law of the sea conference 19 years ago. I think most of the important provisions in this 1982 Convention, apart from the deep seabed, are already customary international law. When policies genuinely serve common interest they have a way of becoming customary law and working themselves pure in terms of common interest, through a process of reciprocity and retaliation in a continuous flow of many different kinds of decisions and communications. I think that future boundary delimitations will invoke the language of articles 74 and 83 of the 1982 Convention that require the use of equitable principles to achieve an equitable solution. Equitable principles will be made to refer not only to geographic features but to many economic and social considerations. If States cannot agree among themselves on what is an appropriate fusion of these features into an equitable outcome they will have no alternative except to go to third party decision-makers, such as the International Court of Justice, or to a Chamber of the Court or to a specially constituted tribunal.

Almost all law requires the judge to examine a complex set of circumstances, a complex set of facts, and to come to a decision which is reasonable. There are no rules that can compel these decisions. The rules merely point to facts and state general policies. In a democratic community, cherishing pluralistic values, the rules will always be complementary and they will always be incomplete and ambiguous. A law is human judgment that seeks to clarify and secure the common interest of the people in a community. I do not regard the search for common interest as a defeatist enterprise. I think, however, that if I represented the United States in an important boundary delimitation I probably would not go to the whole of the International Court of Justice. Since the Nicaraguan decision I do not have quite as much confidence as I once had in its ability to come to a legal conclusion in common interest. I think I would go to a panel of that Court or I would set up a special tribunal where I could join in picking the judges. It is important to have judges who will look at every feature of the context and will try to clarify and secure the common interests of all the parties to the litigation.

PART THREE

U.S. Continental Shelf:

Case Study in Jurisdictional Issues

Now that we have heard a global perspective on the Continental Shelf in terms of the definition of the shelf, the resources, some international public policy issues and international shelf boundary concerns, we will be narrowing our perspective to the United States Shelf. In this session we will address some particular issues that arise from the history of regulatory power changes that have occurred between the Federal and State governments.

As Professor Clingan mentioned, prior to 1937 state ownership of adjacent tide and submerged lands, to a distance of three miles from shore, was virtually unquestioned. Even though title resided with the states, however, the Federal government maintained some limited powers in relation to national defense and commerce. The controversy over ownership can be traced back to 1937 with a bill, prompted by then-Interior Secretary Ickes, declaring the marginal seabed within the national domain. However, no legislation or legal action was taken until the 1945 Truman Proclamation which seemed to be mostly instigated by a desire to control the resources, mainly oil and gas, located on or within the subsoil and seabed of the Shelf.

In 1953, the passage of both the Submerged Lands Act and the Outer Continental Shelf Lands Acts (OCSLA) established a "geographic dual federalism"—to use a phrase coined by D. S. Miller. The OCSLA assured state authority out to three miles and federal authority beyond that on the outer shelf.

The pendulum swung in 1972 more towards the middle with the passage of the Coastal Zone Management Act (CZMA) which promoted more cooperation or a "cooperative federalism"—again a term of Miller's—in OCS development. The 1976 CZMA Amendments and the 1978 OCSLA Amendments reaffirmed this cooperative relationship and the greater state role in OSC development.

The 1984 Supreme Court decision, in *Secretary of the Interior v. California*, that oil and gas lease sales are not subject to the consistency provisions in the CZMA, may be interpreted as a return of the pendulum, reducing the State role in OCS development.

The issues of CZMA re-authorization with its consistency requirements, and revenue-sharing either in the form of a legislatively-established fund or the division of 8(g) monies, at least in part emanate from these shifts in regulatory power. A more detailed jurisdictional history and the other particular issues mentioned will be the subjects of this session.

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CHAPTER 8

Interests and the U.S. Jurisdictional History

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My presentation examines the domestic jurisdictional history as a response to specific interests in the ocean. An overview of selected governmental actions during the period 1940-1983 will serve as a basis for these observations. In essence I will argue that we have a single-interest-based jurisdictional record which must confront multiple and interconnected issues in the oceans. Petroleum on the Continental Shelf, a theme of this conference, is often at the center of these jurisdictional disputes.

RELEVANCE, DEFINITION, AND EMERGENCE OF INTERESTS

If jurisdiction is viewed as authority or control, often with a territorial component to it, one may reasonably ask what the relevance of interests might be to our discussion. The legal framework for domestic ocean issues is an outgrowth of interests and at the same time a mediator among interests. As far back as the Federalist Papers, government in this country has recognized the roles of factions or groups of citizens united with common objectives.¹ In the ocean setting today these groups include commercial and recreational fishermen, oil developers, vessel operators, and waste disposers, among others. When considering an interest group, the modifier "special" is often added, and the emphasis is on attempts by formally organized private organizations to influence public policy. Thus, in jurisdictional terms the resource or activity regulated, the geographic area, and the level or agency of government involved are the results of the interplay of interests before the Legislative and Executive branches of government. Here I have adopted a procedural approach and will examine the impact of interests on the governmental system.² These impacts are recorded in Legislative and Executive actions over the period 1940-1983.

Before considering the recent record in some detail, I would like to observe that some of the ocean interests I have selected are virtually as old as the country. Three of them (Table 1) are reflected in legislation enacted during the late 18th century within a few years of the founding of the country. They include shipping, security, and customs. Each was focused on facilitating relationships that this country had

with its neighbors. In the 19th century, fisheries and pollution issues emerged. During the present century, wildlife, minerals and energy, and research have all been added to the list of U.S. ocean interests. The reflection of interests in the early laws and executive actions of the U.S. indicates the long history of some of these interests, but it does not illuminate the more recent period.

Table 1

Interests and Date of First Appearance
in Federal Legislation

Shipping	1789
Security	1794
Customs	1799
Fisheries	1818
Pollution	1888
Wildlife	1900
Minerals & Energy	1945
Research	1959

HISTORICAL DEVELOPMENTS 1940-1983

This year marks the fortieth anniversary of the Truman Proclamation on the Outer Continental Shelf. That document claimed subsoil and seabed resources of the Continental Shelf of the United States. This assertion of jurisdiction had with it a separate proclamation to establish fishery conservation zones on the high seas around this country. The course of action initiated in 1945 reached a recent plateau through the Reagan Exclusive Economic Zone Proclamation of March 1983. This slice of history, for tabulation purposes considered to be 1940-1983, is the subject of the paper.

To portray this period I have compiled the principal ocean related laws and/or executive actions. First, let me indicate my approach to this synopsis. Utilizing the primary interests (i.e., shipping, security, customs, fisheries, pollution, wildlife, minerals and energy, and research) for each decade, I have tabulated significant laws and executive actions that fall within the purview of each specific interest. Ocean laws have been compiled a number of times and this task is currently being done by the Federal Coordinating Council on Science and Technology-Committee on Atmosphere and Oceans.³ Sorting them by specific interests, my objective, allows additional interpretation. By compiling the legislative and executive actions per decade and displaying them by decade (Fig. 1) one gains an appreciation for the increasing magnitude of actions within the jurisdictional record of this time period.

Examining the historic record, it is apparent that total activity varies from decade to decade. We can reflect on the differences between the 1960s, which were called "The Decade of Ocean Rhetoric," and the 1970s which were considered "The Decade of Creeping Ocean Action."⁴ The former decade culminated with the Stratton Commission Report and the latter produced the major elements of ocean legislation. In contrast, the current decade which is not over yet has produced little rhetoric or action. However, if one remains positive, it may become "The Decade of Ocean Rationalization." Rationalization, in the best sense of the word, will encompass

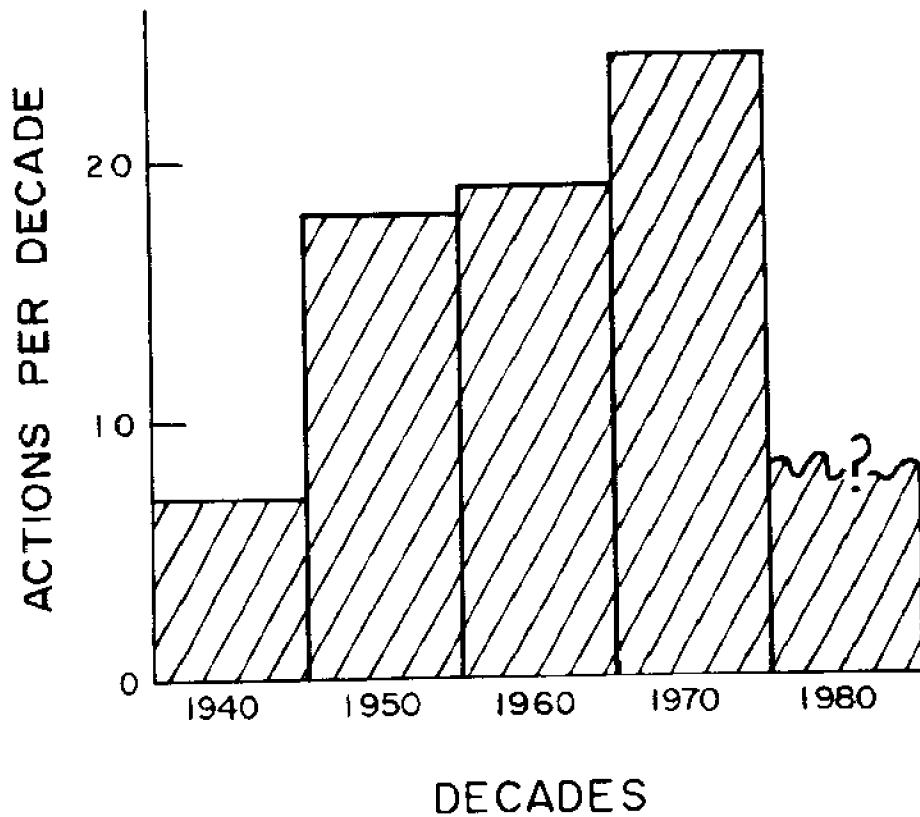


Figure 1. Total legislative actions by decade 1940-1983. From 1940 through 1979 the government, influenced by ocean interests, produced an increasing number of legislative and executive actions in each successive decade.

adjustment of competing claims. The legislative record or lack of it in the 1980s may well be shaped by forces beyond those of an individual administration. Specifically, if legislation is viewed as verification of compromises among interest groups,³ then the increasing numbers of claimants for a finite ocean could well lead to stalemate on Capitol Hill. In such circumstances alternatives to legislation for intergroup negotiation become important. The five-year planning process for offshore oil that we are discussing is an important forum for just that reason.

In addition to observing the total number of actions, we can examine the amount of activity within specific interests by decade (Fig. 2). In essence the number of individual legislative actions within a specific interest can be viewed as an index of the importance of that interest during the decade. The scale on the left of the figure shows the decades of 1940 to 1980. The width of the blocks for different decades illustrates the magnitude of activity for the identified interest.

Let me review some major elements of this history. In the 1940s the stage was set by the Truman Proclamations on minerals and fisheries. In the succeeding decade, substantial elements of current OCS oil and gas law were provided through the Submerged Lands Act and OCS Lands Act. Fisheries dominated in terms of magnitude in both the 1950s and 1960s. In most cases fisheries promotions within individual geographic areas and/or, for specific species were the subjects of the laws

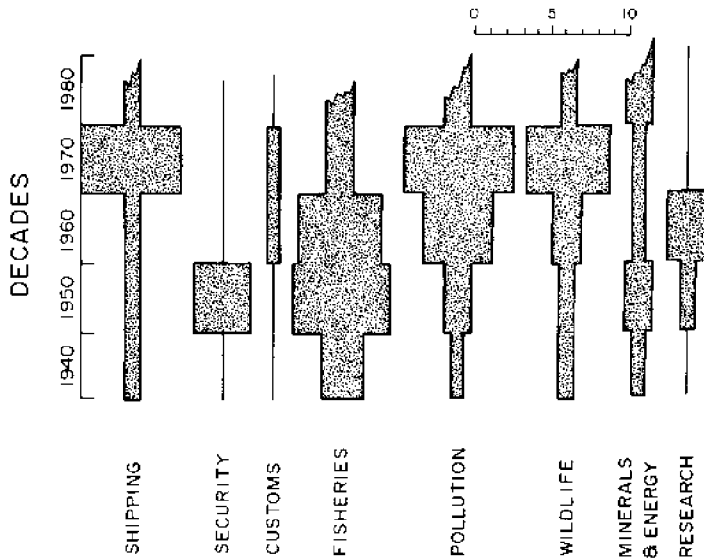


Figure 2. Selected actions by interest and decade 1940-1983. The width of the blocks shown by the scale in the upper right indicates the number of actions taken during the decade.

of the era. That piecemeal approach accounts for the great number of fisheries laws. In the 1960s an interest in curbing ocean pollution began to emerge, and this interest dominated in the 1970s with new initiatives on ocean dumping, pipe discharges, and oil pollution from ships. Protection of endangered marine species, especially mammals, dominated the wildlife record of the 1970s. Security, customs, minerals and energy, and research are the least active areas for new initiatives as tabulated here. For some interests, as illustrated, I was not able to find any significant action within a given decade.

THE SINGLE INTEREST APPROACH

I will now turn to an interpretation of this single interest jurisdictional history in terms of two concepts: expansion and separation. Expansion of a single interest may take several forms. First, there is the well-known expansion in area. An interest that extends three miles may subsequently expand to 12 miles, or more recently to 200 miles. Geographical expansion has occurred as entities claim certain rights over what was formerly unclaimed. In addition, and more commonly in recent years, different entities have made competing claims over the same area. Boundary disputes reflect this phenomenon. Another potential example is the question of state versus federal control of the three- to twelve-mile region around the United States which may be expressed through expanded state sovereignty or through revenue-sharing.

A second type of expansion is in the number of interests that effectively claim a role in the oceans. In the compilation of first occurrences, minerals and energy as well as research appeared in the 1940-1983 time period. Continued refinement, for example commercial versus recreational fishing, and strengthening of interests may lead to finer divisions in future policy deliberations.

A third area of expansion is in the intensity of use. Some, but not all, measures of use of the oceans show substantial gains in recent years. Beyond that, however, even the perception of potential future gain through greater use of the oceans is often sufficient to catalyze groups.

Expansion has as a corollary the potential for conflict. U.S. oil and gas resources have been a highly visible central theme in these discussions. Conflicts over the Coastal Zone Management Act, revenue-sharing, and 8(g) disbursements—all topics of this session—may be traced to expansion of ocean interests that overlap with offshore oil interests. My point here is to indicate the jurisdictional background within which these conflicts might arise.

Separation, both geographically and functionally, is also an important part of this jurisdictional history. In fact separation has been important, at least in the past, as a device to satisfy the growing number of constituencies. In terms of functions, separation is a logical outcome of how interests are converted into laws and in many instances, subsequently into governmental programs. At the outset there is no clear reason for fishermen and oil interests to confer on their ocean objectives. Nor should one expect that their objectives should indeed be mutual. The result is fish law and oil law as well as agencies that reflect these different ocean interests. Similarly, Congressional committees and executive departments seldom have strong incentives to rationalize across interests.

Functional separation may be bridged by embracing more than one interest in a legislative or administrative action. The OCS Lands Act amendments contain such an example. In preparing the five year plan for offshore oil and gas leasing the Secretary of the Interior is required to examine primary productivity and environmental sensitivity.⁶ This information which reflects a fishery interest, among others, is to be considered along with the interest in oil and gas development. However, to date this approach has not met its potential to mediate among demands of different constituencies.

Geographical separation, another attribute of this jurisdictional record, may be natural or man-induced. In the first instance the highest quality resources or uses may not occupy the same area of the ocean. Fortunately, this is often the case. In the second case, a subtle form of zoning occurs where different users proclaim if not exclusive at least preferred use of certain parts of ocean space. For example, security considerations have precluded the leasing of large areas of the Outer Continental Shelf for oil development and have also resulted in the delay and possible rejection of joint fishing ventures that employ Russian vessels near U.S. coasts.

THE MULTIPLE INTEREST DILEMMA

So far I have avoided confronting directly the multiple interest dilemma that is integral to this jurisdictional history. Stated simply, this dilemma is recognition of the fact that most ocean activities intertwine many interests. The ocean environment itself is particularly conducive to these interrelationships. The dilemma comes about when one considers how the interests either are or should be interrelated in the jurisdictional record.

One may be either optimistic or pessimistic about resolving the multiple interest dilemma in the oceans through revisions in the jurisdictional framework. The pessimists—those who believe systematic large-scale accommodation is unrealistic—

observe that society does not have collectively agreed-upon objectives. Ocean interests are united only in some relationship to saltwater, not in any other way. Furthermore, as expansion continues and separation becomes less feasible, the divergence among interests may become clearer. Stated alternatively, once the outer limits of the ocean frontiers have been reached, attention will increasingly turn to allocation within that realm. A second discouraging observation is that irrespective of the political issues, the complexity of the problem exceeds our abilities intellectually and administratively. A commonly repeated theme allied to this is that our scientific understanding, while well developed, is inadequate to portray in detail interactions within and among uses. Finally, there are the arguments that the costs of adjusting this system will far outweigh the benefits.

The optimists—and there are many of them in the marine research community—believe that the ocean may be used as a central focus for jurisdictional and administrative systems. The Stratton Commission advocated a single focus for the oceans in the government.⁷ Since that time a variety of agency proposals or policy and coordinating groups have appeared. The optimists are supported first by the interrelated nature of the ocean itself. Secondly, one can point to a variety of stalemates in government, aspects of oil and gas development being one, where the overlap and conflict between existing policies are unsatisfactory to all parties. Associated with this is the feeling that present piecemeal solutions, often of a judicial nature, are inadequate.

What are the realities and where are the realists? I believe many of the realists are here today. The present reality is one of small and incremental changes. One need only look at the recent debates over reauthorization of the Coastal Zone Management Act or the balancing provisions of the OCS Lands Act Amendments to see that the accommodations among interests at the legislative level are becoming increasingly difficult. An alternative approach, such as an Exclusive Economic Zone Management Act, appears distant at best. However, interagency coordinating committees, memoranda of understanding, and planning processes such as the one that will be discussed in subsequent sections of this conference are in my opinion the fabric of the current reality.

The task of resolving these conflicting interests is complex and one can only wonder whether the current "realistic" approach will indeed be adequate.

NOTES

- ¹ In the Federalist No. 10, Madison describes a faction as "a number of citizens...who are united and actuated by some common impulse of passion, or of interest, adverse to the rights of other citizens, or to the permanent and aggregate interests of the community." *New York Packet* November 23, 1787.
- ² See James N. Rosenau, 1980, *The Scientific Study of Foreign Policy* pp.283-293 for a discussion of the use of society's political process as a means of identifying predominant interests.
- ³ The rationale for the present compilation may be found in National Advisory Committee on Oceans and Atmosphere, May 1984, *The Exclusive Economic Zone of the United States: Some Immediate Policy Issues*, pp.93-100.
- ⁴ John Norton Moore, September 1976, in an address entitled "Organizing for a National Oceans Program" characterized the 1970s in this way and referred to Senator Ernest Hollings' description of the 1960s.

- ⁵ See for example V.O. Key Jr., 1964, *Politics, Parties, and Pressure Groups* p.145.
- ⁶ Section 18(a)(2)(G) of the OCS Lands Act as Amended details the Department of the Interior's obligations in this regard.
- ⁷ See the Report of the Commission on Marine Science, Engineering and Resources, 1969, *Our Nation and the Sea*, Chapter 7, Organizing a National Ocean Effort pp.227-249.

Acknowledgements. I thank L. M. Alexander for proposing a look at the jurisdictional history of ocean issues and L. Juda for comments during preparation of the paper. This presentation was supported by a grant from The Andrew W. Mellon Foundation.

CHAPTER 9

Reauthorization of the Coastal Zone Management Act

THE COASTAL STATES ORGANIZATION'S VIEW

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BACKGROUND

Our country's need for coastal management has never been greater at any point in history than today. Sixteen years ago, the Commission on Marine Sciences, Engineering and Resources, better known as the Stratton Commission, predicted that man's use of and movement toward coastal areas would continue to increase. That prediction came true beyond the Commission's expectations.¹

Today, our oceans and Great Lakes are home to more than one out of every two Americans. By the year 2000, nearly 80 percent of the U.S. population will live within an hour's drive of a seashore or lakefront. In Florida alone, population experts calculate that 5,000 people a week are streaming to its shores. And, on a single day, nearly half a million people will visit California's beaches.

Shoreline construction—ranging from beach resorts and vacation homes to waterfront restoration and marinas—is booming. South Carolina has seen a 300 percent increase in coastal permitting activities over the last four years. Most of it is attributed to a dramatic rise in condominium and resort development. Likewise, residential and hotel development has expanded in neighboring North Carolina, where permitting activities have increased 400 percent. The same is true in Delaware, Maine, Massachusetts, Mississippi, New Hampshire, New York, the Pacific territories, and the Virgin Islands. The rebirth of many urban waterfronts as new centers of commerce and tourism from New York City to Port Angeles, Washington has also significantly added to the use of the coastal zone.

Support facilities for offshore oil and gas development, commercial fishing, port and harbor operations, and other industrial uses of the coastal zone are also escalating.

California alone is expecting \$6-10 billion in construction of offshore and onshore oil and gas facilities within the next decade.²

The burgeoning growth of coastal uses, although predicted years ago, has brought with it unprecedented pressures and demands from diverse, often competing interests. Conflicts center primarily between water- and non-water-dependent uses of the coastal zone and the need to make trade-offs between protecting natural resources or expanding economic development opportunities. These onshore activities, important in their own right, are paralleled by actual or prospective increases in offshore activities such as large-scale OCS oil and gas leasing, at-sea incineration of hazardous wastes, and ocean mining. Combined, these land-based and ocean-based activities present the greatest challenge to coastal management yet.

Clearly, the predictions of the Stratton Commission have come true. Uses of the coastal zone are increasing. Problems of coastal management are moving seaward as well as inland. Thus, the visionary recommendations of the Commission in 1969, which called for a governmental framework to effectively manage the nation's coastal zone, are as valid today as they were then.

The Commission's recommendations became the law of the land in 1972, when Congress recognized the urgent need for federal-state cooperation in efforts to minimize increasing development pressures on the nation's coasts and enacted the Coastal Zone Management Act (CZMA).

The CZMA declares that it is in the national interest to help states preserve, protect, develop and, where possible, restore or enhance our nation's coastal resources, giving full consideration to ecological, cultural, historic, and aesthetic values as well as to needs for economic development. In 1980, Congress unanimously reaffirmed that federal commitment for five years.

WHAT LIES AHEAD FOR THE CZMA?

Despite overwhelming evidence of need and support, the future of the national coastal management program remains uncertain. Most provisions of the CZMA, unless reauthorized by Congress, will expire on September 30, 1985. What would become of the national coastal management program if Congress is unable to enact legislation to reauthorize the CZMA? What is the position of the Administration and the states regarding the extension of the CZMA? These are certainly questions which need to be addressed in any presentation on CZMA reauthorization.

If Congress is unable to reauthorize the CZMA, funding authority for federal grants to states to maintain their federally-approved coastal management programs will end. Many of the 28 federally-approved state and territorial CZM programs will be forced to shut down completely. All will be forced to substantially reduce their CZM effort, eventually leading to unwise, imbalanced, and irresponsible use of coastal resources.

The result? An overall curtailment of planning and regulatory activities due to loss of staff. Coastal development permit processing and federal consistency determination reviews would be subject to lengthy delays and/or a lower rate of approval due to lack of time and resources to negotiate or mitigate. Litigation is a likely result. Permit monitoring and enforcement would also be cut back. Many states would be forced to eliminate special management planning efforts, such as shore protection, urban waterfront development, dredged material disposal siting and mitigation, water quality improvements, public access improvements, and shellfish management. Public participation programs would have to be reduced or eliminated altogether.

In many states, local governments are the recipients of a significant portion of the federal grants money for coastal planning and regulatory activities to help them

address resource and land use conflicts on the local level. If federal funds are significantly reduced, states would no longer be able to share their grant money with local governments. Without this funding source, local coastal planning efforts, which are key to state program initiatives, would be severely disrupted. Since coastal programs in the territories are funded almost entirely by the federal government, a reduction or elimination of federal grants would have an even more serious impact. Without federal funding, coastal zone management in Guam and other territories would come to a standstill, just as the island tourist industry and its related coastal development are rapidly expanding.

The likelihood of states being able to bear the entire cost of the national coastal management program—even if appropriate—are generally not encouraging. This is based on the projected year-end balances of many coastal state budgets and the competition over state funds to mitigate anticipated federal budget cuts. Simply put, if the CZMA is not reauthorized, it would be just a matter of months before the national coastal management program would be reduced to a few state CZM programs, operating individually with minimal attention to the national interest to sustain their federal certification and consistency authority. Is this what we want to have happen?

THE ADMINISTRATION'S REAUTHORIZATION PLANS

The Administration supports a three-year extension of the estuarine sanctuary grants and federal program management but opposes any further continuation of CZM grants to states after September 30, 1985. To me, the Administration's position is no better than killing the CZMA outright. The results and impact upon the national coastal management program would be just as devastating.

In this year's budget analysis supporting the elimination of CZM grant funding to states, the Administration attempted to portray federal funding for state coastal management as "seed" money that is no longer needed or appropriate. It contends that the federal-state coastal management partnership embodied in law has been successful and is complete, that the coastal management mechanisms are fully and equally implemented by a vast majority of coastal states, and that federal funding can be withdrawn without undue harm to the partnership.

Nothing could be further from the truth. In fact, when the Administration testified before Congress this Spring on the CZMA reauthorization, it had no information about the fiscal or programmatic impacts on the states in the event CZM grants were eliminated.

In response to congressional inquiries on this point, NOAA conducted its own survey of proposed budget cuts on coastal states. The result of this survey confirmed what the Coastal States Organization already knew, which I have already shared with you.

THE COASTAL STATE PERSPECTIVE

Coastal states support the enactment of a strong, multi-year CZMA reauthorization. This action would reaffirm the federal government's commitment to states, its promise to all Americans that the partnership under the CZMA would continue and that our nation's coastal resources would have the protection and management they so richly deserve.

The resurgence of economic and environmental vitality in our nation's coastal areas since passage of the CZMA 13 years ago is no coincidence. There have been many success stories, which I am proud to say are documented in a report recently issued by the Coastal States Organization entitled, "America's Coasts: Progress and

Promise." The report describes a record of success achieved by the states to tailor the CZMA to meet not only their unique resource needs but much broader national objectives. We have seen the formation and expansion of capital investment in New York City's waterfronts, the restoration of industrial corridors along the Detroit River, the protection of 3 million acres of Louisiana wetlands, expanded beach access in Rhode Island and in other states; the supporting actions to clean up Boston Harbor, and reduced bureaucratic red tape and permit processing time for coastal projects in Hawaii. Coastal state management means all this—and more—for the nation.

Over the past decade, Congress has appropriated roughly \$187 million for the development and implementation of 28 state CZM programs—an investment which amounts to little more than six cents for every man, woman and child in the United States. It seems such a small price to pay for so much in return.

CONCLUSION

Coastal management is at a crossroads. On one hand, the use of our coast has never been greater. The federal government, on the other hand, is on the verge of embarking upon many new ocean ventures which will certainly have far-reaching impacts on coastal resources. What can and must be done to face these challenges?

First, we must reauthorize the Coastal Zone Management Act to keep in place the only comprehensive tool which allows federal, state, and local governments to manage cooperatively the beaches, bays, wetlands, ports and harbors, estuaries, islands, and fisheries of our nation's coastal areas.

Second, we must provide adequate funding for the national coastal management program at both the federal and state levels to enable these governments to meet fully their obligations under the CZMA.

Third, last year's Supreme Court ruling on the federal consistency provision should not be allowed to drive a deeper wedge between the federal government and the states over future uses of the ocean. Resource management for the oceans, as well as for the coastline, must be conducted as a federal-state cooperative effort.

It is imperative for federal, state, and local governments and industry to try to work together if we are ever to realize the potential of our ocean and coastal resources. The CZMA and the national coastal management program were founded on principles of cooperation between government and the private sector. Its success and promise are clear. CZM is good government. It has potential. It is the right thing to do. So, let's get started.

NOTES

- ¹ Our Nation and the Sea, A Report by the Commission on Marine Sciences, Engineering and Resources, 1969.
- ² CSO conducted a telephone survey in 1985 of 28 states and territories participating in the federal Coastal Zone Management Program on the impacts of Federal budget cuts on state coastal programs.

THE NOAA PERSPECTIVE

JAMES P. BLIZZARD

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Washington, D.C.*

COMMENTS

I am happy to be here today on behalf of Dr. Anthony Calio, Deputy Administrator of the National Oceanic and Atmospheric Administration (NOAA). Enhancing the exchange of information on Outer Continental Shelf (OCS) activities is a laudable goal, and I commend the Center for Ocean Management Studies in their efforts.

While I have been asked to speak to you today concerning the Federal Coastal Zone Management Act (CZMA), I would like to first tell you about some of our activities relating to the OCS.

1. We represent the Department of Commerce on the Department of the Interior's (DOI) OCS Policy Board as an ex-officio Federal agency member.
2. We represent NOAA on DOI's two non-energy mineral task forces—one with the States of California and Oregon for Polymetallic Sulfides at Gorda Ridge and one with the State of Hawaii for Cobalt Crusts in the Pacific.
3. We coordinate OCS comments for NOAA, and
4. We encourage, through the state coastal programs, state participation in OCS activities.

To facilitate these stated activities, it is our policy to allow Section 306 (of the CZMA) funds to be expended for OCS participation. Further, we, on Congressional approval, will be allocating some remaining Section 308 (of the CZMA) funds for this purpose.

IS THE CZMA WORKING? ARE ITS PURPOSES BEING FULFILLED?

I believe the answer to those two questions is yes. The CZMA was enacted in 1972 to encourage and assist states, territories and the Commonwealths in managing increasing and competing demands on the use of the nation's coastal areas. The act established a national program to provide financial and technical assistance as well as policy guidance to states for the establishment of comprehensive coastal zone management plans. Each state's participation is voluntary. The CZMA Amendments of 1976, 1978, and 1980 refined and strengthened the authority vested in the

Secretary of Commerce to carry out the act's purpose and expanded the range of assistance available to states for developing and implementing coastal zone management plans.

CZM implementation during the past 11 years has been successful. When the act was reauthorized in 1980, 19 states had federally-approved programs. State structures are now in place to deal with coastal issues and implement federally-approved coastal management programs in 28 of the eligible 35 coastal states and territories, covering over 90 percent of the 95,000 mile coastline of the United States. Virginia has proposed the 29th program, which is currently being reviewed.

The programs' accomplishments are due to the hard work and dedication of state coastal program staffs, public support, and substantial contributions of time and money from federal, state, and local governments. From FY 1974-1979, Section 305 program development funds totalling approximately \$70 million were provided to 35 states to develop management programs for federal approval. Of the 35 states receiving these funds, six voluntarily chose not to continue to seek federal approval. In 1979 Congress did not reauthorize Section 305 because the states had developed or were well on their way toward developing CZM plans. Similarly, we believe the purpose of Section 306 program administration grants has been served. Since FY 1974, 28 states have received over \$180 million in administrative funds (Section 306) from the Federal Government. Twenty-five states' programs have received funding starting in or before 1980. Grants to 11 of these states began in 1978, and in the case of Washington and Oregon, in 1976 and 1977, respectively. We believe that this 11-year, \$250 million federal investment has achieved the goal of the establishment and implementation of state coastal management programs.

WHERE COULD OR SHOULD THE CZMA BE STRENGTHENED/WEAKENED?

The Administration does not want the Coastal Zone Management Act to be weakened. On the contrary, we believe effective implementation of the CZMA can continue without the support of substantial funding from the Federal Government.

Section 306 (Coastal Program Administrative Grants)

As I mentioned earlier, we believe the purpose of Section 306 program administrative grants has been served and should not be reauthorized. The Administration's position not to reauthorize Section 306 grants should not come as a surprise. During the 1980 reauthorization hearings, the previous Administration proposed an eight-year phasedown of federal funding. The Congress passed a supplemental appropriation at that time based on this phasedown approach. Beginning in fiscal year 1981, this Administration has, each year, proposed no further funding for these grants. As part of the grant application process in fiscal year 1982, states were required to reconsider alternative sources of funding and staff levels necessary to continue their CZM programs in the absence of federal funds.

State coastal programs have been institutionalized and state and local fiscal capability to absorb these costs is stronger than that of the Federal Government. In our opinion, the states have the resources to continue their CZM programs without federal funds. The National Governors' Association Report of February 1985 shows that the states ended FY 1984 with a \$5.8 billion budget surplus. Surpluses in coastal states averaged \$164 million. The same report estimates that 48 states will end fiscal year 1985 with a total surplus exceeding \$5 billion and indicates that a number of states are banking money in "rainy day funding" funds to be used in the future as

needed. While we commend their prudence, the Federal Government should not have to borrow money to support state programs when sufficient state funds are available.

On April 24, 1985 the House Subcommittee on Oceanography passed a bill to reauthorize the CZMA with phasedown funding for Section 306 grants as follows:

FISCAL YEAR	STATE MATCH	306
1986	20%	\$40,000,000
1987	30%	\$38,000,000
1988	40%	\$36,000,000
1989	50%	\$35,000,000

Section 306A

Resource Management Improvement Grants—added to the act in 1980—provide grants to be used for several purposes—to acquire fee simple or other interests in land, to implement appropriate low-cost construction projects, to redevelop certain deteriorating or underutilized urban waterfronts and ports, and to provide access to public beaches and other public coastal areas. The Congress provided no funds for this section until fiscal year 1985 when a combined appropriation of \$34 million was made available for both Sections 306 and 306A. The bill proposed by the House Subcommittee on Oceanography proposes to authorize \$16 million each year through fiscal year 1989 for Section 306A. However, no funds are being requested in the Administration's current bill in keeping with the goal of reducing federal spending. Besides, a number of states already support activities similar to those under Section 306A. For example: in the area of access, the Pennsylvania Fish Commission provides boat launching areas. The South Carolina Coastal Council has received \$500,000 of state funds for beach access projects. Recreational and coastal access bond issues have been passed in Massachusetts, New Jersey, and California. Other states which support such activities are New York with its scenic Hudson program, Maine's rivers program, and Oregon's multi-agency coastal access program. The CZM program should never be turned into a public works program.

Section 315 (The National Estuarine Sanctuary Program)

Section 315 provides 50 percent matching grants to states for acquisition, development and operation of national estuarine sanctuaries. These sanctuaries provide natural field laboratories to study and gather data concerning the natural and human processes occurring within coastal zone estuaries. Presently 15 national estuarine sanctuaries have been established. The Administration has proposed a decrease of \$1.65 million from the current level of \$2.93 million to a level of \$1.28 million for the next three years. The remaining funds are sufficient to provide for a phased acquisition of one new site per year, to support sanctuary operations, and to conduct research in these sanctuaries. In contrast, the bill passed by the Oceanography Subcommittee proposed \$9 million each year for the next 4 years. While the Administration supports Section 315 allocations, we doubt that this much will actually be allocated.

Now to some unfunded sections of the CZMA.

Section 307 (Consistency)

The Coastal Zone Management Act of 1972, as amended requires each federal agency conducting or supporting activities directly affecting the coastal zone to undertake those activities in a manner which is, to the maximum extent practicable, consistent with approved state management programs. The CZMA also requires that federally licensed or permitted activities affecting the coastal zone, including activities described in detail in OCS exploration, development and production plans, be conducted in a manner consistent with federally-approved state coastal management programs. Section 307(d) of the CZMA requires that federal assistance be granted to state and local governments for activities affecting the coastal zone only when such activities are consistent with federally-approved coastal zone management programs. NOAA's current regulations interpreting Section 307 were promulgated in 1979. We believe these consistency provisions, not money, to be the incentive—the carrot, if you will—for state participation in the CZMA program. The Administration does not support any change to the CZMA's consistency provisions.

On January 11, 1984, the United States Supreme Court issued its decision in *Secretary of the Interior et al. v. California et al.* The Court held that the sale of OCS oil and gas leases is not an activity "directly affecting" the coastal zone within the meaning of Section 307(c)(1) of the Coastal Zone Management Act of 1972 and, therefore, a consistency determination is not required before such sale is made. We undertook a review of our regulations to determine which may have to be revised and what new regulations should be promulgated as a result of the Supreme Court's decision. Our proposed final rule makes those changes clearly necessitated by the Supreme Court's decision. The Supreme Court's holding did not address whether other federal activities landward or seaward of the coastal zone were subject to the requirements of Section 307(c)(1) of the CZMA. The final rule leaves the scope and substance of the Section 307(c)(1) requirements open for further interpretation. Federal agencies must continue to review their activities on a case-by-case basis to determine whether they "directly affect" the coastal zone within the meaning of Section 307(c)(1). If a federal agency concludes that a proposed activity directly affects the coastal zone, the federal agency must provide a consistency determination to the affected state(s) and must conduct the activity in a manner which is consistent to the maximum extent practicable with approved state coastal zone management programs.

During the spring of 1984, the NOAA Administrator initiated a comprehensive study of the experiences gained to date in applying the federal consistency provisions of the CZMA. The Federal Consistency Study was designed to provide information useful in evaluating the federal consistency process. NOAA will use the results to consider whether new approaches or improvements are needed to increase the efficiency and effectiveness of coastal zone management and the federal consistency process.

The objectives of this study are:

1. To document the experiences of state and federal agencies, as well as affected parties, with the implementation of the federal consistency provisions of Section 307 of the CZMA; and
2. To identify any issues surrounding the implementation of the federal consistency process and to document any areas of conflict.

NOAA provided for full public awareness and participation in the study. NOAA published a notice announcing the study in the *Federal Register* and mailed announcements to state coastal management agencies and affected federal agencies; to all individuals who attended hearings or provided testimony on the proposed federal consistency rulemaking; to individuals, agencies and organizations known to be interested in coastal zone management issues; and to over 300 major businesses, industries and trade organizations. In addition, NOAA held follow-up interviews and meetings with interested and affected parties.

NOAA compiled statistical and descriptive information from agency files, from state coastal management agency performance reports, from specific follow-up questions and interviews with state and federal agencies, from the public comments received in response to NOAA's Advance Notice of Proposed Rulemaking on Federal Consistency, from testimony presented to the Congress during the spring of 1984 on proposed legislation to amend the CZMA, from existing studies and articles on the consistency process, and from the legislative, regulatory and litigation history of the federal consistency provisions.

The Draft Study (currently out for review) presents and examines statistical information on the implementation of the Federal consistency process. It describes the laws, regulations, and policies which guide the federal consistency process from the early stages through informal negotiations to reach agreements and, finally, the formal mechanisms available to resolve disputes. It also contains reports on comments and concerns received by NOAA regarding the federal consistency process and provides case studies which illustrate both the problems and the successes encountered in the federal consistency process.

The Federal Consistency Statistical Data Base combines statistical information provided by state coastal zone management agencies and by affected federal agencies for activities conducted during the federal fiscal year 1983 (FY 83 includes October 1, 1982, through September 30, 1983). NOAA concluded that compiling information for FY 83 would yield a representative sample based on the most recently available data, would provide an adequate sample size, would allow inclusion of states whose coastal management programs were approved in 1982, and would impose the least burden on participating state and federal agencies. However, fiscal year 83 was unique in one regard. In August 1982, the Ninth Circuit Court of Appeals required consistency review for OCS lease sales under Section 307(c)(1). In January 1984, the Supreme Court reversed this decision. During fiscal year 83, while the case was on appeal to the Supreme Court, the Department of the Interior prepared consistency determinations for the lease sales scheduled during that time.

In order to assure a broad review of the implementation of the federal consistency process, NOAA examined specific cases and examples from the entire history of the CZMA. For example, because the total number of cases involving the Secretarial mediation and appeals processes under the CZMA is relatively small, NOAA documented all cases.

The statistics collected include the numbers of concurrences and nonconcurrences on consistency determinations and certifications. The statistics are organized by state and federal agency and by the appropriate Section 307 category for types of federal actions. Where available, the statistical information includes time periods for review, location of the activity (i.e., in the coastal zone, landward or seaward of the coastal zone, or on federally excluded lands within the coastal zone) and notes on cases in which initial state objections were resolved as a result of further negotiations, litigation and/or project modifications. In the statistical summaries, there was neither weighting of the statistical summaries, nor was there weighting of the statistics for project costs, size or impact.

The statistical information in the study neither allows for objective mathematical analysis of the implementation of the federal consistency process, nor provides the basis for a cumulative evaluation of the experiences of states, federal agencies or other interested parties. As a result, the raw statistical data offer little insight into how the process could be improved to increase efficiency and effectiveness. The diverse and unique character of the states' coastal zone management programs made the gathering and comparison of information difficult. The information provided to NOAA from states, federal agencies, and private individuals was unweighted and often incomplete or incompatible. Therefore, subjective analysis is required to interpret the available information.

The economic information available provided little insight into the costs and benefits of the federal consistency process. NOAA specifically requested information on the economic impacts of the Federal consistency requirements. Specific information was provided only by a few oil companies. Thus, the available information on the economic impact of federal consistency is either case-specific information provided by industry or generic information inferred from research efforts attempting to analyze the costs of compliance with various environmental laws and regulations. The benefits of federal consistency, which also are unquantified, derive from increased intergovernmental coordination and consultation and from wise management of coastal resources.

FUTURE OF THE COASTAL ZONE MANAGEMENT PROGRAM

We believe Coastal Zone Management will continue to be implemented successfully but that the states and territories have the resources to continue their programs without federal funds. The states are and will be receiving fiscal year 85 funds later this year. The Office of Ocean and Coastal Resource Management (OCRM) will review closely the applications for these funds to insure that long-term projects requiring extended federal funds are discouraged.

OCRM will continue in its role of providing technical assistance to states with management programs on issues such as federal consistency, public information and education, permitting, and special area management planning. The Section 312 Program Evaluations will also continue and we are now seeking contacts and interviews with a broader representation of individuals and groups during the evaluation process in order to refine the objectivity of the evaluations. No doubt the cooperation of some of you will be vital to the success of these evaluations.

With the elimination of federal funding for coastal programs, the federal role in coastal zone management will focus on technical assistance and more refined, timely program evaluations.

CHAPTER 10

Revenue-Sharing Legislation

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At approximately 1:30 p.m. on October 9, 1984, Senate Majority Leader Howard Baker rose from his desk on the floor of the Senate and addressed the presiding officer:

Mr. President, as I indicated earlier today, it is the intention of the leadership on this side to go to a privileged matter temporarily laying aside the present pending business and the pending question. Let me hasten to say, however, that even though the OCS revenue-sharing conference report is privileged and is available at this time, if we have not finished that measure by later this afternoon, say 4:30 or 5:00, it would be the intention of the leadership on this side to ask the Senate to return to consideration of the debt limit...

...with the assurance that we are going back to the debt limit sometime today, I submit a report of the committee of conference on S. 2463 and ask for its immediate consideration.
(*Congressional Record*, October 9, 1984, p. S 13844)

Thus, after more than three years of intense Congressional deliberations and passage on three different occasions by the House of Representatives, the U.S. Senate began its debate about a bill that would allocate a portion of the federal revenues received from the sale of offshore oil and gas leases to coastal states for a variety of purposes, including the administration of coastal zone management (CZM) and coastal energy impact programs.

Yet, it was all over in less than two-and-a-half hours. Senator Robert Packwood, the Chairman of the Committee on Commerce, was the floor manager for the conference report. Despite his efforts, the legislation was subject to a "mini filibuster." Those supporting the position of the Reagan Administration in opposition

to OCS revenue-sharing held the floor and precluded the opportunity for a vote on final passage.

When the situation became obvious, Senator Baker returned to the Senate chamber. After briefly conferring with Senator Packwood, the Majority Leader stated:

The situation that has developed here is not altogether unexpected. We all hoped that this conference report, which is privileged, might be disposed of. It appears, to say the least, unlikely--

In view of that, it would be the intention of the leadership on this side to ask the Senate to return to the consideration of the debt limit resolution. (*Congressional Record*, October 9, 1984, p. S 13889)

No objection was made to Senator Baker's unanimous consent motion and the OCS revenue-sharing issue was dead for the 98th Congress. Although the Majority Leader's motion could have been challenged because a conference committee report is "privileged," there was no enthusiasm on the part of the supporters of the bill to do so in the face of a filibuster threat. The 98th Congress was already well beyond its self-imposed deadline for adjournment (it adjourned three days later) and elections were approaching. The momentum to get out of Washington in an election year is far stronger than that for pushing legislation which is, as in the case of the OCS revenue-sharing bill, the target of strong veto threats from the Administration. Thus, CZM aficionados had suffered what was perhaps their most significant setback in a decade of generally strong support from the Congress.

The congressional debate in the 97th and 98th Congresses was simply the most recent in a long rich history of national consideration of this issue. It is an issue which can trace its genesis to the waters of Santa Barbara at the end of the last century, to the Gulf of Mexico, to the halls of Congress and the 1952 Presidential campaign, to court rooms in Louisiana and Texas, and back again to the committee rooms and floor of the United States Congress.

A BRIEF HISTORY

The first offshore oil and gas production occurred in 1896 when developers drilled 400 wells to a depth of 600 feet from wooden piers off of Santa Barbara, California. In 1938, developers undertook the first successful venture in open waters in the Gulf of Mexico. The next year, the Louisiana state legislature passed a bill to extend its boundary 27 miles into the Gulf and, in 1945, the state granted an oil lease for land extending 30 miles into the Gulf.

On September 8, 1945, President Truman issued Proclamation 2667 in which he declared, on behalf of the U.S., jurisdiction, control, and power of disposition over the natural resources of the subsoil and seabed of the Continental Shelf.

In 1947, the first offshore operation not visible from land was carried out in 16 feet of water, 12 miles offshore in the Gulf of Mexico. That same year, the Supreme Court ruled in *U.S. v. California* (332 U.S. 19) that the Federal Government controlled the land seaward of the baseline. Based on *California*, the Louisiana claim to a portion of the Outer Continental Shelf (OCS) was overturned (*U.S. v. Louisiana*, 339 U.S. 699 (1950)).

The Truman Proclamation and the 1947 *California* decision led to efforts by Governors to convince Congress to pass legislation that would give states some control over the resources off of their coasts.

In fact, at least one House Committee and the U.S. Supreme Court noted that state assertions of jurisdiction to the edge of the OCS, prior to 1945, helped give support to U.S. claims under the Truman Proclamation. The House Judiciary Committee, in its 1953 report on H.R. 5134, the original Outer Continental Shelf Lands Act, states:

H.R. 5134 does not vest in the States the power to take or dispose of the natural resources of the parts of the Continental Shelf outside the original boundaries of the States. The power is vested by H.R. 4198 (Submerged Lands Act) in the Secretary of the Interior even though some states have extended their boundaries as far as the outer edge of the shelf. Section 9(a) of H.R. 5134 asserts as against the other nations of the world the claim of the United States to the natural resources in the Continental Shelf. This Nation's claim to the natural resources was strengthened by the earlier action of some of the States in leasing, and consequently bringing about the actual use and occupancy of the Continental Shelf. The benefits flowing to the United States from such State action was recognized by the Supreme Court in the Louisiana case, for it said:

So far as the issues presented here are concerned, Louisiana's enlargement of her boundary emphasizes the strength of the claim of the United States to this part of the ocean and the resources of the soil under that area, including oil.

Bills were introduced in every session of the Congress from 1945 through 1953 to settle jurisdictional matters between the Federal Government and the states over offshore territory. Many of these bills involved some type of financial settlement between the two sides. For the fact of the matter is that a major dimension of the jurisdictional dispute among levels of government in the United States has involved, and continues to involve, the question of money.

RESOURCE ALLOCATION DEBATE

At the very end of this conference, we are all going to be chastised by my friend and colleague Jim Curlin. We will be told that we have reduced the national debate over offshore leasing to esoteric issues such as the "almighty lease sale dollar" and that we are, in part, shamefully focusing our attention on "scrapping over the revenues from federal oil and gas leases" rather than looking at the more global energy picture. As usual, Jim is playing his devil's advocate role as the ocean community's thoughtful conscience and, as usual, Jim is largely right.

Yet, it must also be pointed out that under our system of government the *process* of political decision-making with respect to the allocation of resources is as important as the substantive policy outcome that results from that process. Ours is a federal system of government which began as a very loose confederation of independent-minded states. A cursory review of portions of the *Federalist Papers* reveals quite clearly that, as we moved toward a Constitution to establish a stronger central

government, the division of responsibility between such government and its constituent units contained some inherent tension between the governmental levels. We have a system of divided authority that, in part, evolved from our confederation of states and, in part, was designed to protect the national interest. In other words, we should not be surprised that the conflict over the allocation of revenues has become part of the fabric of the OCS political debate.

Going back as far as 1920, we can see how political accommodations were developed to address this tension with respect to resource development on federally-owned land. The Mineral Lands Leasing Act, as originally enacted, provided that 37.5 percent of the federal revenues received from the leasing of federal lands within state borders would go back to the states directly. Approximately ten years ago, this proportion was increased to 50 percent. Additionally, other programs such as the National Forest Receipts Acts, the Taylor Grazing Act, and various payment-in-lieu-of-taxes programs have resulted in payments to states, primarily in the West, of some \$900 million per year.

In 1953, the most significant debate on the conference report establishing the original Outer Continental Shelf Lands Act focused on a so-called "oil for education" amendment. In the first passage of the OCS bill in the Senate in 1953, Senator Lister Hill of Alabama successfully offered an amendment to put OCS receipts into a special account in the Treasury dedicated to federal grants to states for primary, secondary, and higher educational purposes. The Congress would have three years to pass legislation to carry out the mandates of the amendment. The Hill amendment was passed by a vote 45 to 37.

However, in conference, the House conferees would not accept the amendment and it became the most contentious point in the meeting between the two chambers. Over the vitriolic opposition of the congressional delegations from Louisiana and Texas, the OCS Lands Act was agreed to and became law, without the Hill amendment or any type of revenue-sharing provision.

Thereafter, a relatively quiet period followed in which OCS development proceeded slowly in the Gulf of Mexico and, to a lesser extent off the coast of southern California, but never reached significant heights of general public visibility. Nevertheless, legislation was continually introduced in the Congress to tap OCS revenues.

For example, 16 bills were introduced in the 90th Congress (1967-1968) for utilizing OCS revenues for different purposes. The most significant of these amended the Land and Water Conservation Fund Act of 1965 with the provision that OCS receipts be used as a source for this fund. Eventually, P.L. 90-401 authorized the use of federal receipts from the OCS program for an amount equal to the difference between the existing revenues from outdoor recreation fees and a ceiling established in the bill. In recent years, the OCS contribution to the fund has exceeded \$800 million.

In 1969, as a result of the Santa Barbara blowout and the resulting emergence of the Nation's environmental consciousness, a flurry of activity in the Congress led to the 1972 Coastal Zone Management Act. After the Arab oil embargo of 1973-74, the CZM was amended to establish the coastal energy impact program (CEIP) in 1976 and the OCS Lands Act was substantially rewritten in 1978.

CEIP was a type of categorical impact grant program for coastal states to address the social, economic, and environmental consequences from OCS development. It is to be distinguished from pure OCS receipt-sharing legislation because it was not an entitlement program, i.e., it was based on a congressionally established authorization level, not on OCS revenues coming into the Federal Treasury.

"REVENUE-SHARING" ACTIVITIES

The period between 1981-84 saw the most vigorous efforts to pass legislation frequently, but inaccurately referred to, as OCS revenue-sharing. To respond to proposed budget cuts by the Reagan Administration, the Chairman of the Merchant Marine and Fisheries Committee, Congressman Walter B. Jones of North Carolina, developed a bill that would draw a linkage between an accelerated OCS leasing program and funding for coastal management and energy impact efforts.

The intent of the Jones bill was to respond to the seemingly inconsistent policies of the Administration, i.e., the termination of federal support for CZM, CEIP, and other ocean and coastal programs at the same time that the Interior Department was initiating a major acceleration of offshore oil and gas leasing. Many interested parties, both within and outside the Congress, questioned the advisability of terminating programs which provide the states with their primary vehicles for OCS participation at a time when competing use conflicts could be expected to escalate.

A further premise of the legislation was that existing federal-state jurisdictions on the OCS should not be altered. Specifically, coastal states would not be granted any power to tax OCS mineral production, in contrast to the taxing authority now granted to states with respect to some onshore federal mineral leasing.

During the 97th Congress, Congressman Jones with some 60 cosponsors introduced H.R. 5543. In general, the bill provided that the Secretary of the Treasury would pay into a fund the lesser of \$300 million or ten percent of the amount by which revenues from OCS oil and gas lease sales during each fiscal year exceeded revenues deposited in 1982. The Secretary of Commerce would be directed to use amounts from the fund to provide each coastal state with ocean and coastal resource management block grants.

Eligible uses for the block grants included activities of coastal states authorized by the CZMA and the CEIP and those required for the enhancement and management of living marine and natural resources. The formula by which the block grants were to be allocated among all coastal states included equally weighted criteria involving actual OCS leasing activity, future OCS lease sales, coastal-related energy facilities and, for those states with approved CZM programs, shoreline mileage, and coastal county population. In other words, only 40 percent of the state's allocation was based on whether it participated in CZM—a significant departure from earlier impact aid proposals like CEIP.

On September 22, 1982, the House of Representatives passed H.R. 5543 by a vote of 260-134. Although three companion OCS revenue-sharing bills were introduced in the Senate, and the Commerce Committee conducted two days of hearings on the issue, neither the Committee nor the full Senate acted on any of the Senate bills or on the House-passed measure.

On the opening day of the 98th Congress, Chairman Jones with 117 cosponsors, reintroduced the OCS revenue-sharing bill as H.R. 5. The House passed the bill on September 14, 1983, by a margin of 301-93.

In the Senate, a companion bill was reported by the Commerce Committee by a 15-1 vote. However, because of strong Administration opposition, there was little likelihood that a bill would be scheduled for Senate floor consideration.

Consequently, after the House passed H.R. 5, staff representing interested members from both chambers met to work out an acceptable compromise bill. The strategy was to hold an informal conference that would resolve the differences between the House and Senate and thus facilitate the passage of the compromise bill by one body with final acceptance by the other. Thus, a formal conference committee could be avoided.

Negotiations lasted for a number of weeks during the fall of 1983 and resulted in a compromise OCS revenue-sharing bill that generally conformed to the structure of the House legislation. One major change provided that four percent of all OCS revenues averaged over the preceding three years would make up the fund from which state allocations would be made. The fund would initially be limited to \$300 million but could increase by five percent in subsequent years if OCS revenues increased.

Some relatively technical changes were made to the formula and to the eligible use section. One of the more significant modifications was the establishment of a "minimum floor" for states with approved CZM programs. Such states would receive no less than 1.62 percent of the amount appropriated from the fund for the block grants. A ceiling of 15 percent of the maximum allocation for any individual state was also added.

As the first session of the 98th Congress came to a close, Senator Stevens of Alaska unsuccessfully attempted to add the compromise to legislation pending in the Senate. Senator Stevens then met with the new Secretary of the Interior, William Clark in January, 1984. Secretary Clark indicated he would take the issue under advisement. In May, the Secretary announced that he was urging the Administration to "revisit" the OCS revenue-sharing issue.

In the middle of June, the Secretary met with the President and others to discuss OCS revenue-sharing. The initial stories coming from that meeting noted the possibility of the Administration reversing its earlier opposition. However, within a matter of a few days subsequent activities indicated that the White House would continue to oppose the bill. Although Secretary Clark reportedly had the backing of the Departments of Commerce and Energy, his support for a new position on the legislation was opposed by OMB, and the Treasury and Justice Departments.

Congress then decided to take further action on its own. On June 26, 1984, the House amended a Senate fisheries bill with the text of H.R. 5 and requested a conference. Two days later, the Senate took the necessary action to agree to a conference. Therefore, although the Senate had not taken up OCS revenue-sharing legislation as an individual bill, a formal conference on the subject was convened on August 8. The conference committee approved the compromise bill that had been worked out the prior fall.

Some of the conferees, feeling that a White House reversal of position was still possible, indicated their intention to delay signing the necessary papers until the Administration had additional time to submit any recommended amendments that would guarantee the President's signature. However, as the members were leaving the conference committee session, they were handed a letter by an Interior Department representative that again reiterated the Administration's opposition to the bill. The letter was signed by Secretary Clark, Secretary of Energy Hodel, Secretary of the Treasury Regan, and Director of OMB Stockman.

This action ultimately led all of the conferees to sign the report and the House considered it on September 13. It passed the bill by a veto-override margin of 312-94. After the House vote, Congressman Jones telephoned the President to discuss the merits of the legislation, urging Mr. Reagan to support and sign the bill. The President agreed to discuss it further with his cabinet but made no commitment to the Congressman.

All that was necessary for final congressional action and transmittal to the President was Senate approval of the conference report. As noted at the beginning of this paper, such approval was not forthcoming.

At the beginning of the 99th Congress, Congressman Jones reintroduced H.R. 5, using essentially the text of the same bill that had passed the House in September, 1983. Senator Stevens reintroduced the conference bill as S. 55. Presently, both bills

are pending in the House Merchant Marine and Senate Commerce Committees, respectively. Future progress on either bill is uncertain given the present debate over the budget resolution and continued opposition of the Administration.

Additionally, congressional consideration of general OCS revenue-sharing is likely to be subsumed by the debate over the release of OCS escrow funds pursuant to section 8(g) of the OCS Lands Act. Yet, it is likely that at some indeterminate point in the future, Congress will once again turn its attention to the issue of sharing some OCS-related revenues with the coastal states. It is impossible to predict the precise nature or timing of that debate other than to indicate that it will happen.

NOT PURELY OCS REVENUE-SHARING

Finally, it is important to note that the OCS revenue-sharing legislation considered by the Congress between 1981-1984 was misunderstood by some as pure OCS revenue-sharing. The legislation that passed the House on three different occasions was an ocean and coastal block grant program. One of the key premises of the legislation was that a modest portion of future increases in federal revenues from the extraction of publicly-owned, non-renewable, ocean energy resources should be allocated to coastal states for the continued sound management of renewable ocean and coastal resources.

There was never a precise one-to-one nexus between the use of OCS revenues and OCS-related impacts. Only some of the formula criteria and eligible use provisions in the bill related specifically to impacts from offshore development. Others involved addressing the effects of coal and other energy facilities in the coastal zone, with particular reference to the Great Lakes. Additional aspects of the legislation also addressed the population and competing use pressures on the coastal zone and state programmatic obligations under the CZMA.

The legislation was, in effect, an effort to find a balanced program that addressed both OCS-impacts and CZM resource management obligations. It attempted to recognize that the national interest of the United States would be enhanced by a broad and comprehensive program for the continued sound management of our nation's ocean and coastal resources, based on funding from offshore energy development. It is an idea not likely to go away.

CHAPTER 11

The Dispute Over 8(g) Funds

SECTION 8(G): YESTERDAY AND TODAY

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BACKGROUND

Section 8(g) of the Outer Continental Shelf Lands Act (OCSLA) concerns the division of revenues from certain leases on the Outer Continental Shelf (OCS). Disputes over dividing OCS revenues are almost as old as disputes over the ownership of the OCS. In 1953, when signing the Submerged Lands Act, President Eisenhower made clear his view that OCS lands "should be administered by the Federal Government and income therefrom should go into the Federal Treasury." His opposition to sharing revenues, and presumably other factors, prevented earlier proposals to give coastal states 37.5 percent of OCS revenues from being renewed in the debate over the 1953 OCSLA. (See e.g., H.R. Rept. No. 2078, 81st Cong., 2d Sess.) (1950) (H.R. 8137). I believe it fair to say that Congress regarded its quitclaim of submerged lands to these states as an appropriate substitute for revenue-sharing. In any event, the 1953 OCS Lands Act, in Section 9, required that all lease revenues be deposited in the Treasury as "miscellaneous receipts." No revenues were to be shared.

Revenue-sharing became an issue again in the mid-1970s as Congress considered amendments to the 1953 act. For example, in 1974 the Senate Committee on Interior and Insular Affairs reported favorably on the proposed Energy Supply Act, which would have established a "Coastal States Fund" in the Treasury. The fund was to be funded by 10 percent of OCS revenues, not to exceed \$200 million per year. The Secretary was to award grants "to compensate impacted coastal states for the full cost of any environmental effects and social and economic impacts of offshore oil and gas exploration, development, and production." (S. Rept. No. 93-1140, 93rd Cong., 2d Sess.)

* The views expressed in this paper are those of the author and not necessarily the official views of the Department of the Interior.

119) (1974). But by 1976, the Congress decided not to use the OCS Lands Act as the vehicle for helping states "deal with the impact of offshore development and production," choosing instead to help them through amendments to the Coastal Zone Management Act. (H.R. Rept. No. 94-1632, 94th Cong., 2d Sess. 55-56) (1976) (Conf. Rept. on S. 521).

At the same time, the Conference Committee reviewing the proposed amendments to the OCS Lands Act examined a new provision, one applying only to federal tracts within three miles of a state's submerged lands. That provision would have required the Secretary to offer a Governor "the opportunity to jointly lease any area...which he concludes, in consultation with the Governor...may contain a field, geological structure, or trap which may be located within both Federal and State owned lands." (*Id.* at 17.) If the Secretary and Governor could not agree, the Secretary would be free to lease the federal tracts anyway, but would have to deposit lease revenues in an escrow account until the Secretary and the Governor agreed on "the proper rate of payments" to the State and Federal Treasuries. (*Id.* at 17-18.)

DISPUTE RESOLUTION A PROBLEM

One interesting point about this new proposal was that it provided no mechanism for resolving disputes over how the money should be divided. This point was not lost on Secretary of Interior Cecil Andrus in 1977. On May 10 of that year he filed a report with the House of Representatives on H.R. 1614, a bill substantially the same as the 1976 bill. The report explained his concern about the joint leasing scheme; he feared it would undermine his authority under the act. So he proposed revised language eliminating any reference to joint leasing. In its place, the Secretary would be required to offer the Governor an agreement for the "fair and equitable division" of lease revenues from tracts within three miles of state-submerged lands. If the two could not agree, the Secretary was to place the lease revenues in a special account until they reached agreement, or until a federal district court determined the "fair and equitable" division of the money. With a few minor changes, Secretary Andrus' May 10 language was enacted by Congress the following year.

THE 8(g) PROCEDURE

The details of the procedure Congress enacted to resolve disputes under Section 8(g) are worth considering. The first point to note is that Congress tied the procedure to the Interior Department's procedural steps in planning for a lease sale. Thus, the first step in the 8(g) procedure is for the Secretary to send the Governor a mountain of information "at the time of soliciting nominations for the leasing of lands..."¹ As explained earlier, this soliciting of nominations is what Interior does in its "call for information" for a lease sale, and it occurs at the beginning of the lease sale process (30 C.F.R. Section 256.23). Next, after receiving nominations from industry and the public, the Secretary must tell the Governor whether he intends to consider including any 8(g) tracts in the lease sale. If so, he must then consult with the Governor to see whether any of the tracts "may contain one or more oil and gas pools or fields" underlying state and federal seabeds. If the Secretary then decides to offer any 8(g) tracts containing a pool or field in common with the state's seabed, he must offer the Governor an agreement to divide lease revenues fairly and equitably between the state and Federal Government.² The Department makes this offer at about the time the Department publishes the proposed notice of sale. (See 30 C.F.R. Section 256.29.)

Once the Secretary has made the offer, the Governor has 90 days to accept or reject it. If he accepts it, lease revenues will be distributed in accordance with the agreement. If he rejects it, the Secretary may still lease the 8(g) tracts; but he must

place the revenues "attributable to (common) oil and gas pools" in a separate account in the Treasury where the money can earn interest.

But the procedure does not necessarily end with the lease sale. The Secretary and the Governor can continue their discussions after the lease sale and, upon agreement, can withdraw the money from the special account. Or, either official can sue to have a Federal District Court determine the "fair and equitable" division of the money.³

THE 8(g) EXPERIENCE

The Department's experience with section 8(g) has not been a happy one. A summary of that experience may interest you. Section 8(g) took effect on September 18, 1978, while Mr. Andrus was still in office. The first and principal issue he faced was to determine what a "fair and equitable" division of revenues should be.

Secretary Andrus, of course, had no trouble resolving what the phrase "fair and equitable" meant, for he was its author. He had explained it to the House in his May 10, 1977, letter:

Under existing law revenues from leasing the Outer Continental Shelf must be paid into the Federal treasury. However, there are instances in which a part of this revenue may have been derived from oil and gas drained from State land. We believe any loss of resource or revenue by States in such a situation should be remedied. A statutory provision specifically covering this situation would enhance the Federal/State coordination of development in adjacent areas in addition to that provided elsewhere in the amendments. Additionally, it would reduce the likelihood of costly litigation.

We favor a provision which gives coastal States fair and equitable compensation for oil and gas which is produced through wells in the Federal areas adjacent to them, but which is derived from State land. (H.R. Rept. No. 95-590, 95th Cong., 1st Sess. 219-20) (1977).

As Secretary Andrus saw it, the purpose of Section 8(g) was to protect the coastal states from "drainage:" that is, from having federal wells in common reservoirs produce oil and gas from both sides of the boundary line. The remedy for this problem was therefore quite simple. It called for the use of a legal procedure called "unitization." Simply put, unitization is a procedure for making two or more leases into one lease.⁴ As a part of this procedure, the parties agree on a formula for dividing the oil and gas to be produced. The formula makes sure that the state gets the credit—and the money—for the oil and gas from its lands, even when it is brought to the surface by a federal lessee.

So Secretary Andrus began the practice of offering the Governors before each sale an agreement to unitize any common reservoirs⁵ which may be discovered on the Federal tracts to be leased. It should be noted that under a unitization agreement the Federal Government would never pay the state anything directly. Production would first be divided among the lessees, who would then pay royalties to the state and Federal Governments. The State of Alaska agreed to this as fair and equitable in the first federal sale in the Beaufort Sea in 1979. Six other states, and Alaska since 1979, have declined to accept this offer. As a result, approximately \$5.3 billion was in the special 8(g) account in the Treasury as of September 1, 1984.

Two states, Texas and Louisiana, filed suits in Federal courts in July 1979 to have judges determine what a fair and equitable division of revenues should be. These states presented an array of theories to justify their claims to a large share of 8(g) revenues. At the least, they said, they were entitled to compensation for drainage of their oil and gas. But, in addition, they claimed a right to compensation for the onshore effects of OCS exploration and production. These effects were said to include harm to the environment and stress on the infrastructure of local communities. (Left unmentioned were the beneficial effects to the states of increased employment and taxes.) And, in addition, the states claimed a right to share in the gains (and to be compensated for the losses) resulting from the independent leasing programs of the state and Federal Governments.

This last point requires some elaboration. When leasing in the Gulf of Mexico, Texas, Louisiana, and the United States historically have relied heavily on "bonus bidding." Under bonus bidding, each bidder submits a sealed bid offering to pay a "bonus" to get the rights to lease a given tract. The lease goes to the bidder offering the highest bonus. What a bidder will pay as a bonus is influenced by many things, but a bidder generally will not pay more than the present value of the lease to him. The present value is influenced by the amount of oil and gas he expects to produce and sell, by expected prices, interest rates, and costs, and by the probability that he might not find any oil or gas on the given tract.

To assess this probability, the bidder gathers information about the geology of the tract and of the region. Much of this information comes from wells drilled on nearby leased tracts. If the information from the nearby wells suggests oil or gas may be present, the bidder may bid more. If it suggests little or no oil or gas, the bidder won't bid.

Texas claimed that federal bidders used favorable information from wells on the Texas side of the boundary when bidding on certain federal tracts. As a result, said Texas, the bidders paid Interior more than they would have without information from drilling on the Texas side of the boundary. Therefore, said Texas, the Federal Government received a windfall by letting Texas lease its neighboring tracts first. This windfall is called "bonus enhancement." Louisiana, on the other hand, emphasizes the opposite phenomenon. It complains that in certain areas Interior leased first, but drilling showed that no oil or gas was present. Consequently, no one would bid on the Louisiana tracts. Louisiana wants to be compensated for the money it might have received if bidders had mistakenly believed oil or gas to be present. This alleged loss is called "condemnation." At this writing, it remains unclear whether the Louisiana court will permit the State to present evidence of condemnation at trial.

THE DOI OFFER

Because of the importance of the OCS program to this nation's defense and economic security, former Secretary Clark made the resolution of the 8(g) issue a top priority in 1984. His staff briefed him on the states' legal theories, the litigation risks, the burdens of further lawsuits, the rulings of the two district courts, and other considerations. After weighing these matters, he decided to offer the states the following agreement as a compromise:⁶

1. The states would receive 16 2/3 percent of the bonuses and rentals properly in the special account.
2. The states would share in royalties through unitization agreements generally.

This offer was made on August 8, 1984 in letters to the Governors of the five states not in litigation. On that day Former Solicitor Frank Richardson asked the Justice Department to extend an identical offer to Texas and Louisiana. (Under Federal law the Attorney General has final authority to settle litigation to which the United States is a party.) Later that month the Solicitor met in Denver, Colorado, with representatives of Alaska, Alabama, California, Florida, Louisiana, and Texas (Mississippi did not attend) to answer their questions about the details of the offer. On August 31, he sent them "the fine print:" a detailed, ten-page draft agreement for resolving the 8(g) dispute. Eventually, all five of these States not in litigation rejected the offer.

THE STATES' COUNTEROFFER

Eight months later, after considerable prodding by the Department, Governors of six of the States—California did not join them—finally made a counterproposal for dividing the amount in the 8(g) account. Regrettably, they proposed that the states receive 37.5 percent of bonuses, rents, royalties, and taxes, an amount far higher than any of those states could hope to receive in litigation. The Governors' letter was dated April 15, 1985, which apparently explains why taxes were on their minds.

On May 24, Secretary Hodel outlined a method of proceeding in future discussions in his response to the Governors' April 15 letter. The Secretary was unable to accept their counter-proposal, however. I am unaware of any response from any of the Governors.

THE RESULTING SITUATION

Although the 8(g) issue has remained unresolved for seven years, the end is not far away. The basic legal issue is currently being considered by the Fifth Circuit Court of Appeals in New Orleans, the Secretary and the Governors are proceeding with good faith negotiations, and a Congressional subcommittee is considering a legislative solution. All three branches of the Federal Government—or, as one wag put it, all three rings of the Federal circus—are involved. With all this attention, the problem must be nearing resolution. Well, Spring is the season of hope, and we still have three more days of Spring.

NOTES

¹ "(1) At the time of soliciting nominations for the leasing of lands within three miles of the seaward boundary of any coastal State, the Secretary shall provide the Governor of such State—

- (A) an identification and schedule of the areas and regions proposed to be offered for leasing;
- (B) all information concerning the geographical, geological, and ecological characteristics of such regions;
- (C) an estimate of the oil and gas reserves in the areas proposed for leasing; and
- (D) an identification of any field, geological structure, or trap located within three miles of the seaward boundary of such coastal State." 43 U.S.C. Sec. 1337(g)(1).

- ² "After receipt of nominations for any area of the outer Continental Shelf within three miles of the seaward boundary of any coastal State, the Secretary shall inform the Governor of such coastal State of any such area which the Secretary believes should be given further consideration for leasing. The Secretary, in consultation with the Governor of the coastal State, shall then determine whether any such area may contain one or more oil or gas pools or fields underlying both the outer Continental Shelf and lands subject to the jurisdiction of such State. If, with respect to such area, the Secretary selects a tract or tracts which may contain one or more oil or gas pools or fields underlying both the outer Continental Shelf and lands subject to the jurisdiction of such State, the Secretary shall offer the Governor of such coastal State the opportunity to enter into an agreement concerning the disposition of revenues which may be generated by a Federal lease within such area in order to permit their fair and equitable division between the State and Federal Government." 43 U.S.C. Sec. 1337(g)(2).
- ³ "Within ninety days after the offer by the Secretary pursuant to paragraph (2) of this subsection, the Governor shall elect whether to enter into such agreement and shall notify the Secretary of his decision. If the Governor accepts the offer, the terms of any lease issued shall be consistent with the provisions of this subchapter, with applicable regulations, and to the maximum extent practicable, with the applicable laws of the coastal State. If the Governor declines the offer, or if the parties cannot agree to terms concerning the disposition of revenues from such lease (by the time the Secretary determines to offer the area for lease), the Secretary may nevertheless proceed with the leasing of the area."
- "Notwithstanding any other provision of this subchapter, the Secretary shall deposit in a separate account in the Treasury of the United States all bonuses, royalties, and other revenues attributable to oil and gas pools underlying both the outer Continental Shelf and submerged lands subject to the jurisdiction of any coastal State until such time as the Secretary and the Governor of such coastal State agree on, or if the Secretary and the Governor of such coastal State cannot agree, as a district court of the United States determines, the fair and equitable disposition of such revenues and any interest which has accrued and the proper rate of payments to be deposited in the treasuries of the Federal Government and such coastal state." 43 U.S.C. Sec.1337(g)(3) and (4).
- ⁴ " 'Unitization' is an agreement between lessees (approved by the lessors) to treat the area above a common reservoir as one lease, *i.e.*, as a 'unit.' The separately owned lease interests are combined or consolidated for purposes of joint exploration to share the cost and liabilities of production and to divide the oil and gas they produce under the terms of a 'unit agreement.' By this arrangement the lessees can limit the number of wells drilled, drill in the most efficient locations, and control the rate of extraction, so as to maximize production and minimize costs." Solicitor's Opinion M-36927, 87 Int. Dec. 616, 618-19 (1980).
- ⁵ A reservoir is an accumulation of oil or gas within porous rock. It is like the soda in a soda glass which can be drained by one or more straws put in the glass.
- ⁶ The Interior Department has not departed from Secretary Andrus' interpretation of section 8(g). This remains its position in court. There is always a concern that by offering to compromise a dispute, one will prejudice one's case in court. Under Rule 408 of the Federal Rules of Evidence, however, "evidence of (1) furnishing or offering...a valuable consideration in compromising or attempting to

compromise a claim which was disputed as to either validity or amount is not admissible (in court) to prove liability for or invalidity of the claim or its amount. Evidence of conduct or statements made in compromise negotiations is likewise not admissible."

LOUISIANA'S POSITION CONCERNING SECTION 8(G)

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In 1978, the Outer Continental Shelf Lands Act, 43 USC Section 1331 *et seq.*, was amended. These amendments sought to address the many and varied concerns of the coastal states and were passed in response to the increasing resistance of such states to the expanding and accelerated federal mineral leasing of the Outer Continental Shelf. Enacted together with a package of federal legislative acts designed to address, *inter alia*, coastal zone management and coastal offshore-development impacts, the purpose of the amendments was to encourage the cooperation of the coastal states in offshore mineral leasing, through a variety of mechanisms for state-federal interaction and opportunity for state involvement during the federal leasing program.

One particular concern to coastal states was the nearshore leasing of federal lands. This was a concern from an environmental and geographical standpoint, and because such leasing could directly affect, and be affected by, development of the mineral resources underlying the submerged lands of the coastal states. In response to this last concern, section 8(g) (see Appendix) [43 USC Section 1337(g)] of the amendments provided for a "fair and equitable" distribution of all federal revenues derived from leases within three miles of a coastal state's seaward boundary. This section has led to the present litigation, between Louisiana and the United States, and Texas and the United States, and to disputes with the States of Alaska, California, Florida, Mississippi and Alabama, over what constitutes a "fair and equitable" distribution of these revenues. There is now in escrow, in the various disputes, in excess of \$6 billion and claims outstanding for additional revenues which have not been placed in escrow.

The present litigation in Louisiana was initiated in 1979. Immediately following enactment of the amendments, the Department of the Interior (DOI) had scheduled Sale No. 51, which sale included certain tracts located within three miles of Louisiana's seaward boundary. Louisiana protested the inclusion of such tracts, on account of DOI's failure to follow the provisions of section 8(g). As a result, those tracts were withdrawn from Sale 51.

However, DOI determined that section 8(g) tracts which were to be included in the July, 1979, Sale No. 58, would not be so withdrawn, despite the fact that the information-sharing and consultative requirements of section 8(g) had not been followed. Consequently, Louisiana filed suit in July, 1979 to enjoin Sale 58. Although Louisiana was unsuccessful in obtaining action, the U.S. District Court

ordered that all revenues from all tracts leased within three miles of Louisiana be placed in escrow, pending a determination of the appropriate fair and equitable share to be distributed to Louisiana. Since that time, for all subsequent federal lease sales, the Department of the Interior has placed in escrow certain of the revenues derived from federal leasing within the 8(g) area.

SYNOPSIS OF SECTION 8(g)

Section 8(g)(1) requires that, at the time of soliciting nominations for the leasing of lands within three miles of the seaward boundary of a coastal state, the Governor of that state be provided with certain detailed geographical, ecological and geological information concerning the area sought to be leased. Section 8(g)(2) requires that the Secretary of Interior, in consultation with the Governor, shall then determine which of such tracts may contain one or more oil or gas pools and fields underlying both the Outer Continental Shelf and lands subject to the state's jurisdiction, and is to offer the Governor, prior to leasing such tracts, an opportunity to enter an agreement concerning the fair and equitable division of revenue which may be generated by a federal lease in such area. Section 8(g)(3) gives the Governor 90 days to respond to that offer but allows the Secretary to proceed with leasing if the parties cannot agree to the terms. Finally, Section 8(g)(4) provides for escrow of all such revenues until a U.S. District Court determines their fair and equitable disposition.

THE NATURE OF THE CONTROVERSY

From the outset, the Department of Interior has contended that section 8(g) is a provision concerned only with "drainage" of oil and gas from the state's submerged lands which may occur after production is established from the adjacent federal lease. Consequently, the only "offers" made by the Secretary of the Interior to Louisiana have been to account for such drainage out of royalties accrued. Louisiana, as well as the other coastal states, has consistently rejected this position as overly narrow and, from both a legal and technical perspective, nonresponsive to the plain language of the Amendment.

"Drainage," as a technical matter, can only occur after production is established from a single reservoir or pool which extends from property belonging to one person to property belonging to another. It occurs as hydrocarbons are produced through a well completed in the reservoir, causing migration within the reservoir of additional hydrocarbons toward the well, which were formerly located beneath the adjacent tract. This is a common problem in the oil industry and is normally addressed by unitization, i.e., defining the productive limits of the reservoir and allocating production royalties pro rata to those owners who may be drained by the well(s) in that reservoir.

Therefore, from a technical standpoint, the federal position that "drainage" is the sole criterion for a distribution of 8(g) revenues is not reasonable, in that "drainage" does not address the question of oil or gas fields (which may contain multiple reservoirs many of which are not subject to "drainage") nor does it provide a mechanism for sharing any *federal* bonus, rental, royalties, or other revenues, it merely being a method for allocating to the State what it already owns.

From a legal standpoint as well, the suggestion that drainage is the sole criterion is not an adequate interpretation of the statute. In Louisiana alone, the State and the Department of the Interior have entered into in excess of 100 unitization agreements affecting production along the state's seaward boundary, since the 1950s. The federal position that 8(g) addresses only the problem of drainage effectively reads the section out of the Amendments, since the mechanism to protect the States from drainage

existed long prior to its enactment. The coastal states have taken the position that, not only are the Secretary's "offers" pursuant to section 8(g)(2) inadequate in that they have only offered protection from drainage, but they are not in compliance with the Secretary's legal obligations, since there have been no attempts to comply with the information-sharing requirements of section 8(g)(1), nor the consultative requirements of 8(g)(2), prior to the submission of such "offers," which deficiency the U.S. District Court Judge in the Louisiana litigation has recognized.

The coastal states have continuously asserted that the proper interpretation of the method for arriving at a "fair and equitable" share of revenues derived from the 8(g) belt is to arrive at a percentage of all such revenues to be distributed to the adjacent coastal state. Because mineral revenues derived from federal lands located onshore are split, pursuant to the Mineral Leasing Act, on a fifty-fifty basis with the states within which such lands are located, Louisiana asserts that fairness and equity mandate at least that same percentage be distributed to coastal states. (As to Alaska, the Mineral Leasing Act allocates 90 percent of the revenues from leasing of federal onshore lands to the State.)

Louisiana and the other coastal states have also urged a 50 percent division based on the comparative equities involved, inasmuch as the 8(g) belt, in Louisiana's case, represents only about three percent of the adjacent federal Outer Continental Shelf lands available for leasing; pipelines, construction facilities and other support industries must necessarily be located within the confines of the coastal state to service the offshore; state mineral leasing offshore may be adversely affected by adjacent federal leasing; the affected coastal wetlands, islands and beaches are peculiarly susceptible to adverse impacts from mineral development; and federal leasing activity and revenue income has been significantly enhanced by state cooperation and state exploration in the offshore areas.

Texas filed a similar suit to Louisiana's in 1979. In a partial trial on the merits Texas was successful in being awarded 50 percent of that portion of the 8(g) bonuses which was proven at trial to represent the enhanced value of the federal leases, which resulted from the availability to potential bidders on those leases of information derived from exploration and development of adjacent state tracts. The appropriate distribution of remaining revenues, based upon other state claims, has yet to be resolved.

There are a number of subsidiary issues which have been raised in the Louisiana and Texas litigation, as well as by the other coastal states. These include a number of issues concerning the sufficiency of the escrow account; for example, whether Windfall Profits and other taxes are "revenues" required to be shared (the Judges in both suits have ruled that the States are entitled to offer evidence on this question); whether those revenues derived from those portions of 8(g) tracts lying seaward of the 8(g) belt are subject to a fair and equitable distribution to the adjacent state; whether those revenues collected subsequent to passage of the 1978 Amendments, but derived from leases in existence prior to that time, are subject to distribution; whether those revenues collected from leases awarded by the Federal Government under "area wide" leasing represent fair market value for these leases, and, if they do not, whether the coastal states are entitled to a fair and equitable share of the market value of those tracts.

Finally, there has been considerable disagreement between Louisiana and the Department of the Interior over which of the 8(g) tracts "may contain one or more oil or gas pools or fields underlying both the Outer Continental Shelf and lands subject to the jurisdiction of" Louisiana (Section 8(g)(2)). This determination requires detailed analysis of the geological and geophysical information by experts for the parties.

THE STATUS OF THE CONTROVERSY

The 8(g) controversy has been tried in the Texas litigation, in September, 1982. An opinion was rendered in that matter in 1984, *State of Texas v. Secretary of the Interior, et al.*, 580 F.Supp. 1197 (E.D., Texas, 1984). That matter is presently on appeal to the United States Court of Appeals, Fifth Circuit, Docket No. 84-2422.

The Louisiana suit is presently set for trial in October, 1985. However, a number of the legal issues raised by both parties were disposed of by the District Court by Order dated July 3, 1984, in ruling on cross Motions for Summary Judgment. *State of Louisiana, ex rel. William J. Guste, Jr., v. James G. Watt, et al.*, U.S. District Court, Eastern District of Louisiana, C.A. No. 79-2965-I(2). Interlocutory appeals have been taken by both sides. The appeal by the Department of the Interior has been granted by the Fifth Circuit, and consolidated with the Texas appeal, *State of Louisiana v. Secretary of Interior, et al.*, Docket No. 85-3140, U.S.C.App., Fifth Circ.

In addition, an offer has been made by the Secretary of the Interior to Alaska, Florida, California, Mississippi and Alabama, to share 16 2/3 percent of the presently escrowed revenues with those States. A counter proposal, in which Louisiana and Texas joined was made to Interior, to accept 37.5 percent of the revenues which the coastal states calculate should have been placed in escrow. At present, however, there has been no final agreement reached with any coastal state on this matter.

APPENDIX

Section 8(g) of the Outer Continental Shelf Lands Act Amendments of 1978, 43 USC 1337(g)

Leasing of lands within three miles of seaward boundaries of coastal States

(g)(1) At the time of soliciting nominations for the leasing of lands within three miles of the seaward boundaries of any coastal State, the Secretary shall provide the Governor of such State—

- (A) an identification and schedule of the areas and regions proposed to be offered for leasing;
- (B) all information concerning the geographical, geological, and ecological characteristics of such regions;
- (C) an estimate of the oil and gas reserves in the areas proposed for leasing; and
- (D) an identification of any field, geological structure, or trap located within three miles of the seaward boundary of such coastal State.

(2) After receipt of nominations for any area of the Outer Continental Shelf within three miles of the seaward boundary of any coastal State, the Secretary shall inform the Governor of such coastal State of any such area which the Secretary believes should be given further consideration for leasing. The Secretary, in

consultation with the Governor of the coastal State, shall then, determine whether any such area may contain one or more oil or gas pools or fields underlying both the outer Continental Shelf and lands subject to the jurisdiction of such State. If, with respect to such area, the Secretary selects a tract or tracts which may contain one or more oil or gas pools or fields underlying both the outer Continental Shelf and lands subject to the jurisdiction of such State, the Secretary shall offer the Governor of such coastal State the opportunity to enter into an agreement concerning the disposition of revenues which may be generated by a Federal lease within such area in order to permit their fair and equitable division between the State and Federal Government.

(3) Within ninety days after the offer by the Secretary pursuant to paragraph (2) of this subsection, the Governor shall elect whether to enter into such agreement and shall notify the Secretary of his decision. If the Governor accepts the offer, the terms of any lease issued shall be consistent with the provisions of this subchapter, with applicable regulations, and, to the maximum extent practicable, with the applicable laws of the coastal State. If the Governor declines the offer, or if the parties cannot agree to terms concerning the disposition of revenues from such lease (by the time the Secretary determines to offer the area for lease), the Secretary may nevertheless proceed with the leasing of the area.

(4) Notwithstanding any other provision of this subchapter, the Secretary shall deposit in a separate account in the Treasury of the United States all bonuses, royalties, and other revenues attributable to oil and gas pools underlying both the outer Continental Shelf and submerged lands subject to the jurisdiction of any coastal State until such time as the Secretary and the Governor of such coastal State agree on, or if the Secretary and the Governor of such coastal State cannot agree, as a District Court of the United States determines, the fair and equitable disposition of such revenues and any interest which has accrued and the proper rate of payments to be deposited in the treasuries of the Federal Government and such coastal State.

PART FOUR

The U.S. OCS Oil and Gas Leasing Program:

The Building Blocks for the

Proposed Five-Year Plan

In the immediate aftermath of the 1973 Arab oil embargo, a principal policy response of the U.S. government was to propose significantly increasing the pace of leasing on the Outer Continental Shelf (OCS) to speed the recovery of domestic oil and gas resources. Sales were to be held more frequently and were to take place in areas other than the Gulf of Mexico and southern California for the first time.

The OCS leasing process had been a relatively relaxed one, with sales held whenever it seemed appropriate. Thus, the proposal for significantly increased leasing raised concerns about the potential impacts of offshore oil operations and the ability of the Department of Interior (DOI) to anticipate and mitigate any adverse effects.

A protracted debate about reforms to the OCS leasing process culminated in the 1978 OCS Lands Act Amendments. A key provision of these amendments was a requirement that the Department of the Interior prepare a five-year leasing schedule and adhere to it in conducting sales. Congress also required that a detailed analysis of the costs and benefits of the options for scheduling sales be conducted in the preparation of the five-year OCS leasing program.

The Department of Interior prepared the first five-year plan in 1980. A year later this plan was revised under the new Secretary of the Interior, James Watt. The Department is now preparing its third five-year plan to cover the period 1987-1991.

From its beginning, the five-year planning process has been one of the most extensive, complex, and controversial portions of the OCS leasing process. Indeed, the

five-year OCS leasing program is probably one of the most complex planning efforts in the Federal Government.

Its extent and complexity derive from the scope of the problems which DOI confronts in developing the leasing schedule and from the requirements Congress imposed on the process for developing the plan. The five-year program must identify which areas of the nearly 1-billion-acre Outer Continental Shelf are to be offered for lease, in what order, how soon, with what returns to the public, and with what potential costs. To do this, DOI must consider eight statutory requirements for its analysis and must publish and receive comments on three drafts over two years before a final plan is put into effect.

The plans have been surrounded by controversy, as indicated by the fact that each of the two previous plans have been litigated by various parties. Although DOI has largely prevailed in these lawsuits, each plan is prepared with an eye to the courts as well as to the resources of the OCS.

The papers from this panel consider the major components of the analysis which DOI must perform: the question of how much oil and gas is potentially available to be recovered, the social costs of recovering those resources, the effects on the marine environment, and the compilation of this information into a form readily accessible to the Secretary, the final decision maker.

As with any effort of this scope, DOI has been refining and improving its analytical techniques and conceptual approaches to the five-year planning process. The methods used by DOI in this edition of the five-year plan are significant improvements in many ways over the earlier versions. Better data are being combined with more sophisticated views of the lease sale planning problem to produce a clearer and better reasoned analysis for the Secretary.

The present five-year planning process is still in its early stages. Two full drafts and three decision steps remain before a final plan is ready for implementation. It is too early, therefore, to be sure what effect these improvements will have on the decisions, or the controversy, concerning the five-year OCS leasing program.

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CHAPTER 12

Assessment of Resources

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INTRODUCTION

Section 18(a) of the Outer Continental Shelf Lands Act (OCSLA) required the Secretary of the Interior to prepare a five-year leasing program consisting of a schedule of lease sales which considers, among other things, economic values of the nonrenewable resources of the OCS. This paper discusses the concepts, methods, and results of that economic analysis.

Energy, including oil and gas, has played a significant role in the growth of the U.S. economy from its infancy to the present. Prior to the international events of the 1970s, which reconstructed the world's energy picture, the growth of the U.S. economy and its use of energy grew in tandem. When the steep price increases in petroleum occurred in the 1970s as a result of OPEC's policies, the U.S. economy underwent a structural change in its energy use which resulted in more efficient and effective heating and transportation methods. Further, the heavy dependence on imports from OPEC at that time has since changed to a more diversified supply of imported oil and gas. This situation has led to improvements in energy security and to a more stable economic environment.

The near-term outlook over the next ten years sees our total energy consumption increasing by 21 percent from 1984 to 1995; our domestic production of oil and gas, on the other hand, is projected to decrease to 36 percent of our total energy consumption compared to 49 percent today. The shortfall is projected to be met by increasing imports; the Department of Energy has forecast that the quantity of imported oil will double from 1984 to 1995 and will grow from currently supplying 9 percent of total energy consumption to 15 percent by 1995.

In the face of declining domestic proven hydrocarbon reserves and increased dependence on foreign sources of oil, the hydrocarbon potential on the OCS represents a significant domestic energy source. In 1984, offshore oil and gas production represented 12 percent of total domestic oil production and 25 percent of total domestic natural gas production. The amount of unleased, undiscovered economically

recoverable oil and gas resources on the OCS that is expected to be worth searching for in 1986 is estimated to be 15 billion barrels of oil equivalent (BBOE); the present value of these resources is estimated to be in excess of \$95 billion in 1986 prices.

The OCS oil and gas resources are heterogeneous in their location, their size, and their probabilities of being economic. An assessment of economically recoverable resources is dynamic over time based upon the influence of factors other than the physical size and location of the resource. Changing economic conditions which are reflected in price changes, cost changes, and technological development influence the magnitude of our resource base in terms of its exploration and development potential. Production of the resource ordinarily involves a time lag of five to fifteen years from the time it is leased, indicating the need to address projections of oil and gas requirements in the future in formulating a leasing program today.

PLANNING A LEASING SCHEDULE - THE ECONOMIC PERSPECTIVE

In developing an OCS leasing program, the most important consideration is the choice of a leasing schedule, i.e., the order and frequency of sales to be held in different planning areas. Accordingly, one objective of the economic analysis was to provide insights into how the lease schedule should be designed, drawing upon relevant economic measures in each planning area.

If the Secretary were obliged to explore and develop OCS resources in an economically optimal manner, he would tend to focus interest first on the geological prospects expected to be most valuable on a per barrel basis, i.e., those prospects that are least costly to find and produce, and/or those that are most likely to contain commercial accumulations of hydrocarbons. This observation provides the main conceptual link between the economic analysis of planning areas and the design of the five-year leasing program. Another reason for conducting the economic analysis is to ensure that leasing occurs in specific locations only when the benefits to the Nation exceed the environmental costs.

The initial step in developing economic values for each of the 25 planning areas on the OCS was to estimate undiscovered economically developable resources (Table 1). These estimates reflect the state of geological and geophysical knowledge and expectations of relevant future economic conditions. They are based on a mid-1986 starting point for the next five-year program. The estimates were generated using a sophisticated simulation computer model called PRESTO, an acronym for "probabilistic resource estimates—OCS."¹ You will note that Table 1 lists two categories of resource estimates—conditional and risked. The conditional resource estimates indicate the potential amount of oil and gas that would be produced in a particular location assuming that the area contains hydrocarbons. The conditional resource estimates are used to assess the environmental consequences of leasing in specific areas. However, in conducting the economic analysis for the five-year schedule, measures representing the risked resource estimates were used since they incorporate the appropriate likelihood of hydrocarbon occurrence.

Although these average values are the statistically "best" measures to use in the analysis, it is important to recognize their inherent uncertainty and variability. The risked resource size associated with each planning area represents the average results that would emerge if the exploration and development scenario were repeated 5,000 times in an area. Of course, in practice, only one sequence of exploration and development activities will occur in each planning area. Hence, the actual results could differ substantially from the expected results.

To obtain the risked levels of economically developable oil and gas resources, a planning area's mean conditional resource levels are multiplied by the chance that one or more geological conditions exist, such that the planning area is considered to

Table 1

Undiscovered Economically Developable Resources Unleased As Of 7/86

Rank ¹	Planning Area ²	Cnd1 Mean Oil (BBO)	Cnd1 Mean Gas (TFCG)	MP _{hc}	Risked Mean Oil (BBO)	Risked Mean Gas (TFCG)	Risked BOE (BBOE)
1	Central Gulf of Mexico	2.29	17.57	1.00	2.29	17.57	5.41
2	Western Gulf of Mexico	1.55	21.23	1.00	1.55	21.23	5.32
3	Southern California	1.10	1.65	1.00	1.10	1.65	1.39
4	Navarin Basin	2.33	3.08	0.27	0.63	0.83	0.78
5	South Atlantic	0.64	12.64	0.25	0.16	3.16	0.72
6	Mid-Atlantic	0.16	2.81	1.00	0.16	2.81	0.66
7	Beaufort Sea	0.87	4.23	0.70	0.61	-0-	0.61
8	Eastern Gulf of Mexico	0.32	1.41	0.99	0.31	1.40	0.56
9	Chukchi Sea	2.68	15.10	0.20	0.54	-0-	0.54
10	North Atlantic	0.35	7.07	0.30	0.10	2.12	0.48
11	Central California	0.56	0.79	0.65	0.36	0.51	0.46
12	Northern California	0.42	1.86	0.60	0.25	1.12	0.45
13	St. George Basin	0.77	6.09	0.22	0.17	1.34	0.41
14	Washington-Oregon	0.18	3.26	0.20	0.04	0.65	0.15
15	North Aleutian Basin	0.23	1.62	0.20	0.05	0.32	0.10
16	Gulf of Alaska	0.37	5.12	0.08	0.03	0.41	0.10
17	Norton Basin	0.20	1.16	0.12	0.02	0.14	0.05
18	Kodiak	0.15	2.92	0.05	0.01	0.13	0.03
19	Hope Basin	0.17	1.81	0.02	negligible	0.04	0.01
20	Shumagin	0.05	1.42	0.03	negligible	0.04	0.01
21	Cook Inlet	0.10	0.20	0.03	negligible	0.01	negligible
22	Aleutian Basin	negligible			negligible		
23	Bower Basin	negligible			negligible		
24	St. Matthew-Hall	negligible			negligible		
25	Aleutian Arc	negligible			negligible		

¹ Ranking based on risked BOE.

² In the Beaufort and Chukchi Sea planning areas, 200-foot water depth is considered to be the limit of current technology. Based on current cost/price relationships and foreseeable technological advances, it is assumed that the conditional mean gas resources estimated to exist in the Alaskan OCS Beaufort Sea and Chukchi Sea Planning Areas are uneconomic.

contain a commercial accumulation of hydrocarbons. This likelihood is defined by the term "marginal probability;" its value for each planning area is shown in column five of Table 1. The resulting estimates of risked economically developable oil and

gas resources are provided in columns six and seven. A single measure, called barrels of oil equivalent (BOE), is obtained by converting the risked gas to the Btu equivalent of oil and then simply adding it to the risked oil figure. One barrel of oil contains the heating content of about 5.62 thousand feet of gas. The units in Table 1 are billions of barrels of oil and trillions of cubic feet of gas. Hence to obtain (risked) equivalent barrels of oil, we divide the gas amount in column 7 by 5.62 and add it to the oil amount in column 6.

In many of the planning areas studied, hundreds of geologic prospects were identified having some likelihood of containing hydrocarbon resources in amounts greater than that size necessary to encourage development, given that the fields have been discovered. However, prior to exploration, many of these developable fields have negative risked private values net of exploration costs. Thus, in considering the potential for oil and gas discovery, it is appropriate to recognize that discovery results from investments in lease acquisition and exploratory drilling. Under a given set of economic conditions and geologic risk, some prospects are not worth acquiring and drilling even though they would be profitable to develop if such investments had already been made and the deposits found.

Lease acquisition and exploration investments are based upon both the size and the probability of the economic payoffs that can result. The Minerals Management Service (MMS) has estimated the risked economically developable oil and gas resources and their net economic value for the identified prospects that are worth investments in lease acquisition and exploration, i.e., they are leasable even in the presence of the perceived level of risk for the planning area. Table 2 shows the estimates of risked resources and expected net economic value from the set of prospects in each OCS area worth leasing and exploring.

The economic assumptions for these base case calculations include a FOB port of export oil price of \$28.65 in July 1984 (rounded to \$29 in the discussion), a 1 percent real oil and gas annual price increase, an 8 percent discount rate, and a 5 percent inflation rate. The net economic values as of July 1986 have been calculated in Table 2 for a representative 10 percent sample of 2,400 potential geologic fields. The four lowest ranked planning areas in Table 1 (Aleutian Basin, Bower Basin, St. Matthew-Hall, and Aleutian Arc) are deleted from Table 2 and subsequent tables because their resource magnitudes are estimated to be negligible.

The aggregate magnitude and value of leasable resources do not, however, provide a complete picture of the resource and economic potential of an OCS planning area. A substantial total net economic value may result from a moderate amount of high-valued resources or a very substantial amount of lower valued resources. Table 3 shows how the resource potential is distributed by net economic value in each area. (The actual distribution of developable resources by net economic value is more widely dispersed than that shown in Table 3 because the sample size used in evaluating fields within a planning area tends to truncate the lower and upper tails of the original distributions of field sizes. This, in turn, explains the absence of resources in the lower net economic value categories of Table 3.)

The sensitivity of the distribution of leasable resources by net economic value to alternative starting oil price assumptions has also been approximated. These changes from the base case occur primarily in the lowest net economic value categories of the distribution of leasable resources.

Table 4 evaluates the effects of alternative price assumptions on the amount of developable resources that is on leasable prospects for each of the 20 planning areas. This table shows that some areas, such as Gulf of Alaska and St. George Basin, have much better leasing possibilities when the investment climate is more favorable than specified in the base case. The sensitivity analysis on prices is extended to the measures of net economic value as shown in Table 5.

Table 2
Value Estimates For Leasable Resources Based On The
Calculated Field Size Distribution Within Each OCS Planning Area

Planning Area	Risked Economically Developable Oil and Gas Resources as of 7/86 (MMBOE)	Fraction of Developable Resources that is Leasable as of 7/86	Risked Economically Leasable Resources as of 7/86 (MMBOE)	Net Economic Value per bbl	Rank	Net Economic Value for (8%, \$29)	Rank
Central Gulf of Mexico	5,411	0.90	4,846	\$7.68	1	\$37,220	1
Western Gulf of Mexico	5,323	1.00	5,312	6.77	4	35,965	2
Southern California	1,386	0.79	1,090	6.84	3	7,456	3
Navarin Basin	776	0.72	559	2.75	12	1,535	8
South Atlantic	722	0.82	593	4.14	8	2,455	6
Mid-Atlantic	657	0.23	150	3.93	9	590	11
Beaufort Sea	606	0.67	407	2.20	13	895	9
Eastern Gulf of Mexico	561	0.81	454	5.41	7	2,458	5
Chukchi Sea	535	0.74	396	1.99	14	788	10
North Atlantic	481	0.21	103	3.49	10	359	14
Central California	456	0.88	400	6.43	5	2,573	4
Northern California	446	0.92	409	5.93	6	2,425	7
St. George Basin	410	0.42	173	2.84	11	491	12
Washington-Oregon	152	0.37	56	7.13	2	399	13
Northern Aleutian Basin	103	0.18	19	1.28	16	24	16
Gulf of Alaska	96	0.19	18	1.19	17	21	17
Norton Basin	48	0.29	14	1.66	15	24	15
Kodiak	30	0.00	0	N.A.		0	
Hope Basin	11	0.00	0	N.A.		0	
Shumagin	8	0.00	0	N.A.		0	
Cook Inlet	4	0.00	0	N.A.		0	

Assumptions: Base Case
 Starting Oil Price: \$29
 Annual Oil Price Change: 1 percent
 Discount Rate: 8 percent
 Resources Expressed in Millions of Equivalent Barrels (MMBOE)

Table 3
Approximate Distribution of Risked Developable Resources
(Millions of Equivalent Barrels)

Planning Area	Total Developable Resources 7/86	Non-Leasable Resources	Net Economic Value per Barrel Category for Biddable Resources (8%, \$29)										Leasable Resources
			\$0.50	\$1.50	\$2.50	\$3.50	\$4.50	\$5.50	\$6.50	\$7.50	\$8.50	\$9.50	
Central Gulf of Mexico	5,411	564			61		65	468	2,484	1,347	421	4,846	
Western Gulf of Mexico	5,323	11	159				463	2,549	1,718	423		5,312	
Southern California	1,386	296			20	241				37	430	1,090	
Navarin Basin	776	217	46		80							559	
South Atlantic	722	129			31	133	211					593	
Mid-Atlantic	657	507			78		72					150	
Beaufort Sea	606	199	78		329							407	
Eastern Gulf of Mexico	561	107			52	84	116	175	16	11		454	
Chukchi Sea	535	139	202		194							396	
North Atlantic	481	378	54				31	18				103	
Central California	456	56			34	115	124		37	43	47	400	
Northern California	446	37			98	127			35	60	89	409	
St. George Basin	410	237			173							173	
Washington-Oregon	152	96			10			13				56	
North Aleutian Basin	103	84		19								19	
Gulf of Alaska	96	78	18									18	
Norton Basin	48	34	14									14	
Kodiak	30	30										0	
Hope Basin	11	11										0	
Shumagin	8	8										0	
Cook Inlet	4	4										0	

Assumptions: Base Case
 Starting Oil Price Change: 1 percent
 Discount Rate: 8 percent
 Resources Expressed in Millions of Equivalent Barrels (MMBOE)

Table 4

Sensitivity of Leasable
Resource Amounts to the Starting Oil Price
(Millions of Equivalent Barrels)

Planning Area	Starting Price: \$24	Starting Price: \$29	Starting Price: \$34
Central Gulf of Mexico	4,846	4,846	5,416*
Western Gulf of Mexico	5,153	5,312	5,312
Southern California	902	1,090	1,471*
Navarin Basin	557	559	794*
South Atlantic	556	593	615
Mid-Atlantic	150	150	418
Beaufort Sea	391	407	651*
Eastern Gulf of Mexico	454	454	556
Chukchi Sea	343	396	487
North Atlantic	49	103	128
Central California	359	400	471*
Northern California	347	409	417
St. George Basin	173	173	359
Washington-Oregon	56	56	56
No. Aleutian Basin	0	19	25
Gulf of Alaska	0	18	33
Norton Basin	0	14	14
Kodiak	0	0	0
Hope Basin	0	0	0
Shumagin	0	0	0
Cook Inlet	0	0	0

Assumptions: Base case with price sensitivity

Starting Oil Price: \$29

Annual Oil Price Change: 1 percent

Discount Rate: 8 percent

Resources Expressed in Millions of Equivalent Barrels (MMBOE)

* Estimates of leasable resources in these planning areas exceed economically developable resources (in the base case) because the price change lowers the minimum economically developable field size and tends to increase ultimate recovery from a given field.

Table 5

Sensitivity of Net Economic Value Estimates for
Leasable Resources to the Starting Price of Oil

Planning Area	Base Starting Price Less \$5		Base Starting Price Plus \$5	
	Net Economic Value per Barrel	Net Economic Value (M)	Net Economic Value Per Barrel	Net Economic Value (M)
Central Gulf of Mexico	\$5.74	\$27,816	\$9.62	\$52,102
Western Gulf of Mexico	4.63	23,858	8.91	47,330
Southern California	5.39	4,865	7.42	10,910
Navarin Basin	1.57	874	3.93	3,120
South Atlantic	2.57	1,429	5.71	3,512
Mid-Atlantic	2.16	325	5.70	2,383
Beaufort Sea	1.14	446	3.26	2,122
Eastern Gulf of Mexico	3.47	1,575	7.35	4,087
Chukchi Sea	0.97	333	3.01	1,466
North Atlantic	1.69	82	5.29	677
Central California	5.33	1,912	7.32	3,446
Northern California	3.78	1,312	8.08	3,369
St. George Basin	1.20	208	4.48	1,608
Washington-Oregon	4.79	268	9.47	530
North Aleutian	N.A.	0	2.64	66
Gulf of Alaska	N.A.	0	2.51	83
Norton Basin	N.A.	0	3.26	46
Kodiak	N.A.	0	N.A.	0
Hope Basin	N.A.	0	N.A.	0
Shumagin	N.A.	0	N.A.	0
Cook Inlet	N.A.	0	N.A.	0

Assumptions: Base case with price sensitivity

Starting Oil Price: \$29

Annual Oil Price Change: 1 percent

Discount Rate: 8 percent

Resources Expressed in Millions of Equivalent Barrels (MMBOE)

WHAT TO OFFER AND WHEN?

An important consideration in deciding when to offer the potential resources in a given planning area for lease, or how to order the offering of all planning areas, is the cost of delaying the sale (and hence, presumably, exploration and development) of leasable prospects. In cases where the net economic value per barrel can be increased in present worth from future rather than current offerings, such planning areas should be timed for sale later (if at all) in the schedule.

Measures of the cost of delay for currently (July 1986) leasable prospects in each planning area for the base case are presented in Table 6. These average annual measures were developed under both 1 and 2 percent real oil price increase scenarios over a multi-year delay interval. The largest delay costs, equal to about 4 percent of net economic value per year of delay in the 1 percent price growth scenario, are incurred for the highest valued planning areas including the Gulf of Mexico and Pacific Regions. The relative size of delay costs would be higher if no price increase was expected.

Table 6

Simple Average Annual Change in Net Economic Value
Per Barrel For Leasable Resources From a Delay in Leasing

Planning Area	Annual Resource Price Increase Per Barrel		Annual Resource Price Increase Per Barrel	
	1 Percent \$/bbl	%	2 Percent \$/bbl	%
Central Gulf of Mexico	-0.30	-3.92	-0.36	-3.84
Western Gulf of Mexico	-0.27	-3.91	-0.35	-3.90
Southern California	-0.26	-3.84	-0.28	-3.74
Navarin Basin	-0.09	-3.42	-0.13	-2.97
South Atlantic	-0.15	-3.73	-0.18	-3.21
Mid-Atlantic	-0.14	-3.60	-0.03	-1.29
Beaufort Sea	-0.07	-3.31	-0.10	-2.76
Eastern Gulf of Mexico	-0.20	-3.77	-0.22	-3.24
Chukchi Sea	-0.07	-3.32	-0.09	-2.71
North Atlantic	-0.12	-3.48	-0.16	-3.05
Central California	-0.26	-4.01	-0.27	-3.79
Northern California	-0.22	-3.75	-0.33	-3.93
St. George Basin	-0.10	-3.34	-0.10	-2.34
Washington-Oregon	-0.27	-3.79	-0.32	-3.59
Northern Aleutian Basin	-0.03	-2.27	-0.04	-1.49
Gulf of Alaska	-0.03	-2.18	-0.03	-1.20
Norton Basin	-0.04	-2.29	-0.04	-1.28
Kodiak	N.A.	N.A.	N.A.	N.A.
Hope Basin	N.A.	N.A.	N.A.	N.A.
Shumagin	N.A.	N.A.	N.A.	N.A.
Cook Inlet	N.A.	N.A.	N.A.	N.A.

Assumptions: Base Case with real oil price growth sensitivity

Starting Oil Price: \$29

Discount Rate: 8 percent

Resources Expressed in Millions of Equivalent Barrels (MMBOE)

7.5 and 15-year delay intervals for 2 percent and 1 percent annual real oil price growth assumptions, respectively.

Negative change means cost to delay.

The delay costs reflect changes in the size of the developable resource that occur as prices increase, as well as increases in per barrel value due to these higher prices. (Fields that may become leasable at higher prices through time at a given annual price growth assumption are not included in the calculations.) Observe in Table 6 that all entries are negatively valued. This means essentially that within each of the relevant planning areas, a delay in leasing, which results in postponement of the start of exploration activities, will cause a reduction in the net economic value per barrel of oil that would be produced if hydrocarbons were discovered on a *typical* leasable field.

The net economic value of a barrel of oil and gas in the 2 percent growth case is higher than in the 1 percent case. Moreover, the set of leasable prospects may differ somewhat for each price scenario. Thus, for a given planning area, the delay costs per barrel as presented in Table 6 are not directly comparable between price scenarios. A more appropriate comparison is between the annual percentage change in values per original risked barrel, as shown in columns 3 and 5 of the table, since this comparison normalizes the effects on absolute values due to the different price change assumptions. Of course, for a given price change assumption, the dollar measures of delay costs do suggest the proper ordering of leasing and investment among areas.

PLANNING AREAS BY POTENTIAL VALUE

Table 7 shows that the central and western Gulf of Mexico areas have by far the greatest resource potential in the highest value category, nearly 5 billion barrels each. These two areas also have the greatest total net economic value and the greatest total leasable resources. In addition, both areas have substantial resource potential at lower net economic values.

Based on these indicators of the resource and economic potential of the central and western Gulf of Mexico, it would be reasonable to schedule sales in these areas for each year in the five-year program. This would continue the frequency of leasing under the current program. The amount of leasing and the value of leases sold in such annual sales would be expected to decrease unless prices increased suddenly or significant new prospects were identified; however, annual leasing in these two areas is warranted until the unleased inventory is sufficiently depleted to fall more nearly in line with that of other OCS areas.

Outside the central and western Gulf of Mexico, the eastern Gulf of Mexico and the three California planning areas have by far the greatest amount of high-valued leasable resources. The southern California area has the largest portion of this high-valued resource in the top net economic value categories and almost as many leasable resources as the eastern Gulf of Mexico and the central and northern California planning areas combined. Moreover, the southern California area has a greater potential gain in leasable resources from higher oil prices. The estimated cost of delaying investments in the leasable resources (at the base case assumption of 1 percent) is about the same for each of the four areas, and somewhat less than in the central and western Gulf of Mexico areas. Thus, while the relatively high economic value of the resource potential in these areas makes it reasonable to schedule more than one lease sale in each area during the five-year program, priority for earlier sales should be given to the southern California area.

The Navarin Basin and South Atlantic planning areas have about the same estimated leasable resources with total net economic values of about \$2.5 and \$1.5 billion, respectively. The South Atlantic, however, has more resource potential in the top economic value categories and about twice the cost of delaying investments as the Navarin Basin. The Navarin Basin area would gain more leasable resources from higher prices. The estimates show that both areas may warrant sales in the

Table 7

Condensed Distribution of Risked Developable Resources
(Millions of Equivalent Barrels)

Planning Area	Developable but not Leasable	Net Economic Value per Barrel Category for Leasable Resources		
		Below \$3.00	\$3.00 to \$6.00	\$6.00 to \$10.0
Central Gulf of Mexico	564	0	126	4,720
Western Gulf of Mexico	12	159	463	4,690
Southern California	296	168	261	661
Navarin Basin	217	479	80	0
South Atlantic	128	218	375	0
Mid-Atlantic	506	78	72	0
Beaufort Sea	199	407	0	0
Eastern Gulf of Mexico	105	52	200	202
Chukchi Sea	138	396	0	0
North Atlantic	378	54	31	18
Central California	56	0	273	127
Northern California	37	0	225	184
St. George Basin	238	173	0	0
Washington-Oregon	96	0	10	46
North Aleutian Basin	84	19	0	0
Gulf of Alaska	78	18	0	0
Norton Basin	34	14	0	0
Kodiak	30	0	0	0
Hope Basin	11	0	0	0
Shumagin	8	0	0	0
Cook Inlet	4	0	0	0

Assumptions: Base case

Starting Oil Price: \$29

Annual Oil Price Change: 1 percent

Discount Rate: 8 percent

Resources Expressed in Millions of Equivalent Barrels (MMBOE)

1986-1991 leasing program, perhaps more than one sale if exploration yields positive results. Consideration of industry interest and noneconomic factors must also be weighed in addition to the net economic value basis for scheduling.

The next group of prospective areas in Table 7 are the Beaufort and Chukchi Seas. These areas are similar in both estimated leasable resources and net economic value, but the Beaufort Sea shows a greater gain in leasable resources from higher base prices (see Table 8).

Since the estimated net economic value for each of these areas is in the \$1 billion range, it is reasonable to offer both of them at least once in the 1986-1991 program.

Table 8

Change In Base Case Leasable Resources Resulting From A
\$5 Per Barrel Change In The Starting Oil Price
(Millions Of Equivalent Barrels)

Planning Area	Base Starting Price Less \$5	Base Starting Price Plus \$5
Central Gulf of Mexico	0	570
Western Gulf of Mexico	-159	0
Southern California	-188	381
Navarin Basin	-2	235
South Atlantic	-37	22
Mid-Atlantic	0	268
Beaufort Sea	-16	244
Eastern Gulf of Mexico	0	102
Chukchi Sea	-53	91
North Atlantic	-52	25
Central California	-41	71
Northern California	-62	8
St. George Basin	0	186
Washington-Oregon	0	0
Northern Aleutian Basin	-19	6
Gulf of Alaska	-18	15
Norton Basin	-14	0
Kodiak	0	0
Hope Basin	0	0
Shumagin	0	0
Cook Inlet	0	0

Assumptions: Base Case with oil price sensitivity

Starting Oil Price: \$29

Annual Oil Price Change: 1 percent

Discount Rate: 8 percent

Resources Expressed in Millions of Equivalent Barrels
(MMBOE)

Because the Beaufort Sea estimates show higher resource growth potential, a somewhat earlier sale in the Beaufort Sea may be preferable.

The last four areas that currently have resources that appear to make worthwhile acquisitions are mid-Atlantic, St. George Basin, North Atlantic, and Washington-Oregon. The estimated net economic value of leasable resources is in the neighborhood of \$0.5 billion for these areas. They have relatively little resource potential in high-valued prospects, but the mid-Atlantic and St. George Basin could gain substantially from a higher oil/gas price level. Delay costs are moderate, except for Washington-Oregon, which reflects the relatively high per barrel value of the limited resources in that area. These findings make it worth offering the areas at least once during the 1986-1991 period to allow firms the opportunity to invest in gathering more seismic data and exploring the unleased prospects that are leasable.

Of the remaining areas with resource potential, the Minerals Management Service (MMS) estimates show three with some leasable resource potential (North Aleutian Basin, Gulf of Alaska, and Norton Basin) and four with none (Kodiak, Hope Basin, Shumagin, and Cook Inlet). Further, none of the last four show any resource gain from the \$5 per barrel higher oil price level. The other areas are marginal. To be able to make these remaining areas available if new information should make them more valuable, they might be scheduled for standard or tentative sales.

THE PROPOSED PROGRAM

On March 21, 1985, Secretary Hodel announced a draft proposed leasing program for the 1986-1991 five-year period. The economic analysis just described was one of the factors considered by the Secretary in deciding on the proposed program. In the Gulf of Mexico, for example, annual sales are proposed to be continued in the two highest valued, highest interest areas: the central and western Gulf of Mexico. Triennial sales are proposed in 15 other areas. Areas identified with little or no leasable potential—the Gulf of Alaska, Cook Inlet, Shumagin, Hope Basin, and Kodiak—are scheduled as frontier exploration sales with an additional Request for Interest in these areas to help determine if the sale process should proceed. The schedule provides for annual sales for a limited number of selected blocks in areas other than the central and western Gulf of Mexico in order to minimize the costs of delay associated with not offering the blocks for an additional three years. The draft proposed program is currently under review by states, federal agencies, and the public. The Proposed Final Program is slated for release in the spring of 1986. Secretarial approval will follow appropriate consultation and a 60-day notification period before Congress.

NOTE

- ¹ The PRESTO methodology is designed to accommodate an analysis of hydrocarbon resource potential for an area on both a horizon-by-horizon and a prospect-by-prospect basis.

CHAPTER 13

Social Costs

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INTRODUCTION AND BACKGROUND

Section 18(a)(3) of the Outer Continental Shelf Lands Act (OCSLA) provides that the timing and location of individual OCS lease sales be selected based on a consideration of balancing the potential for environmental damage, for the discovery of oil and gas, and for adverse impact on the coastal zone. Hence, an analysis of possible environmental damages and adverse coastal zone effects from proposed OCS oil and gas leasing is essential in the development of the proposed five-year OCS oil and gas leasing program.

This paper briefly summarizes an economic analysis of the potential social costs of developing, producing and transporting the oil and gas resources of each OCS planning area estimated to be leasable as of July 31, 1986, the current starting date for the proposed five-year schedule. Readers interested in a detailed discussion of the methodology, data, assumptions and results are referred to the study document (U.S. Department of Interior, Draft Proposed Five Year OCS Oil and Gas Leasing Schedule, Appendix G, March, 1985).

The advantage of developing cost estimates in economic terms is that comparisons of social costs can be made across OCS planning areas using a common unit of measurement - dollars. Also, the estimation of social costs in dollar terms allows one to rank OCS areas by their net social value (development benefits minus social costs). It is recognized, however, that a number of potential societal costs of OCS development are not economic in nature (e.g., effects on subsistence community lifestyles of rapid OCS development) or cannot currently be quantified in economic terms (e.g., possible effects of an oil spill on endangered species). Therefore, in the analysis of social costs attention was focused on those categories of costs for which reasonable quantifiable information could be obtained. Issues which cannot be addressed in quantitative terms are addressed qualitatively in other documents prepared in connection with the Five-Year Program.

Given the intent of the analysis, the economic study of social costs was carried out on an aggregated, planning-area basis for each OCS area. The social cost analysis

thus does not address specific, intra-area resource management issues; such issues are examined in Environmental Impact Statements preceding a lease sale in a given area.

To provide a common basis for comparison among OCS planning areas, social cost estimates for each area are based on the assumption that all of the leasable oil and gas resources for each area are leased on the same date, July 31, 1986. The different flows of costs over time for each OCS area are converted into their present discounted values, using a discount rate of 8 percent.

Quantification of economic damages from environmental incidents is a difficult undertaking (see, e.g., Grigalunas *et al.*, 1985; U.S. Department of Commerce, 1983). In the present case, the many uncertainties involved, the aggregated planning-area level of the analysis, and severe limitations in the state of the art for quantifying economic damages make it impossible to develop precise estimates of social costs or to present confidence intervals for estimates of these costs. Pre-sale estimates of hydrocarbon resources, their location and composition (oil or natural gas), the conditions under which any spills will occur and the damages which will result are all uncertain. Hence, in considering the results which follow, attention should be focused more on the relative ranking of planning areas than on the precise numerical results.

As a result of the many difficulties inherent in the measurement of social costs, when judgment was required concerning a cost estimate or an assumption to be used, a conservative, high-cost approach was adopted, provided a reasonable high-cost estimate was available. Specific examples of this conservative approach include:

1. Oil spills predicted by the oil spill trajectory model to reach shore may not actually strike land because of prevention measures (e.g., booms or at-sea recovery);
2. Spills reaching shore may not impose tourism and recreation losses, depending upon the season in which spills occur and the speed and thoroughness of cleanup operations;
3. Existing mitigating or regulatory measures, such as precluding the alteration of wetlands by shoreside pipelines or requiring a reduction in potential air pollution emissions, can reduce or eliminate many potential social costs (although costs of compliance are not considered here because they are production costs which are part of the net economic benefits calculations); and
4. Beneficial aspects of OCS oil and gas development are ignored. For example, platforms in some OCS areas serve as artificial reefs, improving the quality of recreational fishing. Also, offshore operators have provided emergency assistance to fishermen. Finally, additional OCS natural gas production to some extent reduces the amount of imported oil and the associated oil spills; and by substituting for coal and other energy products, OCS natural gas production reduces air pollution problems (or air pollution control costs) in energy consuming areas. None of these beneficial effects, however, are considered in this analysis because they are beyond the scope of the present effort.

Notwithstanding the use of assumptions which provide a high estimate of social costs, informed judgment and simplifying assumptions necessarily play important

roles in this analysis. Every effort has been made to document data sources and to state explicitly the methodology and assumptions employed to give the reader the opportunity to judge the reasonableness of the results. Also, sensitivity analysis is used to examine how costs respond to variations in the estimates of unit costs employed in the analysis.

THE CONCEPT OF COSTS USED IN THE ANALYSIS

Introduction

The term "costs" means different things to different people. To reduce the potential for confusion, it is important to define the concept and categories of costs which have been considered in assessing the potential social costs of the Draft Proposed Five-Year Program.

Social Costs

Social costs measure the environmental and related costs to the Nation as a whole resulting from the proposed oil and gas development in each OCS planning area. The specific costs considered in the analysis of social cost encompass market and non-market costs and include such oil spill and non-spill costs as cleanup and control costs, commercial fisheries, tourism and recreation costs, ecological costs, wetland losses and several other costs.

Excluded from social costs are transfers, secondary (or "multiplier") effects and purely private costs. Transfers are merely financial redistributions. For example, oil spill-caused losses in a community's tourism industry sales tax receipts may be offset by increases in other communities' tax revenues. Because losses by one group tend to be counterbalanced by gains to others, no net social cost is involved. Similarly, oil spill damage compensation payments redistribute the burden of a spill but do not change its social cost; thus, compensation payments are not included as a cost for to do so would count costs twice. Secondary effects usually are omitted from the estimation of social costs unless it is unreasonable to assume full employment and mobile resources, such as in isolated commercial fishing communities. Finally, purely private losses occur when, for example, a loss in profits by the tourist industry in one location is balanced by an increase in profits at substitute sites. Because the losses in one location usually are offset by gains at substitute sites, no social cost arises.

In all cost-benefit studies, the standard of comparison for assessing a policy is what would have happened in the absence of the policy. For this analysis, the with-vs-without comparison is OCS oil and gas development vs. the alternative of imported oil. Hence, the social costs of the Draft Proposed Five-Year Program are measured net of the costs avoided because OCS oil development reduces the demand for foreign oil and thereby avoids damages from spills by foreign tankers.

The national focus adopted for assessing social costs is consistent with the evaluation of the benefits of OCS development at the national level. Actual measurement of the social costs of production in an OCS area, however, requires that consideration be given to the consequences of that production for other OCS areas. For example, oil produced in the Navarin Basin on the Alaskan OCS is expected to be shipped south to refineries by tankers, potentially resulting in oil spills off all west coast OCS areas, thereby causing social costs in those areas. The social costs concerned, however, are attributed to OCS oil production in the Navarin Basin since they would not have occurred in the absence of the Navarin Basin production. On the other hand, oil production in an OCS area reduces social costs in other areas by backing out imported oil and foreign tanker spills from those other areas. For example, oil

produced in the central Gulf of Mexico replaces an equivalent amount of imported oil destined for refineries in the central Gulf of Mexico as well as other OCS areas. The reduction in imported oil means less oil will be spilled from foreign tankers in all areas concerned. Just as costs imposed on other areas are attributable to the producing OCS area, so too, the costs avoided when imported oil and the associated oil spillage are reduced also must be assigned to the producing area if social costs are to be measured correctly from the viewpoint of the Nation as a whole.

Regional Costs

In addition to an analysis of social costs to the entire Nation, the OCSLA dictates that the distribution of the social costs of OCS oil and gas development also be considered. To emphasize the important difference between the social costs to the Nation as a whole and the costs estimated to be realized by residents of the producing OCS area, a second category of costs is estimated. These costs are referred to as regional costs. However, this paper focuses on the analysis of social costs carried out as part of the development of the Draft Proposed Five-Year Program (DPP). Readers interested in the definition and estimation of potential regional costs should refer to Appendix G of the DPP.

OVERVIEW OF METHODOLOGY AND ANALYTICAL APPROACH

Introduction

To estimate the present discounted value of the costs of OCS oil and gas development for each planning area, the analysis proceeds through several steps which are illustrated in the accompanying simplified flow chart (Fig. 1), and described in general terms below. The two basic types of costs considered are oil-spill costs and non-spill costs. An overview of the approaches used to estimate each of these categories of costs follows.

Oil Spills Costs

A major focus of the analysis is on the costs of oil spills. Particular attention is given to the possibility of large oil spills - those over 1,000 barrels. Spills of this size from OCS production are rare; no spills greater than 1,000 barrels have taken place since 1981, and only three such spills have occurred from 1979 through 1984. Nonetheless, large spills happen periodically, with potentially serious damages, especially if they strike sensitive resources or reach shore within a few days, before natural weathering of the oil can reduce its harmful effects.

Small spills (those less than 1,000 barrels) also are considered in the analysis of social costs. Although numerous, the total amount of oil historically discharged into the marine environment by small spills is relatively small compared to the amount attributable to large spills. To illustrate, 934 small spills between 1 and 1,000 barrels constituted over 99 percent of all production platform and pipeline incidents recorded in the Gulf of Mexico from 1974 to 1983. However, these spills accounted for only about 28 percent of the volume of oil spilled during the period. The average amount discharged in these small spills over the period cited was 9.4 barrels per spill.

For each OCS area, estimated oil spill costs are determined by several factors. The principal factors include the scale of annual oil production; the estimated number (rate) of large and small oil spills per unit of annual production; the estimated average size of spills; the chance that spills which do occur will strike land; and the

SIMPLIFIED
FLOW DIAGRAM FOR ANALYSIS OF SOCIAL
AND REGIONAL COSTS FOR EACH O.C.S. AREA

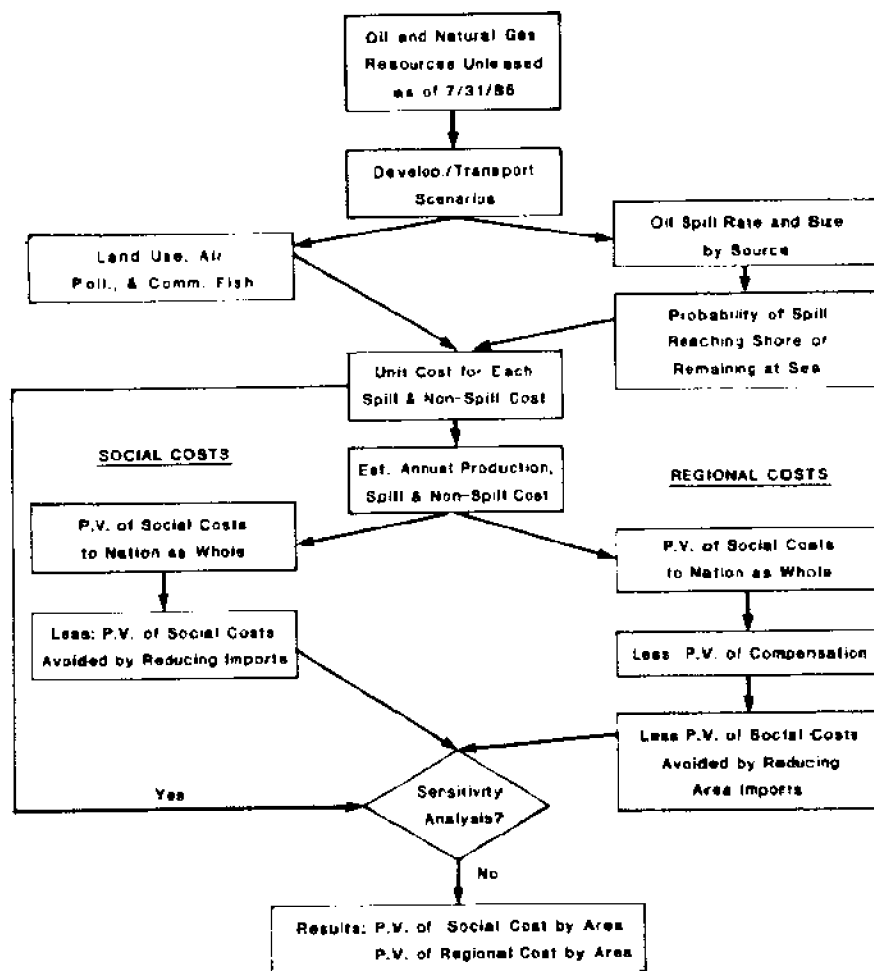


Figure 1. Simplified Flow Diagram for Analysis of Social and Regional Costs for Each OCS Area.

marine resources and economic characteristics and the environmental productivity and sensitivity of each OCS area.

Estimates of the remaining leasable resources as of July 31, 1986, and the development/transportation scenario (time to initial, peak, and final production; mode of oil transport) provide the point of departure for estimating each area's oil spill costs. Given this information, obtained from Interior Department sources, annual oil production was estimated for each OCS area. The estimated resources and the development/transportation scenarios vary widely from OCS area to area; consequently the estimated time pattern of oil production differs considerably among OCS areas. For example, the time from a lease sale to initial production ranges from

as little as three years in a mature OCS area like the central Gulf of Mexico to thirteen years for OCS areas in the Arctic.

Using the estimated annual oil production for each area, the number and size of large and small spills are established (Table 1). The number of large spills (greater than or equal to 1,000 barrels) per billion barrels of oil for each source (production platforms, pipelines and tankers) is adopted from Lanfear and Amstutz (1983). The estimated "typical" spill size for large platform and pipeline spills also is adopted from Lanfear and Amstutz (1983). For vessels the large spill size is estimated from the worldwide tanker spill data file for the period 1974-1984 maintained by the Interior Department. Information for small spill sizes is based on the record of small spills in the Gulf of Mexico for 1974-1983.

Given the estimated total spillage for each area, the next step is to estimate the amount of spilled oil expected to come ashore. This number is significant because, generally, the costs per barrel are considerably higher for spilled oil which comes ashore than for oil which remains at sea. The former requires costly onshore removal operations and impose a variety of additional costs not associated with spills which stay at sea.

The estimated probability that a given spill will strike land is an average of many hundreds of oil spill trajectory runs made for each planning area in previous studies by the OCS oil spill modeling group in the Interior Department. The probability figure used in this analysis can be regarded as a weighted average reflecting the overall chance that a given spill will come ashore within thirty days. For example, the chance that a spill which occurs will strike land within thirty days ranges from 10 percent in the North Atlantic to 85 percent in the Gulf of Alaska. The estimated amount of spillage to come ashore in each area plays a key role in the analysis of costs (Table 1).

Once OCS oil production and the amount of oil spillage by year have been estimated, estimates of annual social costs for each area are developed. Basically, total costs are estimated by multiplying estimated unit costs per barrel spilled times the annual estimated spillage in each area. Constant marginal and average costs are assumed, for all oil spill costs, over the range of spills considered. All coefficients are expressed in constant 1986 dollars.

Non-Spill Costs

Since non-spill costs depend upon the scale of total OCS activity, the approach used to estimate these costs differs considerably from the approach followed to estimate oil spill costs. For example, commercial fishing losses from gear conflicts resulting from OCS oil and gas debris or bottom obstruction or area preemption caused by the emplacement of OCS hydrocarbon facilities on fishing grounds can begin during OCS exploration and development—often years before production begins. For these costs, losses are assumed to begin one year after a lease sale, reach a maximum coinciding with an area's peak production and decline thereafter as field activity diminishes and, eventually, facilities are abandoned. Actual data for these costs are obtained from studies of commercial fishing area preemption losses and recent experience with claims for damages to the Fishermen's Contingency Fund established by the OSCLA and operated by the National Marine Fisheries Service.

Possible wetland acreage losses were based on best estimates by Interior Department experts. These estimates are area-specific and include consideration of an area's oil and gas resources, existing pipeline facilities and the extent of wetlands potentially exposed to alteration because of OCS pipelines. Air quality concerns for some areas arise from both oil and natural gas production; hence, possible air quality

Table 1
 Summary of Unleased Resources as of July 31, 1986, Transportation Modes,
 and Large Spill Information for OCS Planning Areas

Planning Area	Expected Recoverable Resources			Transportation Mode	Probability of Spill Reaching Land	Expected No. of Spills ≥ 1000 bbls Reaching Land	
	Oil (BBOE)	Gas (BBOE)	Total (BBOE)			Occurring	Land
Central Gulf of Mexico	2.05	2.79	5.41	P/T	.772	5.94	4.59
Western Gulf of Mexico	1.55	3.76	5.31	P	.728	4.03	2.93
Southern California	1.23	.34	1.57	P/T	.500	2.30	1.15
Central California	.36	.09	.45	P/T	.444	1.84	.82
Navarin Basin	.45	.11	.56	P/T	.150	2.87	.43
Beaufort Sea	.45	0	.41	P/T	.231	1.99	.46
Chukchi Sea	.40	0	.40	P/T	.225	1.75	.39
Northern California	.25	.20	.45	P/T	.444	1.48	.82
East Gulf of Mexico	.25	.20	.45	P/T	.432	1.21	.52
South Atlantic	.13	.46	.59	P/T	.039	.63	.02
St. George Basin	.07	.10	.17	P/T	.144	.66	.10
Mid-Atlantic	.04	.11	.15	T	.106	.37	.04
North Atlantic	.02	.08	.10	P/T	.100	.16	.02
North Aleutian	.01	.01	.02	P/T	.342	.16	.05
Washington-Oregon	.01	.05	.06	T	1.000	.09	.09
Gulf of Alaska	.01	.01	.02	P/T	.851	.10	.09
Norton Basin	.01	0	.01	P/T	.250	.06	.02
Kodiak	.01	.02	.03	P/T	.545	.04	.02
Hope Basin	neglig.	.01	.01	P	NA	neg.	neg.
Shumagin	neglig.	.01	.01	P	NA	neg.	neg.
Rest of Alaska		negligible		P	NA	neg.	neg.

losses were related to total oil and gas production using the results of a prior analysis of possible air quality damages in southern California.

DEVELOPMENT OF UNIT OIL SPILL AND NON-SPILL COST ESTIMATES

Introduction

The costs examined include those which could be incurred as a result of (1) oil spills in the marine environment, (2) physical conflicts among competing marine resource uses, and (3) adverse coastal impacts. The third category includes (a) alteration of wetlands, (b) possible deterioration in air quality, and (c) subsistence losses. Space limitations make it impossible to explain in detail in this paper the methodology, assumptions and data used to generate each of the thirteen individual categories of costs used in the study of social costs. Instead of presenting an extensive discussion of each cost, an overview is given of the development of unit oil spill and non-spill costs. In addition, for each of the two categories of costs, one major cost is reviewed in some detail in order to provide an example of the approach used to estimate important cost items. Again, those interested in the particulars of the analysis can consult the original study document.

Oil Spill Costs: Overview

For oil spill-related costs, the unit cost coefficients developed in this study measure the costs reasonably expected to be incurred, by area, per barrel of oil spilled. These coefficients are adapted from available case studies of oil spill costs, modified by information from prior OCS lease sale EISs and other sources. The results of seven major oil spill case studies were used to develop unit oil spill cost estimates (Table 2). These spills ranged over time from the 1979 IXTOC I platform spill in which 5 million barrels were spilled to the 1967 supertanker TORREY CANYON spill in which 858 thousand barrels were lost. All costs were converted to categories corresponding to those used in this study and all values were inflated to 1986 dollars.

The nine unit oil spill costs used in the social costs analysis are summarized in Table 6. In general, the cost-per-barrel coefficients differ by: (1) type of cost considered (e.g., oil spill control and cleanup costs vs. commercial fishery losses), (2) by planning area, reflecting the different resources, marine uses, and environmental sensitivity and productivity of each area, and (3) whether or not spilled oil comes ashore or remains at sea.

An Example: Control and Cleanup Costs

The costs of interest here include the cost of manpower, equipment, supplies and services used: (1) to stem the loss of oil from a tanker, pipeline, or offshore oil facility, (2) to recover the oil at sea or prevent it from reaching shore, and (3) to remove and recover the oil, should the spill come ashore. Control and cleanup costs typically represent the single largest market valued cost of a spill, often accounting for fifty percent or more of the total cost. Hence, this category of costs merits special attention.

Several factors influence the per barrel cost of controlling and cleaning up a particular spill (Table 2). Whether or not a spill strikes shore is a very important determinant of the per barrel costs of controlling and cleaning up a spill. Because there is a major difference in cost per barrel between spills which do and which do

Table 2
Control and Cleanup Costs

Spill	Location	Year	Cost in \$ Millions Current	Cost in \$ Millions 1986 ^a	Barrels (Thousands) ^b	Cost Per Barrel 1986 dollars ^a
Reached Shore						
Zoe Colcostroni	Puerto Rico	1973	\$ 7.3 ^c	\$17.7	36	\$492
Amoco Cadiz	France	1978	\$106-117 ^d	\$181.3-200.1	1,600	\$113-125
Santa Barbara	United States	1969	\$10.5 ^e	\$31.1	77	\$394
STC-101	United States	1976	\$ 0.6 ^f	1.2	6	\$200
Torrey Canyon	Great Britain & France	1967	\$21.2 ^g	\$68.7	858	\$ 80
Ixtoc 1	Mexico & U.S.	1979	\$120.3 ^{h i}	\$188.9	5,000	\$ 38
Remained at Sea						
Argo Merchant	United States	1976	\$ 1.9 ^f	\$ 3.7	179	\$ 21

^a Using GNP implicit price index

^b Conversion ratios used are: 42 Gallons - 1 barrel and 1 metric ton - 7.33 barrels

^c Sorensen (1977,p-3)

^d U.S. Dept. of Commerce, NOAA (1983, p. 143)

^e Mead and Sorensen (1970, p. 225)

^f U.S. Comptroller General, General Accounting Office (1977, App. I, pp. 7-8)

^g Burrows, Rowley, and Owen (1974, p. 241)

^h U.S. Dept. of Interior, Bureau of Land Management (April, 1984, Vol. II, p. 14)

ⁱ Excludes the value of the lost semi-submersible drilling rig (\$33.4 million 1986 dollars)

not hit land, considerable attention is given to the estimated chance that spills in an OCS planning area will or will not strike shore.

The geographic location of an oil spill will also influence control and cleanup costs in some cases because of relative cost differences among regions. To allow for possible higher costs, Alaskan OCS cleanup and control costs are assumed to be 45 percent greater than for "lower 48" OCS oil spills, based on the F.W. Dodge labor and materials construction costs index for Anchorage (L. A. McMahon, 1983, p. XII).

Control and cleanup costs also are affected by such considerations as the type of shoreline struck (e.g., sandy beach vs. rocky shore) and by the ease of accessibility of the resources employed in cleanup operations to the spill area. However, sufficient historic data do not exist to isolate the effect of these (and possibly other) factors on control and cleanup costs. Moreover, at the level of aggregation necessarily used in this document, it is not feasible to predict precisely the specific sections of areas that could be affected by spills. For these reasons the only distinctions made when estimating cleanup and control costs for possible spills in the different OCS planning areas are: (1) whether or not the spill is expected to come ashore, (2) whether the source of the spill is an OCS production platform, pipeline, or a tanker, and (3) whether the spill is on the lower 48 OCS or the Alaskan OCS. Using the available cleanup and control cost data from several oil spills, the per barrel cost of controlling and cleaning up oil spills used in the analysis of costs ranges from \$318 for a spill coming ashore from an Alaskan OCS platform to \$21 per barrel for an OCS-related tanker spill in the lower 48 which remains at sea (Table 3).

Overview of Non-spill Costs

Four categories of non-spill social costs were considered (Table 6). As indicated earlier, estimates of these costs were based on total oil and gas development in each OCS area, the unit cost results from prior studies, and analyses provided by the Interior Department.

An Example: Possible Wetland Costs

Development of offshore oil and gas requires onshore support and transport facilities which can lead to wetlands losses. Dredging of pipeline or navigation canals can block or channelize water flows, thereby altering water circulation patterns. This can result in changes in water tables, tidal flows, and salinity levels, all of which can be detrimental to wetland habitats. Construction activity can lead to soil compaction and subsequent loss in water holding capacity of the wetland's soil. If these soils are not restored to preconstruction conditions, long-term changes in water quality, groundwater levels, and vegetation can result. OCS oil and gas-related activities have been cited as one of the contributing factors to salinity changes and loss of wetlands, most notably in Louisiana, although the available results do not indicate the share of wetland alterations attributable to OCS oil and gas operations vs. oil and gas operations in state waters and other activities (Olds, 1984).

Wetlands are recognized as important nurseries and food production areas for many species of finfish, shellfish, and waterfowl. Wetlands work as buffers for flood waters and can reduce levels of erosion and subsequent sedimentation. Also, wetlands provide aesthetic benefits through provision of open space and may play important roles in purifying waters by removing excess nutrients and reoxygenating water. The essentially irreversible nature of damages resulting from wetland losses and the relatively increasing value of these natural environments (compared to manufactured goods) has been recognized in the economics literature (see, e.g., Shabman and Bertelson, 1979).

Table 3

Summary of Per Barrel Oil Spill Control and Cleanup Costs Used in
Analysis of OCS Planning Areas

Spill Type	Cost per Barrel Lower 48 (1986)	Cost per Barrel Alaskan OCS (1986) ^a
Production Platform		
Hits shore	\$219 ^b	\$318
Remains at sea	100 ^c	145
Pipeline		
Hits shore	216 ^d	313
Remains at sea	61 ^d	89
Tanker		
Hits shore	222 ^b	322
Remains at sea	21 ^e	31

^a Unit cleanup and control costs for the Alaskan OCS are assumed to be 45 percent greater than indicated costs for lower 48 OCS spills, based on F. W. Dodge labor and materials construction cost index for Anchorage (L. A. McMahon, 1984 *Dodge Guide to Public Works and Heavy Construction Costs*, 1983, p. XII).

^b Average of the cost of the relevant spills in Table 2.

^c Estimate based on average per barrel well control costs for two production spills reported in Table 2 (\$79) plus the per barrel at-sea control and cleanup costs for the ARGO MERCHANT (\$21).

^d Average of platform and tanker costs.

^e ARGO MERCHANT spill.

While it is easy to enumerate benefits provided, quantification of economic damages from wetland losses, particularly preservation value, is extremely difficult because the flows of services provided by these resources are not directly measurable through the market. Past studies have employed the "life support" measure of Gosselink *et al.* (1974), largely because alternative measures which capture the diversity of benefits from wetlands were unavailable. The life support approach estimates total primary energy production within the wetland of interest and multiplies this measure of energy by a unit value determined by dividing Gross National Product by the National Energy Consumption index. However, this life support measure of value has been severely criticized as having no meaningful relationship to standard measures of value (Walker, 1974; Shabman and Batie, 1978; Shabman and Bertelson, 1979). The life support methodology of Gosselink *et al.* may vastly overstate wetland values.

Despite severe empirical problems, several studies have sought to estimate the economic contribution of wetlands to particular fisheries (Batie and Wilson, 1979; Lynne *et al.*, 1981), as well as the overall economic returns to commercial fisheries in several estuary areas (Tihansky and Meade, 1976). The value of wetlands for wildlife management, flood control, and amenity benefits have been estimated (Gupta and Foster, 1975). Also, analysis has been used to isolate the effect of the amenity

qualities of salt ponds on property values (Edwards and Anderson, 1984). Finally, estimates are available for the value of a recreation fishing day (e.g., Norton, Smith, and Strand, 1983).

Attempts to estimate the possible economic damages from wetlands changes resulting from the expansion of OCS oil and gas operations in a planning area must relate the anticipated increase in exploration, development, production and transportation to (1) investment in pipelines and onshore support facilities, (2) acres of wetlands destroyed, and (3) economic changes. Analysis of this issue is further complicated because the investment in pipelines and other facilities needed to support proposed OCS operations depends on the rate of utilization of existing facilities and on a host of highly area-specific siting issues which can be substantially influenced by applicable state and federal rules and permitting requirements.

Given these considerations, the wetlands acreage losses for each area were estimated using the best judgment of experts within Department of the Interior. In areas with negligible or zero estimated resources, zero acreage losses are assumed. For other areas acreage losses were allocated over time, assuming constant acreage damaged per year, starting from the lease date and culminating at the year of peak production. In addition, erosion is assumed to cause wetland losses to spread each year at 5 percent until peak production is reached.

The value per acre of wetlands is constructed by summing the estimated value of preservation benefits for each region using the economic information described above. The aesthetic and flood control benefits are taken from Gupta and Foster (1975). Their estimates imply a capitalized value per acre of \$11,243 (in 1986 dollars) at an 8 percent rate of interest.

Wildlife values per acre of wetland are estimated using area specific information on the range of per acre prices or assessed values made by the U.S. Fish and Wildlife Service in acquiring wetlands acreage in each area. These per acre value ranges are given in Table 4. This study employs the mid-point of the range of values for each region outside of Alaska as an estimate of wildlife values. Within Alaska, where these figures are unavailable and wildlife habitat is abundant, the lowest non-zero figure of \$50 per acre is used.

The value of wetlands as nurseries for recreational and commercial fisheries is calculated as follows. Availability of wetlands is assumed to be a limiting factor for all fisheries. The proportion of fisheries losses is assumed to be equal to the proportion of wetlands destroyed. Fisheries losses are then calculated by multiplying the total value of the fishery by the proportion of total available wetland which is destroyed by onshore development. For example, the proportion of wetlands lost in the western Gulf of Mexico is calculated by dividing wetland acreage losses (480 acres, including erosion) by total estuarine wetlands in the region (1.715 million acres) to calculate the proportion of wetlands which are destroyed. The total value of a commercial fishery's catch is then multiplied by this figure to determine the loss in commercial fisheries. For recreational fisheries, the total number of recreational fishing days is obtained for each area (U.S. Dept. of Commerce, National Marine Fisheries Service, 1984, p. 20). This is multiplied by an estimate of the marginal value of a recreational fishing trip for striped bass from Norton, Smith and Strand (1983). Norton *et al.* give values ranging to a maximum of \$12.63 for recreational fishing days in various areas on the Atlantic coast. For this section, the highest marginal value per day is used. Adjusted to 1986 dollars, this value is \$15.03 per day fished. In the western Gulf, the annual value of an acre of wetlands for recreational fishing is \$15.03/day fished times 7.372 million days fished divided by total acres of wetlands (1.715 million) equals \$64.61. At an 8 percent interest rate, this implies a capitalized value of \$807. per acre. The value per acre for commercial fisheries is total value of catch in 1986 dollars (\$223.7 million) divided by 1.715

Table 4

Wildlife Valuation Dollars Per Acre

Area	U.S. Fish and Wildlife Service Range	Wildlife Value per acre
Western Gulf of Mexico	450 - 500	475
Central Gulf of Mexico	50 - 250	150
Southern California	300 - 1000	650
South Atlantic	50 - 100	75
Navarin Basin*	50 - 50	50
Eastern Gulf of Mexico	0 - 50	25
Beaufort Sea*	50 - 50	50
Chukchi Sea*	50 - 50	50
Central California	300 - 1000	650
Northern California	300 - 1000	50
St. George Basin*	50 - 50	50
Mid-Atlantic	500 - 2000	1250
North Atlantic*	600 - 1500	1050
Oregon-Washington	300 - 1000	650
North Aleutian*	50 - 50	50
Gulf of Alaska*	50 - 50	50
Norton Basin*	50 - 50	50
Kodiak*	50 - 50	50
Hope Basin*	50 - 50	50
Shumagin*	50 - 50	50

* The U. S. Fish and Wildlife Service did not provide ranges of values for Alaskan planning areas. The range 50-50 and wildlife value per acre 50 were assumed.

million total acreage equals \$130. At an 8 percent interest rate, this implies a capitalized value of \$1630. Hence, the value of an acre of wetlands in the western Gulf as a nursery ground for commercial and recreational fishing is \$2438.

The total capitalized value of an acre of wetland in the western Gulf is the sum of the aesthetic, wildlife, and flood control benefits (\$11,718) plus the value as nursery grounds for commercial and recreational fisheries (\$2438), which equals \$14,158 per acre. Determining acreage damaged as described above, the total present value (in 1986 dollars) of wetland losses in the western Gulf is \$2.23 million.

These measures are expected to overstate fisheries losses since many species, such as tuna and sea scallops, are not highly dependent upon wetlands. In addition, wetlands availability may not be a limiting factor even for those species which do depend upon wetlands. For example, Batie and Wilson (1979) and Lynne *et al.* (1981) both conclude that the loss of a small amount of wetlands would not likely have much of an effect on particular wetlands-dependent fish populations. Finally, these figures represent gross value of recreational and commercial fishing from which costs of fishing should be deducted to calculate net values.

Using the methodology described above, acres of wetlands lost, value per acre of wetland and total economic losses were estimated for each region (Table 5). As shown in the table, acres lost range from near zero to about 1013 acres. The net present value of losses range across regions from near zero to about \$5.84 million.

Table 5

Estimated Wetland Losses for Each OCS Planning Area
Resulting from the Production of All Leasable
Resources Unleased as of July 31, 1986.

Area	Acres Lost	Value Per Acre(\$)	Present Value (\$Million)
Western Gulf of Mexico	408	14157	2.23
Central Gulf of Mexico	1013	13767	5.84
Southern California	41	30490	0.67
South Atlantic	84	12550	0.54
Navarin Basin	112	11480	0.66
Eastern Gulf of Mexico	216	11850	0.91
Beaufort Sea	173	11295	0.96
Chukchi Sea	122	11294	0.62
Central California	41	20167	0.44
Northern California	41	54563	1.19
St. George Basin	112	11664	0.67
Mid-Atlantic	34	14143	0.26
North Atlantic	30	36738	0.51
Oregon-Washington	18	17031	0.16
North Aleutian	0	11672	0.00
Gulf of Alaska	0	11551	0.00
Norton Basin	0	11296	0.00
Kodiak	0	11432	0.00
Hope Basin	0	11296	0.00
Shumagin	0	11410	0.00
St. Matthew-Hall	0	—	0.00
Aleutian Basin	0	—	0.00
Bowers Basin	0	—	0.00
Aleutian Arc	0	—	0.00

Summary of Unit Cost Estimates

For convenience, the unit cost estimates derived in the preceding sections are summarized below in Table 6. These results, all stated in 1986 dollars, provide the central economic building blocks for the estimation of the costs of leasing OCS planning areas.

RESULTS

Social Costs for Each OCS Planning Area

Introduction Using the approach outlined in the preceding sections, estimates have been made of the social costs from producing all of the leasable hydrocarbon resources unleased as of July 31, 1986. Only the aggregated oil spill and non-spill cost results for each area are presented here. It is emphasized that the results described here are from the draft Appendix G report and are subject to revision as

Table 6

Summary of Unit Cost Estimates Used in Analysis
of Costs of Proposed OCS Five-Year Leasing Program

Cost Category	Cost per indicated unit (\$1986) ^a
Oil Spill Costs	
1. Cleanup and control costs	
a. Production platform	
(i) Oil comes ashore	\$219-318 per bbl ashore
(ii) Oil remains at sea	\$100-145 per bbl spilled
b. Pipeline	
(i) Oil comes ashore	\$216-313 per bbl ashore
(ii) Oil remains at sea	\$ 61- 89 per bbl spilled
c. Tanker	
(i) Oil comes ashore	\$222-322 per bbl ashore
(ii) Oil remains at sea	\$ 21- 31 per bbl spilled
2. Commercial fishing	
(i) Direct Losses	\$ 7-123 per bbl spilled
(ii) Secondary (multiplier) effects	\$ 87-266 per \$100 loss in commercial fishing income
3. Tourism industry & recreation losses	\$ 40-120 per bbl spilled reaching shore ^b
4. Ecological Costs	\$40.6-311 per bbl spilled ^b
5. Subsistence losses	\$26 per bbl spilled for Alaskan OCS
6. Value of lost oil	\$ 32- 34 per bbl spilled ^{b c}
7. Other costs	
a. Legal-administrative costs	-\$17.50 per bbl spilled
b. Research costs	\$8 per bbl spilled for spills \geq 1,000 bbls
c. Property value losses	-\$44.3 per bbl spilled reaching shore for "lower 48"
	-\$5 per bbl spilled reaching shore for Alaska
Non-Oil Spill Costs	
1. Commercial fishing	
a. Area preemption	\$1.5 million per BBOE produced
b. Gear losses	\$1.1 million per BBOE produced
2. Air pollution	-\$0.002-.063 per bbl ^b -\$0.002-.024 per MCF ^b
3. Wetlands	\$11,294-54,563 per acre lost ^b

^a See text for a discussion of the derivation of the individual unit cost estimates.

^b The indicated range reflects the range of unit costs estimates used for different OCS planning areas.

^c These are 1986 base prices which are assumed to increase by 2 percent in real terms annually.

resource estimates change, new data become available or as analytical refinements and adjustments are carried out during the review process.

Social Cost Results for Each OCS Area Table 7 presents a summary of the estimated social costs for each OCS area as a result of developing, producing and transporting all of the estimated leasable oil and gas resources unleased as of July 31, 1986. Using the western Gulf of Mexico as an example, the results in the table should be interpreted as described below.

Table 7

Summary of the Present Discounted Value of Social Costs
For Each OCS Planning Area (millions of 1986 dollars)

Area	(1) Oil Spill Costs	(2) Non Spill Costs	(3)=(1)+(2) Gross Social Costs	(4) Less: Cost Avoided From Reduced Imports ^a	(5)=(3)-(4) Total Net Discounted Social Costs
Western Gulf of Mexico	12.29	7.39	19.69	7.86	11.82
Central Gulf of Mexico	22.90	14.64	37.54	11.74	25.81
Southern California	14.47	5.61	20.08	6.69	13.40
South Atlantic	2.19	1.24	3.43	0.81	2.62
Navarin Basin	8.29	1.27	9.55	2.57	6.99
Eastern Gulf of Mexico	3.86	1.36	5.22	1.30	3.92
Beaufort Sea	3.90	1.37	5.28	2.14	3.13
Chukchi Sea	3.45	0.97	4.42	1.79	2.63
Central California	3.61	0.93	4.54	1.99	2.55
Northern California	2.51	1.67	4.18	1.38	2.79
St. George Basin	1.19	0.84	2.03	0.37	1.66
Mid-Atlantic	0.52	0.46	0.98	0.26	0.73
North Atlantic	0.29	0.60	0.89	0.10	0.79
Oregon-Washington	0.27	0.24	0.51	0.10	0.41
North Aleutian Gulf of Alaska	0.14	0.02	0.16	0.06	0.10
Norton Basin	0.09	0.02	0.11	0.03	0.08
Kodiak	0.09	0.02	0.12	0.04	0.07
Hope Basin	0.00	0.00	0.00	0.00	0.00
Shumagin	0.00	0.00	0.00	0.00	0.00
St. Matthew Basin	0.00	0.00	0.00	0.00	0.00
Aleutian Basin	0.00	0.00	0.00	0.00	0.00
Bowers Basin	0.00	0.00	0.00	0.00	0.00
Aleutian Arc	0.00	0.00	0.00	0.00	0.00

^a Social costs avoided to the nation as a whole from reduced needs for imported oil, assuming reduced imports (and associated oil spills) are distributed across OCS planning areas in the same proportion as in recent years (see Table III.A.3.1, Appendix G, Draft Prepared Five-Year Oil and Gas Leasing Program).

The value of the oil spill costs (\$12.29 million) plus the non-oil spill costs (\$7.39 million) for the western Gulf of Mexico is \$19.69 million in 1986 dollars. This figure represents the total, quantifiable social costs resulting from the production and transportation of all of the area's resources. However, the social cost estimate of \$19.69 million does not yet include recognition of the social costs avoided because oil from the western Gulf of Mexico will back out imports, thereby reducing foreign tanker spills. Hence, the \$19.69 million social cost figure at this point represents "gross" social costs.

The social costs avoided when western Gulf of Mexico oil backs out imports is \$7.86 million (Column 4 in Table 7). These social cost savings are distributed among the different OCS areas based on the recent geographical pattern of crude oil imports (not indicated here). After the social costs avoided are subtracted from gross social costs, we arrive at net social costs of \$11.82 million for the western Gulf of Mexico (Column 5). In summary, the \$11.82 million is estimated cost of developing all of the western Gulf of Mexico leaseable oil and gas resources unleased as of July 31, 1986, to the Nation as a whole.

Estimated social costs range from \$25.8 million for the central Gulf of Mexico to less than \$1 million for the north and mid-Atlantic areas, for Oregon and Washington and for several Alaskan OCS areas. Generally speaking, there is a direct association between an area's total social cost and the total leaseable hydrocarbon resources estimated to be contained in the area.

Total hydrocarbon resources alone, however, do not determine total social costs. The oil-gas resource composition, the transportation mode, the estimated chance that spills which occur will reach shore, together with the characteristics of an area's marine and coastal resources and environmental productivity and sensitivity, also influence total social costs. For example, the central Gulf of Mexico has resources which are 9 percent lower but social costs which are more than double, the corresponding estimates for the western Gulf of Mexico. One important reason for the large difference in social costs estimates for the two areas is that the central Gulf of Mexico is expected to contain considerably more oil than the western Gulf, hence, estimated spillage is greater for the former area. Other reasons for the difference in the estimated total social costs between the two areas include the fact that the central Gulf has more valuable commercial fisheries and a higher environmental productivity and sensitivity ranking and is potentially more susceptible to wetland alteration than the western Gulf of Mexico.

The net effect of all of the myriad of factors influencing social costs can be examined by assessing the social costs per unit of production—here measured as the social costs per billion barrels of oil equivalent (BBOE). This information is presented for each OCS area in Table 8.

Social cost per BBOE range from \$12.50 million for the Navarin to \$2.23 million for the western Gulf of Mexico and is not directly correlated with an area's total leaseable resources. The high social costs per BBOE for the Navarin Basin is explained by the transportation scenario set out for this OCS area. Oil produced in the area is assumed to be shipped first by pipeline to a central collection point and then transported down the west coast by tankers. Hence, oil produced in this area is subject to a double spill risk (for pipelines and for tankers). This double spill risk explains why the estimated number of large spills (2.87) is so high relative to other OCS areas, despite the modest amount of resources estimated to be leaseable in this area (see Table 1).

As noted, the cost per BBOE is determined by a number of factors. One important factor is the estimated transportation mode for oil. Since tankers result in considerably more estimated oil spillage (70,941 barrels per BBO) than pipelines

Table 8

Total And Per BBOE Net Social Costs

Area	Total Net Social Costs	Net Costs Per BBOE
Western Gulf of Mexico	11.82	2.23
Central Gulf of Mexico	25.81	5.33
Southern California	13.40	11.88
South Atlantic	2.62	4.42
Navarin Basin	6.99	12.50*
Eastern Gulf of Mexico	3.92	8.64
Beaufort Sea	3.13	7.70
Chukchi Sea	2.63	6.65
Central California	2.55	7.43
Northern California	2.79	8.33
St. George Basin	1.66	9.62
Mid-Atlantic	0.73	4.84
North Atlantic	0.79	7.72
Oregon-Washington	0.77	13.67*
North Aleutian	0.10	5.39
Gulf of Alaska	0.08	4.22
Norton Basin	0.07	5.24
Kodiak	0.00	0.00
Hope Basin	0.00	0.00
Shumagin	0.00	0.00

* These numbers appear to be anomalous and are being investigated. It is unlikely that a recalculation would affect the relative ranking of the planning area's total social costs.

(41,499 per BBO), areas relying on tankers more than pipelines to transport oil can be expected to have higher social costs per BBO, other things being the same.

With respect to the composition of social costs, an important conclusion is that oil spill costs exceed non-oil spill costs by a wide margin for most OCS areas. Though small relative to total social costs, potential wetland losses and/or air quality losses could occur in several OCS areas, and could be a relatively substantial part of social cost for the central and western Gulf of Mexico and southern California OCS areas. It is important to stress, however, that by regulatory authority the MMS limits air emissions from OCS operations (or employs offsets) to avoid significantly affecting onshore ambient air quality. Furthermore, states through their permitting authority have considerable control over wetland use. For these reasons, non-oil spill costs may be overstated.

Social Cost Sensitivity Analysis A sensitivity analysis was used to determine the magnitude of area social cost changes, if specific unit costs are presumed to be even higher than the conservative costs described in preceding sections (see Table 6). Wetlands, ecological and commercial fishing industry losses were selected for the sensitivity analysis because these costs are potentially quantitatively significant and inherently difficult to estimate. The sensitivity analysis cases considered ranged from one set of results in which each of the individual costs was

allowed to be 25 percent greater than the unit cost estimates presented in Table 6 to an extreme case in which all of the three unit costs were assumed to be 50 percent greater than the unit costs indicated in Table 6. In general, the sensitivity analysis leads to a less than 30 percent increase in social costs. This is because (1) only a subset of all costs is assumed to increase and (2) when individual oil spill costs increase, the social cost *savings* from backing out imported oil also increase, thereby moderating the net increase in total social costs. The extreme sensitivity analysis results lead to only a small change in the ranking of OCS areas in terms of their total social costs.

SUMMARY AND CONCLUDING COMMENTS

The oil spill and non-spill costs reviewed in this paper provide a perspective on the estimated potential social costs that could result from the exploration, development, production and transportation of all of the leasable oil and natural gas resources unleased as of July 31, 1986. The results described are those which appear in the March, 1985, Draft Proposed Five-Year Program. These results are subject to modification as a result of changes in resource estimates or transportation scenarios or in response to additional information or comments received during the Program review process. The estimated potential social costs for each OCS area provide an important building block for the estimate of net social value (development benefits minus social costs) described in a later chapter in this volume.

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CHAPTER 14

Marine Productivity and Environmental Sensitivity

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INTRODUCTION

Section 18(a)(2)(G) of the Outer Continental Shelf (OCS) Lands Act, as amended, requires that the Secretary of the Interior consider the relative marine productivity and environmental sensitivity of the various oil-and-gas-bearing physiographic regions of the OCS in determining the timing and location of oil and gas activities. Analyses of relative marine productivity and environmental sensitivity were conducted in the process of developing the 1982 oil and gas program of Secretary Watt. Those analyses clearly demonstrated the complexity of collecting, interpreting, and analyzing scientific information to satisfy the requirements of section 18(a)(2)(G). In spite of the difficulties described in the 1982 analysis, the approach used by the Department of the Interior (DOI) was upheld as reasonable by the U.S. Court of Appeals for the District of Columbia Circuit on July 5, 1983.

Those members of the Minerals Management Service (MMS) staff who were involved in the 1985 analyses of relative marine productivity and environmental sensitivity used the 1982 analyses as a prototype. We established a goal of improving the analysis by (1) improving the data base for making comparisons among the OCS regions, and (2) developing an analytical procedure that could be more easily understood than that used in 1982.

In order to improve the data base, MMS contracted the University of Maryland Eastern Shore (UMES) in 1983 to collect, analyze, and archive environmental information on all OCS planning areas. The MMS asked the UMES to ensure that the final data used in the comparative analysis required by section 18(a)(2)(G) were comparable in quality among the OCS planning areas. This was not an easy task. The UMES experienced difficulties resulting not only from the complexity of available information but also the abundance of data in some areas and the absence of data in others. As a result of these difficulties, the UMES was not able to meet several deadlines established by the MMS. To compensate for this, MMS staff engaged in data searches and analyses. The UMES was able, through considerable effort, to provide the MMS with drafts of several sections of data compilation. That

information was used in the Draft Proposed Program which was released in March 1985 and provided an outline for data analyses by the MMS staff. The UMES study was designed to provide information on one-half of the equation to determine environmental sensitivity, the distribution and abundance of environmental resources. The second half of the equation, the effects of oil on these resources, was summarized by the MMS staff. The summaries prepared by the MMS staff appeared in the Draft Proposed Program as Appendix I-2. The information provided in these summaries is the same as that in the 1985 publication of the National Academy of Sciences, *Oil in the Sea: Impacts, Fates and Effects*.

The second goal of our effort was to improve the analytical procedure in a manner which increased its comprehensibility. Although we were interested in improving the technical quality of the analysis, we believed that it was equally, if not more, important to have a procedure that could be discussed and understood by most reviewers. As we developed the analysis, this aspect became increasingly important to us. Since the publication of the 1982 analysis, the DOI has received advice and suggestions on improving its analysis of environmental sensitivity. Concepts for improving the analysis were discussed with the OCS Advisory Board Policy Committee (October 1984) and Scientific Committee (April 1985). The analysis in the Draft Proposed Program incorporates much of the advice and guidance received. Some of the advice and suggestions were more appropriate to other environmental analyses of the Five-Year Program which follow the present analysis. Many of these suggestions will be considered during the preparation of the environmental impact statement (EIS) on the proposed program and in subsequent site-specific EISs.

MARINE PRODUCTIVITY

In the present analysis of relative marine productivity, we chose to follow the lead of the 1982 analysis and to address this topic through its strictest ecological definition; that is, the production of plant material through photosynthesis. In addition, we chose to focus on the primary production of marine phytoplankton because of the significance of their productivity through their numbers and distributions.

Measurements of phytoplankton productivity have been made in almost all of the planning areas of the OCS. The methods for measuring phytoplankton productivity are relatively standard and results are normally expressed in terms of the amount of carbon fixed during photosynthesis per unit area of ocean surface during a fixed period of time. In the present analysis we selected one year as our fixed period of time. As a result, our data are expressed as grams of carbon fixed per square meter per year ($gC/m^2/yr$). By selecting the period of one year for reporting primary productivity, we theoretically incorporate short periods of extremely low or high productivity and place them in the appropriate perspective in terms of their contribution to the annual cycle. This may sound relatively straightforward, but as both MMS and the UMES concluded, it is far from simple. This is especially true where primary productivity is highly variable by season and measurements are available for only some seasons.

As a result of the work of the UMES and some additional literature research by the MMS staff, the marine phytoplankton productivity data used in 1982 were modified as shown in Table 1. This table is being revised for the Proposed Program. Productivity data reviewed and analyzed by the UMES for many of the Alaskan planning areas are being added. References are being changed to the primary source. The table will be footnoted to indicate that the UMES report compiled and analyzed these data.

Table 1

Marine Phytoplankton Productivity by Planning Area
Expressed as Grams of Carbon Fixed per Square Meter per Year

Planning Area	Range of Values Used in the 1982		More Recent Results Reference
	Analysis (gC/m ² /yr)*	(gC/m ² /yr)	
North Atlantic	200-400	230-470	UMES (In Press)
Mid-Atlantic	100-200	260-370	UMES (In Press)
South Atlantic	50-200	20-360	UMES (In Press)
Eastern Gulf of Mexico	50-100	10-110	UMES (In Press)
Central Gulf of Mexico	50-100	10-220	UMES (In Press)
Western Gulf of Mexico	50-100	27#	UMES (In Press)
Southern California	200-400	180-360	UMES (In Press)
Central California	200-400	150-300	FWS (1981)
Northern California	200-400	150-300	FWS (1981)
Washington-Oregon	—	35-360	MMS (1938b)
Gulf of Alaska	200-400		
Cook Inlet	200-400		
Kodiak	200-400		
Shumagin	200-400		
Aleutian Arc	—	50#	NOAA/OCSEAP (1984b)
North Aleutian Basin	400-7300	120-400	NOAA/OCSEAP (1984a)
St. George Basin	400-7300		
Bowers Basin	—		
Aleutian Basin	—		
St. Matthew-Hall	200-400		
Navarin Basin	50-200		
Norton Basin	50-100		
Hope Basin	<50		
Chukchi Sea	<50	18-28	NOAA/OCSEAP (1978)
Beaufort Sea	<50	2-14	NOAA/OCSEAP (1978)

* Data from Smith and Kalber (1974)

Reported Annual Mean

One of the most controversial results of our first analysis was the lowering of the primary productivities reported for the St. George and North Aleutian Basins of Alaska. The 1982 analysis placed these two basins in a class by themselves as a result of the data provided by Smith and Kalber (1974) showing a productivity rate of 7300 gC/m²/yr. Based upon more recent information, we understand that such rates may occur along the sea-ice edge for very limited periods of time. However, they are not representative of the annual average primary production in these basins. Based upon more current information, we lowered the average annual productivities for these two areas, but kept them in the high productivity group. Based upon our current understanding of available data, we do not anticipate significant changes in our ranking of the planning areas by relative marine phytoplankton productivity (Table 2).

Table 2

Relative Phytoplankton Productivity of the OCS Planning Areas
Expressed as Grams of Carbon per Square Meter per Year

High Productivity (200 to 500 gC/m ² /yr)	Moderate Productivity (50 to 200 gC/m ² /yr)	Low Productivity (Less than 50 gC/m ² /yr)
North Atlantic	South Atlantic	Hope Basin
Mid-Atlantic	Navarin Basin	Chukchi Sea
North Aleutian Basin	Eastern Gulf of Mexico	Beaufort Sea
St. George Basin	Central Gulf of Mexico	
Southern California	Western Gulf of Mexico	
Central California	Norton Basin	
Northern California	Bowers Basin	
Washington and Oregon	Aleutian Basin	
Gulf of Alaska	Aleutian Arc	
Cook Inlet		
Kodiak		
Shumagin		
St. Matthew-Hall		

OTHER MEASURES OF MARINE PRODUCTIVITY

The MMS has received several comments from reviewers of the Draft Proposed Program objecting to the use of the literal definition of the term "productivity." The MMS has also been advised by some members of the OCS Advisory Board Scientific Committee that the literal definition is appropriate. Critics of the literal definition would like to include other biological components into this analysis: fish, birds, marine mammals, or benthic communities. These components are consumers, not producers. As such, they are qualitative, at best, measures of productivity.

In order to prepare an analysis of relative productivity among planning areas using these measures, MMS would need equivalent data from most of the areas. In some instances, such as fish, birds, and marine mammals, presently available information approaches this condition. In others, such as benthic communities, we have scattered information in different units of measurement and of differing quality. Even with some of our best data, assumptions are incorporated into the analysis of marine productivity. Many of our critics appear to have overlooked that point. We shall discuss this point further.

ENVIRONMENTAL SENSITIVITY

The concept of environmental sensitivity is even more complex than the concept of marine productivity. The 1982 analysis clearly demonstrated this complexity. The 1982 analysis of relative environmental sensitivity was based, in large part, on an evaluation of the sensitivity of various coastal and marine habitats and biota to spilled crude oil. Limiting the analysis to spilled crude oil provided the following advantages:

1. Different OCS planning areas were evaluated against a common factor, in this case, crude oil;

2. Effects from "overlapping" factors were avoided; and
3. Oil spills, although rare, cause the most visible, and easily measurable effects of OCS activities.

The present analysis of environmental sensitivity also concentrates on the effects of spilled oil. Some other factors were evaluated but were not used in the final analysis. They include: operational discharges; noise; habitat alteration; and air emissions.

We defined environmental sensitivity in the following terms:

1. The severity of damage resulting from contact of spilled oil with various coastal and marine habitats and biota (this was designated as the persistence of oil in the 1982 analysis); and
2. The time required for the habitat or population to recover from the effects of contact with spilled oil.

The following assumptions were also included in the present analysis of relative environmental sensitivity:

1. Spilled oil has not weathered significantly when it contacts the habitat or population. In some limited instances, where weathered oil may have significant effect, the weathered oil was incorporated into the analysis; and
2. All of the biological populations in a planning area are contacted by spilled oil. Migratory species, which may inhabit the planning area for only a short period of time, are assumed to be present and contacted by spilled oil.

Two variables were used to assess relative environmental sensitivity:

1. *Distribution of the Resource* - linear or areal extent of the habitat or abundance of biota. This information was provided by the UMES and from MMS EISs and other sources; and
2. *Sensitivity Coefficient* - based upon the definition above. This information was provided in Appendix I-2 of the Draft Proposed Program.

In the present analysis, relative environmental sensitivity was calculated for three components of each planning area: coastal habitats; marine habitats; and marine biota.

For each subcomponent the distribution of the resource and its sensitivity to spilled oil had to be assessed. An example of the method used to make the calculation is provided in Table 3. These assessments are as relative as available information would permit.

A condition of the analysis was that initially we would not provide greater importance to one component over the others by the design of the calculation. As a result of this condition, the maximum possible scores for each of the three components were equal. In this case that number was 225 points per component. This number was derived from the theoretical maximum score for biota (sum of the products of the relative abundances times the sensitivity coefficients). The coastal and marine habitats were analyzed using a "unit" concept suggested by Dr. Don Boesch of the

Table 3

Relative Marine Productivity/Environmental Sensitivity Analysis
Oil Spills

Planning Area: Hypothetical

Overall Total Score: 290

	Distribution of Resource		Sensitivity Coefficient		Score (5)
	(1)	(2)	(3)	(4)	
Coastal Habitats					
	Miles				
Estuaries/Wetlands	200	33	High	225	74.2
Sandy Beaches	300	50	Low	45	22.5
Rocky Beaches	100	17	Moderate	135	22.9
TOTAL	600	100			119.7
Marine Habitats					
	Acres				
Submerged Vegetation	1200000	5.3	Moderate	135	7.1
Submarine Canyons	None	0	Low	45	0.0
Coral Reefs	5000	0.02	High	225	0.0
Hard Bottoms	600000	2.6	Low	45	1.1
Shelf Break Zone	850000	3.7	Low	45	1.6
Mud/Sand Bottom	20000000	88.2	Low	45	39.6
TOTAL	22655000	100			49.7
Biota					
Phytoplankton	High	5	Low	1	5
Juvenile Fish/Shellfish	High	5	High	5	25
Adult Fish/Shellfish	Moderate	3	Moderate	3	9
Mud/Sand Benthos	Low	1	Low	1	1
Coastal Birds	Moderate	3	High	5	15
Marine Birds	High	5	High	5	25
Marine Turtles	None	0	Low	1	0
Marine Mammals	High	5	High	5	25
Whales	Moderate	3	High	5	15
TOTAL					120

- (1) Linear or areal extent of habitat; abundance of biota.
- (2) Percentage of total coastal marine habitat in the planning area; abundance of biota in planning area in relation to abundance in all other OCS planning areas. Rated as high=5, moderate=3, low=1, and none or negligible=0.
- (3) Adjective describing sensitivity in terms of the severity of impact from spilled oil and recovery time as high, moderate or low.
- (4) Numerical value associated with the adjective under (3) as high=225, moderate=135 or low=45 for coastal and marine habitats, and high=5, moderate=3 or low=1 for biota. Thus, the maximum possible total score for each ecological component is 225.
- (5) Product of (2) and (4).

OCS Advisory Board Scientific Committee. This concept involves calculating the sensitivity of an average unit of these habitats for each planning area. In effect, this eliminates the effect of total size and permits the comparison of planning areas purely on sensitivity. Several reviewers of the Draft Proposed Program objected to this concept.

As stated previously, the analysis of the environmental sensitivity of marine biota required some assessment of the relative abundance of the various biotic groups among the OCS planning areas. The results of that assessment are generally conservative. The estimated populations are probably higher than the actual populations, but the relative rankings are probably accurate. The sensitivity coefficients may also be conservative, but we believe that their relative values are generally accurate.

The results of our calculations are displayed in Table 4. The results indicate that the nine most sensitive planning areas are in Alaska. The most sensitive planning area in the lower 48 is the central Gulf of Mexico. The principal determinants of environmental sensitivity were the coastal habitats and marine biota. We had difficulties discriminating among the planning areas on the basis of marine habitats. This results from a general lack of information about the extent of various marine

Table 4

Relative Marine Productivity and Environmental
Sensitivity of the OCS Planning Areas

Planning Area	Overall Total Score
St. Matthew-Hall	345
Norton Basin	307
Kodiak	303
Shumagin	295
Gulf of Alaska	283
St. George Basin	278
Aleutian Arc	278
North Aleutian Basin	264
Cook Inlet	255
Central Gulf of Mexico	253
North Atlantic	245
Central California	244
Northern California	234
Hope Basin	231
Southern California	222
Chukchi Sea	212
South Atlantic	206
Eastern Gulf of Mexico	204
Washington-Oregon	203
Western Gulf of Mexico	196
Mid-Atlantic	185
Beaufort Sea	183
Navarin Basin	131
Aleutian Basin	107
Bowers Basin	97

habitats and the large extent of habitats (such as mud/sand bottoms) which are not highly sensitive.

It is important to remember that the results of this analysis are not equivalent to predictions of the consequences of OCS oil and gas activities. This analysis does not incorporate the concepts of risk, vulnerability, or mitigation. In addition, it does not account for specific ecological interactions between habitats and biota or between various biotic groups. These factors enter the planning process through the programmatic and sale-specific environmental impact statements. The programmatic EIS initiates these analyses in the phased OCS leasing and lease-management process.

CHAPTER 15

The Integration of Data for Policy

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This presentation will describe in summary form the analysis and decision options developed for the Secretarial Issue Document (SID) for the Draft Proposed Five-Year Outer Continental Shelf (OCS) Oil and Gas Leasing Program (1985). Before reviewing this most recent effort, it is worthwhile to present some of the background which exerted a formative influence on it.

BACKGROUND

The legal mandate for preparing the new Five-Year OCS Oil and Gas Leasing Program is found in section 18 of the OCS Lands Act. Prior to the passage of the 1978 Amendments to the Act which added section 18, the issuance of a leasing program was a discretionary act of the Secretary of the Interior (hereafter, the Secretary). While Federal OCS lease sales date from the year after the passage of the original OCS Lands Act of 1953, the Secretary had issued leasing programs since mid-1970.

Section 18 formalized the process of developing OCS leasing programs. In particular, it specified both a thought process and a political process with three basic aspects: consultation; analysis; and decisionmaking. Section 23 of the OCS Lands Act—also added by the 1978 Amendments—provides a fourth aspect: the process for litigation concerning a leasing program, beginning in the U.S. Court of Appeals for the District of Columbia.

The first five-year program prepared pursuant to section 18 received final approval in 1980. A suit brought by a number of coastal States and other parties led to a 1981 opinion by the U.S. Court of Appeals for the District of Columbia¹ which validated much of the method followed by the Department, but called for a number of changes which it permitted to be implemented in the preparation of the next five-year program. The 1981 opinion was distinguished by upholding the Department's approach of quantifying the quantifiable and providing qualitative descriptions of nonquantifiable elements. The analytic basis for the 1982 program

was prepared with the benefit of the guidance provided by the court's 1981 opinion. That benefit became manifest with the issuance of the court's 1983 opinion² validating the 1982 program in terms of the requirements of section 18 and the National Environmental Policy Act (NEPA).

The nature of the decision to be made by the Secretary does much to shape the process of developing a new program. The form and standard for the decision to be made are mandated by section 18(a), which provides that the Secretary establish a five-year OCS Oil and Gas Leasing Program which

...shall consist of a schedule of proposed lease sales indicating, as precisely as possible, the size, timing, and location of leasing activity which he determines will best meet national energy needs for the five-year period following its approval or reapproval.

Section 18(a)(2) requires the Secretary to consider a wide range of factors which affect or are affected by OCS oil and gas activities. On the basis of these considerations, the Secretary is to

...select the timing and location of leasing, to the maximum extent practicable, so as to obtain a proper balance between the potential for environmental damage, the potential for the discovery of oil and gas, and the potential for adverse impact on the coastal zone [18(a)(3)].

It is important to note that the Federal OCS oil and gas leasing program essentially only offers OCS oil and gas leases for purchase by private firms. In OCS lease sales, qualified bidders are given the opportunity to bid on the clearly defined and limited rights to explore, develop, and produce oil and gas which are set forth in the lease, the applicable stipulations, and the large body of applicable laws, regulations, and operating orders.

DEVELOPMENT OF THE NEW FIVE-YEAR PROGRAM

The initiation of the current effort to develop a new program was timed so as to provide for an overlap between the current program and the new one to ease the transition. This timing also reflected the recognition that the process of developing a new schedule takes about two years.

Consultation

The solicitation of comments is one of the first steps in the development of a new program. Comments were requested by means of letters to all coastal State Governors and the heads of affected federal agencies as well as a *Federal Register* notice of July 11, 1984. Over 160 comments were received. Those comments contributed to both the analysis and the formulation of decision options for the new program.

The Draft Proposed Program selected by the Secretary—consisting of a schedule of proposed sales and proposed policies—was submitted to Governors for review and a notice on it was published in the *Federal Register* on March 22, 1985. Comments were due on May 20, 1985. Over 300 comments were received.

A Proposed Program will be issued around the beginning of 1986, based on a consideration of updated analysis and comments. In particular, the Secretary is required to respond in writing to comments by the Governors of affected States.

Comments will be solicited from the Attorney General, Congress, coastal State Governors, localities, and individuals.

A Proposed Final Program will be issued in late 1986 or early 1987, based on a consideration of a further updated analysis and comments on the Proposed Program stage. The Secretary must indicate why any specific recommendation of the Attorney General or a State or local government was not accepted. The Proposed Final Program must be sent to Congress and the President at least 60 days prior to final approval by the Secretary.

- Functions of the Consultation Process

The consultation process prescribed by section 18 serves two basic functions related to the analytic and decision-making aspects of section 18. First, it provides additional information useful in the analysis. For example, the industry interest ranking of planning areas (Table 1) provides a very useful check on MMS estimates of resource potential (Table 2).

Second, the consultation process provides a formal mechanism for participation by affected parties: State and local governments; federal agencies other than the Department of the Interior; oil and gas firms; fishing, tourism, and recreation enterprises; environmental groups; and individuals.

The ramifications of the participation of affected parties are manifold. Indeed, such participation is a reflection of our democratic form of government and illustrates its characteristic features.

On the one hand, public comments can contribute data and perspectives for its interpretation that are not always available to or identified by government analysts. Public comments can also provide novel recommendations of policy objectives and specific means of reconciling and implementing them. On the other hand, OCS issues are to a large extent both technical and capable of arousing strong emotions—a situation in which the latter element can obscure the former.

A further benefit of the public participation procedures prescribed by section 18 is that the parties involved are given a specific channel for expressing their views. While satisfaction with the process is, of course, greater when the party in question is successful in getting its way—and failure to succeed is sometimes equated with not being listened to—there is at least some potential for reconciling the various parties to the results of a process in which they had a say. It is clear from the legislative history of the OCS Lands Act Amendments of 1978 that increased participation in decision-making was intended to reduce litigation over OCS leasing. It is hard to assess the success of that intention, since we cannot know what lawsuits would have been brought had the Amendments not been enacted. Nonetheless, it is clear that there have been numerous suits against sales in the programs issued by the Secretaries whose five-year programs were issued in accordance with section 18—and, in addition, suits challenging those five-year programs themselves.

Analysts

- National Energy Needs

Section 18(a) provides that the Secretary establish a Five-Year OCS Oil and Gas Leasing Program which

...shall consist of a schedule of proposed lease sales indicating, as precisely as possible, the size, timing, and location of leasing activity which he determines will best meet national energy

needs for the five-year period following its approval or reapproval.

In examining the way in which OCS oil and gas production can help meet national energy needs, the SID reviewed the following topics: the role of OCS oil and gas in the United States economy; the current and projected United States demand for energy in general and oil and gas in particular; the current and projected U.S. supply of oil and gas; the prospect for continued dependence on oil imports; the domestic and foreign policy implications of such continued dependence; and the role of OCS leasing in reducing that dependence.

To summarize, the United States in 1984 consumed 73.73 quadrillion British Thermal Units of energy. Oil and gas constituted about two-thirds of that amount.³ The Nation's production of oil and natural gas liquids peaked in 1970 and natural gas

Table 1
Industry Interest in OCS Planning Areas^a Summer 1984
(Not all companies ranked all areas.)

Overall Ranking		Range of Companies' Rankings ^b
1	Central Gulf of Mexico	1 to 5
2	Western Gulf of Mexico	1 to 7
3	Beaufort Sea	1 to 7
4	(tie) Southern California	1 to 11
4	(tie) Central & Northern California	3 to 14
6	Eastern Gulf of Mexico	3 to 12
7	Navarin Basin	2 to 11
8	North Aleutian Basin	3 to 14
9	St. George Basin	3 to 15
10	Chukchi Sea	2 to 13
11	North Atlantic	7 to 22
12	Norton Basin	8 to 18
13	Washington-Oregon	5 to 21
14	Mid-Atlantic	9 to 23
15	Hope Basin	10 to 19
16	Cook Inlet	9 to 20
17	Shumagin	12 to 22
18	South Atlantic	10 to 24
19	Gulf of Alaska	12 to 21
20	St. Matthew-Hall	14 to 23
21	Kodiak	13 to 24
22	Bowers Basin	16 to 24
23	(tie) Aleutian Arc	12 to 24
23	(tie) Aleutian Basin	15 to 23

^a Rank order of mean (average) ranks of companies ranking the OCS planning area on the basis of interest in exploration and development.

^b Reflects highest and lowest ranking by companies ranking the particular OCS planning area on the basis of interest in exploration and development.

production peaked in 1973. The United States is heavily dependent on oil imports (Table 3). Furthermore, the Department of Energy projects continued U.S. dependence on oil imports for the foreseeable future.⁴

Leasing and exploration of OCS oil and gas resources can make a substantial contribution to limiting U.S. dependence on oil imports. The hydrocarbons produced from the OCS in 1984 represented about 12 percent of domestic production of oil and about 25 percent of domestic natural gas production. The MMS risked estimate of the

Table 2

Risked Oil and Gas Resource Estimates^a
 Unleased Undiscovered Resources Projected to be in
 Leasable Prospects ("Leasable Resources") as of July 1986
 (\$29 per barrel 1984 starting price)

Planning Area	Estimated Risked Oil and Gas Resources (Millions of barrels of oil equivalent (BOE))
Western Gulf of Mexico	5,312
Central Gulf of Mexico	4,846
Southern California	1,090
South Atlantic	593
Navarin Basin	559
Eastern Gulf of Mexico	454
Northern California	409
Beaufort Sea	407
Central California	400
Chukchi Sea	396
St. George Basin	173
Mid-Atlantic	150
North Atlantic	103
Washington-Oregon	56
North Aleutian Basin	19
Gulf of Alaska	18
Norton Basin	14
Kodiak	*
Hope Basin	*
Shumagin	*
Cook Inlet	*
Aleutian Basin	*
Bowers Basin	*
St. Matthew-Hall	*
Aleutian Arc	*

* Negligible (estimated to be less than 0.5 million BOE).

^a Risked oil and gas resource estimates are obtained by multiplying the conditional mean resource estimate by the marginal probability of the presence of hydrocarbons. Calculations exclude Beaufort Sea and Chukchi Sea natural gas. See Marshall Rose's presentation, above in this volume.

Table 3

Imports of Petroleum and Selected Petroleum Products in 1984

Net quantity: 2.0 billion barrels^aValue: \$59.2 billion^aRelation to Trade Balance: $\frac{-\$59.2 \text{ billion}}{-\$123.3 \text{ billion}}$ b - 48 percent (approx.)

^a From table 6, Imports of Petroleum and Selected Petroleum Products into the U.S. Customs Area and the U.S. Virgin Islands from Foreign Countries, in "Summary of U.S. Export and Import Merchandise Trade, December 1984", U.S. Department of Commerce, Bureau of the Census, February 1, 1985 (FT900-84-12), pp. 16-17.

^b From Table 1, U.S. Exports, General Imports, and Merchandise Trade Balances, *ibid.*, p. 3.

unleased undiscovered "leasable" oil and gas resources on the OCS as of mid-1986 was almost 15 billion barrels of oil equivalent.

- *National Security Concerns Relevant to OCS Leasing*

The continuing dependence of the United States on oil imports for a substantial part of our consumption creates a number of national security concerns. First, the potential for a supply disruption imposes political limits on the flexibility of our foreign/national security policy, including our ability to respond to foreign security threats.

Second, our dependence on foreign nations for so essential a commodity as oil creates the potential for the United States to be drawn into dangerous political and military situations involving those nations.

Third, dependence on oil imports entails dependence on extended supply lines (tanker routes) which present a target for attack and thus add to our defense burden. This added defense burden involves both the deterrence of attacks as well as actual defense in the event of an attack.

Fourth, many other nations, including our allies, are faced with the same set of problems. The restraints on them indirectly but effectively pose further limits on our own national security flexibility. Thus, any improvement in our ability to assist them in meeting their energy needs in turn improves our ability to pursue our own foreign policy/national security goals. The 1983 National Energy Policy Plan underlines this last point by noting that:

The overriding concern of our allies to reduce their dependency on imported oil has led to growing reliance on natural gas from the Soviet Union, a new source of vulnerability and concern to our collective energy security and to fundamental United States national security interests.

Fifth, if there were a world oil shortfall, all of our suppliers, including non-OPEC suppliers, might reduce oil shipments to us in order to honor all of their export contracts equitably. Thus, our oil import vulnerability is not limited to our reduced amount of OPEC imports.

Sixth, key weapons systems in the Nation's current arsenal and under development for future use are designed to use liquid hydrocarbon fuel. In Fiscal Year 1983, the armed forces used over 177 million barrels of oil, which was the equivalent of over 58 percent of OCS oil production in that year. The most secure sources of supply for such fuel are, clearly, domestic sources. This consideration is reflected in section 12(b) of the original OCS Lands Act:

In time of war, or when the President shall so prescribe, the United States shall have the right of first refusal to purchase at the market price all or any portion of any mineral [including oil and gas] produced from the outer Continental Shelf.

- Analysis of Section 18(a)(2) Factors

The factors which section 18(a)(2) requires the Secretary to consider and the balancing which section 18(a)(3) requires the Secretary to perform are the legal bases for the technical analyses which appear in the SID. Section 18(a)(2) specifies that the following factors be considered by the Secretary in the course of reaching a decision on the leasing program:

- (A) existing information concerning the geographical, geological, and ecological characteristics of such regions;
- (B) an equitable sharing of developmental benefits and environmental risks among the various regions;
- (C) the location of such regions with respect to, and the relative needs of, regional and national energy markets;
- (D) the location of such regions with respect to other uses of the sea and seabed, including fisheries, navigation, existing or proposed sealanes, potential sites of deepwater ports, and other anticipated uses of the resources and space of the OCS;
- (E) the interest of potential oil and gas producers in the development of oil and gas resources as indicated by exploration or nomination;
- (F) laws, goals, and policies of affected States which have been specifically identified by the Governors of such States as relevant matters for the Secretary's consideration;
- (G) the relative environmental sensitivity and marine productivity of different areas of the OCS; and
- (H) relevant environmental and predictive information for different areas of the OCS.

A comparative analysis by planning area with respect to the factors listed above is presented in the SID. That analysis compares the information required by section 18(a)(2) in quantitative terms where that is possible and in qualitative terms otherwise.

The quantitative balancing of risked benefits and costs is summarized by their difference, termed "net social value" in the SID (see Table 4). The analysis of social costs is explained in Tom Grigalunas' presentation, above in this volume. The analysis of marine productivity and environmental sensitivity, reflected in the social cost analysis as well as presented on its own, is explained in Piet DeWitt's piece, also above in this volume.

Table 4
Ranking of Planning Areas by Estimated Net Social Value

Planning Area	Estimated Net Economic Value of Leasable Resources (\$ 1986 Millions)	Estimated Social Costs of Leasable Resources (\$ 1986 Millions)	Estimated Net Social Value (\$ 1986 Millions) (col. 1 - col. 2)
Central Gulf of Mexico	\$37,220	\$26	\$37,194
Western Gulf of Mexico	35,965	12	35,953
Southern California	7,456	13	7,443
Central California	2,573	3	2,570
Eastern Gulf of Mexico	2,458	4	2,454
South Atlantic	2,455	3	2,452
Northern California	2,425	3	2,422
Navarin	1,535	7	1,528
Beaufort Sea	895	3	892
Chukchi Sea	788	3	785
Mid-Atlantic	590	1	589
St. George Basin	491	2	489
Washington-Oregon	399	*	399
North Atlantic	359	1	358
North Aleutian Basin	24	*	24
Norton Basin	24	*	24
Gulf of Alaska	21	**	21
Kodiak	*	**	**
Hope Basin	*	**	**
Shumagin	*	**	**
Cook Inlet	*	**	**
St. Matthew-Hall	*	**	**
Aleutian Basin	*	**	**
Bowers Basin	*	**	**
Aleutian Arc	*	**	**

* Negligible (estimated to be less than 0.5 million \$ 1986).

** Resources for these areas are estimated to be negligible (See Table 2), thus no production is expected, and social costs are estimated to be negligible.

- Planning for an Uncertain Future With Limited Information

A theme of the SID for the Draft Proposed Program (March 1985) is the need to recognize the inherent and unavoidable limits of the planning process for OCS leasing and of the technical analyses in the SID. The decision-maker and the public need to be informed of limits on the analysis of two kinds: limits on the available data; and limits which come from assumptions made in order to facilitate the required analysis but which bring its results further from actuality.

The first limit derives from the nature of the activity for which planning is undertaken. The offering of OCS leases for bids does not in itself cause bids to be submitted or leases to be issued on blocks which are bid upon. In fact, it is very difficult to predict the patterns of bidding and leasing which will occur at a given lease sale. For oil and gas exploration, firms have alternatives to U.S. OCS oil and gas leasing which include the onshore lease market in the U.S. and abroad as well as the state and international offshore lease markets. Additionally, the issuance of leases does not necessarily lead to exploratory drilling—nor does drilling necessarily lead to discovery and production.

The precision with which future OCS oil and gas activities can be planned is further limited by the kinds of considerations on which the five-year program is to be based pursuant to section 18 as interpreted by the court. Notwithstanding the technical expertise of the section 18 analyses, they are subject to several kinds of limitation: the incompleteness which so often characterizes even the best available data; the unavoidable uncertainty of predictions of future events; and the exercise of judgment not reducible to technique.

The court addressed this issue in *California v. Watt* (II) in the following terms:

It is important to understand what is being evaluated...[T]he factual basis and the methodology used by the Secretary in various aspects of the cost benefit analysis...fall within what the court in *Watt I* described as the "frontiers of scientific knowledge." The facts used by the Secretary in performing the analysis are largely predictive in nature, and the methodology utilized was necessarily novel because this type of analysis has not been performed extensively in the past. Thus, as the court in *Watt I* observed, a great deference is afforded to the Secretary in these areas. "Where existing methodology or research in a new area of regulation is deficient, the agency necessarily enjoys broad discretion to attempt to formulate a solution to the best of its ability on the basis of available information." Therefore, although we are obligated to review the factual findings of the Secretary in order to determine that they are supported by substantial evidence in the record, we realize that these finds must be somewhat speculative. Further, we are required to sustain the methodology and assumptions made by the Secretary if they are reasonable.⁵

- Limits of the Technical Analyses

Geological and Geophysical Data Geological and geophysical data are typically the beginning point for assessing the consequences of OCS oil and gas leasing. A great amount of such data have been accumulated and interpreted by the

MMS and other parties. Nonetheless, the available data have been rated by MMS as ranging from "excellent" in mature areas to "very poor" in a number of frontier areas.

Section 102(9) of the OCS Lands Act Amendments clearly recognizes the incomplete nature of geologic knowledge in mandating that "...the extent of oil and natural gas resources of the Outer Continental Shelf [be] assessed at the earliest practicable time." Drilling many wells is often necessary to determine whether oil and gas are present in an area. Since the OCS Lands Act for the most part ties the right to drill to the acquisition of a lease, the OCS leasing program has to be seen, at least in part, as a program that facilitates the acquisition of better geological data by potential producers for use by them and by the Government. The leasing program thus has a major influence on progress in resource assessment.

Economic Projections of Benefits The projection of the economic benefits of OCS leasing also reflects the unavoidable limits on precision in OCS program planning. The chief limits here are the uncertainties attendant on the prediction of future oil prices and the selection of a discount rate used in computing the present value of the resources within the various planning areas so that they can be compared on the basis of a common standard.

Estimates of Social Costs Like the analysis of economic benefits, the analysis of social costs also bears the burden of predicting prices and selection of a discount rate. The analysis of social costs has the additional burden of quantifying certain potential costs of oil and gas development not valued by the market so that the overall net social value (net economic benefits minus social costs) can be computed for oil and gas development in each planning area. Net social value has to be interpreted in light of the fact that estimates of social costs which are not valued in the market cannot be considered entirely comparable to estimates of net economic value.

Analysis of Relative Marine Productivity and Environmental Sensitivity The analysis of the relative marine productivity and environmental sensitivity of OCS planning areas called for by section 18 has limits comparable to those of the analysis of social costs. The calculation of numerical and productivity and sensitivity measures is subject to two kinds of limitations: the abstract nature of the measures as contrasted to the factors which they represent and the unavoidable need for professional judgment not reducible to technique in the determination of the sensitivity coefficients. In addition, the availability of marine productivity and sensitivity data is limited by the data base available as the result of past investigations and by the costliness of acquiring new information. The efforts of the MMS to acquire more data through its environmental studies program are described in the SID.

- Providing Perspective on the Limits of the Technical Analyses

A variety of techniques were employed in the SID to enable the decision-maker both to use the data and analysis presented and to appreciate their inherent limitations.

Evaluation of the Adequacy of the Data In order to provide a way of evaluating the results of the various technical analyses, an indication is given of the adequacy of the data on which they are based. For example, the adequacy of the geologic and geophysical data which are the basis of much of the analysis in this SID ranges from "Excellent" for some areas to "Very Poor" in others.

Analyzing the Sensitivity of the Analyses to Key Assumptions Where reasonable changes in technical assumptions could produce significant changes in the results of analyses, sensitivity analyses are provided. These analyses show the effects of different assumptions on the results of the technical analyses. For example, the analysis of net economic value includes a sensitivity test which shows the sensitivity of leasable resource estimates to oil prices.

Providing Ranges of Data Given the uncertainties inherent in the data, ranges of data are an informative supplement to the point estimates and the measures of central tendency in the technical analyses. The ranges can present the high and low values determined by the sensitivity analyses, or values at probability levels of 5 percent and 95 percent.

Overestimation of Costs A cautious approach in formulating the technical analyses is taken, erring on the side of understating economic benefits to the Nation and overstating social costs to the Nation, while still aiming at a reasonable estimation of both.

Supplementing Government Analyses with Public Comments Pursuant to section 18, consultation with and comments by parties outside the Federal Government are used to provide additional information. The consideration of outside comments is an important element in the decision-making process, as discussed above.

Providing Perspective on the Estimates of Costs and Benefits In making comparisons between planning areas based on the cost-benefit analysis, the relative ranking of the values calculated for OCS areas is accorded much more importance than the absolute values themselves. Further, OCS areas with estimates within the same general range of value are not considered to differ for purposes of program formulation. Thus, for example, planning areas were formed into the following net social value groups whose members were treated alike for the scheduling of sales, all things being equal:

High	central Gulf of Mexico, western Gulf of Mexico.
Intermediate	southern California, eastern Gulf of Mexico, Navarin Basin, central California, northern California, South Atlantic, Beaufort Sea, Chukchi Sea, mid-Atlantic, St. George Basin, Washington-Oregon, North Atlantic, Norton Basin, north Aleutian Basin, Gulf of Alaska.
Low	Kodiak, Hope Basin, Shumagin, Cook Inlet, St. Matthew-Hall, Aleutian Basin, Bowers Basin, Aleutian Arc.

Highlighting the Role of Judgment in Interpreting the Technical Analyses and Formulating the Leasing Program The fact that the technical analyses performed pursuant to section 18 have inherent and unavoidable limits has important implications both for the decision-making process leading to the new five-year program and for the structure of that program. In terms of the decision-making process, the limits of the quantitative analyses make clear the prudence of the court's opinion in *California v. Watt* (II). The court found that the Secretary's decision on the leasing program is to be based on a consideration of quantitative analyses rather than determined by the results of those analyses in a

mechanistic way. Thus, there remains for the Secretary substantial scope for the exercise of judgment based on non-quantifiable considerations and limitations on the quantitative analyses. These considerations and limitations are highlighted in the SID and its appendices.

Decision Options and Decision-making

The formulation of the decision options—like the ultimate decision itself—has to be based upon a consideration of the technical analyses but cannot be determined by them. For decision options—and decisions—require an element of judgment which cannot be supplied by the technical analyses alone.

Decision options reflect the alternative means of pursuing and reconciling the various objectives of the program. Thus, the formulation of decision options requires reflection on the objectives of the program prescribed in the OCS Lands Act and the comments submitted by the public as well as the technical analyses. Indeed, the technical analyses are only useful for any decision-maker insofar as they reflect the range of purposes of the program specified by section 18: to formulate an OCS leasing program “[so as to] best meet national energy needs;” and “to the maximum extent practicable, ...to obtain a proper balance between the potential for environmental damage, the potential for the discovery of oil and gas, and the potential for adverse impact on the coastal zone.” The point here is that the technical analyses cannot be entirely “value-free” because even the categories of analysis are ones which are relevant to the variety of program goals. Of course, the analyses need to remain objective in the sense of resisting preconceived notions of the outcome.

OPTIONS FOR THE DRAFT PROPOSED PROGRAM

Planning Area Boundary Options

The July 1984 *Federal Register* notice announcing the development of the new program had depicted the OCS as divided among 24 planning areas. The SID proposed changes in several of those areas, including the reconfiguration of the planning areas offshore California from two to three and an option to create two separate planning areas in the South Atlantic. The drawing of planning area boundaries involves a number of considerations: geological and geophysical data; leasing, exploration, development, and production history; environmental data; coordination with coastal governmental entities; mapping considerations; jurisdictional claims to the OCS and the Exclusive Economic Zone; and administrative factors.

Pace of Leasing Options

- Option 1: The Base Schedule

Annual sales for both high net social value (NSV) areas (the central and western Gulf of Mexico) were proposed because the high NSV indicates the presence of very high resource potential in those areas. That indication is confirmed both by the high cost of delay of leasing for those areas and by industry interest. In addition, there are about 100 drainage and development blocks per year in each of these two mature areas.

The scheduling of triennial sales in Intermediate NSV areas reflects the suggestions made by numerous “commenters,” including a number of states, for more than 2 years between sales. All Intermediate group areas have been estimated to be capable of attracting bids leading to production with a positive NSV. All of these

areas are included in Option 1—except the Gulf of Alaska, based on lack of industry interest in that area. It is interesting to note that the Gulf of Alaska planning area was estimated to have a NSV approximately equal to that for the North Aleutian Basin and Norton Basin, which are included in Option 1. However, industry respondents to the July 1984 *Federal Register* notice requesting comments on the development of the new program rated North Aleutian Basin eighth and Norton Basin twelfth (in both cases higher than their relative rank by NSV), whereas the Gulf of Alaska was rated nineteenth (lower than its relative rank by NSV). Thus, industry interest was judged to confirm the inclusion of North Aleutian Basin and Norton Basin in the base schedule, whereas it was judged to support the exclusion of the Gulf of Alaska from the base schedule.

A single sale in Shumagin was included in Option 1 as a carry-over from the 1982 program, confirmed by responses to a request for industry interest in that sale. Shumagin is the only low NSV area to be included in Option 1. In addition, MMS has rated geological and geophysical data in Shumagin as Very Poor—which raises both the question of the reliability of the resource estimate and the need for increased data for that area, such as would come from exploratory drilling.

- Option 2: Biennial Sales

Option 2 amended Option 1 by making sales biennial in up to six higher-value, higher-interest areas. The six areas were southern California, central California, northern California, eastern Gulf of Mexico, Navarin Basin, and Beaufort Sea. The areas proposed for biennial sales were those with relatively high NSV and high cost of delay, with two exceptions based on industry interest: exclusion of the South Atlantic area, which was estimated to have a NSV of about \$2.5 billion (\$1986), but was ranked 18th by industry in response to the July 1984 notice; and inclusion of Beaufort Sea, with a NSV estimated at about \$0.9 billion (\$1986), but ranked 3rd by industry.

Flexibility Options

The limitations on the technical analyses and on the projection of future conditions also suggest the kind of leasing program appropriate to meet the objectives specified by Congress and the National Energy Policy Plan. The many uncertainties which affect planning for OCS leasing make clear the value of flexibility in the OCS leasing program. Indeed, the issue in formulating a new program is not whether to provide for flexibility, but how. For example, the five-year schedule responds easily in the direction of less bidding interest by industry or the deferral or cancellation of sales. The five-year program is characteristically rigid, however, with respect to responding to circumstances which call for the addition of sales.

The development of the new program poses the challenge of providing a stable framework for planning OCS lease sales while providing flexibility to respond to changing circumstances which could make OCS areas much more promising. The Draft Proposed Program SID provided two flexibility options:

- Option 3: Frontier Exploration Sales

Option 3 proposed up to five sales in Alaska frontier areas: Gulf of Alaska; Cook Inlet; Hope Basin; Kodiak; and Shumagin. Those five areas all are estimated by MMS to have "developable" resources (resources which would be economic to develop, if found), although only the Gulf of Alaska is estimated to have "leasable" resources (resources which would be economic to bid and explore for).

In these areas, the geological and geophysical data are incomplete. MMS has rated the adequacy of data in these areas as follows: "Good" in Kodiak and Cook Inlet; "Fair to Good" in the Gulf of Alaska; "Fair" in Hope Basin; and "Very Poor" in Shumagin.

This option recognized that new geological and geophysical data or an oil price increase could result in these areas being viewed more favorably by potential producers. In addition, the consideration of equitable sharing of developmental benefits and environmental risks among regions has been interpreted by the court to support the scheduling of frontier sales.

- Option 4: Supplemental Sales

This option proposed an annual sale to offer selected blocks in areas other than the central and western Gulf of Mexico: drainage and development blocks; and blocks on which bids were rejected in the preceding year. This option proposed reintroducing the concept of drainage sales on a basis compatible with the requirements of section 18. Twelve drainage sales were held in the Gulf of Mexico between 1959 and 1978. The annual limited reoffering of blocks which received bids which were rejected in sales held in the prior year in these areas was designed to diminish the delay cost associated with offering blocks in which industry interest has been demonstrated.

Sale Options

Three basic presale approaches have been used for OCS general lease sales: (1) "tract selection;" (2) the initial areawide approach; and (3) the modified areawide approach. Historically, these different approaches represent distinguishable combinations of policies and procedures under different Secretaries of the Interior.

Projections of the effects of different presale processes on sale size cannot be performed with great precision because the "presale process" is an abstraction whose concrete implementation can lead to very different results in different planning areas. The results of the presale process is likely to differ both between planning areas and between sales in the same planning area because they depend on the following variable factors: (1) MMS and industry estimates of the amount and distribution of undiscovered oil and gas resources in an area; (2) environmental and multiple-use considerations; and (3) the results of consultations with numerous parties, including coastal State Governors, under section 19 of the OCS Lands Act. All three factors are subject to different perceptions by the various parties who participate in the offshore leasing process. The third factor, depending as it does on a consultation process, does not lend itself to reliable predictions.

For example, the implications for sale size of multiple-use considerations such as the location of Department of Defense (DOD) use areas are subject to consultation. In addition, different local attitudes toward oil and gas leasing and other uses of the ocean can lead to very different outcomes of consultations between the Department of the Interior and other parties such as coastal State Governors under section 19 of the OCS Lands Act. Both the Gulf of Mexico and Pacific regions contain significant deposits of commercially recoverable hydrocarbons under nearshore waters. The difference between the large size of Gulf of Mexico areawide sales (ranging up to more than 8,000 blocks) and the small size of, for example, Sale 80 offshore southern California (657 tracts), held under "areawide" procedures, clearly illustrates the effects of factors whose implications for the size of a lease sale are not clearly predictable.

Furthermore, in considering the precision with which "leasing activity" can be planned for under section 18(a) of the OCS Lands Act, it is also important to keep in mind the wide gap between offering tracts and leasing them. In the mid-Atlantic Sale 76, over 22 million acres were offered, but under 1 percent of that area was leased. In the eastern Gulf of Mexico Sale 79, over 50 million acres were offered, but less than 2 percent of that area was leased. Even in the OCS sale which leased the largest number of tracts (Sale 72, central Gulf of Mexico), the 623 tracts leased represented just over 8 percent of the acreage offered.

Fair Market Value Options

Section 18(a)(4) requires that the program provide for the receipt of fair market value. The SID proposed consideration of varying the minimum bid by planning area, given the differences among planning areas.

CONCLUSIONS

The conclusion of the decision-making process—the Secretary's choices for the Draft Proposed Program—will be described in the first paper of the final session. Pending that discussion, there are three conclusions which we can draw about the development of a five-year OCS leasing program under section 18. First, the limits of planning for an uncertain future with limited information need to be recognized both by the analyst and by the decision-maker. Second, quantification needs to be seen both as a tool of analysis and as a limit on it. Third, the indispensable role of judgment needs to be acknowledged—in interpreting the analysis and formulating decision options as well as in reaching decisions.

NOTES

- ¹ *California v. Watt*, 668 F.2d 1290 [hereafter, *California v. Watt* (I)], decided October 6, 1981.
- ² *California v. Watt*, 712 F.2d 584 [hereafter, *California v. Watt* (II)], decided July 5, 1983.
- ³ U.S. Department of Energy, *Annual Energy Review 1984*, April 1985, Table 1.
- ⁴ U.S. Department of Energy, Energy Information Administration, *Annual Energy Outlook 1984* (January 1985), p. 223.
- ⁵ *California v. Watt* (II) at 600.

This presentation is a revised version of the one delivered at the Conference on short notice. Thanks are due to the many people at the Department of the Interior who contributed to the development of the Draft Proposed Program and whose work is reflected in the Secretarial Issue Document and relied upon here.

PART FIVE

The U.S. OCS Oil and Gas Leasing Policy and The Policy Process: A Variety of Perspectives

In our presentations and discussions to this point, we have examined several aspects of oil and gas resources which lead to this final session. Boundaries and, hence, ownership have been considered in both an international and in a bilateral context. The value of shelf resources and aspects of U.S. legislation that directly affects their management have been covered. And finally, we looked at important parts of the five-year planning process under the OCS Lands Act Amendments of 1978. Once ownership and a body of law directed toward management are established, perspectives on interpretation become important. Those perspective are the subject of this session.

But first, I think it is important to consider just what the changes in the law require of the Secretary. The plan is expected to be a balance between the potential for oil and gas and the potential for environmental damage and adverse impacts on the coastal zone. In specifying the timing and location of the sales, a number of factors are identified. Among them the interest of producers and the productivity/sensitivity of different geographic areas are central topics. In addition, the distribution of risks and benefits, the interrelationships with other uses of ocean space, and effects on coastal states are components of the planning process.

The draft results of the five-year plan are before us today. Formally it is called the Draft Proposed Program Five-Year Outer Continental Shelf Oil and Gas Leasing Program for mid-1986 through mid-1991. There were earlier plans under the 1978 law approved in 1980 and again in 1982. The present document is some 700 pages in

length. It has a 96-page summary and 16 appendices. Some of those appendices are the building blocks we have discussed. The scope, assumptions required, and knowledge implied in reaching conclusions are indeed impressive. Whether the document is thorough or cumbersome depends upon your viewpoint.

Fortunately, this panel is well equipped to discuss matters of interpretation related to the process and the results. As you know, the Secretary of the Interior makes the ultimate decisions on this plan. There are, however, only a relatively few experts for this complex, political, scientific, technical, and economic document. Bear in mind as we move to the first presentation that between the panel of yesterday afternoon and that of this morning you will have met many of them.

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CHAPTER 16

The Department of Interior's Preliminary Decision on the Five-Year Program

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INTRODUCTION

Yesterday we talked about the building blocks, the analytical process, and the options that were before Secretary Hodel for the five-year program. This morning we will turn to the Secretary's preliminary decision made in March 1985. I would like to emphasize, if it is not clear by now, that the decision he made was on the Draft Proposed Program (DPP). The DPP is the first of three versions of the program. We have to develop two more, and he will make decisions on both of them. So we are really in the early, formative stages of the process. It is an open process, nothing is locked in concrete. The Secretary is approaching the five-year program with flexibility and an eye towards reaching a consensus. We are trying to build flexibility into the structure of the program as well.

Secretary Hodel decided that we should move from 24 to 26 planning areas by adding the Straits of Florida, which was formerly part of the South Atlantic region, and by dividing California into three instead of the former two planning areas. Figures 1 and 2 show the layout of the planning areas.

SCHEDULING LEASE SALES

Standard Sales

The leasing schedule itself was based to a large degree on the rank order of planning areas by what we call net social value. As indicated earlier, we divided the listing of planning areas by their net social value into three groups: high, medium, and low. These categories were used as a fundamental basis for the Secretary's decision. In essence, the Secretary chose to provide for 33 standard sales in the next

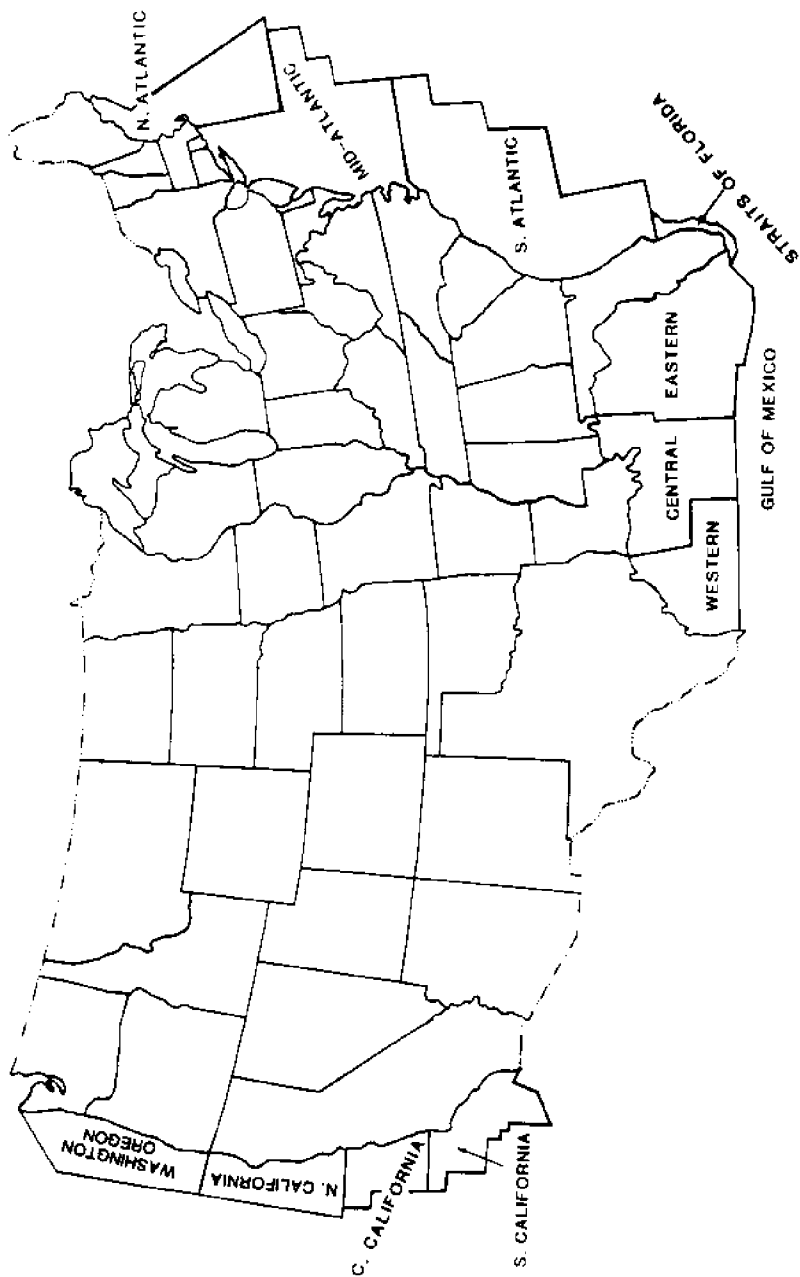


Figure 1. Continental United States OCS Planning Area (as released in Draft Proposed Program March 21, 1985).

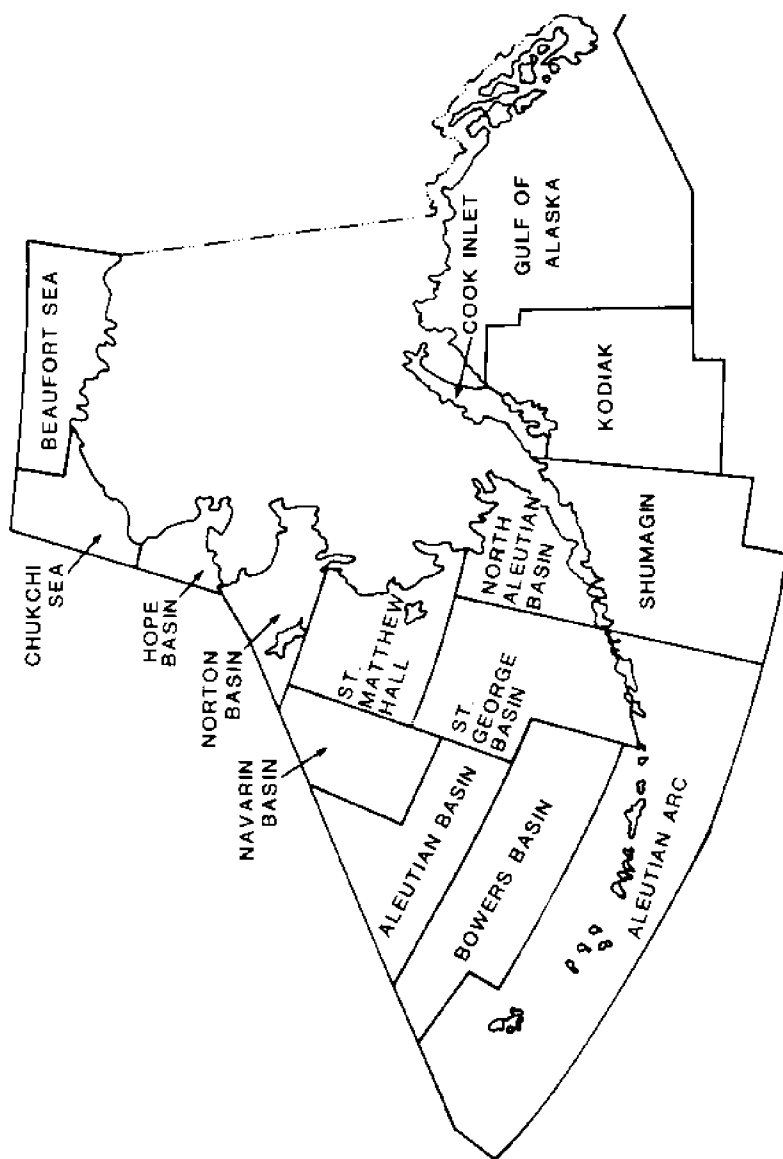


Figure 2. Alaskan OCS Planning Area (as released in Draft Proposed Program March 21, 1985).

five-year program—1987 through 1992. The preliminary decision is to have annual sales in the western and central Gulf of Mexico because they were high on the list and to have triennial or less frequent sales in all the other areas which in the Minerals Management Service (MMS) estimates have developable resources (Table 1).

Table 1

OCS Oil and Gas Resources Estimates as of July 1986

Planning Areas	Millions of barrels of oil equivalent (BOE)
Western Gulf of Mexico	5,312
Central Gulf of Mexico	4,846
Southern California	1,090
South Atlantic	593
Navarin Basin	559
Eastern Gulf of Mexico	454
Northern California	409
Beaufort Sea	407
Central California	400
Chukchi Sea	396
St. George Basin	173
Mid-Atlantic	150
North Atlantic	103
Washington-Oregon	56
North Aleutian Basin	19
Gulf of Alaska	18
Norton Basin	14
Kodiak	*
Hope Basin	*
Shumagin	*
Cook Inlet	*
Aleutian Basin	*
Bowers Basin	*
St. Matthew-Hall	*
Aleutian Arc	*

* Negligible (estimated to be less than 0.5 million BOE).

The Secretary scheduled no lease sales in the four areas, Aleutian Basin, Bowers Basin, Saint Matthew-Hall, and Aleutian Arc, which appear at the bottom of the net social value list (see the last column in Table 2). These areas have no estimates of developable resources, the lowest estimates of net social value, and low industry interest. Industry ranked three out of the four as the three lowest and the other as the fifth lowest of all planning areas (Table 3). These areas show so little promise that they are not worth scheduling at this time as far as the Secretary is concerned.

Also, notice on the schedule (Figure 3) that there are no sales scheduled for the Straits of Florida. That would have been inappropriate since the section 18 analysis had not yet been completed for the Straits of Florida when the DPP was issued. The

Table 2

Ranking of OCS Planning Areas by Benefits and Costs
in Millions of 1986 Dollars

Planning Areas	Benefits	Costs	Net Benefits (col. 1 - col. 2)
Central Gulf of Mexico	\$37,220	\$26	\$37,194
Western Gulf of Mexico	35,965	12	35,953
Southern California	7,456	13	7,443
Central California	2,573	3	2,570
Eastern Gulf of Mexico	2,458	4	2,454
South Atlantic	2,455	3	2,452
Northern California	2,425	3	2,422
Navarin Basin	1,535	7	1,528
Beaufort Sea	895	3	892
Chukchi Sea	788	3	785
Mid-Atlantic	590	1	589
St. George Basin	491	2	489
Washington-Oregon	399	*	399
North Atlantic	359	1	358
North Aleutian Basin	24	*	24
Norton Basin	24	*	24
Gulf of Alaska	21	*	21
Kodiak	*	**	**
Hope Basin	*	**	**
Shumagin	*	**	**
Cook Inlet	*	**	**
St. Matthew-Hall	*	**	**
Aleutian Basin	*	**	**
Bowers Basin	*	**	**
Aleutian Arc	*	**	**

* Negligible (estimated to be less than 0.5 million \$ 1986).

** Resources for these areas are estimated to be negligible (See Table 1), thus no production is expected, and social costs are estimated to be negligible.

decision on whether to propose a sale in the Straits of Florida will be made at the upcoming Proposed Program stage.

Eleven of the 33 sales are carried-over from the current, ongoing five-year program which was approved in 1982. These were carried over partly because of some overlap between the two programs and partly because some sales were delayed for various reasons. The 33 sales contrast with 40 standard sales in the current program.

Table 3

Industry Interest in OCS Planning Areas
as of July 1984.

Overall Ranking

1	Central Gulf of Mexico
2	Western Gulf of Mexico
3	Beaufort Sea
4	(tie) Southern California
4	(tie) Central & Northern California
6	Eastern Gulf of Mexico
7	Navarin Basin
8	North Aleutian Basin
9	St. George Basin
10	Chukchi Sea
11	North Atlantic
12	Norton Basin
13	Washington-Oregon
14	Mid-Atlantic
15	Hope Basin
16	Cook Inlet
17	Shumagin
18	South Atlantic
19	Gulf of Alaska
20	St. Matthew-Hall
21	Kodiak
22	Bowers Basin
23	(tie) Aleutian Arc
23	(tie) Aleutian Basin

Flexibility Provisions

In addition to these standard sales, the Secretary chose three flexibility provisions. I would like to pause here and discuss what we mean by flexibility and why it is needed.

Under the Outer Continental Shelf (OCS) Lands Act, once a five-year program is approved, sales cannot be added to it, but they can be deleted from it. This poses an interesting dilemma. If you project the Nation's future needs and future world prices for oil and gas and you make a judgment that a certain number of sales is appropriate, you may have a problem if you are wrong. If you underestimate, you cannot add any sales. However, if you overestimate, you can simply cancel some. The potential problem is that you do not know when the decision is made whether it will be an overestimate or underestimate. Hence, to avoid the possibility of making an underestimate there is a need to build flexibility into the program.

The first flexibility provision, the designation of five frontier exploration sales, relates to planning areas which are near the bottom of the net social value list, just above those in which the Secretary scheduled no sales. Four of these are Kodiak, Hope Basin, Shumagin, and Cook Inlet. These four planning areas are estimated to have only negligible developable resources.

The Gulf of Alaska was also put in the category of frontier exploration sales because industry interest was low as was its net social value ranking. It is quite possible that there will not be sufficient interest to hold all or some of the five sales in these five planning areas. We have designed a special extra step very early in the presale process to call out to industry and the public asking if there is interest in going ahead with the sale.

The second flexibility provision is the designation of five supplemental sales, one per year. The purpose of a supplemental sale is to take care of a very limited number of special situations that could arise—the offering of rejected bid tracts and drainage and development tracts outside the central and western Gulf of Mexico. If bids on tracts are rejected as not meeting MMS acceptance criteria, this provision would allow them to be reoffered the following year. If a discovery is made, there is an economic advantage to the Nation to offer the surrounding tracts which are called drainage or development tracts. The Federal Treasury can reap benefits from that new information if MMS promptly offers for lease adjacent tracts. Otherwise, a company could drain the adjacent tracts and/or the extent of the discovery could not be delineated in a timely manner.

Unfortunately, the provision for supplemental sales has been incorrectly categorized by some observers as a wholesale offering of tracts. In fact, we are talking about a very limited number of tracts. Based on past data, MMS Director Bettenberg has estimated that in the range of 10 to 20 tracts would be in a supplemental sale. That is about the best estimate we have. We cannot tell what the number of tracts in a supplemental sale will be until the future unfolds.

The third flexibility provision is the potential for acceleration of lease sales in certain planning areas with high net social value and/or high industry interest. There has been much debate within the Department and in the form of comments from the public as to whether sales should continue to be held on a biennial basis as in the current five-year program or whether a triennial basis is more appropriate. The acceleration provision is an attempt to create the best of both worlds. Triennial or less frequent sales would be held in areas outside the western and central Gulf of Mexico. Then, should conditions warrant in one or more of the high valued/high interest areas, the sale or sales would be moved forward in time. Of course, a key question is, What are those "conditions"?

The public has been asked in the March 1985 *Federal Register* notice announcing the DPP for their views on such conditions. We need and will consider the public's views because, quite frankly, we have not predetermined precisely what those conditions will be. We do have some ideas. For example, substantially higher long-term oil price expectations might result from a serious oil supply disruption; or new geologic data could come from a major new discovery. Once we have determined draft criteria, we will publish them in the Proposed Program along with a description of how this acceleration provision would operate. The acceleration provision is necessary because of the constraint which I already mentioned. The Department of the Interior (DOI) cannot add, but only delete, sales once the five-year schedule is approved. Under any of these three flexibility provisions there is no net addition of sales to the schedule.

LEASE SALE SIZE

That ends our discussion of the scheduling of lease sales. Another decision the Secretary has before him is the "size" of lease sales. The court validated DOI's interpretation of this OCS Lands Act term as the presale process of moving from a whole planning area to the tracts actually offered for lease. In some cases, there is a major change, and in other cases there may not be. It depends on the particular

planning area. The Secretary's choice of a presale process is one which focuses on promising acreage. By that he means acreage reasonably determined to be likely to lead to exploration and/or development of oil and gas resources. This judgment is not strictly a geologic one. It is a way of minimizing conflicts early in the presale process by deletion of lower potential/high conflict areas. While the presale process consists of similar steps from planning area to planning area, the decisions are determined on a case-by-case and a sale-by-sale basis. The focus will be on early resolution of conflicts in consultation with affected federal agencies, state and local governments, the public, and potential bidders.

FAIR MARKET VALUE

Let us now turn to bid adequacy and fair market value. The Secretary has chosen to continue in the DPP the bid adequacy procedures that were adopted in February and March of 1984. These procedures incorporate knowledge gained from area-wide leasing and technical adjustments that were made in July 1984. These procedures help to continue to assure fair market value which is one of the requirements of the OCS Lands Act. In addition, the DPP contains a provision to consider revisions to the minimum bid policies if it is found that fair market value requirements can be satisfied by lowering minimum bids and/or using different minimum bids in different planning areas.

SUBAREA DELETIONS

I would like to wrap up with a brief discussion of subarea deletions. The Secretary has called for the use of special conditions or special considerations for parts of planning areas. We have been getting nominations and suggestions for a large number of subarea deletions from a diversity of "commenters." People are suggesting that we not offer for lease major chunks of the OCS. Recommendations come from a variety of sources: Governors, local governments, and others. If there is one general theme of these requests, it is—"I do not want leasing off my shores."

If the Secretary were to take everyone's suggestions, the program would be cut back severely and could be closed down in some areas. He has many difficult decisions to make. He is weighing the suggestions carefully. He said he is not going to close the door on the issue. He has made a commitment to look carefully at the issue and study it. The candidates for subarea deletion must be weighed with a consideration of the views of the public, the geological potential of these areas, and the environmental risks.

We expect the Proposed Program to be issued in late 1985 or early 1986 and the Proposed Final Program in very late 1986 or very early 1987. That is the current estimate of timing.

CHAPTER 17

Coastal State Perspective

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INTRODUCTION

The Department of the Interior (DOI) employs a detailed methodology in developing the Five-Year OCS Leasing Program. After an initial review of the draft proposed program, and thinking back over my state's (Massachusetts) experiences with proposed lease sales 52 and 82, I have some observations on the analysis used to develop the program and some suggestions for improvements.

OBSERVATIONS

The usefulness of the program analysis is dependent on the availability of good information regarding the economics of the market, industry interest, the environmental sensitivity and marine productivity of the waters and seabed of the Outer Continental Shelf (OCS), and the estimates of oil and gas in the various geologic prospects. Of these four, the market is perhaps the most difficult to factor into the analysis since price and demand are so unpredictable. Industry interest is also unpredictable, since it is so dependent on the resources estimates, the costs of production and transportation, and the projected market price for oil and gas once the field is in production.

However, we can and should obtain and better utilize information on the environmental sensitivity and marine productivity of the various OCS regions. The problem with the analysis in the draft proposed program is not the methodology used to determine sensitivity and productivity, but the lack of necessary information to make the analysis useful. The habitat types and biological resources chosen for the analysis are good, as they are common to or comparable among the regions. The lack of information, however, in the program analysis on the extent of some habitat types and the abundances of some of the resources makes the analysis useless, since the sensitivity of the region cannot be established. From my perspective, the DOI has an excellent environmental studies program in the North Atlantic. The research conducted has contributed to the data base needed for the sensitivity/productivity analysis. In addition, the National Marine Fisheries Service (NMFS) has extensive

information on the abundance of the region's biological resources. Unfortunately, this information is not effectively used by DOI in the sensitivity/productivity analysis and for some other OCS regions it is not even available.

SUGGESTIONS FOR IMPROVEMENT

To improve its analysis, the DOI should establish more cooperative working relationships with agencies such as NMFS and should focus the Environmental Studies Program on closing the existing information gaps. The Department of the Interior should not consider leasing OCS regions that lack the necessary environmental information for the five-year program analysis.

The resource estimates used by DOI in developing the five-year program and in planning for individual lease sales are the subject of much controversy. Estimates developed by the United States Geological Survey on specific oil and gas prospects are adapted by the Minerals Management Service (MMS) to generate the probable amount of oil and gas to be found in an entire planning area. The oil industry believes the estimates are too low for many OCS regions. The states and others also question their validity and their usefulness in decision-making, since the estimates seem to be poorly correlated with the oil and gas potential of an entire planning area and the numbers are changed so dramatically from time to time.

I believe that, if the DOI were to narrow the focus of its offshore leasing program to those portions of the OCS that are actually prospective, the Secretary of the Interior would find the states and other concerned parties more willing to accommodate leasing in those discrete areas. All parties involved in the leasing process need more reliable information on the resource potential and possible development scenarios for particular sale areas, in order to assess their interests in and concerns about a lease sale. I think we need to consider new ways of leasing smaller areas which are more certain prospects for oil and gas. Initial drilling should be limited to those wells necessary to determine if commercially significant quantities of petroleum hydrocarbons are present.

I suggest that the DOI consider establishing a process for limited on-structure drilling as a way of evaluating prospects prior to a lease sale. The oil industry would cooperatively drill these exploratory wells as they presently do on Continental Offshore Stratigraphic Test (COST) wells in frontier areas. Interior's process would include tract nominations by industry for on-structure COST locations, an MMS evaluation of these nominations, and the establishment of a drilling area of less than 100 blocks. The Minerals Management Service would auction these drilling rights, after conducting an appropriate environmental analysis. All the well data and information would be made available to the public once the last well was drilled. The Minerals Management Service would evaluate these data and other geologic information and decide whether a lease sale is merited. The maximum size of the sale area would be limited to a discrete area closely associated with the COST well area. If MMS decided to go forward with a lease sale, they would prepare an environmental impact statement and the leasing process would be conducted as it is at present.

My idea is a general one and many of the specifics would have to be determined. There would need to be incentives established for industry to participate, agreement among the affected parties regarding the size of the COST well area, and agreement on the regulations that would govern the drilling program. I think this program would improve the analysis used to develop the five-year program. If the results of the on-structure COST well program were positive, there would be better information available for use in preparing environmental impact statements, and for developing more realistic transportation and production scenarios. If the results

showed an area to be a poor hydrocarbon prospect, countless hours and dollars would be saved. I'm sure we would all like to avoid a repeat of Sale 82.

CHAPTER 18

The Oil Industry Position

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It goes without saying that industry supports the concept of the Five-Year Program as a planning and budgeting tool. Industry believes the Department of the Interior (DOI) has done a very thorough and commendable job in attempting to achieve the difficult balance between the many interests involved in developing the Draft Proposed Program (DPP).

The Nation deserves a new schedule, one which will afford continued opportunities to evaluate the resources of all areas. Such timely evaluation can best be achieved by continued reliance on a vigorous area-wide offering system and a balanced and predictable five-year leasing schedule. Companies recognize that the national interest requires an effective and efficient mechanism which will permit the remaining petroleum resources of the Outer Continental Shelf (OCS) to be identified and developed in a timely manner while simultaneously preserving and protecting the valuable marine and other resources of our ocean and coastal zones. That continues to be the position of the petroleum industry.

AREA WIDE LEASING

Industry continues to endorse the area-wide offering system and the manner in which the area-wide concept is employed by the existing five-year leasing program. The important aspects of area-wide leasing from an industry standpoint are:

1. Ability of a company to make a tract selection anywhere in an area. This does not mean to select the entire area; and
2. The willingness of DOI to include *all* nominated acreage in the sale—excluding *only* acreage on which a serious negative nomination has been received.

Having said that, let me go on to point out that area-wide leasing is achieving the objective of the Outer Continental Shelf Lands Act Amendments (OCSLAA) to expedite exploration of the OCS in order to achieve national economic and energy

policy goals, assure national security, reduce dependence on foreign sources, and maintain a favorable balance in world trade. Area-wide leasing fosters innovative approaches to petroleum exploration. It allows companies to generate exploration ideas and then bring them to life through nominations on areas perhaps ignored by others. Over the long term, this technique will result in the location and development of far more hydrocarbon reserves than the tract selection system.

When incorporated in a five-year leasing schedule, the area-wide system also ensures that companies are able to follow promising leads throughout entire subareas, since that acreage can be nominated at the next area sale. Frequent sales and streamlined procedures permit rapid follow-up of promising exploration areas. The larger the number of opportunities, the greater the chance for significant new discoveries *and* the most efficient use of capital available for exploration activities.

The disappointing results of recent exploration work in frontier areas emphasizes the need to continue using the area-wide offering concept. We estimate that just to keep even with current levels of domestic production we must find the equivalent of 3.8 million barrels of oil and more than 50 billion cubic feet of natural gas each and every day. I am convinced that industry stands a much better chance of meeting, or approaching this objective if it is allowed to pick its own plays and acreage in a planning area, as noted above, rather than being restricted to local areas selected by the Department of the Interior.

SALE SCHEDULE AND FREQUENCY

To maintain balance, ensure equal sharing of the rewards and benefits of OCS oil and gas exploration, development and production, and encourage the thorough evaluation of all OCS planning areas, we believe that a sale schedule should provide for the following:

- 1) annual sales in both the western and central Gulf of Mexico planning areas;
- 2) biennial sales in those planning areas identified by oil and gas companies as having higher interest/higher value; and
- 3) triennial sales in those areas receiving lower interest/lower value ratings from responding oil and gas companies.

The program should also retain adequate procedural flexibility so that it can be adjusted to reflect mid-course changes in area prospectiveness, due to the infusion of new exploratory concepts or techniques, the result of future drilling activity, or changes in economic conditions.

PRE-SALE PLANNING PROCESS

The Department of the Interior's current proposed Outer Continental Shelf Five-Year Program introduces an additional procedural step at the beginning of the planning process called "request for interest," scheduled four months prior to the call for information for OCS frontier sales. Industry is not totally convinced of the need for a new "request for interest" milestone. The Minerals Management Service should receive information at the call for information milestone sufficient to make the decision to proceed with the scheduled sale. The new milestone is an additional formal step not heretofore a part of the Five-Year Leasing Program. It may prove to be just another opportunity for litigation and delay.

These "frontier sales" should be included as standard sales in the Draft Proposed Program, rather than being included as "tentative" sales. If the Secretary determines that these areas should be on the lease sale schedule (as he apparently has determined), then the presumption should be that the sales *will* go forward unless, based on information received during annual program review or pre-sale planning, there is adequate reason to defer or cancel the sale. That is the way the program should work—to reduce, not increase, uncertainty.

WITHDRAWALS

Industry has consistently urged that the Five-Year Leasing Program stress early consultation, coordination and environmental assessments in order to minimize the withdrawal of acreage from proposed lease sales, after completion of the Final Environmental Impact Statement (FEIS). Unfortunately, events of the past several years show that very large withdrawals are made by Congress or by the Department of the Interior *after* publication of the Final Environmental Impact Statement.

These large withdrawals nullify the clear advantages of the area-wide offering approach, especially when the acreage withdrawn represents excellent prospects for new discoveries. Industry urges that the Minerals Management Service continue the presale consultation efforts under Section 19 of the OCSLAA but that decisions on which acreage will be included in, or excluded from a sale be concluded by the time the Final Environmental Impact Statement is published.

That gives a general sense of where industry is coming from as to the Outer Continental Shelf Five-Year Leasing Program. But there are two other issues intimately associated with the Outer Continental Shelf schedule and which are controversial as well. These are: fair market value and resource estimates.

FAIR MARKET VALUE

The argument over fair market value of Outer Continental Shelf acreage rages on—and nothing that will be said today is likely to change that. The value accepted by the Department of the Interior for a tract at a lease sale is, by definition, fair market value. That is, the value involves a willing buyer, a willing seller, and no coercion. Fair market value is in no way conceived to be real value, future value, or maximum value. For example, look at the Outer Continental Shelf leasing history. As of the end of 1983:

Tracts Offered = 61,043
Tracts Leased = 7,317
Billion Bonus = \$51

Each of these tracts was purchased at fair market value—regardless of the individual bonus accepted. Not all of these tracts ever produced a barrel of oil or a million cubic feet (MCF) of natural gas, but at the end of 1983 there was an all-time high of producing leases offshore—a grand total of 1386 leases. For the sake of argument, let's say an additional 50 leases have produced in the past but are no longer productive. That will give us a total of approximately 1,436 leases that are or were productive. That's 1,436 of 7,317 tracts leased or about one fifth (19.6 percent, to be exact).

There is now a total of 3,772 tracts still held by industry. So 3,545 tracts have been surrendered to the Department of the Interior. The value of all 3500 of these tracts combined is *zero*, today. But not necessarily forever—as we will note later. What about the 1,386 producing leases? Certainly some of these will make a

handsome profit for the lessee, but I would anticipate that the majority will not. Some, although productive, will never show a profit.

There is an important point to be made here. Industry's overall return for its total offshore investment can come *only* from the profit realized from these few *profitable* Outer Continental Shelf leases. The investment includes \$51 billion spent as lease bonus, the additional expenditures for all seismic, gravity, magnetic, sea floor, archeological and other surveys, the cost of all exploratory development and COST hole drilling, lease rentals and royalties, computers and computer processing, technical personnel at all levels, transportation, offshore and onshore facilities, offices and overhead, taxes and services, etc. All these costs must be recovered from the profit generated by the relatively few profitable leases.

On the federal side, the bonus is only the beginning of the income stream from offshore. One Department of the Interior official in 1982 testified that only 25 percent of Outer Continental Shelf revenue to the Department of the Interior comes from bonuses, the other 75 percent from royalties and taxes. All leases require yearly rental payments as long as the lease is held or until it is incapable of production. The interim between discovery and production is covered by minimum rents, while producing leases are generating royalty. These and other incomes so far have brought the federal lessor a total of about twenty billion dollars of additional revenue, and annual income from these sources is growing each year.

At the end of 1983, the Department of the Interior had received 54 percent (68 billion) of the \$126.6 billion attributed to oil and gas produced offshore. This is before the income taxes industry must also pay on the oil and gas produced.

Yet another source of revenue is the re-sale of leases once held and surrendered, occasioned by new ideas or better, more advanced technology. So, charges that the government is not obtaining fair market value offshore are specious on many counts.

RESOURCE ESTIMATES

This is another area of current controversy, particularly in light of recent Minerals Management Service reductions of earlier forecasts. What's the fuss about? No one believed the earlier figures anyhow.

Certainly there have been a number of disappointments offshore in the last few years or so. The outlook for some areas has changed for the worse. But let's not panic. Neither the North Sea, nor Hibernia, offshore Canada, were discovered with the first few wells drilled in the areas. The same is true in the greatest producing province in the U.S.A. Most of the prolific discoveries on south Louisiana salt domes were made only after repeated wildcats—sometimes dozens.

But let's look at another offshore basin leased and drilled before all this huffing and puffing about reserve estimates. One of the most disappointing offshore areas for the oil industry was the Gulf of Alaska. That area was leased in 1976 and at the time was probably number one on every oil company's list of promising offshore areas. Two years later a series of unsuccessful wildcats were drilled. The basin now is rated number 19. But it still is on the list, and I will bet that no serious offshore operator has written the Gulf of Alaska off completely.

A new geologic concept may surface, or a new or improved geologic technique may show industry where it made its mistakes in the 1970s. When and if this happens—and it is constantly happening in other areas—then the Gulf of Alaska might again be considered as one of our offshore's most promising basins, and the second time industry may be right. My message is that we should remember that reserve estimates are nothing more than guesses based on what we think we know and what we think we see today.

We should assume only one thing about regional reserve estimates. Regardless of who makes them and regardless of the system used, they will all ultimately be proven wrong. Let's not overreact.

Two particularly interesting reports on the OCS program were presented yesterday; namely social cost and social value. Both are very interesting studies but not on the same statistical basis. One shows significant costs, the other even more significant social value from the five-year program. But what I kept thinking about during these presentations was 70+ billion dollars. That's the federal revenue or, more accurately, the revenue to the American people from the Outer Continental Shelf program through 1983. And the revenue will grow year by year in the future.

At the end of Section Four, we heard Jim Curlin define a successful Environmental Impact Statement (EIS) as one that could pass the scrutiny of the courts. Let me propose that a successful five-year program is one that expedites development of the Outer Continental Shelf—that carries out sales on schedule. Don't force industry to continually adjust its very expensive exploration and leasing programs and budgets. That is not efficient.

Finally, there are two booklets published by the National Ocean Industry Association available for your reading: one on Area-Wide Leasing; and a second on America's Five-Year Offshore Leasing Plan. These will give you more information and rationale on industry's positions.

CHAPTER 19

Environmental Perspectives on OCS Leasing Policy

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I would like to start by saying a few words about the process used to develop our nation's offshore oil and gas leasing policy. I then will devote the major portion of my remarks to environmental perspectives on Secretary Hodel's Draft Proposed Five-Year Outer Continental Shelf (OCS) Leasing Program.

A very thorough process now exists for development of an OCS leasing policy. As a result of the statutory criteria in Section 18 of the OCS Lands Act Amendments and court decisions interpreting that section, the Department of the Interior (DOI) must be very explicit about the assumptions it makes and must provide a detailed analysis buttressing its selection of a leasing program. There are also several opportunities for public review and comment. We think these aspects of the process are excellent.

Notwithstanding these points, there are major problems with the process. The principal problem is the excessive flexibility and discretion that the Secretary has in utilizing the analysis that emerges from the process. For example, the DOI can conduct a very detailed quantitative and qualitative analysis of the benefits and costs which form the basis of a schedule of lease sales. However, the Secretary may select a single factor such as industry interest and use it to completely revise the schedule. While some level of discretion is clearly necessary, the broad discretion afforded the Secretary under the statute allows him to continually elevate industry interest over environmental concerns.

A second concern about the process is that there is no action-forcing mechanism to get the Secretary to set aside certain areas for environmental reasons. For other natural resource programs, including the management of forest service lands or Bureau of Land Management lands, the federal agency as part of its five-year or ten-year planning process sets aside certain areas to be protected. The Department of the Interior under the OCS Lands Act has no mandate to do this and has not done it. We think this is a serious problem.

The third point I would make about the problems with the process concerns the lack of a requirement that state recommendations be given serious weight. Section 19 of the OCS Lands Act requires serious weighing of state comments at the lease sale and subsequent stages. This provision, however, does not apply to the five-year OCS

lease sale planning stage nor does any similar requirement. I think this is a drawback.

SPECIFIC CONCERNS WITH THE DRAFT PROPOSED FIVE-YEAR PROGRAM

I would now like to turn to specific concerns about Secretary Hodel's Draft Proposed Five-Year Oil and Gas Leasing Program which was issued in March of 1985. The Natural Resources Defense Council submitted comments on behalf of a number of environmental groups in response to that program in May.

Scope and Pace of Leasing

The new Draft Five-Year OCS Leasing Program (1986-1991) has been portrayed as slowing the pace of offshore oil and gas leasing. The facts indicate otherwise.

While the number of lease sales in each planning area outside the central and western Gulf of Mexico has been reduced to one every three years, at least two new planning areas are proposed for leasing. These are the entire Washington and Oregon coast and Hope Basin in Alaska. The Draft Program proposes *more* lease sales than the Five-Year Program adopted by Secretary Watt: 43 sales vs. 41 sales. The addition of two new planning areas also means that the acreage proposed for leasing *exceeds* the 1 billion acres covered under the current program.

Revised Resource Estimates

The recently released OTA study entitled *Oil and Gas Technologies for the Arctic and Deepwater* (1985) includes Minerals Management Service revised resource estimates for the OCS. These revised estimates show a 55 percent drop for oil and 44 percent drop for gas since 1981.

If the estimates are as low as Minerals Management Service (MMS) currently believes, one important question is whether the OCS can play a major role in securing our nation's energy future. In our view, these lower estimates suggest there is less of a driving need to lease areas of high environmental sensitivity or marine productivity that also are low in hydrocarbon potential. The environmental risk is simply not worth the small amount of oil or gas to be found.

Economic Analysis

Because of the importance of the economic analysis underlying the DOI's Draft Program, we asked two economists to review the analysis, Dr. Joseph Stiglitz, Professor of Economics at Princeton University and Dr. Michael Kavanaugh. Both economists concluded that a proper economic analysis supports a more controlled rate of OCS leasing than proposed in the Draft Program. They rejected the area-wide leasing approach on the grounds that it leads to inefficient resource development and prevents attainment of fair market value by the Federal Government.

Both economists recommended that OCS planning areas be defined more narrowly in light of the significant differences in the value of oil and gas resources within planning areas. Such a narrowing of the planning areas would permit a more accurate assessment of the costs and benefits of proceeding with leasing in these areas.

Area-Wide Leasing

A major concern we have about the Draft Program is the continuing commitment to offering huge areas of the OCS for lease at one time. Minerals Management Service Director, William Bettenberg, recently stated at hearings held before the House Interior Committee that the Department's current so-called "modified" area-wide leasing approach was being carried over into the new program.

In our view, the "modified" area-wide leasing approach is hardly distinguishable from the original area-wide approach. For example, this coming fall there are three sales scheduled, each of which involves massive lease offerings: Sale 111 off the mid-Atlantic, 20 million acres; Sale 89, in the St. George Basin off Alaska, 65 million acres; Sale 94, eastern Gulf of Mexico, 50 million acres. If this is "modified" area-wide leasing, we fail to see it.

We would like the Department to explain the continuing need for the modified area-wide approach in light of the large inventory of leases industry will have acquired under the current Five-Year Program. Many of these leases are of ten-year terms. Will the offering of extensive acreage under the next Five-Year Program really result in rapid inventorying of our nation's oil and gas resources or merely the speculative acquisition of leases at bargain prices by oil companies?

Flexibility Provision

Another major issue we have raised is the Draft Proposed Program's "flexibility" provision which would allow the Secretary of the Interior to advance sales in several areas based on changed economic or geologic conditions. We oppose this provision and believe it should be deleted from the program.

First, we question whether this provision is consistent with the statutory requirement regarding revisions to the Five-Year Program. Section 18(e) of the OCS Lands Act Amendments provides that the Secretary:

may revise and reapprove a program, at any time, and such revision and reapproval, except in the case of a revision which is not significant, shall be in the same manner as originally developed.

We believe the DOI may not use the flexibility provision to make significant changes in the program without following the statute's directive.

The program lists eight planning areas for which the flexibility provision might be utilized. The areas listed include areas along the California coast, the Florida Gulf and four areas in Alaska which contain some of the world's richest fisheries. Advancement of sales in these areas would affect planning by coastal communities, the states and the public and reduce the time available for gathering valuable environmental information. Advancement of lease sales in these areas would in our view constitute a significant revision of the program. If the sale dates in eight significant planning areas can be advanced at the Secretary's broad discretion, doesn't this seriously undercut the value of the program as a planning document?

Deletion of Sensitive Areas

A key issue of environmental concern is the deletion of sensitive areas. We believe that the DOI should be able to delete certain areas at the program stage so that the battle over inclusion of these areas does not have to be fought again and again for

each lease sale. The statute provides a mechanism by which the program may be revised to add such areas at a later date if it is necessary.

Under the current leasing program, there has been an accumulation of information from leasing and exploration in most frontier areas of the OCS. Based on this information, the Department should be able to assess areas of low energy potential and low industry interest within planning areas. Where these areas coincide with areas of high environmental sensitivity or marine productivity, the Department should consider deleting these portions of planning areas from the Five-Year Program.

CONCLUSION

In conclusion, the process utilized to develop the OCS leasing program fails to assure that environmental and coastal state concerns are adequately addressed. The Draft Proposed Program developed by Secretary Hodel has limited value as a planning tool and fails to affect a proper balance between rapid resource exploitation and environmental protection.

CHAPTER 20

Offshore Petroleum Exploration 1986-1991:

The Last Hurrah?

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Have we—the ocean community—reduced the national debate over offshore leasing to a subset of not-so-trivial, but nevertheless, esoteric issues? Have we lost the sense of broader national concern and global importance in our self-centered debates focused on state-federal coordination, state's rights, and the almighty lease-sale dollar? Yes!... The current public debate is parochial, offers few new "facts" for consideration, and fails to confront several major aspects affecting national interest, and economic and military security.

Since 1937, the "tidelands" controversy between the Federal Government and the states over control of the resources on the Continental Shelf has dominated the issues related to offshore petroleum development. A brace of Supreme Court decisions, two Presidential Proclamations extending U.S. jurisdiction seaward, a couple of international Law of the Sea Conventions, and several Acts of Congress dealing with offshore leasing and marine resources have only changed the emphasis—not the basis—of the debate over state and federal administration of the offshore leasing program.

During the interim, the debate has been institutionalized. Washington offices have opened to represent special interests on all sides of the issues. Lobbyists are into the second decade of "protecting" their client's interests; others have retired. The public debate has become nearly "ritualistic," with points and counterpoints on any issue wholly predictable on both sides. Political alliances have been formed; sometimes among strange bedfellows. Some influence peddlers seem more interested in "playing the game" than in "solving the problem." Adversaries have learned to tolerate each other, but have communications really improved?

Hyperbole is not foreign to the debate. Overstatement has been contributed by all sides. Projections of environmental "gloom and doom" are met by inflated claims of "oil bonanzas" offshore that will ensure "national security." Questions about oil spill cleanup are answered with self-assured assertions, but little proof of effectiveness.

"Facts" become "perceptions" and analysis gives way to legalistic pleading. Are we any closer to a "national consensus" on the conduct of offshore leasing now than at the enactment of the Outer Continental Shelf Lands Act in 1953? More importantly, is a consensus possible?

Few opponents of the OCS leasing program are unabashed enough to publicly assert that they are uncompromisingly opposed to offshore oil and gas development. Not a single coastal state, or a major national environmental organization has made such claims, but restrictions proposed by some would, for practical purposes, have that effect. Industry pleads simply for "certainty" and "predictability" in the leasing process, yet its lobbyists curry political action to push overly ambitious offshore leasing programs that invite lawsuits, public outrage, and ultimately congressional leasing moratoria. Rhetoric for environmental protection has become inextricably interwoven with the less-noble coastal states' quest for "revenue-sharing." Notice how these issues were even joined in the program for this conference.

America's resolve for protecting the environment is unequivocal, but so is its commitment to national security and a strong, competitive economy. Little in the current debate over OCS oil and gas development addresses these issues. We have shamefully reduced the national debate over the future of our offshore energy resources to scrapping over the revenues from federal oil and gas leases and to arguing whether a federal bureaucrat or a state bureaucrat should regulate the industry. Is it not time to redefine the questions, to update the debate in light of the nation's future, and to recognize that the position of the United States is changing in a world undergoing major economic and political transitions?

OUR NATIONAL ENERGY POLICY AND THE OCS CONTRIBUTION

If we are to advance the debate over federal offshore leasing, we must establish a new foundation for discussing the important issues that is based on a broader concept of "national need." Development of offshore petroleum resources must be debated as a major component of an integrated national energy supply system, not piecemeal as if OCS resources are the exclusive playtoys of "ocean groupies" or "industry fundamentalists." There are several aspects to the changing dimensions of offshore oil and gas exploration and development that should be considered in reformulating this debate:

The United States' Petroleum Situation is More Precarious Than Current Conditions Indicate

Energy analysts generally agree that U.S. petroleum consumption will gradually increase through the end of the century, while domestic production will remain steady or slightly decrease. This trend suggests that imports of petroleum products will likely increase, adding even more to the \$52 billion paid to foreign suppliers in 1983. Lower gasoline prices have stimulated consumption, and if use-trends continue upward, petroleum imports could contribute even more to the trade deficit by the year 2000.

The Department of Energy (DOE) projects that the U.S. can continue to produce about 8 million barrels per day through the year 2000—it currently produces 8.9 million—but to do this perpetually, we must discover and produce 2.9 billion barrels of petroleum each year. Currently, only 4.6 billion barrels of oil are estimated to be discovered and recoverable in all of the OCS after over 30 years of exploration and production (6.4 billion barrels have already been pumped)—only 1.6 times more than that which must be discovered each year from here on to keep the ledger even. Of course, not all of the petroleum to be discovered is expected to come from the federal

offshore, but the prospects for "giant" discoveries onshore—like the 12 billion barrel Prudhoe Bay field—are low outside Alaska.

Current excess world oil production has driven crude oil prices to less than \$18 per barrel. Low oil prices and a buyers market, particularly with the current overvalued dollar, have led the public and the government into general complacency. The supply bubble will not last forever, and when it bursts the economic consequences may be severe. Inflation during the past four years was not "whipped" as much by skillful economic strategies, as by greedy petroleum-producing countries seeking hard currency in a worldwide recession by increasing oil production, thereby depressing world energy prices.

Federal policy continues to respond only to crises. Because of low oil prices, ample supplies, and budget considerations, the Federal Government has relaxed its emphasis on energy conservation, dismantled its forward-looking synthetic fuels research, and is phasing down oil purchases for the Strategic Petroleum Reserve. These actions promise to increase pressure for accelerated exploration in the OCS and onshore in the future as a "cushion" in the event of an oil supply disruption.

The Petroleum Industry is in The Process of An Economic Shakedown

Mergers, leveraged buyouts, and hostile corporate takeovers have plagued the once stable petroleum industry in the last few years. While the cause for mergers and takeovers varies among transactions, much of the impetus has been attributed to the pessimistic outlook for success and the high cost of exploration to discover and produce new oil. In a nutshell, it is cheaper and more certain to purchase existing reserves than to take the financial risk of unsuccessful exploration. While such corporate strategies may make business sense, they do not add a single new additional drop of oil to the national reserve base.

Firms threatened with takeovers defend themselves with a number of corporate maneuvers: stock buy backs, increase debt to make them less attractive, write down assets, dilute stocks, etc. A company which successfully takes over another often mortgages its financial future in order to afford the buyout. The net result in either case is generally the same—less money to invest in exploration and plant expansions, and distraction of corporate management from exploration and development goals. Merger-takeover trends, should they get out of hand, could seriously jeopardize future exploration.

Another industry trend that bears watching is the erosion of U.S. refining capacity with increases in imports of finished petroleum products. Oil-producing countries are expanding refinery capacity to take advantage of the value-added by exporting products instead of crude oil. United States production capacity is shrinking as refineries close because an imported barrel of finished petroleum products can currently be purchased for about the same price as a barrel of unrefined crude oil. This trend parallels those of other U.S. basic industries that have collapsed: steel, ferroalloys, copper. Once the capacity to process raw materials diminishes significantly, options for meeting domestic demands are reduced and market strength shifts to the exporter.

Financial Uncertainties Tend To Chill Industry Risk-Taking

World oil prices peaked at about \$35 per barrel in 1981. They have since declined to about \$18 per barrel as a result of overproduction. Price instability makes corporate managers cautious about the future. While the petroleum industry is accustomed to gaging business risks from assumptions about future energy prices, OPEC's pricing and production policies add another dimension of uncertainty. For

example, ARCO's recent restructuring, which resulted in liquidation of its eastern U.S. refining and retail facilities, was based on the assumption that oil prices may dip as low as \$18 per barrel in the near future, which has since occurred.

Price forecasting is a black art, but petroleum economists expect that prices may continue to dip between 1985 and 1989 but after 1992 prices might rise significantly to \$40-\$45 per barrel by the end of the century. It is this anticipated rise in crude oil prices 15 years hence that the offshore industry must bet its venture capital on to undertake long-term, incredibly expensive projects in the Arctic.

It is estimated that after taxes and a 10 percent profit, the minimum price that oil must bring from offshore California is \$27 per barrel, Gulf of Mexico \$27.50 per barrel, Harrison Bay (Beaufort Sea) \$28 per barrel, Norton Basin (Bering Sea) \$28.50 per barrel, and Navarin Basin (Bering Sea) \$30.50 per barrel. Today's oil price of \$18 per barrel is not profitable in the mature Gulf of Mexico and California regions, in Harrison Bay and Norton Basin, and in the Navarin Basin. In the parlance of drawpoker players, the industry is "betting on the come."

Prospects for "tax simplification" introduce further uncertainties for investment decisions. Tax treatment of exploration costs, equipment and resource depreciation, investment credits, and windfall profits can have a significant effect on the profitability of investments in the frontier deepwater and Arctic regions.

Expectations For Offshore Oil and Gas Resources Have Been Lowered

Reality has caught up with myth. The Arab oil embargo in 1973 provided the offshore industry an opportunity to impress upon government decision makers the important role that offshore petroleum resources could play in gaining "energy independence." The industry did such a good job of convincing the Congress and the executive branch of this, that the assumption that immense pools of oil and gas lie in the OCS for the taking became a major unspoken cornerstone in U.S. energy policy. In the effort to make a case for going slow on offshore development, environmental interests played a similar game by speculating that the development of these large volumes of oil would have the potential for destroying the environment and disrupting life in the coastal states.

Petroleum geologists and engineers are by definition optimists. However, the alchemy they rely on for predicting the possible existence of economically recoverable petroleum resources is based as much on intuition as on science. There remains only one way to determine whether petroleum exists at any single location and that is to drill. Ironically, the offshore drilling program in the frontier regions—those outside the proven areas of the Gulf of Mexico and southern California—has discovered little oil. The industry's outlook has soured in the Atlantic region, the Gulf of Alaska and lower Cook Inlet have all but been abandoned, and disappointments in the Beaufort Sea and upper Bering Sea have given the industry reason for pause.

It now appears that the petroleum resources of the OCS will not contribute as substantially to the nation's future energy supply as was once thought. In 1983, production from the OCS contributed about 10.7 percent of total domestic oil production. The question remains, whether the contribution from the OCS will ever rise much above this figure?

In March 1985, the Minerals Management Service reassessed offshore oil and gas potential based on exploration completed since 1981, additional geologic information that has been collected, and changes in economic recoverability. As a result, OCS oil potential was reduced 55 percent and natural gas 44 percent. Most of the reductions were in the Atlantic and Alaskan frontiers, which were once considered the best prospects for very large discoveries.

The Continental Shelf: Resources, Boundaries and Management

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