

# Tulsa Law Review

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Volume 13  
Issue 4 *National Energy Forum 1978:*  
*Government- Helping or Hurting?*

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1978

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### Recommended Citation

Charles P. Eddy, *Outer Continental Shelf Exploration and Development: New Policies for Changed Conditions*, 13 Tulsa L. J. 730 (2013).

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# OUTER CONTINENTAL SHELF EXPLORATION AND DEVELOPMENT: NEW POLICIES FOR CHANGED CONDITIONS

Charles P. Eddy\*

## I. INTRODUCTION

The Outer Continental Shelf (OCS) holds significant potential for reversing the downward trend in U.S. domestic oil and gas production, and the Carter Administration's Energy Program depends in part on the successful exploration and development of OCS resources. But this statement must be treated with great caution. There are a number of uncertainties and needs that must be addressed before exploitation of these resources becomes reality. These fall into three broad categories: (1) uncertainty as to the resource base itself; (2) technological uncertainties associated with unusual operating environments and potential impacts in certain frontier regions; and (3) the need for state and local governments to deal with the potential impacts of development by an industry with which they may be unfamiliar.

Our current OCS leasing and regulatory program is directed at these issues. We believe we can successfully address them, but it will take a concerted effort by all concerned parties, the Interior Department, industry, and the states.

OCS development to date has proceeded almost entirely in the well-known and relatively benign confines of the Gulf of Mexico. Here, operating conditions tend to be relatively well understood. Although the move to deeper waters entails greater risks, there is a general belief that we will be able to overcome potential problems. Equally important, there is a well-established onshore infrastructure

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based on nearly thirty years of operating experience. Governments and the people are familiar with—in fact, closely tied to—the oil and gas industry. This situation, for the most part, does not apply in the frontier areas of the East, West and Alaskan coasts. The natural result is a high level of uncertainty. This has led to skepticism in dealing with both the industry and the Department of the Interior.

Establishing the basis for state involvement in the OCS program has now been introduced as a basic component of the Interior Department OCS program. The President's Environmental Message to Congress of May 23, 1977 laid down several key elements of the program: (1) work closely with the governors of affected coastal states to guarantee that proposals for the timing and sequence of offshore lease sales are reasonable, not only in a technological sense but also in economic, social, and environmental respects; (2) establish an OCS information clearinghouse to receive inquires about federal OCS activities; (3) develop regulations, operating orders and lease provisions specifying the information required from industry about both the offshore and onshore impacts of prospective development; (4) facilitate cooperative planning among industry, the Interior Department, the Department of Transportation and the states for lease development, pipeline locations, pipeline standards, and onshore facilities; and (5) establish procedures for compliance with the National Environmental Policy Act in connection with development plan approvals.

Some of the authority to implement these measures exists under current law, and, as discussed later, several essential steps have already been taken. But, just as experience to date has been in the Gulf of Mexico, so the legal regime that governs OCS activities was based on the experience of the Gulf. The 1953 OCS Lands Act<sup>1</sup> in effect extended the system in use in Louisiana waters to the OCS. The OCS Act has been a viable flexible law and has been able to accommodate many—but clearly not all—of the problems encountered to date. The OCS Lands Act Amendments of 1978,<sup>2</sup> while introducing a much more detailed and complex legal regime, provides the additional needed authorities to bring the system in tune with the needs of the time.

I will come back to what I believe to be the most critical—and potentially the most controversial—aspect of the modified OCS program. But before doing that I would like to touch on the resource

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1. 43 U.S.C. §§ 1331-1343 (1970).

2. *See* S. 9, H.R. 1614, 95th Cong., 1st Sess. (1977).

potential of the OCS, particularly in frontier areas and the OCS leasing schedule.

## II. THE UNCERTAIN POTENTIAL OF THE OCS

The only experience to date in the frontier OCS has been the Gulf of Alaska, and with nine dry holes to date results after two years are not encouraging. Since the potential of the Gulf of Alaska was rated relatively high among the frontier areas (sixth out of sixteen), this does not mean necessarily that the outlook is equally discouraging in other areas. It is too early to tell; we will only know by leasing and exploring.

What do we currently know about the frontier areas? With only limited seismic data in hand and almost no drilling, we are in the realm of speculation. In a 1975 United States Geological survey<sup>3</sup> the primary emphasis was placed on crude oil and natural gas in the onshore provinces and the provinces on the continental shelf out to water depth of 200 meters. The resource estimates were made by reviewing a large amount of geological and geophysical data on more than 100 different provinces by over seventy specialists within the survey. A variety of resource appraisal techniques and subjective probability procedures were applied to each province.

The Geological Survey estimates that the offshore contains thirty-two percent of the undiscovered oil and twenty-two percent of the undiscovered gas in the country.<sup>4</sup> Of the total undiscovered recoverable oil and gas resources for the offshore, fifty-eight percent of the oil and forty-one percent of the gas are estimated to come from Alaska. There are sixteen major OCS areas for undiscovered oil and gas.<sup>5</sup> If these

3. *Geological Estimates of Undiscovered Recoverable Oil and Gas Resources in the United States, Circular 725*, U. S. GEOLOGICAL SURVEY (1975) [hereinafter cited as GEOLOGICAL SURVEY].

4. *Id.*

5. OCS areas listed in order of decreasing potential for undiscovered recoverable oil and gas include:

<i>OIL</i>	<i>GAS</i>
Chukchi	Central Gulf of Mexico and South Texas
Central Gulf of Mexico and South Texas	Chukchi
Beaufort Sea	Beaufort Sea
Bering Sea	Gulf of Alaska
Mid-Atlantic	Bering Sea
Gulf of Alaska	Mid-Atlantic
Santa Barbara Channel	North Atlantic
Lower Cook Inlet	Lower Cook Inlet
Southern California	Santa Barbara Channel
MAFLA	Bristol Bay Basin

areas were ordered by BTU value, the lists would be very similar, although the central Gulf of Mexico and lower Texas would be at the top.

In order to put the undiscovered oil and gas potential of the total national OCS into perspective, the following scenario might be useful. If we assume that all of our OCS areas contain the statistical mean resource estimates for undiscovered oil (29.9 billion barrels), and that the average annual production rates from this resource base for each of the OCS areas are totaled, this would amount to 1,156 billion barrels of oil per year for an average of twenty-three years from the total U.S. OCS. When measured against projected U.S. consumption in 1985 (6.6 billion barrels) and the 1977 level of imports (3.2 billion barrels), we can see that, while important, the OCS is not likely to cure our energy ills.

But again, these levels are purely speculative. Since the publication of the survey in 1975, what new information has been learned about the OCS?

A. *Alaska*—Proprietary and nonproprietary seismic data indicate many large structures in the Beaufort Sea. Many of these structures, especially in the deep water part of the Beaufort, are similar to those producing in the Gulf of Mexico and the McKenzie Delta of Canada. Recent oil and gas discoveries offshore Canada by Dome Petroleum and two recent discoveries by Exxon (Pt. Thomson and Flaxman Island) just to the southeast of the proposed state federal Beaufort Sea sale suggest that the Beaufort Sea has high oil and gas potential.

A large gas seep has been discovered in the Norton Basin of the Bering Sea. Although this in itself is not indicative of a large hydrocarbon accumulation, its presence certainly is encouraging. Also in the Bering Sea (Navarin Basin), many amplitude anomalies on seismic record sections have been recognized. These bright spots could suggest frozen gas.

It is too early to tell how the Lower Cook Inlet will fare, but we ought to have a fair idea by the end of the year. In the Gulf of Alaska it has been suggested for some time that the quality of the potential reser-

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North Atlantic  
Bristol Bay Basin  
Northern California  
South Atlantic  
Washington-Oregon  
Southern Aleutian Arc

Southern California  
MAFLA  
South Atlantic  
Northern California  
Washington-Oregon  
Southern Aleutian Arc

voir rocks would not be good. The available information from the wells so far has shown poor reservoir rocks. The formation thus far penetrated has been shaly, tight and deeper than originally expected.

B. *West Coast*—We have not learned much more about Washington-Oregon and Northern California since 1975. Exploration on the Tanner Banks nearly 100 miles off Southern California has been an expensive failure so far. However, recent discoveries by Shell and Standard of California in San Pedro Bay appear to be promising. Shell discovered 520 feet of oil between 2,405 and 4,172 feet. The well lies approximately seven miles southwest of the nearest production in the offshore extension of the Huntington Beach field and about ten miles south of the nearest production in the offshore extension of the Wilmington Field. Standard Oil of California discovered 250 feet of oil apparently on the same structure. The Santa Barbara Channel continues to look exciting due to several recent discoveries.

C. *Gulf of Mexico*—The Gulf of Mexico is still the bread and butter area for the offshore. The Gulf ranks near the top of the list in terms of undiscovered oil and gas potential as reported in government and industry ratings. However, a preliminary interpretation from recent detailed examination of the Gulf by the U.S. Geological Survey suggests that the undiscovered oil and gas potential may be less than the estimate reported. Discoveries still are being made in the Gulf, but they have not been large.

The deep water Gulf of Mexico could contain a billion barrels of oil and fifteen TCF of gas. However, there has been only limited deep water activity. One problem is that in water depths greater than 600 feet there may not be the abundance of reservoir rocks necessary for a large hydrocarbon accumulation, although the source rocks and traps are probably there. The outlook for the eastern Gulf of Mexico off Florida and Alabama is not good.

D. *Atlantic*—The mid-Atlantic (Baltimore Canyon) looks to be the best of the three Atlantic OCS areas. These estimates were made prior to the drilling of the COST B-2 wells, and subsequent data from the well suggest that the shelf may be a more strongly gas-prone province than originally assessed.

The deeper water portion of the Atlantic, especially Baltimore Canyon, may have greater oil potential than does the shelf (this area was not assessed in the 1975 survey).<sup>6</sup> There appear to be large structures, maybe reefs, beneath the slope in addition to an increase in marine organic material. These prospective deep water tracts were not available for lease in the first Atlantic OCS sale.

The data from the COST wells drilled on Georges Bank and the Southeast Georgia Embayment are still confidential, but other publicly available data suggest a lower hydrocarbon potential for these two Atlantic areas than for the Baltimore Canyon.

As more geological and geophysical data becomes available in the offshore (i.e., COST well data), undiscovered recoverable oil and gas resource assessments will be revised and updated. The Geological Survey is planning a publication of a more comprehensive and expanded version in approximately two years. There will probably be an interim report issued in one year on the offshore areas.

### III. LEASE SCHEDULES

The current policy calls for opening almost all areas for leasing, exploration and production in the next four and one-half years. In August 1977, the Secretary announced his revised lease schedule. It is a realistic and systematic introduction to the frontier areas, interspersed with an appropriate number of sales in the developed provinces of the Gulf of Mexico and California. I emphasize the word "realistic." None of the highly optimistic schedules of the past seven years have come close to being met. The policy fluctuated among arbitrarily set leasing goals ranging from three to ten million acres per year. We are confident that we can meet the objective of approximately five sales per year for the next five years. This will provide the opportunity for industry to obtain ample acreage for exploration and subsequent development.

### IV. ADDRESSING ENVIRONMENTAL CONCERNS WITH OCS EXPLORATION DEVELOPMENT

The impacts of OCS development, both offshore and onshore, for the most part have been acceptable. There is a high level of confidence that even in the more difficult frontier areas we can deal with the impacts. There will always be uncertainties, such as the chronic effects of

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6. See GEOLOGICAL SURVEY, *supra* note 3, at 3.

low-level pollution, but the OCS has been a relatively minor source of the introduction of oil into the oceans. This is not to say that we should not continue to improve. The best technologies must be employed. We must proceed with a high degree of caution where there are unusual operating conditions. The companies, of course, have a strong interest in protecting their investments.

But this is not sufficient in itself. The Geological Survey is taking a number of steps to improve its enforcement efforts to assure that the risks are acceptable. Independent verification of platform design, increased mandatory training requirements for operator personnel and a third party inspection program are all now in process. In addition, we will be conducting a detailed review of the entire current OCS regulatory structure.

But, how best can we address the issues which most concern the States and the public: the pipeline corridors, siting of support facilities, the possibility of new processing plants of various types, the potential for spills and the effect on fishing and tourism, and the attendant growth and demand for state and local government services. In dealing with the states, a fundamental demand is repeated time and time again: tell us what to expect so that we may plan accordingly—or stated as a question “If we don’t know what OCS development is going to mean to us, why should we be agreeable to allowing it to proceed?” As the preceding discussion illustrates, if we do not know with any degree of certainty whether and where the resources exist, it is virtually impossible to respond to these questions. To avoid a “catch-22” situation, a means must be put in place to provide these answers and overcome the opposition we are witnessing in many areas. It is clear that the states currently have the legal power to throw a wrench into the development process by prohibiting onshore and nearshore activities associated with the OCS. It is equally clear that the type of confrontation we have been witnessing in recent years is simply not productive.

The general answer to these concerns is a change in federal/state relations as they concern OCS development, with the states playing a larger role in the process. This change of order is reflected in the Coastal Zone Management Act<sup>7</sup> and the OCS Lands Act Amendments.<sup>8</sup> In the leasing of new OCS acreage the Department is giving the states a much greater role. Extensive consultation has taken place,

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7. 16 U.S.C. §§ 1454-64 (1970).

8. S. 9, H.R. 1614, 95th Cong., 1st Sess. (1977).



and the majority of the states' requests have been met in modifications to OCS orders, regulations, sale notices and stipulations.

But the most significant, and what is likely to be the most controversial change, will come at the point of approving development operations. Because much of the success of the program will hinge on successful implementation of changed development approval procedures, I would like to devote the rest of this discussion to this concept.

## V. EXPLORATION AND DEVELOPMENT PLANNING

The notion here is quite simple. When we enter a frontier area there generally has been no exploratory drilling, and thus the existence of economically recoverable resources is speculative. There might be a general idea of where oil and gas might be, but at this point it would be unproductive to devote much effort to planning for development. Not until we have proved the existence of reserves does it make sense to undertake detailed planning. Industry, of course, has long operated on this basis. Simply stated, the states and others now are demanding the same opportunity to respond in their own planning.

The issue is how can we accomplish this "second look" at the effects of development and still assure that OCS development proceeds in an orderly fashion. The approach the Department intends to use has now been established. On January 27 of this year, regulations setting out new procedures for the submission, review and approval of exploration and development plans were published.<sup>9</sup> The concept of exploration and development plan approval itself is not new. The major change is in how these documents are to be prepared and treated.

Up to now, approval of exploration and development plans has been a rather cursory administrative process. In fact, it has served primarily as a means of giving notice of proposed activities to the area oil and gas supervisor. This will no longer be the case.

The new regulations provide in detail for the contents of exploration and development plans. Equally important, they introduce a substantial new requirement for lessees: preparation of an environmental report to accompany both types of plan. The environmental report must contain sufficient detail on the description of the environment and potential impacts to enable the oil and gas supervisor and the states who review the documents to make judgments about the acceptability of the action and the need for mitigating measures. The method for

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9. 43 Fed. Reg. 3883 (1978); 30 C.F.R. 250.34-2(e)(1) (ii) (1978).

complying with the National Environmental Policy Act (NEPA)<sup>10</sup> in connection with exploration and development plan approval is also set forth.

There are three basic concepts involved in these regulations. First, the documents will provide the basis for more detailed review and comment than has been the case in the past. Subject to tight time restrictions, they will be circulated to the states for reaction.

Second, a process of consultation involving the states and the Geological Survey supervisor is a logical follow-up where needed. This is to provide the opportunity to iron out difficulties which may emerge and to agree on measures needed to protect both the offshore and on-shore environments.

Third, a substantial additional commitment of resources will be required by all parties involved in the process. The greatest burden will fall on the lessees. Detailed plans and environmental reports are new to OCS operations. Operators will have to gear up to produce adequate documents if their operations are to proceed smoothly. The burden on the Geological Survey is also substantial. They must review and approve all documents, establish standards of adequacy and provide the means of tripartite communications discussed above. States that wish to be actively involved must commit the people to review and consultation.

In short, this is not to be a cursory exercise: carrying out these new procedures within the full spirit of the regulations will be essential to the success of future OCS operations.

## VI. REGULATIONS SUMMARY

The following is a brief summary of the regulations:

A. *Exploration plans:* The basic components of a plan include: (1) the proposed type and sequence of exploration activities to be undertaken together with a tentative timetable for performance; (2) a description of the drilling vessels, platforms, or other offshore structures to be used indicating the important features thereof with special attention to safety features and pollution-prevention and control features; (3) types of geophysical equipment to be utilized; (4) approximate location of each proposed exploratory well, including surface and projected bottom hole location of each directionally drilled well; (5) current structure maps and, as appropriate, schematic cross sections showing expected depth of

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10. 42 U.S.C. §§ 4321-61 (1970).

marker formations; and (6) such other relevant data and information as the supervisors may require.

The environmental report accompanying a plan is intended to be a concise summary document. In all cases, environmental reports are intended to be as brief as possible considering the information requirements of the regulations. They should give greatest emphasis to analysis, cite previous impact statements and other documents rather than laying out great amounts of descriptive material.

The emphasis in exploration environmental reports will be on potential offshore hazards in the immediate area of the lease or leases covered by the plan and any identifiable onshore impacts that may result. An assessment of impacts must be included and mitigating measures discussed. Obviously, a report for the first activities in a frontier area with little onshore infrastructure and unusual operating conditions, such as exist in most of Alaska, will be a considerably different document than for much of the previously developed sections of the Gulf of Mexico.

No exploration other than preliminary activities may be commenced until the plan is approved. The documents will be transmitted to the states and will be publicly available. The states will have ten days to review the documents for adequacy and an additional thirty days to submit substantive comments. However, where the state has an approved Coastal Zone Management Plan<sup>11</sup> in effect, the consistency requirements of the Coastal Zone Management Act<sup>12</sup> are applicable and the state will have up to six months to make a determination that the activities are consistent with the Coastal Zone Plan.

**B. *Development Plans:*** This will be one of the most critical points in the entire OCS sequence of events. Development plans for individual leases or units will provide the basis for making the critical decisions on how development is to proceed offshore and how onshore facilities will be constructed and located.

The review and comment provisions are basically the same as for exploration plans, except states without an approved coastal zone plan will have sixty days to comment on the plan. The Development Plan must contain: (1) a description of the specific work to be performed together with a proposed schedule for development and production; (2) a description of drilling vessels, platforms, or other offshore structures

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11. 16 U.S.C. § 1456(c)(3)(B) (1970).

12. 16 U.S.C. §§ 1454-64 (1970).

to be used showing the location, design, and important features pertaining to safety and to pollution prevention and control; (3) the location of each well, including surface and projected bottom hole locations for each directionally drilled well; (4) current interpretations of all available geological and geophysical data, including structure maps and schematic cross sections of productive formations; (5) a description of the environmental safeguards to be implemented in the course of development and production operations under the plan together with a discussion of how such safeguards are to be implemented; (6) all safety standards to be met and the safety features to be utilized in order to meet those standards; and (7) such other relevant data and information as the supervisor may require.

The environmental report accompanying the development is to be a more detailed document than for exploration plans. The report is to include all activities proposed for immediate implementation and those contemplated for future implementation. It must identify all environmental and safety features required by law together with additional measures the lessee proposes to employ.

The current regulations<sup>13</sup> contain considerable detail on the contents of the development plan environmental report. We have also prepared detailed guidance for use in review and preparation of the reports.

*C. Compliance with NEPA:* It is our hope that high quality environmental reports will satisfy the information needs associated with most exploration and development activities. Nevertheless, there will likely be situations where approval of development plans constitute a major federal action significantly affecting the quality of the human environment and will require following of the Environmental Impact Statement (EIS) requirements of NEPA. To aid in determining whether this will be the case, the regulations set out certain criteria to be applied by the supervisor: (1) location of major structures in areas of high seismic risk or seismicity; (2) location of major structures within or near the boundary of a marine sanctuary, wildlife refuge or other areas of high ecological sensitivity; (3) location of bottom-founded structures in areas of potentially hazardous natural bottom conditions; and (4) use of new and/or unusual technology.

Procedures are also included to help decide whether a development EIS is to cover a single plan or a number of such plans. When

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13. 43 Fed. Reg. 3883 (1978); 30 C.F.R. 250.34-2(e)(1) (ii) (1978).

there is a likelihood of significant development over a broader area, an areawide EIS is to be prepared when: (1) no additional lease sale environmental impact statement evaluating the cumulative impacts of development and production for the area is being prepared or is planned for preparation within the next two years; (2) at least one exploratory well has been completed in at least sixty-six percent of the significant geologic structures known to exist at the time of the lease sale or sales applicable to the area; and (3) the total potential production of oil and gas from the area exceeds or is expected to exceed existing and planned onshore processing, storage, treatment and transportation facilities.

## VII. CONCLUSION

Again let me emphasize a key point. The OCS exploration and development groundrules are changing in a major way. It is clear that all parties involved—the OCS operators, the Interior Department, and the states—must start to make the commitments needed to assure these procedures are smoothly implemented. Without this cooperation, we may be faced with undue delay in production of these needed resources.