1973

Offshore Oil Interests of the United States: An Overview

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Introduction

The following discussion focuses on the current situation as regards U.S. oil interests worldwide offshore. It divides into three general areas: 1) a general view of the scope of the U.S. oil companies' investments offshore, foreign and domestic, 2) an analysis of the recent rise to power of the Organization of Petroleum Exporting Countries (OPEC) and the ensuing problems created for U.S. oil investments abroad, and 3) a brief history and a discussion of U.S. oil interests in the law of the sea as an expression of their concern for resolution to OPEC-like problems.

The term U.S. oil interests is used repeatedly. In this discussion it refers to U.S. oil companies' interests as opposed to Government's interest. It refers to international oil companies' interests as opposed to domestic companies' interests. Often the interests of all three are the same. As will be seen, however, the Government's view must necessarily consider other interest groups besides petroleum, and the domestic oil companies are more concerned with

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maintaining the domestic production of crude -- an operation which, as we shall see, benefits from higher OPEC prices. Often the domestic and international companies are one and the same. The problem then arises of having divided interests. This is, more often than not, the case. In fact, while there are oil companies which are strictly domestic (American Petroleum Institute list over 800 members), to this author's knowledge, of the 10 or so international oil companies discussed in this paper, all are involved in the domestic field as well.

This discussion relies upon common sense when associating OPEC with the law of the sea. Both subjects are infinitely vast and certainly no one decision or link exists between the two. Rather, an understanding of their interrelated aspects emerges clearly when one considers current developments in both areas. The author views OPEC basically as the problem and the law of the sea as the search for the solution. The oil drama is being played more and more

offshore. OPEC has most of the oil; OPEC has provided U.S. investors with investment security problems. The law of the sea is investment security oriented. The key is investment security. We will look specifically at what U.S. oil companies have paid to OPEC for the right to produce oil in their countries. We will look specifically at which nations have expropriated or nationalized U.S. investments. We will get as close to the present as we can in looking at the state of law of the sea negotiations as regards the seabeds. For the sake of discussion, some basic assumptions concerning the law of the sea will have to be made, but the author realizes these assumptions have not been fully developed by the various author nations.

At the outset then, and knowing full well what lies in the following discussion, it is safe to say that U.S. oil interests in the law of the sea are significant and oriented towards the future.

Chapter I The Investment

In 1946 the U.S. oil industry entered the offshore market. Most of this development has occurred in the Gulf of Mexico off the shores of Louisiana and Texas. T.D. Barrow reconstructs the 15 year history between 1951 and 1965 in his book, Exploration and Economics of the Petroleum Industry. During this period approximately $160 million was invested in seismic surveys in marine areas, and approximately $1 billion was amassed in lease purchases. The cost of wildcat drilling during this period was $280 million. Total exploration expenses during this period were approximately $1.6 billion. Barrow estimates that ultimate production from this period would amount to approximately 3.6 billion barrels of oil and 49 trillion cubic feet of natural gas.

U.S. domestic oil interests offshore operate under the aegis of the coastal state within the 3 mile limit as per the Submerged Lands Act of 1953. Seaward of this limit, the Department of Interior controls leasing under the Outer Continental Shelf Lands Act.

> Bidding on oil and gas is permitted to be either on the basis of cash bonus or royalty at the discretion of the Secretary of the Interior with royalty to be not less than 12.5 percent in any case. The Act provides that oil and gas leases shall cover not more than 5760 acres and shall be for a period of 5 years and as long thereafter as oil or gas may be produced from the area in paying quantities...[1]

In the recently concluded September 1972 bidding for 74 offshore tracts in the Gulf of Mexico, "$1,694 per acre for 346,000 acres of potentially rich leases" established a record high price paid to the Department of Interior.[2] On December 18, 1972 another lease auction was held and a new record high was established when Trans-Ocean Group, a combination of 8 oil companies, bid $21,630 per acre. The total of all bids for the December auction was $1.6 billion.[3]

> Under the authority of the Outer Continental Shelf Lands Act 2.5 billion barrels of oil, 14.5 trillion cubic feet of natural gas, and nearly 3 billion gallons of natural gas liquids have been produced with bonuses, rentals and royalty payments accruing to the U.S. Treasury from 1953 through 1971 in the amount of $6,456,688,788.[4]

The world's offshore oil industry began in the U.S. To date over 15,000 wells have been drilled off U.S. coasts. There are presently more than 400 drilling units worldwide working off the coasts of 70 nations. (See Appendix A for a list of nations involved in offshore activity. See Appendix B for the geographic location of worldwide offshore reserves.) F.J. Gardener of Oil and Gas Journal reports that oil or gas has now been found

in 37 countries offshore; "25 of these are now on commercial production, and the other dozen - Ireland, Dahomey, South Africa, New Zealand, Holland, Spain, Zaire, Egypt, Libya, Tunisia, and Ecuador - could enter the oil column soon".[5]

The generally acknowledged areas of oil and gas potential around the world are as follows: Indonesian waters, the North Sea, off West Africa, the Mediterranean, the Persian Gulf, the South China Sea, off northwestern Australia, off Canada's Maritimes, the Caribbean Sea, off the west coast of South America, off the Atlantic coasts of both North and South America, off California, the Gulf of Mexico, and the Arctic Ocean.

Of the 15 or so largest international oil companies, approximately two thirds are U.S. owned:[6]

Standard Oil (New Jersey)*
Gulf
Mobil
Standard Oil (California)
Texaco
Continental
Marathon
Occidental Petroleum
Amerada Hess
Grace Petroleum

*Exxon

A detailed analysis of which companies have investments in specific geographic regions throughout the world,

if it were to be current and complete, is material enough for an entire paper. For purpose of our discussion, we shall make the basic assumption that these above mentioned oil companies collectively are involved in a significant manner in all of the offshore areas mentioned. The following comments pertain to a sampling of some of these investments.

In the 1971 Standard Oil of California annual report, the Company told its stockholders that "oil production is rising steadily, principally in the Eastern Hemisphere..."[7] For 1971 Standard Oil of California lists in part the following crude oil or natural gas liquid production.

Saudi Arabia	1,363,300 barrels per day
Indonesia	360,000
Iran	284,300
Libya	130,800

N.B. Figures include interests in affiliates Aramco, Iranian Oil Consortium, and Caltex Pacific Indonesia.

Exxon lists 2,349,000 barrels per day production from the Middle East and Africa, and 175,800 barrels per day from Australia and the Far East in its 1971 annual report.[8] Amerada Hess lists for 1971 240,262 barrels per day from Amerada/Shell joint operations in Libya. Amerada Hess further states that during 1971 an agreement was concluded

with National Iranian Oil Company "to explore approximately 1400 square miles in the Persian Gulf, and (Amerada Hess) acquired new concessions offshore Abu Dhabi..."[9] The 1971 annual report from Texaco contains a chart entitled "Texaco's Worldwide Operation". This chart indicates offshore oil production in Nigeria and Indonesia. It further indicates exploration activity offshore Australia, Trinidad and Tobago, and South West Africa.[10] Texaco lists in part the following worldwide gross production from crude oil and natural gas liquid.

Texaco and subsidiaries

Iran	255,000	barrels per day
Venezuela	141,500	
Liberia	131,000	
Dubai	13,000	
Nigeria	5,000	

Nonsubsidiary companies

Saudi Arabia	1,333,000	barrels per day
Indonesia	360,000	
Bahrain	37,000	

Tenneco, a diversified, multi-market company, as per their 1971 annual report, is involved in exploratory drilling in the North Sea.[11] Continental Oil Company in its 1971 annual report states that it has discovered oil in the Fateh Field offshore Dubai.[12] Occidental Petroleum Company in its 1971 annual report states that Venezuela,

Nigeria, Peru, and the North Sea are areas of major foreign exploration.[13] Atlantic-Richfield Company in its 1971 annual report list in part the following figures for crude oil and natural gas production.[14]

Indonesia	1,162	barrels per day
Iran	76,755	
Libya	21,505	
Venezuela	111,797	

Most of the above mentioned companies are active in the U.S. offshore markets of California and the Gulf of Mexico. The newest domestic market, Alaska, will be introduced to the lower 48 states partially via a pipeline owned by the following companies.[15]

ARCO	28.08	percent
British Petroleum	28.08	
Exxon	25.52	
Mobil	8.68	
Phillips Petroleum	3.32	
Amerada Hess	3.00	

Most of the above mentioned companies are involved in the North Sea as well. The final list of figures in our more or less random sample of domestic and foreign U.S. oil interests lists the major international oil companies by percentage of ownership in the Organization of Petroleum Exporting Countries (OPEC) oil production.[16]

Exxon	18.3	percent
British Petroleum	15.5	
Royal Dutch/Shell	11.5	
Gulf	9.5	
Texaco	8.7	
Standard Oil (Calif)	8.1	
Mobil	5.3	

Presently, there are 11 members in OPEC: Indonesia, Algeria, Venezuela, Iran, Saudi Arabia, Kuwait, Iraq, Nigeria, Libya, Abu Dhabi, and Qatar.

While the preceding figures do not delineate clearly between offshore and onshore production, they do indicate that U.S. foreign and domestic oil interests are substantial. J. McCaslin, exploration editor, Oil and Gas Journal, states that Persian Gulf offshore production for 1971 totaled 2,868,000 barrels per day, compared to 2,664,000 barrels per day in 1970.[17] McCaslin states further, Venezuela, Lake Maracaibo fields, produced 2,803,000 barrels per day in 1971, and Saudi Arabia cumulative offshore production for that year totaled 2.8 billion barrels.[18] McCaslin lists total oil output worldwide for 1971 at 48,221,000 barrels per day and total wouldwide marine oil output for 1971 at 8,760,000 barrels per day. Based upon these figures, over 18 percent of the 1971 worldwide oil production was offshore. Combining the figures for Venezuela and the Persian Gulf as a percentage of the worldwide offshore total, by this author's

calculation, indicates that nearly 65 percent of the offshore total emanates from these two areas. McCaslin lists U.S. offshore production at 1,692,000 barrels per day; he groups the remaining 1,397,000 barrels per day under "Others". These latter two sources, then, would account for the remaining 35 percent. Thus, in the aggregate view all of these figures imply that our original assumption, that U.S. international oil companies' interests in foreign and domestic offshore production is significant, would appear to be a reasonable assumption.

Chapter 2 The Problem

Much of what one reads in the newspapers today regarding the oil industry has to do with the "energy crisis" and the nation's energy policies. One might, therefore, naturally seek to understand the possible relationship between this topic and the oil industry's interest in the law of the sea. When the layman thinks of U.S. oil sources offshore, the most readily imagined are Alaska, California, or the Gulf of Mexico in the U.S., and the OPEC nations on the foreign front. Indonesia and the North Sea are being much talked about as areas of major new free world development.

Basically, offshore sediments are more productive than onshore because of their younger, more loosely packed geologic structure. This facilitates drilling. Secondly, offshore is the major area where large oil and gas reserves are yet to be discovered. Setting aside the present economics of the "energy crisis", and looking purely at the amounts of proven reserves in existence worldwide, it becomes apparent that there is no shortage of oil. The "energy crisis" is political and economic. The U.S. in its history of oil envolvement has changed

from an oil exporting nation to an oil importing nation. Our dependence upon foreign oil is increasing. This is then the matter of primary concern to every individual involved in any aspect of determining U.S. energy policy or in supplying the U.S. with sufficient amounts of petroleum to meet future energy requirements. "The Arab countries of the Middle East and N. Africa together with Iran now produce nearly two thirds of the oil in world trade. Even more importantly, they possess some three-fourths of the total world reserves outside the communist countries."[19]

The following facts and figures will provide a better understanding of the trends and concerns which characterize today's free world oil market.

> About 60 percent of Western Europe's energy is supplied by oil, of which over 3/4 of the nearly 14 million barrels used per day come from the Middle East and North Africa. The proportion of energy supplied by oil will probably rise to about 70 percent by 1980, representing an oil consumption of some 23 million barrels per day. Over 70 percent of Japan's energy requirements is now supplied by oil, 4.5 million barrels per day, of which some 90 percent comes from the Middle East. Japanese dependence on Middle Eastern supplies will continue to increase as its consumption rises to 13 million barrels daily by 1980.[20]

> As of now, this country draws 55 percent of its total oil imports, equivalent to about 11 percent of U.S. oil consumption, from OPEC members, notably Venezuela.[21]
>
> M.A. Wright, board chairman of Humble Oil, Jersey Standard's (Exxon) domestic subsidiary, predicted that by 1985 the U.S. will be dependent on foreign supplies for more than 60 percent of its oil. Most of that...will have to come from the Eastern Hemisphere.[22]
>
> Most oilmen figure that U.S. shale will not be converted to liquid petroleum in large quantity unless oil prices rise at least $4.00 per barrel, and perhaps $5.00 (at the Texas wellhead, a barrel of oil today sells for about $3.40).[23]
>
> Even if large quantities of oil from the Alaskan North Slope reach consumers by 1975, there will still be a large gap between U.S. output and consumption.[24]
>
> Europe and Japan have little hope of escaping from dependency on imported oil. OPEC members already supply 85 percent of Europe's oil. The anticipated production of North Sea oil by 1975 will cover about one year's increase in European demand, which rose by 13 percent in 1970. Until more Indonesian fields are developed, Japan must continue to depend on the Persian Gulf...[25]

The costs involved in the production of oil in OPEC nations are 1) cost of "physically producing a barrel of oil and delivering it to the point of export" and 2) "...the export costs of this oil which includes payments to the government by the producing company".[26]

Middle East and Persian Gulf oil costs less than $0.20 per barrel to produce and N. African oil costs less than $0.30 per barrel to produce.[27] From 1955 through 1970 payments to the major oil producing countries (OPEC) varied between $0.76 and $0.86 per barrel. In 1970 as a result of a settlement in Libya, this price increased $0.10 per barrel throughout the Middle East. Then in 1971 new negotiations with OPEC resulted in a further increase in payments by U.S. oil concessionaires of $0.30 per barrel with the provision for further escalation to $0.50 per barrel by 1975. As a result of these renegotiations upward, the State Department has estimated annual payments to oil producing nations will rise from $5.9 billion in 1970 to $26 billion in 1975. This added strain on an already balance of payments deficit situation poses a most serious problem for U.S. interests.

During the 1950's Middle East producers operated on the 50/50 principle whereby they received 50 percent of the net profit on oil at the export point after the costs of the producing company had been deducted. In

1960 the OPEC nations began to build their organization into today what is the strongest of international cartels. In 1965 OPEC introduced the concept of "expensing of royalty" whereby royalty was treated as a fixed cost of production and, therefore, deducted from gross income. The result of this move was to increase the payments to the producing governments by the concessionaires by one-half the amount of the royalty payments. This concept was introduced on a graduated basis and not until 1975 would the full royalty be deducted. In 1970 Libya forced an increase in the basic tax rate to 55 percent. In January 1972 the Persian Gulf countries forced an increase of 8.49 percent on the posted price of crude as compensation the devaluation of the U.S. dollar - the dollar is the basic unit of currency for all crude prices. Further, the principle of "participation" has been accepted by the concessionaires in the Persian Gulf as of March 1972. The specifics of such agreements vary with each country, however, all allow the producing company's operation to remain within the producing country's boundaries, but the latter's percentage of ownership in the operation is to increase to a

controlling 51 percent within the space of next few years.

U.S. oil companies have in the past conducted almost all of their own marketing for oil produced abroad.

> ...in recent months OPEC has advised its members to insist that the companies continue to perform this function, not only because the companies have the facilities to do so, but also because the tax-paid cost plus a nominal return to the companies sets a price below which they cannot sell oil and remain in business. Government companies, on the other hand, if relieved of taxes, theoretically have no lower limit on price above the actual cost of production, a level which would be disasterous to government revenues should cut-throat competition even begin to approach this floor.[28]

Additionally, the consuming nations do almost all of their own refining. Cheaper shipping rates on crude have resulted from increased tanker sizes. These are two reasons why U.S. oil companies are interested in maintaining their marketing function.

OPEC serves in a very vivid way to dramatize U.S. security of investment problems abroad. U.S. oil interests in the law of the sea serve in a very vivid way to express our sincere desire for resolution to problems of security of investment. Dependence upon Eastern

Hemisphere sources is increasing. No American likes to think of the day U.S. oil power and, hence, industrial might may be so heavily dependent upon another nation or group of nations. M.A. Adelman, M.I.T. oil economist,states the following.

> Depletion of reserves at the Persian Gulf is only about 1.5 percent a year. It is uneconomic to turn over an inventory so slowly. But Persian Gulf operations have not been free to expand output and displace higher cost production from other areas because this would wreck the world price structure. Therefore, it is meaningless to average production-reserve ratios for the whole world, as is too often done. A barrel of reserves found and developed elsewhere in the world is from 5-7 times as important in terms of productive capacity as a barrel at the the Persian Gulf. In other words, one could displace production from the entire Persian Gulf with reserves from one-fifth to one-seventh as large. And this is perhaps the only constructive aspect of the current drive for self-sufficiency in oil.[29]

The U.S. oil interests in the Law of the Sea represent, in this author's view, precisely this desire for "self-sufficiency" which the above quote addresses. It is no secret that efforts in the North Sea, aside from it being a desireable area for oil in terms of reduced transportation costs to Europe, are politically motivated. M.B. Morris, vice-president for Eastern

Hemisphere petroleum exploration., Continental Oil Company, equates the oil consuming country's proximity to crude oil sources with political stability. In specific, he cites the attractiveness of the North Sea over the Middle East for Europe's crude supply.[30] The argument applies as well to the U.S. and Alaska. Perhaps this explains in part why with only an estimated 12 billion barrels involved in the North Slope, U.S. companies have already paid over $2 billion towards its development.[31] Twelve billion barrels contrasts markedly with 342 billion barrels of reserves for the Middle East.[32]

In the years ahead producing nations will increase their technological capabilities to produce oil and thus become less dependent upon U.S. capital. They will, however, before they reach total independence increase their ownership in U.S. operated concessions on their soil. Just how long the U.S. will remain in the production end of the business in these foreign countries will determine how rapidly the face of the U.S. oil industry will change. Behind all this conjecture lies the over-riding concern as to how long OPEC power will reign supreme.

Professor Adelman considers the U.S. policies of the past to be responsible for OPEC's rise to power.

> Without active support from the U.S, OPEC might never have achieved much. When the first Libyan cutbacks were decreed, in May 1970, the U.S. could have easily convened the oil companies to work out an insurance scheme whereby any single company forced to shut down would have crude oil supplied by others at tax-plus cost from another source. Had that been done, all companies might have been shut down, and the Libyan government would have lost all production income. It would have been helpful but not necessary to freeze deposits abroad. The OPEC nations were unprepared for conflict. Their unity would have been severely tested and probably destroyed.[33]

We have already seen that the Libyan demands were met, and OPEC emerged victorious. The situation currently is that crude oil prices can go much higher before they reach the monopolistic equilibrium point of greatest profit. Again in Adelman's words, "The producing countries have had great success using the weapon of a threatened concerted stoppage and they can not be expected to put it away".[34]

For the oil companies facing nationalization, oil expert, Walter Levy, observes that their big decision "is to what extent and for how long they can be held

hostage by their resource interests in producing countries. Will they be able to moderate the ransom, or would it be better to abandon the hostage?"[35]

What can the oil companies do? Levy offers the following suggestion.

> Therefore, it has to be at least considered whether the ultimate riposte of the industry - faced with impossible demands and backed by consuming countries -- may be to turn away from their reserves and reappear as competitive buyers of crude from the producing countries. From the company standpoint, its purchasing power would derive from past investment in and current control over transport, refining and marketing facilities -- the power to dispose. And they could expect that producing countries eventually would compete for export volume since captive concession-holding companies would no longer be at their behest. For established major oil companies, the crux would be the loss of control over reserves. Downstream position, historically, has been related to preeminance in the resource position. If that is replaced by a bargaining situation, with all buyers haggling over crude price advantage, it is doubtful that refining and marketing shares will remain as is. While efficiency in refining and marketing could begin to count, the companies will probably still prefer to hold on to the competition edge of 'low-cost' reserves as long as possible, no matter how high the producing governments may push up that low cost.[36]

Similarly, Adelman says the following.

> Were the producing nations the sellers of crude, paying the companies in cash or oil for their services, the cartel would crumble. The floor to price would then be not the tax-plus-cost, but only bare cost.[37]

And like Levy, Adelman offers reasons why U.S. policy and U.S. oil companies do not oppose OPEC.

> 1) First, American companies have a large producing interest in the world market.
>
> 2) Second, the higher energy costs will now be imposed on competitors in world markets; and in petrochemicals higher raw material costs as well.
>
> 3) Third, the U.S. has a large domestic oil producing industry. The less the difference between domestic and world prices, the less the tension between producing and consuming regions.
>
> 4) Fourth, the U.S. desires to appease the producing nations, buying popularity with someone else's money and trying to mitigate the tension caused by the Arab-Israel strife...[38]

In a 1972 Congressional report entitled, The U.S. and the Persian Gulf, the following economic policy in the Persian Gulf was recommended. (See Appendix C for a U.S. petroleum supply and demand figures upon which this report is based.)

> 1) U.S. relations with the states of the Persian Gulf should continue to be practical and low key.
>
> 2) While U.S. oil companies do need the support of the U.S. Government in their dealings with oil producing countries at this time of difficult

Algeria

1967 Arab-Israili Six Day War --- nationalized U.S. oil companies: ARCO, Mobil, and Jersey Standard. Settlements were reached 1970-71.

Bolivia

1969 Gulf Oil Company expropriated. Settlement reached 1971.

Ecuador

1972 Texaco-Gulf consortium working on Trans-Andean pipeline is presently threatened with contract alteration due to possible military coup d'etat.

Iraq

1961 Iraq Petroleum Company (owned in part by Standard of New Jersey and Mobil) seized. Settlement not reached, precipitated further seizures in 1972.

1972 Iraq and Syria further nationalized IPC assets on June 1. (Settlement announced in NY Times February 28, 1973. IPC will pay Iraq $610 million in return for Iraq guarantee that oil will be delivered to Mediterranean ports.)[40]

Libya -- Government leadership figures strongly in OPEC tax increases.

1969 Chappaqua Oil Company seized. Settlement unknown.

1970 Gulf Oil seized. Standard of New Jersey nationalized.

From the foregoing summary, it will be seen that expropriations are proceeding at an accelerated rate and that a great variety of industries, as well as oil, are affected (the author has mentioned only oil expropriations from Mr. Leigh's article). The examples summarized illustrate nearly all of the issues that arise in the law of expropriations. There have been

> politically motivated expropriations, as in the Algerian seizures in 1967 and in Libya in 1972. In most cases, expropriation has been in violation of existing concession agreements. In some cases, compensation has been offered and accepted in full settlement. In two countries, Peru and Chile, where compensation has been offered, bizarre offsets have been claimed, which greatly exceed the amount of the claims for compensation. In none of these cases, as far as I am aware, has arbitration been instituted. User recourse to the courts has been expressly disallowed.[41]

Adelman has suggested a purely economic solution to OPEC power, and both Adelman and Levy have offered reasons why this will practically never occur. Classical economics describes the interrelated forces that govern the marketplace, and then always adds the postscript that these forces apply under conditions of perfect competition. Perfect competition, of course, is rarely seen in the real world. In the international oil market perfect competition will not occur before certain political decisions are made. Notably, the political decision on the part of the consuming governments to seek a more active role in this market is needed to stimulate any economic changes. Levy addresses this point when he speaks of consuming nation security of supply.

> A more effective relationship with the industry is essential to the longer-run interests of all consuming countries. Their governments have already indicated that they intend to involve themselves with many aspects of company operations within their countries, including the relationship among industry's costs taxes, prices, and profits. An example is the new Common Market policy to obtain information regularly on the oil industry's supply and investment programs.[42]

This author is not suggesting that increased government role in the oil industry is the answer, for what may benefit foreign investment may not benefit domestic investment. We have, in fact, seen that present policies abroad complement the domestic policies of the U.S. oil industry. This author is suggesting that the situation from both industry's and government's view is one in which any course of action will have its good and bad points. In large bureacracies decisions with these results are the norm. Realizing the situation is too complex for one solution then, decision-makers devote their energies to more narrowly defined problems which, assuming a favorable resolution, will ultimately have some good effect upon the larger problem. The above mentioned goal of government and industry establishing a more effective

relationship is a reasonable goal -- one to which many decision-makers in the energy business are devoting a great deal of effort. In recent years the law of the sea has become a central forum for just this process. Additionally, U.S. interests have had the benefit of international scrutiny as this development has been housed largely in the United Nations. The law of the sea will not solve OPEC power, but for the remainder of this discussion we shall look at how it may well provide the U.S. oil interests with a significantly larger measure of control over the problem.

Chapter III The Search for Solution

The U.S. has been the leading nation in offshore development of petroleum resources. C. Eichelberger, executive director, Commission to study the Organization of Peace, has in his article, "The United Nations and the Bed of the Sea", outlined the development of international interests in the seabed during this period when the oil industry has moved offshore.[43] In 1957 the Commission recommended that the UN General Assembly declare the seabed beyond the continental shelf to be the property of the international community. On July 13, 1966 President Johnson made the following statement.

> We must ensure that the deep seas and the ocean bottoms are and remain, the legacy of all human beings.

In 1967 the UN Committee of the World Peace Through Law Center recommended that the General Assembly claim jurisdiction of the seabed beyond the continental shelf. Also, in 1967 the ambassador from Malta in the UN, Dr. Arvid Pardo, proposed that the UN declare the "seabed and the ocean floor underlying the seas outside present territorial waters and/or the continental shelves" to be the common heritage of mankind.[44]

The U.S. via the Truman Proclamation of 1945 unilaterally claimed exclusive jurisdiction over its

continental shelf. In 1958 the UN Conference in Geneva adopted the Convention on the Continental Shelf. Article I in part reads as follows.

> For the purpose of these articles, the term 'continental shelf' is used 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 admits 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.[45]

The 1969 North Seas Continental Shelf Cases are cited as being supportive of the above quoted Article I as codification of customary international law.

> In view of the special treatment accorded Articles I through III of the Convention by the Court, a sound argument can be made that they...evidence customary international law...[46]

> More importantly, the World Court recognized that the doctrine of the continental shelf constituted customary international law exclusive of the Convention on the Continental Shelf.[47]

Thus, it was in 1967 Ambassador Pardo's initiative served to polarize these two developing, yet conflicting, views of what should be done with the seabeds. Pardo's statement resulted in the establishment of a 35 member

Ad Hoc Committee tasked with "Examination of the question of the reservation exclusively for peaceful purposes of the seabed and the ocean floor, and the subsoil thereof, underlying the high seas beyond the limits of present national jurisdiction, and the uses of their resources in the interests of mankind". The following year this Committee was established as a standing committee, and is commonly referred to as the Seabeds Committee. Its membership has since increased to over 90 members.

The Commission to study the Organization of Peace in 1969 recommended that the 1958 Continental Shelf Convention be revised to limit the national exploitation rights to 200 meters or 50 nautical miles. The U.S. Presidential Commission on Marine Science, Engineering and Resources also in 1969 supported 200 meters or 50 nautical miles. The Commission further proposed the creation of an intermediate zone seaward of the limits of national jurisdiction and extending to 2500 meters or 100 nautical miles. Only the coastal state or its licensees should be authorized to explore or exploit in this zone. Seaward of the intermediate zone would lie the deep seabed to be controlled by an

international authority.

The National Petroleum Council (NPC) in its 1969 report, Petroleum Resources Under the Ocean Floor, reviewed the UN Resolutions and the Marine Science Commission's recommendations. As an official voice for U.S. oil interests, NPC recommended that the U.S. not concede its rights, granted under existing treaties and international law, to the exploitation of its resources on the continental shelf.

On May 23, 1970 President Nixon announced a major U.S. policy decision on the oceans.[48] National jurisdiction of the seabed should be limited to 200 meters. Similar to the Marine Science Commission proposal, the President proposed the establishment of a trusteeship zone between the 200 meter and 2500 meter isobaths. The President further proposed the establishment of an international authority to control the deep seabeds beyond 2500 meters. The NPC was asked to respond to this statement. In 1971 an NPC Supplement to the 1969 report was published. The NPC position was the same as that stated in 1969; the NPC opposed relinquish·g existing rights. The NPC did, however, agree with 5 specific points in the President's statement.

> ...1) the collection of substantial mineral royalties to be used for international community purposes, particularly economic assistance to developing countries...and the establishment of general rules, 2) to prevent unreasonable interference with other uses of the ocean, 3) to protect the ocean from pollution, 4) to assure the integrity of the investment necessary for such exploitation, and 5) to provide for peaceful and compulsory settlement of disputes.[49]

The 1974 Law of the Sea Conference will address a wide range of issues. One of them will be the question of an international seabeds regime. One invites a certain amount of discord among law of the sea interest groups, if one seeks to arrange the issues in some hierarchy based upon importance. Fisheries, for instance, would oppose any inferences that their concerns are subsidiary to petroleum, and vice-versa. In a less provocative sense, however, it can prove enlightening, if not essential, to discuss various factions representing views on the seabeds proposals and the relationships which some of these views may bear to other issues to be discussed. U.S. policy in the law of the sea breaks down into two broadly defined areas, 1) the seabed - how it will be divided between coastal state and international authority, and 2) territorial seas,

straits, and fisheries.[50]

Dr. Ann Hollick in an article entitled "Seabeds Make Strange Politics" provides a very insightful view as to the inter-relationships of the various ocean issues, and U.S. policy evolution. With regard to oil interests, for example, Dr. Hollick states the following.

> As the ocean interests of the petroleum industry have become more diverse, a single policy has been increasingly difficult to elaborate. Whereas the domestic sectors of the major petroleum companies formerly controlled ocean policy in cooperation with the Interior Department and its National Petroleum Council, international segments of the industry with close relations to the Department of State, are playing an increasing role.[51]

Or, with regard to the evolution of U.S. ocean policy since President Nixon's 1970 statement, Dr. Hollick states the following.

> In the last two years, U.S. policy has shifted away from insistence that national jurisdiction be limited to the 200 meter isobath; increasingly, the United States is responding to strong international and domestic pressure in favor of a broader resource or economic zone. The government now simply delineates the provisions that must apply in undefined coastal zones of national resource jurisdiction. In such areas, the United States insists upon international agreement to certain standards and provisions for compulsory dispute settlement to protect other uses of the area and to safeguard the integrity of investments.[52]

This comment shall become central to the remainder of this discussion and will be discussed in much further detail.

We mentioned related issues - territorial seas, straits, and fisheries. Generally, in these areas U.S. policy has moved toward more coastal state jurisdiction. There is, for example, considerable support now for a 12 mile territorial sea if free transit of international straits can be assurred. In the February 2, 1973 edition of Ocean Science News, editor Hull refers to something "closely approaching 'free transit' through straits - a two-tier approach, perhaps, with certain historical international straits (Gibralter, English Channel, for example) providing for completely free transit, and others of more recent commercial and military interest being subject to rules amounting to something less than 'free transit' - more along the lines of innocent passage".[53] The change in fisheries has been towards "acceptance of coastal state management of coastal and anadromous species of fish".[54]

United States seabeds policy has two major aspects, "1) delimitation of national jurisdiction over seabed minerals, and 2) nature of the seabed regime to be

established beyond national jurisdiction".[55] The first concerns the oil industry because it is within the continental margins that most of the oil lies. The second is of prime concern to hard minerals industries for the deep seabed contains the manganese nodules. The position of the Department of Defense has been that it favors free transit of straits, freedom of navigation on the high seas, and a narrow interpretation of national jurisdiction on the continental shelf. The interests of pure scientific research i.e. research for the sake of knowledge vice economic or military gain favor a narrow shelf. The Department of Interior, the American Bar Association, the NPC, the American Branch of the International Law Association, and the oil companies traditionally have supported a wide shelf interpretation.[56]

In an interview with M.S. McKnight, general councel, NPC, the preceding remarks by Dr. Hollick concerning the shift away from the trusteeship zone and towards the economic zone were similarly expressed.[56A] At the 1972 New Delhi meeting of the Asian-African Legal Committee 19 nations endorsed the concept of a 200 mile economic

zone of exclusive jurisdiction by coastal states of seabed mineral resources. Thus, there appears to be an emerging acceptance of the 200 mile economic zone. The roots of this concept, of course, go back to 1952 with the Latin American Declaration of Santiago. J.R. Stevenson, U.S. ambassador to the Seabeds Committee, on August 10, 1972 made a significant statement in this regard. He expressed the willingness on the part of the U.S. government to accept a broad resource management zone under the exclusive purvue of the coastal state provided internationally agreed upon standards were therein applied in 5 specific areas. These 5 areas are the same 5 points mentioned in the 1971 NPC Supplement, and will be discussed more fully later in the chapter. Oil interests, thus cast in an arena with many other law of the sea issues appear on the surface and for the moment to be well represented in current law of the sea negotiations.

R. Wright and L. S. Ratiner, then chairman of the Department of Defense Advisory Group on the Law of the Sea, summarize the progress of the law of the sea negotiations from oil industry's viewpoint as follows:

> ...the starting positions of some of the principal countries in the negotiation have begun to evolve in the course of general debate in the Plenary rather than in any of the Subcommittees. When the Law of the Sea Conference first appeared on the horizon, the range of viable alternatives included the Latin American 200 mile territorial sea position as well as the more traditional, customary international law positions, Today, based on the the Declaration of Santo Domingo, the results of the Yaounde Seminar and the U.S. August 10 speech, as well as numerous other important policy statements in the Plenary, it is obvious that the gulf between widely disparate positions has begun to close.57

The August 10 speech emphasized that U.S. mineral resource interests were not an issue to be traded away for benefits in another area.

> The views of my delegation on resource issues have also been stated on a number of occasions. Unfortunately, some delegations appear to have the impression that maritime countries in general, and the United States in particular, can be expected to sacrifice in these negotiations basic elements of their national policy on resources. This is not true. The reality is that every nation represented here has basic interests in both resource and non-resource uses that require accommodation.58

When the trusteeship zone was being more seriously considered a couple of years ago, H. G. Knight made the following points in its favor.

> 1) International Seabed Area disposition provisions are developmentally oriented. ...they provide almost unlimited exploration rights and permit extremely large areas to be retained for exploitation purposes until commercial production is achieved.
>
> 2) ...industry will be protected as never before from the threat of expropriation without payment or compensation.
>
> 3) As Elliot Richardson, then Under Secretary of State, said, 'Clear rules of the game...for rights of exploration off the coasts of other countries would exist.
>
> 4) Industry won't have to negotiate directly with foreign government, it will have the International Authority.[59]

Have there been any trade-offs in the shift in position? With regard to point number one, exclusive jurisdiction for mineral resource development will facilitate development at rates comensurate with the abilities and interests of each coastal state. That is to say, a nation may or may not opt for a developmentally oriented stance. In either case, however, it seems certain that the "almost unlimited" rights will have been up-graded to unlimited rights. With regard to the remaining three points, the logical concern from the point of view of a U.S. oil company might well be that if the economic zone will serve U.S. domestic offshore interests so well, then surely it will do the same for the

the interests of foreign coastal states in their offshore domains.

Mr. Knight's latter three points address the very real problem of investment security which U.S. oil companies presently encounter in foreign operations. The problem is not universal; there are climates where political stability enable security of U.S. investment. Areas such as the North Sea, Canada, and, more recently, Russia offer attractive climates for U.S. investment.[60] In the less stable political spheres of the world, the three proposals by Mr. Knight certainly appear to be beneficial to oil interests. The trusteeship zone concept was cast within a more pronounced international framework than law of the sea discussions have permitted since the May 1970 proposal. The economic zone is very heavily weighted to the national point of view. It seems, given the present predominance of nation-state vice international communities, that if remedy to Mr. Knight's concerns were to be achieved, it might more easily be facilitated by changing an existing structure than by going the longer way about and first instituting a new framework and then introducing the change. A nation-state oriented economic zone, if it can be modified

as per the August 10 speech by Ambassador Stevenson, would seem to be a more readily achievable goal than perhaps a new, untried, and more internationally flavored approach.

With regard to lesser developed countries which might offer an insecure environment to U.S. companies, Wright and Ratiner make the following comment.

> ...treaty provisions which would protect the integrity of investment should be of interest to the developing countries as much as they are to the developed. Developing countries, to the extent they are suspect by major investors because of an expropriation, frequently require a period of years in order to regain investor confidence. Willingness to accept a treaty obligation to protect the integrity of investment might substantially shorten that waiting period and enhance many developing countries' prospects for attracting oil investment.
>
> There is another potential advantage if the developing countries accept the concept of 'integrity of investment'. We have seen in the Seabeds Committee a reluctance on the part of developed countries to accept the principle of revenue sharing which has been so vigorously promoted by the developing countries. It is possible that developed countries would be less reluctant to accept revenue sharing if they could foresee tangible benefits with respect to their foreign investments accruing as a direct result of their willingness to share revenues off their own coasts.[61]

Assume each nation established a 200 mile economic zone for exclusive mineral rights to the seabed off its coast. There will be little in the way of petroleum reserves that will not then be subject to the control of one coastal state or another. The fact that some coastal states' margins are substantially less than 200 miles wide is irrelevant from the jurisdiction viewpoint. Those nations with a substantially narrower shelf, however, will probably have less wealth in petroleum resources offshore. Ironically, the Latin American nations, which have for so long championed the 200 mile zone of exclusive jurisdiction, may be in this very situation. In accepting the 200 mile economic zone, these nations may have foreclosed an opportunity to have benefitted from a narrower zone in terms of their exploitation off foreign coastal states with substantially broader shelves. All this, of course, is predicated upon the assumption that 200 miles will be the distance chosen for the economic zone -- it may in fact not be.

For the U.S. oil companies, distance may not be the prime consideration in accepting the concept of the economic zone. Political stability probably is a more important concern. At the January 1973 meeting of the American Society of International Law, Panel on the Law of the Sea, E. Figueredo, foreign office, Venezuela expressed the view of his country that the economic zone must have a defined limit to start, and then agreements can be made to obtain within this zone.[61-A] Such would be the case with the 5 points contained in the August 10, 1972 speech of the U.S. U.S. oil interests may gain more in terms of stability and beneficial climate of investment with these five points applied to the zone than if the U.S. were to concentrate more on establishing a seaward limit of national jurisdiction on the seabed as per 1958 Continental Shelf Convention or May 23, 1970 statement by President Nixon. In accepting the 200 mile economic zone, the U.S. is not saying that its rights terminate at the 200 mile limit. U.S. oil interests may well extend beyond this boundary. As this paper is being

prepared, the economic zone is being discussed and its concept is being further defined. There is no concrete understanding as to what its relationship with the 1958 Continental Shelf Convention will be. Will the economic zone replace the Convention as international law? Clearly this depends upon how many nations endorse the economic zone. It is too early even to speculate. At present this author will pursue a very conservative discussion of the implications of this zone. The facts are these: 1) there appears to be considerable support for the concept among lesser developed nations, and 2) the United States will support this zone with certain standards applied therein. The rights of nations in the seabed beyond the zone is not clearly defined. Pending formation of an international authority, the rights of exploitability would seem to apply to the shelf beyond 200 miles. HR 9, currently being considered, would establish interim mining rules for the deep seabed. This legislation is not a claim of exclusive rights to the deep seabeds by the U.S. It is merely designed to facilitate investment where U.S. technology is capable, but for political reasons industry is discouraged.

A more detailed look at the five points proposed in the August 10, 1972 statement is a subject which can be approached with more concrete analysis and less conjecture. The first of these points, international treaty standards to prevent unreasonable interference with other uses of the ocean, refers specifically to "unreasonable interference with navigation, overflight, and other uses".[62] According to J. Dykstra, U.S. representative to the Seabeds Committee meetings in New York, the economic zone being discussed currently will include the ocean floor and the water column above.[63] For purposes of our discussion, we have limited this zone to the ocean floor mineral resources. In making this limitation, however, one invites consideration of the question of "creeping Jurisdiction". Is such a phenomenon real? H. Gary Knight belies this concept as juridically non-existent, but concedes it is often a functional response to a perceived need by a coastal state in it territorial sea.[64] It is then to the eventuality of this latter situation that point number one seems to address itself. Obviously 200

miles will entail considerable high seas in the water column above. Freedom of navigation and overflight must be preserved here.

If the next Law of the Sea Conference adopts a twelve mile territorial sea, some 116 international straits which now possess high seas would be theoretically closed. It seems unlikely that the U.S. or any other maritime nation could ever accept such a situation. This author would, therefore, include this as one item which must not be unreasonably interfered with. (See Appendix D for a list of strategic international straits.)

The key to this internationally agreed standard will be what is reasonable. The test of reasonableness has been applied in the past in interpreting the common right of a nation to freedom on the high seas. The test means that such freedom applies to uses which are reasonable only. So too would this test of resonableness be applied to the first point. Such interferences, in other words, would only be permitted which are reasonable. Such a reasonable test, for example, might

be applied in the proposal for a deep water port.

> Senator Tower (R-Tx) has introduced an amendment to the Outer Continental Shelf Lands Act providing authority 'for the issuance of permits to construct, operate and maintain port and terminal facilities.' The bill, comments the Senator, is required because of our 'urgent need for superports'. The Senator is pushing for a deep water terminal off Texas.[64-A]

The whole question of superstructures based on the seabed which inhibit navigation is no where better viewed than in the Gulf of Mexico. Presumably, similar approaches to the fairways in the Gulf would have to be applied in other navigation-seabed use conflicts in order that the interests of all parties involved be maximized to the extent possible.

The second point, international treaty standards to protect the ocean from pollution, is probably the most advanced in terms of international effort devoted to the subject. The major concern of the U.S. oil interests would be that the coastal state not be allowed to interfere with freedom of navigation as a means of controlling pollution. Such a situation may be seen in the unilateral declaration by Canada in its Canadian Arctic Waters Pollution Prevention Act 1970. According

to T. Leitzell, attorney, Department of State, latest law of the sea developments show lesser developed countries in coastal regions favor coastal state control of pollution in the economic zone.[65] Leitzell poses six enforcement options: 1) flag state enforcement, 2) 1954 London Convention as amended plus compulsory settlement of disputes, 3) requirement of tanker construction certification that a vessel meets international pollution control requirements, 4) place the enforcement authority in the receiving port (perhaps this could be implemented with an oil detection device), 5) coastal state arrest and flag state prosecution, or 6) 1954 London as amended i.e. coastal state notification of flag state.[66] G. Winn Haight, New York attorney, observes that the coastal state must adhere to standards of the international community. Mr. Haight concedes that Canada's approach is right for Canada, but that this approach must not be allowed to dominate pollution control.[67] When seen in terms of a trade-off pollution occurring between 12 and 200 miles is much less of a priority issue than freedom

of navigation in that same zone. Mr. Haight suggests further that some sort of interim agreement should be reached such that coastal state and free navigation interests retain the ability to remain on-going.[68] Pollution is a unique issue in the law of the sea because,as mentioned earlier, so much work in this area has already been accomplished by the international community i.e. International Maritime Consultative Organization (IMCO). According to Adm. J. Doyle some of the lesser developed countries in their law of the sea negotiations fail to recognize that much work has been done by IMCO.[69]While certain internationally defined pollution control standards must be applied to the economic zone, it should be realized that pollution is not a phenomenon unique to the economic zone and as such does not lend its complete resolution to legislation strictly within the zone.

The third point is international treaty standards to protect integrity of investment. This problem is nowhere better dramatized than in recent Middle East,

OPEC, expropriations and nationalization activity. It is precisely this kind of a situation which would hopefully be avoided for U.S. investments in the foreign offshore area. This issue is, in the view of the author, the key issue in all of the U.S. oil interests in the law of the sea. The oil developers are moving offshore; U.S. oil interests seek stability in the offshore environment. U.S. oil interests, eager to invest in foreign offshore areas, are unwilling to do so when conditions are so politically and economically volatile.

The fourth point, sharing of revenue for the international community benefit, is one to which many agree in principle. As Ambassador Stevenson observes, however, while so much of this revenue would come from U.S. shelves initially, "we are concerned about opposition to this idea implicit in the position of those advocating an exclusive economic zone".[70] The advocates of the economic zone are growing in numbers; generally, the lesser developed nations of the Afro-Asian Community and the Latin American states support the zone. Will these nations support international revenue sharing

or will they retain all revenues derived from within their respective zones?

The fifth and final point is compulsory settlement of disputes. This is the safety device required to handle any misfire of U.S. investment abroad, and conversely, of any foreign investment in the U.S. Presumably, settlement would be handled in a manner similar to the present International Court of Justice arrangement, if not,ih fact, by the ICJ.

The affect of the August 10, 1972 statement was not to alter the basic U.S. position, rather to shift the focus. The U.S. has shifted from interests in the law of the sea expressed in meters and miles to interests expressed in internationally agreed upon standards. This shift has occurred partly because of the U.S. position of great power in the world. That is to say, as a leading world power, the U.S. cannot afford to become too dominant in a decision which by definition is an international decision. Theoretically, the vote of one lesser developed nation carries the same weight as a vote from the U.S. Even though in reality the U.S.

accounts for 85 percent of all monies spent in the oceans, the concept of one nation, one vote, still obtains. In dealing with a Seabeds Committee with over 90 members the U.S. cannot allow herself to be negotiated out of any of her power. If the U.S. were to dominate i.e. demand 85 percent of her policies be adopted by the international community, then the mission of all the lesser powers negotiating would become that of voicing their 15 percent of the policy or more to the point diminishing the U.S. percentage. These figures are not a qualitative description of U.S. power, they merely illustrate the point that the U.S. must not be too bullish with her power lest it work to her disadvantage. Then the risk of a break down in negotiations would become very real. It is better, therefore, for us to remain less in the forefront of the negotiating process so as to allow an interplay of forces independent of the U.S. among the less powerful. It works, for example, to our advantage to have the CEP nations, long a trouble-some group with tuna fisherman from U.S., to now be confronted with a 200 mile economic zone worldwide,

and the resultant prospect of some foregone opportunity to the CEP nations because of it. The example may or may not be valid, but the point here is that this kind of process evolved without dominant U.S. involvement in the negotiations, and subsequently the U.S. cannot be targeted as a scapegoat, as she has been in the past, by a "have-not" nation. In the opinion of J. Dykstra, the U.S. will wait until all the other coastal states have gone to 200 miles with the economic zone, and then follow suit. In the meantime, with the lesser developed nations dominating much of the law of sea discussion, it is reasonable for the U.S. to strongly support these five points, and it is reasonable for the Seabeds Committee to accept them.

Chapter IV Conclusion

It would perhaps be instructive to view how some of the OPEC nations consider the law of the sea in regards to their petroleum resources offshore. Venezuela and Indonesia are the only OPEC nations which signed the 1958 Convention on the Continental Shelf. They did so with "reservation or declaration".[71] In the closing days of the 1969 General Assembly in the UN, the "moratorium resolution" to halt further development of mineral resources of the seabed beyond the limit of national jurisdiction was adopted by a vote of 62 in favor, 28 opposed, and 28 abstained. Among those in favor were Algeria, Iraq, Kuwait, and Venezuela. Among those abstaining were Indonesia, Iran, Liberia, Libya, and Saudi Arabia. The U.S. opposed the resolution on the grounds that it was meaningless under existing international law i.e. limits of exploitability determine limit of national jurisdiction.[72] Another resolution passed in the 1969 General Assembly called for the Secretary-General to prepare a further study of various types of international machinery for governing the international seabed. This resolution was supported by

Kuwait, Libya, and Liberia.[73] In the first Seabeds Committee meeting 1971, a "large number of representatives stated that the establishment of an international regime and machinery with comprehensive powers and authority should be given priority in the Committee's deliberations".[74] This was supported by Algeria, Iran, Iraq, and Libya. Kuwait supported a modified version of the proposal which included simultaneous discussion of the area of such a regime. The U.S. supported Kuwait's view. At the end of the 1972 General Assembly, a resolution, requesting the Secretary-General to "prepare a comparative study of the extent and economic significance, in terms of resources, of the international area that would result from each of the proposals on limits of national jurisdiction" for the seabeds, was adopted by a vote of 69 in favor to 15 against with 15 abstentions. Voting against were Algeria and Venezuela. Indonesia, Iran, and Saudi Arabia abstained.[75]

The foregoing examples are not indicative of any strong OPEC policy in the law of the sea. There is no group unity to the extent that there is among the Afro-Asian Community, for instance. There is not

the emerging support for any major resource policy that there is, for example, in the Latin American nations with their "patrimonial sea". In 1971 the Indonesian states met to discuss ways to establish regional controls for offshore exploration and exploitation.

The notion of OPEC as an interest group in the law of the sea is not well founded. U.S. oil companies independently and in consortia negotiate for the rights of offshore exploration and exploitation directly with the various countries involved. This fact is evidenced by reading the various annual reports of these oil companies. They are not as concerned with the political and legal overtones of the OPEC rise to power as they with protecting their investments and making a profit. To this extent none of the oil companies is anxious to risk a short-run loss for the long-term gain. The oil companies have to show a profit this year; their stockholders demand it. A short-run loss would surely result if, for example, certain of the economic remedies mentioned in Chapter II were applied.

In conclusion U.S. oil interests in OPEC are on-going and concerned with the present. They want to know whether the latest devaluation of the dollar augurs another tax increase? U.S. oil interests in the law of the sea are equally as real, however, they are more oriented to the future. U.S. oil interests view the law of the sea as a mechanism which if applied to future offshore development will help stabilize U.S. foreign investments considerably. There is time yet. Offshore oil provides a small, but rapidly increasing percentage of the total. There are a number of politically stable offshore environments to be exploited before the U.S. must meet face-to-face with OPEC. There could be a couple decades yet before the U.S. will have to actively begin to produce alternative sources of energy (shale). In the meantime if progress can be made in the law of the sea negotiations, and some sort of stable regime can be established in the seabeds, all this will work to the oil companies advantage. Hopefully, the day when offshore development moves seaward under the aegis of an internationally agreed upon treaty is not in the too distant future.

Notes

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[13] -----1971 Annual Report, Occidental Petroleum Corporation, p 7.

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Appendix A

List of Nations Involved in Offshore Activity:

Offshore production around the world

Country, Field	1971 prod.	Cum. 1-1-72	Est. reserves
	Million bbl		
Abu Dhabi			
Umm Shaif	36	284	1,939
Zakum	89	257	1,000
TOTAL	125	542	2,939
Angola (Cabinda)			
73-480	0.1	0.06	NA
72-4	14.0	31.0	NA
73-1	8.0	21.0	NA
73-2	6.0	17.0	NA
72-9	2.0	3.0	NA
72-18	0.2	0.06	NA
72-73	3.0	3.0	NA
72-35	2.0	2.0	NA
84-1	NA	NA	NA
84-30	.08	0.4	NA
84-4	NA	0.1	NA
84-4S	0.3	0.1	NA
84-12	NA	NA	NA
73-48	0.08	0.05	NA
72-34	NA	NA	NA
TOTAL	35.8	77.9	1,200
Argentina			
Comodora Rivadavia	0.7	NA	NA
TOTAL	0.7	NA	NA
Australia			
Barracouta	2.0	4.0	498
Barrow Island	16.0	36.0	155
Halibut	64.0	108.0	536
Kingfish	20.0	20.0	980
Marlin	NA	NA	500
TOTAL	102.0	168.0	2,669
Brazil			
Plataforma Continental	SI	0.1	NA
Dom Joao	3.0	NA	NA
TOTAL	3.0	.1	NA
Brunei-Malaysia			
Ampa SW.	29.0	141.0	2,200
Baram	9.0	10.0	90
West Lutong	12.0	20.0	124
TOTAL	50.0	171.0	2,414
Congo (Brazzaville)			
Emeraude Marine	NA	NA	500
TOTAL	NA	NA	500
Denmark			
"M"	SI	SI	NA
Dubai			
Fateh	46.0	80.0	1,500
Fateh, SW.	SI	SI	NA
TOTAL	46.0	80.0	NA
Egypt			
Belayim*	NA	225.0	NA
El Morgan	44.0	247.0	400
TOTAL	44.0	472.0	NA
Gabon			
Aguille	10.0	36.0	150
Port Gentil Ocean	1.0	7.0	14
Tchengue Ocean	0.5	4.0	6
TOTAL	11.5	47.0	170
Ghana			
Block 10	SI	SI	NA
Iran			
Bahrgansar	9.0	79.0	960
Hendijan	2.0	4.0	450
Nowruz	7.0	7.0	960
Cyrus	9.0	23.0	790
Darius*	37.0	209.0	1,123
Rostam	20.0	56.0	980
Rakhsh	3.0	3.0	560
Sassan	130.0	138.0	1,318
TOTAL	217.0	519.0	7,141
Italy (Sicily)			
Gela*	4.0	62.0	90
Japan			
Kubiki	0.8	9.0	15
Libya			
Block 137	SI	SI	NA
Mexico			
Arenque	1.0	.9	999
Atun	6.0	24.0	900
Cabo Nuevo	1.3	8.0	NA
Isla de Lobos	2.0	14.0	20
Morsa	.9	.5	NA
Santa Ana	.6	27.7	NA
Tiburon	1.0	3.0	21
TOTAL	12.8	78.1	NA

Source: J.C. McCaslin, "Worldwide Offshore Output Nears 9 Million B/D", The Oil and Gas Journal, May 1, 1972, pp 197-198.

Offshore production around the world (cont.)

Country, Field	1971 prod.	Cum. 1-1-72	Est. reserves
		Million bbl	
Neutral Zone			
Hout	19.0	26.0	950
Khafji	118.0	738.0	800
TOTAL	137.0	764.0	1,750
New Zealand			
Kapuni	.7	.8	10
Nigeria			
Delta	7.0	24.0	101
Delta, South	18.0	55.0	200
Malu	8.0	6.0	104
Meji	7.0	22.0	95
Meren	30.0	79.0	448
Okan	26.0	143.0	445
Parabe	10.0	8.0	105
Asabo	9.0	19.0	102
Idaho	5.0	12.0	65
Ubit	9.0	9.0	104
Pennington	3.0	4.0	65
TOTAL	132.0	381.0	1,834
Norway			
Ekofisk	(began prod. late '71)		1,500
Ekofisk, West	(began prod. late '71)		NA
Tor	(not producing)		NA
TOTAL	....	.....	7,000
Peru			
EPF-Belco	.1	.4	NA
Humboldt	5.0	19.0	NA
Litoral	2.0	20.0	NA
Providencia	2.0	9.0	NA
Rincon-37	NA	.2	NA
TOTAL	9.1	48.6	NA
Qatar			
Bul Hanine	SI	SI	NA
Idd El Shargi	17.0	108.0	2,007
Maydan-Mahzan	65.0	249.0	10,000
TOTAL	82.0	357.0	12,007
Saudi Arabia			
Abu Sa'Fah*	30.0	130.0	6,398
Berri*	57.0	85.0	5,817
Manifa*	2.0	79.0	10,930
Qatif*	35.0	326.0	8,709
Safaniya*	289.0	1,882.0	23,402
Khursaniya*	27.0	344.0	6,156
TOTAL	440.0	2,846.0	61,412
Tobago-Trinidad			
N. Marine	0.1	1.0	0.8
Soldado	23.0	218.0	200
Brighton*	0.1	62.0	70
TOTAL	23.2	281.0	270.8
Tunisia			
Ashtart	SI	SI	NA
United Kingdom			
Forties	SI	SI	1,500
United States			
Alaska			
Granite Point	6.0	40.0	91
McArthur River	41.0	135.0	191
Middle Ground Shoal	11.0	59.0	126
Trading Bay	9.0	32.0	74
California			
Alegria	0.1	0.2	0.5
Belmont Offshore	3.0	32.0	55
Carpinteria	5.0	33.0	82
Coal Oil Point	0.1	1.0	1
Conception	0.4	28.0	45
Cuarta	0.1	0.6	0.9
Dos Cuadras	28.0	51.0	125
Elwood South	.9	6.0	15
Huntington Beach*	16.0	393.0	108
Rincon Offshore*	.8	27.0	2
Montalvo West*	.0	3.0	.5
Santa Ynez	SI	SI	3,000
Summerland Offshore	.9	24.0	48
Wilmington*	49.0	643.0	636
Louisiana (giants only)			
Bay Marchand Blk. 2	31.0	335.0	447
Breton Sound Blk. 20	2.0	21.0	50
West Delta Blk. 27	1.0	13.0	48
West Delta Blk. 30	26.0	241.0	157
West Delta Blk. 41	5.0	30.0	34
West Delta Blk. 73	16.0	95.0	625
West Delta Blk. 105	3.0	16.0	13
West Delta Blk. 117	2.0	7.0	10
West Delta Blk. 133	2.0	8.0	12
Eugene Island Blk. 18	3.0	34.0	12
Eugene Island Blk. 32	2.0	14.0	13
Eugene Esland Blk. 126	6.0	74.0	50
Eugene Island Blk. 128	3.0	35.0	24
Eugene Island Blk. 175	2.0	6.0	24
Eugene Island Blk. 188	3.0	25.0	24
Eugene Island Blk. 276	5.0	23.0	41
Grand Isle Blk. 16	22.0	160.0	190
Grand Isle Blk. 18	3.0	36.0	52
Grand Isle Blk. 41	4.0	17.0	30
Grand Isle Blk. 43	23.0	99.0	169
Grand Isle Blk. 47	4.0	53.0	45
Main Pass Blk. 35	4.0	72.0	27
Main Pass Blk. 41	18.0	102.0	202
Main Pass Blk. 69	13.0	161.0	138
Main Pass Blk. 299	2.0	7.0	15
S. Marsh Island Blk. 6	3.0	15.0	15
S. Marsh Island Blk. 73	5.0	25.0	30
South Pelto Blk. 20	2.0	15.0	14
Rabbit Island	5.0	21.0	20
Ship Shoal Blk. 107	3.0	34.0	25
Ship Shoal Blk. 113	3.0	15.0	19
Ship Shoal Blk. 154	3.0	27.0	19
Ship Shoal Blk. 176	2.0	16.0	10
Ship Shoal Blk. 204	2.0	6.0	14
Ship Shoal Blk. 207	4.0	13.0	39
Ship Shoal Blk. 208	10.0	15.0	121
South Pass Blk. 24	20.0	322.0	750
South Pass Blk. 27	21.0	217.0	199
South Pass Blk. 62	4.0	14.0	26
Tiger Shoal	2.0	17.0	13
Timbalier Bay	31.0	331.0	320
South Timbalier Blk. 54	2.0	11.0	17
South Timbalier Blk. 131	3.0	26.0	23
South Timbalier Blk. 135	14.0	101.0	166
South Timbalier Blk. 176	3.0	16.0	17
Vermilion Blk. 245	3.0	16.0	17
Others (215 fields)	95.0	3,069.0	NA
Texas			
Federal Block 288	.7	6.0	50
High Island	.6	1.0	40
TOTAL U.S.	617.7	7,577.8	NA
Zaire			
GC-1X	NA	NA	NA
Venezuela			
Zulia State			
Bachaquero**	270.0	4,184.0	**
Cabimas* **	30.0	1,186.0	**
Lagunillas**	343.0	7,723.0	**
Centro	48.0	244.0	500
Ceuta	23.0	174.0	450
Lama	117.0	1,566.0	1,112
Lamar	52.0	459.0	1,300
Mene Grande	4.0	568.0	32
Tia Juana*	136.0	2,573.0	1,401
TOTAL	1,023.0	18,767.0	NA
U.S.S.R.			
Azerbaijan			
Bakhar (Makarov Bank)	5.0	7.0	NA
Baku Archipelago (Sangachaly-DuvannyiBulla)	30.0	100.0	900
Izerbash*	NA	20.0	NA
Neftianye Kamni	45.0	715.0	500
Turkmen			
Cheleken	1.0	5.0	10
TOTAL	81.0	847.0	NA
TOTAL WORLDWIDE OFFSHORE	3,197.6	34,095.3	NA

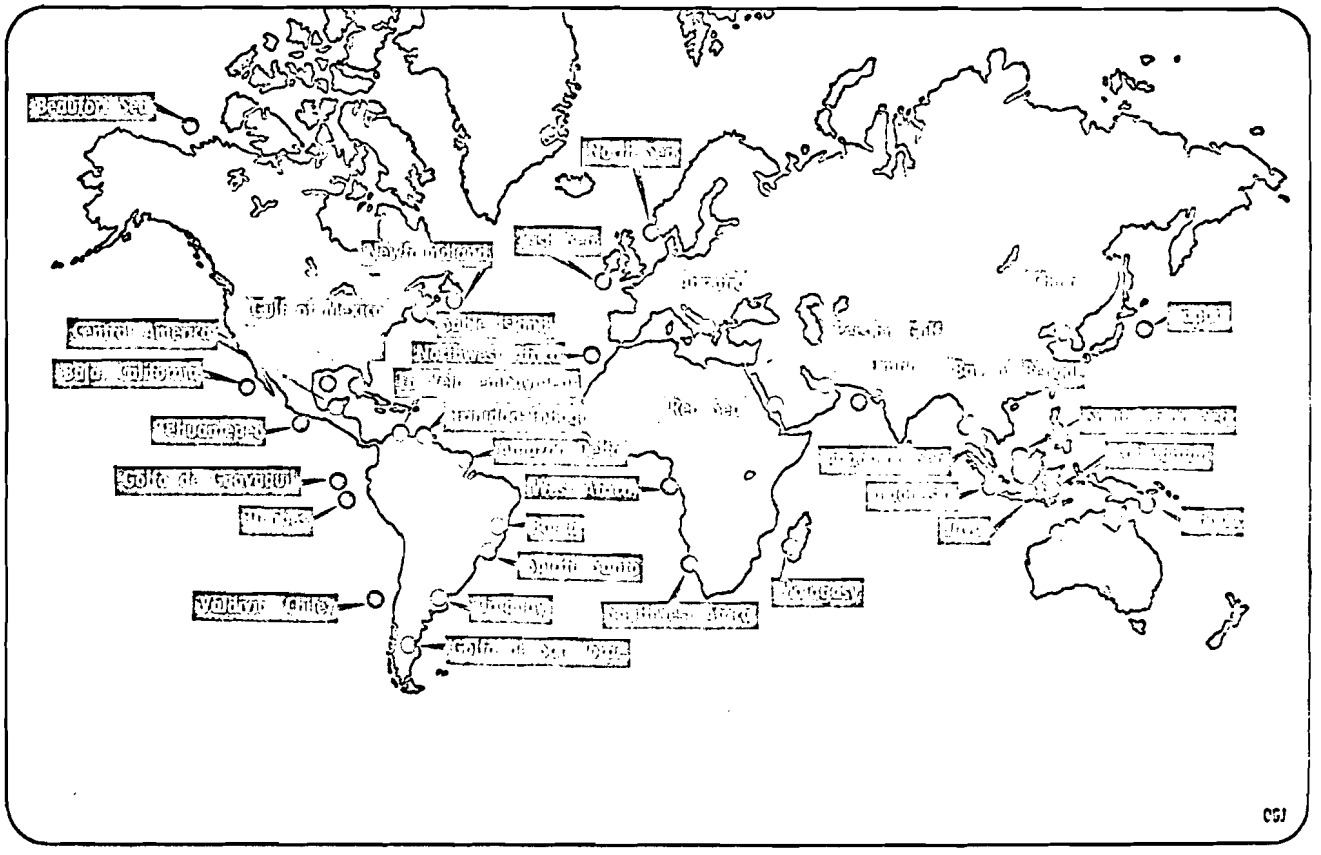
NA = Not available.
SI = Shut-in (not producing).
* = Partly onshore.
**Boliver Coastal (30 billion bbl ultimate recovery).

Appendix B

Geographic Location of Worldwide Offshore Reserves of Petroleum and Gas:

Fig. 1

Where on the high seas in 1973

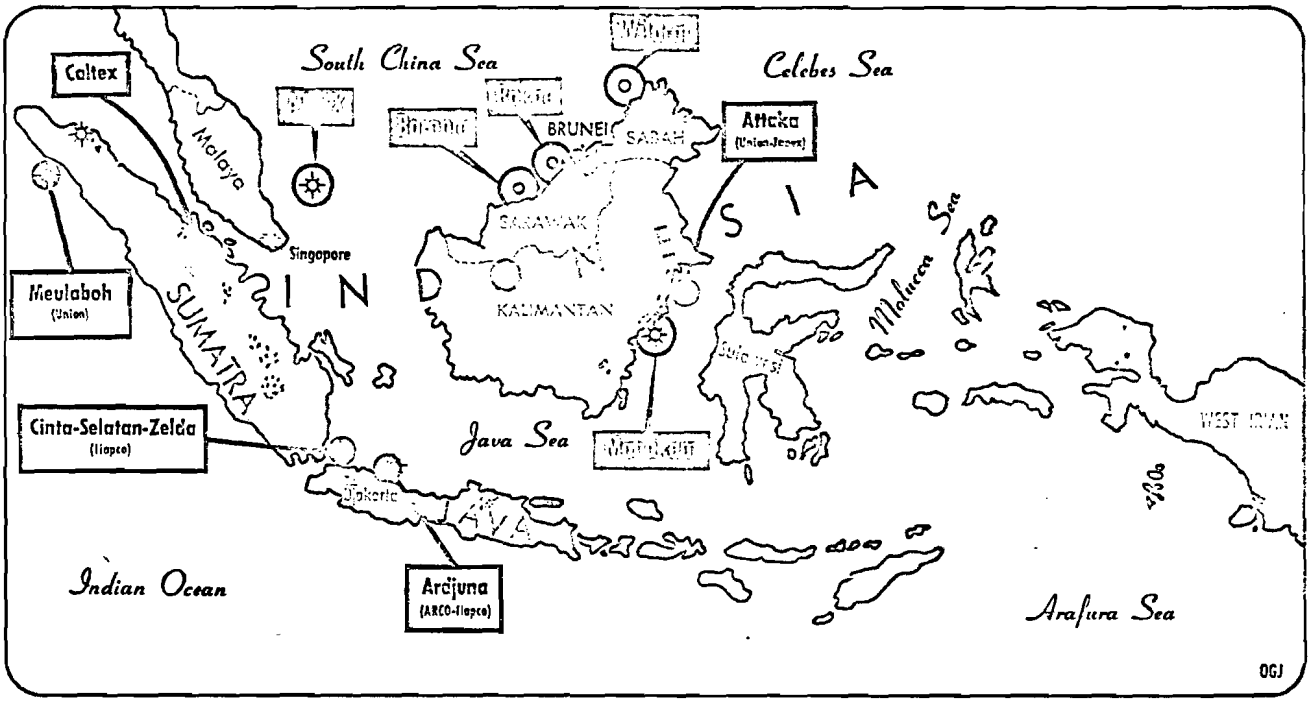


Source: J.C. McCaslin, "Offshore Exploration Is Moving Around the Globe", The Oil and Gas Journal, Dec 11, 1972, p 106.

Indonesia

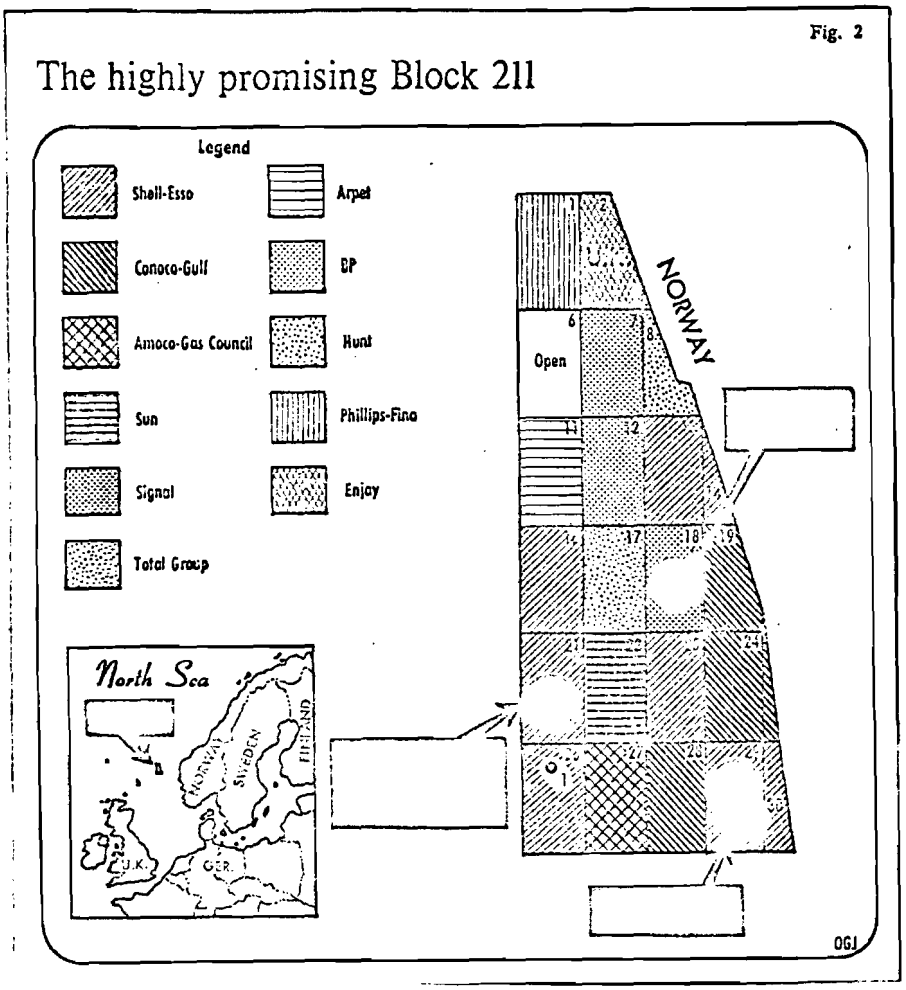
Fig. 3

The Indonesia offshore theater

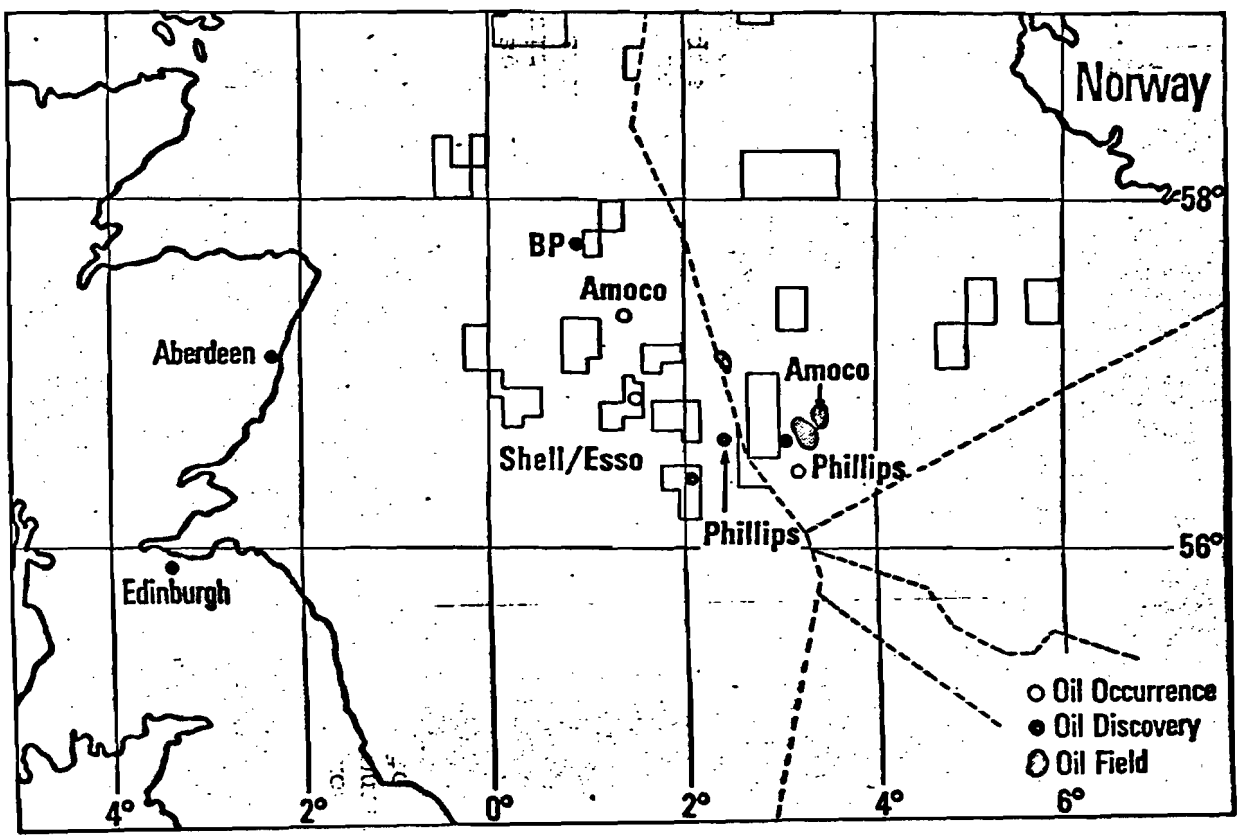


Source: J.C. McCaslin, "Offshore Exploration Is Moving Around the Globe", The Oil and Gas Journal, Dec 11, 1972, p 107.

The North Sea

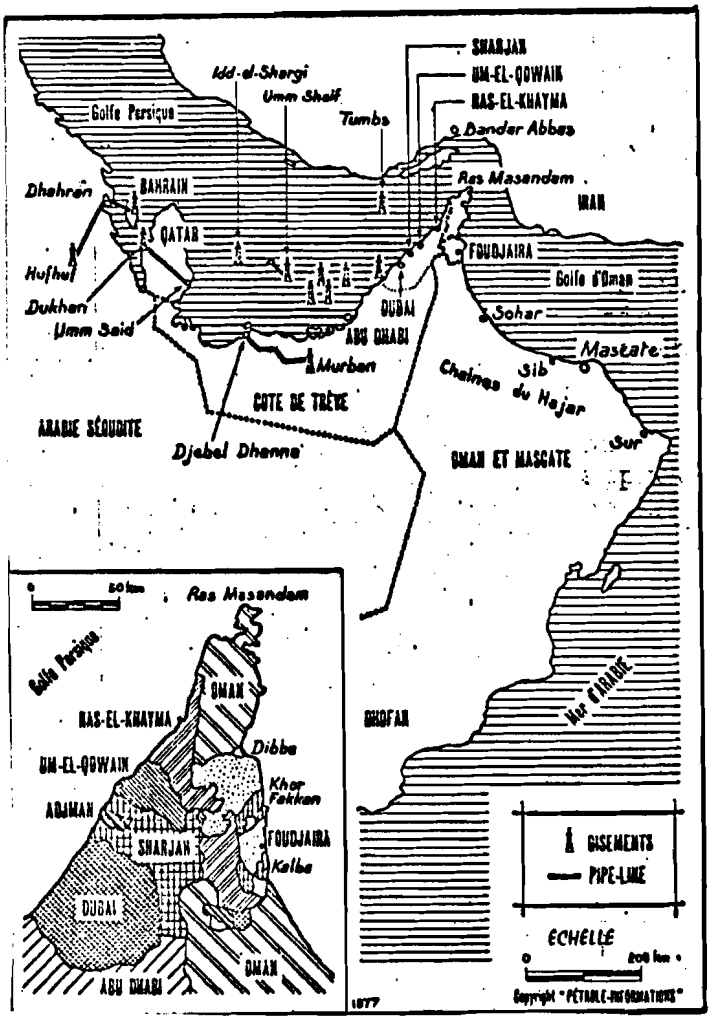


Source: J.C. McCaslin, "Offshore Exploration Is Moving Around the Globe", The Oil and Gas Journal, Dec 11, 1972, p 108.



Source: G.H. Barrows, Offshore Petroleum Industry, 9 East 53rd St., New York, NY.

The Persian Gulf

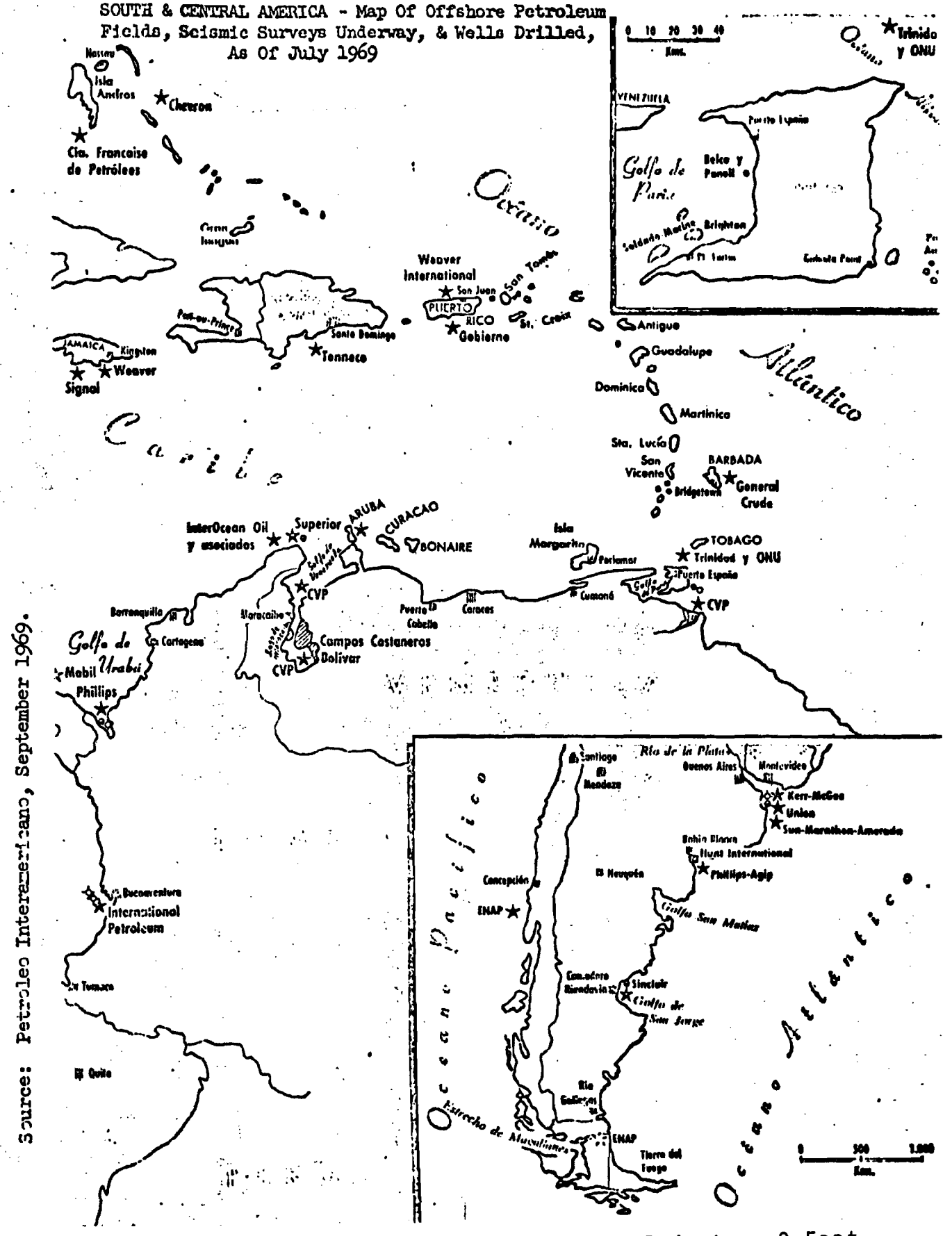


Source: G.H. Barrows, Offshore Petroleum Industry, 9 East 53rd St. New York, NY.

Source: Petróleo Interamericano, September 1969.

Source: G.H. Barrows, Offshore Petroleum Industry, 9 East 53rd St., New York, NY.

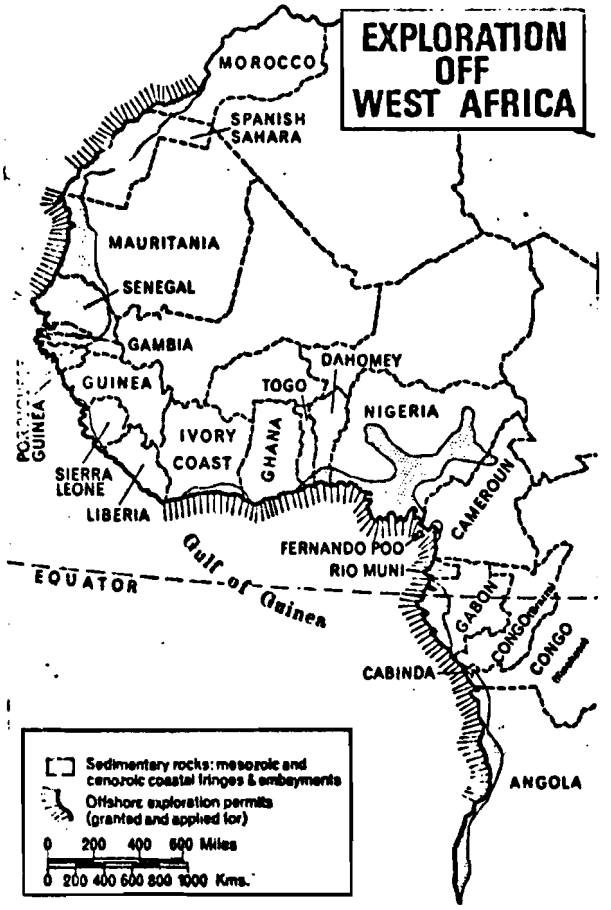
SOUTH & CENTRAL AMERICA - Map Of Offshore Petroleum Fields, Seismic Surveys Underway, & Wells Drilled, As Of July 1969



Source: Petroleo Interamericano, September 1969.

Source: G.H. Barrows, Offshore Petroleum Industry, 9 East 53rd St., New York, NY.

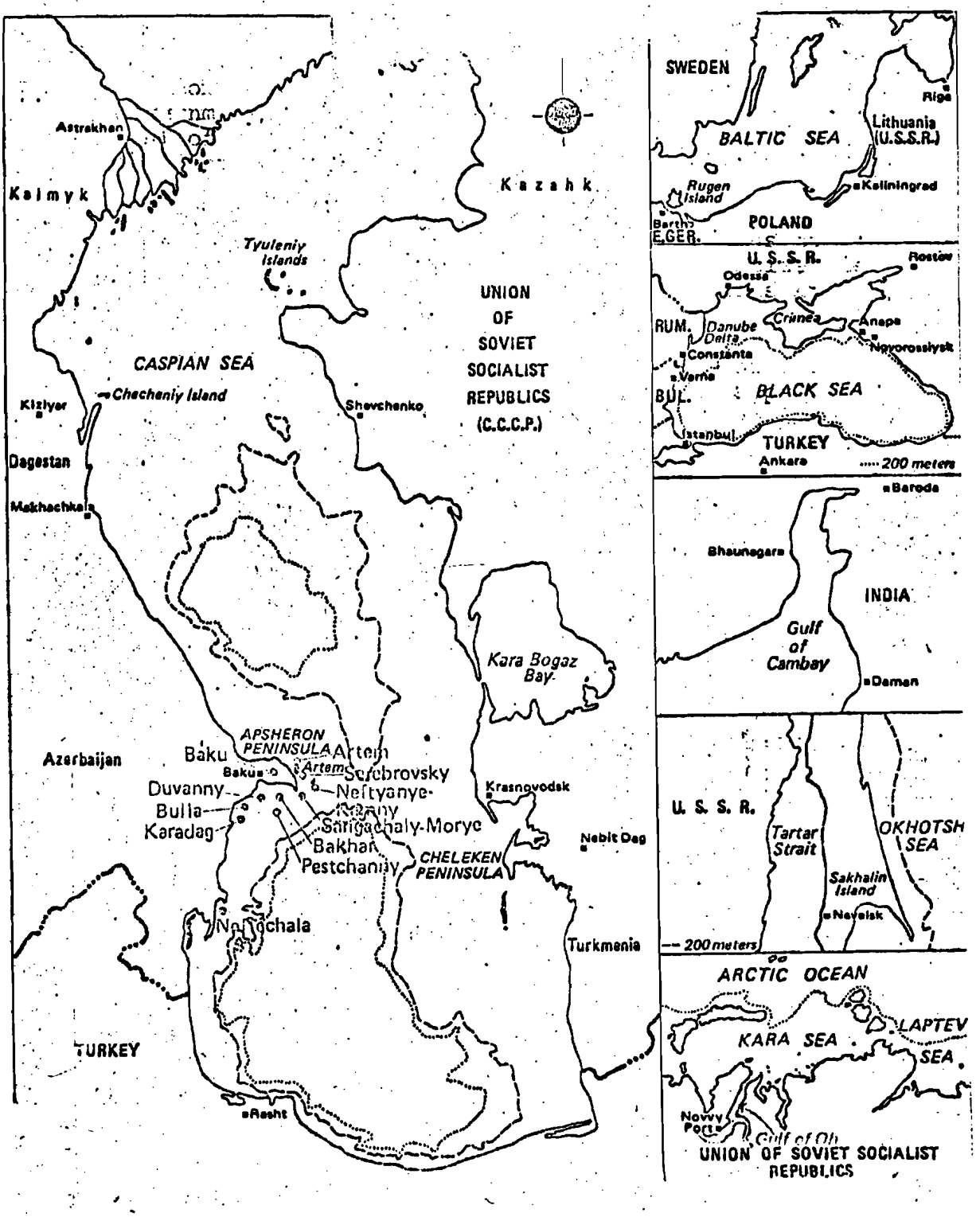
West Africa



Source: Petroleum Press Service.

Source: G.H. Barrows, Offshore Petroleum Industry, 9 East 53rd St., New York, NY.

USSR - Map Of Offshore Activity Areas, 1970



Source: G.H. Barrows, Offshore Petroleum Industry, 9 East 53rd St., New York, NY.

WORLD (EXPLORATION) - Table Showing Approximate Distance To 100 Fathom Line For Various Parts Of The World (Cont'd)

Country	Distance to 100 fathom line (nautical miles)		Remarks
Middle East			
1. Abu Dhabi	—		All Persian Gulf is less than 100 fathoms deep. Maximum depth about 50 fathoms
			The Gulf is up to 18 nautical miles wide
2. Bahrain	—		The deepest water, 40 fathoms, about 100 nautical miles north of Island
3. Dubai	—		Water depth less than 40 fathoms
4. Iran	—	(a)	Persian Gulf, less than 50 fathoms
	15	(b)	Gulf of Oman and Arabian Sea
5. Kuwait	—		Depth less than 30 fathoms
6. Neutral Zone	—		Depth less than 30 fathoms
7. Oman	15		Gulf of Oman
8. Pakistan	80		—
9. Qatar	—		Depth less than 50 fathoms
10. Saudi Arabia	10 to 60		Red Sea Coast
11. Sharjah	—		Persian Gulf, about 50 fathoms deep, and about 120 nautical miles wide
North America, South America and Caribbean			
1. Bahamas	2	(a)	East of Andros Island
	60	(b)	West of Andros Island
	3	(c)	South of Grand Bahama Island
	40	(d)	North of Grand Bahama Island
2. Canada	60	(a)	Atlantic Coast
	5 to 205	(b)	Newfoundland Island generally about 20 nautical miles
	200 to 500	(c)	Hudson Bay
	50	(d)	Pacific Coast
	50 to 100	(e)	Baffin Island, east of North Coast
	10 to 50	(f)	Prince Regent Inlet (West Coast)
3. Cuba	about 1	(a)	South of Sierra Macstra
	20 to 60	(b)	Between Cab Cruz and Sierra de Trinidad
	—	(c)	Gulf de Batabano, less than 100 fathoms deep. Width about 70 nautical miles
	1 to 30	(d)	North Coast of Cuba
4. Mexico	130	(a)	Off Pta Boxcohuo
	30	(b)	Off Tonala
	10	(c)	Off Pta. Roca Partida
	5 to 30	(d)	Most of it about 10 nautical miles
5. Nicaragua	30 to 70		East boundaries
6. Panama	10		North Coast
	20 to 40		South Coast
7. Surinam	80 to 100		—
8. Trinidad	45		—
9. U.S.A.	10 to 30	(a)	Pacific Coast
	60	(b)	Pacific Coast off the State of Washington
	5	(c)	Atlantic Coast, off Florida
	120	(d)	Atlantic Coast, off Long Island
	40 to 100	(e)	The rest of the Atlantic Coast line
	50 to 130	(f)	Gulf of Mexico
	120 to 1000	(g)	Beaufort Sea, off Alaska
	—	(h)	Chukchi Sea, off Alaska
	—	(i)	Gulf of Alaska, off Alaska
South America			
1. Argentina	60 to 350		—
2. Brazil	20 to 30	(a)	North Coast
	100	(b)	In the vicinity of Pra River
	10 to 60	(c)	East Coast
	100	(d)	In the Sao Paulo area
3. British Honduras	15		—
4. Chile	5 to 40		—
5. Colombia	10 to 30		—
6. Ecuador	10 to 30		—
7. Peru	15 to 60		—
8. Venezuela	10 to 100		Gulf of Venezuela, less than 30 fathoms deep

Source: Wiegel, 8th World Petroleum Congress, 1971.

Source: G.H. Barrows, Offshore Petroleum Industry, 9 East 53rd St., New York, NY.

WORLD (EXPLORATION) = Table Showing Approximate Distance To 100 Fathom Line For Various Parts Of The World

Country	Distance to 100 fathom line (nautical miles)		Remarks
Africa			
1. Cabinda	30		—
2. Cameroun	20 to 60		—
3. Congo	40		—
4. Dahomy	10 to 20		—
5. Egypt	5 to 50	(a)	Mediterranean Sea
	5 to 20	(b)	Red Sea
	—	(c)	Gulf of Suez, less than 50 fathoms deep
	—	(d)	Gulf of Aqaba, less than 10 fathoms deep
6. Ethiopia	10		Red Sea
7. Gabon	40		—
8. Libya	10 to 35		Mediterranean Sea
9. Mauritania	30 to 100		Mostly about 30
10. Senegal	20		—
11. South Africa	30 to 100	(a)	South Atlantic Ocean
	10	(b)	Cape of Good Hope
	10 to 120	(c)	Indian Ocean
12. Portuguese Guinea	30		—
13. Spanish Sahara	10 to 60		—
14. Tunisia	50 to 120		Mediterranean Sea
15. Morocco	5 to 10		Mediterranean Sea
16. Nigeria	20 to 40		—
Asia			
1. China	200 to 250	(a)	East China Sea
	150 to 200	(b)	South China Sea
	—	(c)	Yellow Sea (all under 100 fathoms)
2. India	10 to 20	(a)	East Coast
	30 to 60	(b)	West Coast
3. Indonesia	5 to 35	(a)	West of Sumatra
	more than 200	(b)	East of Sumatra
	—	(c)	Karimata Strait, less than 40 fathoms deep, and more than 120 nautical miles wide
	—	(d)	Java Sea, less than 40 fathoms deep, and about 250 nautical miles wide
4. Japan	10 to 30		All around Japan's Islands
5. Republic of Korea	1 to 5	(a)	Sea of Japan (East Coast)
	under 100	(b)	Yellow Sea (West Coast—all under 100 fathoms)
6. U.S.S.R.	1500	(a)	East Siberian Sea
	700	(b)	Kara Sea
Australian Area			
1. Australia	15 to 120	(a)	South Coast, Bass Strait, less than 100 fathoms deep
	10 to 120	(b)	East Coast
	200	(c)	North Coast
	10 to 60	(d)	West Coast
2. Borneo	60 to 120		South China Sea
3. New Zealand	5 to 60		Around the Islands
Europe			
1. Denmark	60	(a)	Off Skagen
	—	(b)	North Sea, less than 100 fathoms deep off Denmark
2. France	120	(a)	Western European basin
	—	(b)	English Channel, less than 100 fathoms deep. Width, Dover–Calais about 40 nautical miles
	5 to 40	(c)	Mediterranean Coast
3. Germany	—		All coastal region less than 100 fathoms (North Sea) deep
4. Italy	—	(a)	Adriatic Sea, less than 100 fathoms deep, and up to 120 nautical miles wide
	5 to 60	(b)	Mediterranean Sea
5. Netherlands	500		North Sea
6. Norway	5		North Sea
7. Spain	5 to 30	(a)	Atlantic Ocean
	5 to 30	(b)	Mediterranean Sea
8. United Kingdom	180	(a)	Atlantic Ocean
	360	(b)	North Sea
	—	(c)	English Channel, less than 100 fathoms deep
9. U.S.S.R.	—	(a)	Baltic Sea, all less than 100 fathoms deep, and up to 300 nautical miles wide
	5 to 150	(b)	Black Sea

Source: Wiegel, 8th World Petroleum Congress, 1971.

Source: G.H. Barrows, Offshore Petroleum Industry, 9 East 53rd St., New York, NY.

UNIVERSITY OF RHODE ISLAND

AN EXAMINATION OF THE ABILITY OF THE U.S. MERCHANT MARINE TO PERFORM ITS MISSION DURING PEACETIME AND VARIOUS CONTINGENCY SITUATIONS

MARINE AFFAIRS SEMINAR

GMA 652

SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR A MASTER OF MARINE AFFAIRS DEGREE

MAY, 1983

BY

PAUL MICHAEL MOLLOY

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Chapter I

Introduction

The maritime transportation industry is an extremely important one for the United States today. Being deficient in most of the materials considered "strategic", the U.S. must import 69 of the 72 critical materials required by our high technology industry (Day, 10 August 1973). These strategic materials are mostly carried by ships; thus, our economy, and to some extent our national defense, depend on the secure and efficient operation of the maritime transportation industry. Anything which could adversely impact on the continued operation of shipping is a matter of grave concern.

The importance of the merchant marine was clearly recognized from the inception of the United States. One of the first acts passed by the new Continental Congress concerned the establishment of a merchant marine. In his report to the Congress Thomas Jefferson, in 1793, wrote of the essential nature of secure maritime transportation. This governmental interest in the merchant marine was shared by the industry itself, and U.S. flag vessels sucessfully competed with vessels flying other flags.

The ensuing two hundred years wreaked numerous changes to the maritime industry. The U.S. Civil War, the Indust-

rial Revolution, the change from sail to steam, and two World Wars all greatly affected the industry. As the United States progressed from an agrarian society to a highly industrial one, our dependance on imported materials grew until the present time. Viewing the figures in paragraph one, it becomes very evident that the economic well being of this nation rests, to a large extent, on the steady flow of materials into this country. These raw materials are then transformed by industry into finished products, many of which are exported. Shipping then takes these exports to the rest of the world. It has been estimated that exports account for 20 percent of domestic U.S. jobs. Therefore, shipping is a necessity for the economic health of this country.

With foreign trade being as critical as it is, it stands to reason that the U.S. would have a large, domestic-flag fleet of merchant ships capable of moving the vast tonnages required by its economy. However, due to a variety of economic circumstances, this is not the case. In fact, domestic flag vessels carry only 5 percent by weight, and 28 percent by value of our foreign trade (U.S. Dept. Commerce, August, 1981, p. 2).

While in peacetime, there are many foreign flag merchant vessels ready and able to carry what ever tonnages U.S. flag vessels cannot carry, this situation could change radically in the event of a war or national emergency.

Many foreign flag vessels are government owned or subsidized and, as such, are very dependant and responsive to the political philosophy of their governments. Even foreign vessels not directly owned or subsidized by their governments must follow the dictates of their governments, in order to avoid puntative measures in licencing, registration, etc. If these governments politically support the U.S., then trade will probably continue as usual. However, if these governments do not support the U.S., or if, due to wartime circumstances, there is an added risk to the vessels themselves or to the governments involved, then there might be an interruption in the flow of resources, both into and out of the U.S. Such an interruption, depending on its scope and duration, could cause severe economic damage to the United States. Since a strong economy is essential to the national defense, such an interruption in trade would weaken this nation's defenses. If domestic flag vessels are not able to respond adequately in this situation, the U.S. could be damaged, both economically and militarily. To avoid this damage, the number of U.S. flag vessels would have to be increased to carry the tonnages not being carried by foreign flag vessels. Depending on the speed with which additional domestic flag vessels could be pressed into service, the economy could experience shortages in vital materials, and therefore damage. At the present time, U.S. flag vessels would find it extremely difficult to respond to such a

situation in a manner timely enough to prevent shortages from occurring.

Up to this point, only general transportation has been discussed. However, in addition to routine trade, the U.S. merchant fleet would be tasked with the support of the military mission.

The hypothesis of this paper is that the U.S. Merchant Marine is currently unable to perform its peacetime or wartime mission. The methodology will be to examine the missions to be performed by the Merchant Marine during the different situations ranging from peace to war, and the historical record established by the Merchant Marine in its performance of these missions.

Missions

The United States' Merchant Marine has two missions. The first mission is to conduct normal maritime trade, both in peacetime and in wartime. The second mission is to support the military effort of the United States.

At present, the domestic flag merchant fleet cannot carry more than a small fraction of U.S. trade. The reasons underlying the commercial industry's inability to carry a fair proportion of domestic trade are many and complex; so complex, in fact, that the reasons cannot be adequately discussed in just a few pages. However, a superficial examination of these problems is necessary.

The primary factor most critical to the decline of the

U.S. flag merchant fleet can be summed up in one word: cost. Due to high overhead, U.S. companies must charge a high price to carry cargo. This situation allows competitors with a lower overhead to successfully charge lower prices and still be profitable.

High overhead for domestic vessels is caused by many factors. Vessels built in the U.S. are very expensive. Steel mills are located far from the ports which receive the raw ore from abroad, and from the shipyards. Consequently, the iron ore incurs transportation costs on its way to the steel mill. U.S. steel mills are, for the most part, antiquated, labor intensive, and inefficient. This increases the cost of the steel even further. Finally, the steel is sent to a shipyard, incurring still more transportation costs.

Once the steel arrives at a shipyard, it is used in the making of ships. Shipyards are very labor intensive and have many unions. Due to the high wages and work practices demanded by the unions and agreed to by the shipyard owners, the building of ships takes longer and is more expensive in the United States than in other countries.

Therefore, ships cost more money to build in the U.S. because of the high cost of the materials and the high cost of labor. When a ship owner pays a high price for his ship, he must charge a high price for its services to recover his investment.

A second major factor in the high freight rates charged

by U.S. companies is the wages paid to crew as well as work practices (such as guaranteed work, long vacations, overtime pay, etc.). As a result, crew costs are usually higher for domestic flag vessels than their foreign flag competitors. In fact, all things being equal, crew costs alone would make the U.S. merchant marine less competitive (Coffey, March, 1983). While Operating Differential Subsidies (ODS) reduce the magnitude of this factor, with the Reagan Administration's desire to eliminate subsidies, the wage costs become more acute.

There are other factors, as well, such as the current recession, high fuel costs, etc. However, the net result of all these factors is that the U.S. flag fleet is not very competitive and is smaller than the volume of U.S. trade would indicate. Consequently, the U.S. flag fleet cannot carry the total commerce, or even half of the total commerce, of the United States.

In peacetime, the mission of the merchant marine, to conduct the U.S. commerce, is accomplished through a combination of domestic and foreign flag vessels. While it does not appear that, by itself, the domestic flag fleet could perform its mission, with the "assistance" of foreign flag vessels, the mission is accomplished.

However, in times of war or national emergency, the U.S. merchant marine would have the added responsibility of supporting the U.S. military mission in addition to its peacetime mission. This paper will analyze the present

ability of the merchant marine to effectively perform the added mission of supporting the military, while continuing to carry the U.S. commerce.

It is appropriate here to define some of the above terms, such as Military Sealift Command Nucleus Fleet, Ready Reserve Fleet, and National Defense Reserve Fleet.

The Military Sealift Command (MSC) is a part of the Navy and is tasked with the responsibility of moving all waterborne military cargo. It has a four part mission:

> 1. MSC provides sealift capability for deployment and support of U.S. forces and material in an emergency;
> 2. MSC develops plans for expansion of sealift capabilities during an emergency or in wartime;
> 3. MSC provides peacetime logistical support by world-wide sealift of supplies, equipment, and material;
> 4. MSC provides, mans, and operates ships used for non-transportation purposes such as oceanographic and hydrographic research (Evers, 1978, p. 2).

The Military Sealift Command is composed of a nucleus fleet, owned by the government and crewed by U.S. civil servants. As such, it is totally under MSC control. Also utilized by MSC are chartered civilian ships. Some of these vessels are "bareboat" charters. Under the terms of this type of charter, the owner of the vessel leases the vessel to MSC, who then provides a civil servant crew. In addition to bareboat charters, MSC also has "time" or "voyage" charters. These ships are leased by the owner to MSC and the crewed with employees of that company.

In 1979, the Military Sealift Command had 70 ships in

the nucleus fleet (MSC, 1979, p. 2). It has been projected that the fleet will remain at this level until at least 1984. Table 1 is a listing of the number and types of vessels in the nucleus fleet.

In the event of a non-mobilization contingency where the MSC is unable to charter merchant ships, there are two additional sources of shipping: Sealift Readiness Program (SRP), and the National Defense Reserve Fleet (NDRF) (Evers, p. 14).

The Sealift Readiness Program is one in which commercial companies who wish to carry military cargo in peacetime agree to commit half of their vessels to military control in the event of an emergency. There is a pre-determined schedule for call-up, with all vessels being made available to MSC within 60 days after notification.

Because these SRP ships are merchant vessels in active service, they require little modification, such as radio equipment, and can be made available fairly quickly and easily.

The National Defense Reserve Fleet is a collection of vessels kept in storage to be used by the MSC if necessary. From an all time high of 2277 ships following World War II, the NDRF has dwindled to 317 ships in 1981 (U.S. Dept. of Transportation, 1981, p. 48). Table 2 shows the number of ships in the NDRF from 1945 to 1981. These ships are supposed to be activated within 4 weeks of notification. The ships are located in three locations: James River,

Table 1

UNITED STATES NAVAL SHIPS

SUMMARY

TYPE	NUMBER	CLASSIFICATION
AF -(R3S4)	1	Refrigerated Cargo
AG -(V#3)	1	Miscellaneous
AGM -(C4SA)	2	Missle Range Instru-
AGM -(ST2E)	2	mentation
AGM -(V#3)	1	"
AGM -(V#5)	1	"
AGOR-(C1ME)	1	Oceanographic Research
AGOR-NAVY	4	"
AGS -(C4SA)	1	Surveying
AGS -NAVY	6	"
AGS -(V#3)	2	"
AK -(C3SD)	1	Dry Cargo
AK -(C4)	1	"
AK -(V#3)	5	"
AKC -(C1ME)	1	Dry Cargo (Coastal)
AKR -(C3ST)	1	"
AKR -(C4ST)	1	"
AO	16	Tanker
AO -(EXT5)	1	"
AO -(T3S2)	7	"
AO -(T5)	4	"
AOG -(T1B2)	3	Gasoline Tanker
ARC -(S3S2)	2	Cable Repairing
ARC -(S4SE)	1	"
ATF -NAVY	4	Fleet Ocean Tug

(Source: Ship Register, Military Sealift Command, Washington D.C., 1979)

Table 2

NATIONAL DEFENSE RESERVE FLEET, 1945-1981

Fiscal Year	Ships	Fiscal Year	Ships
1945	5	1963	1819
1946	1421	1964	1739
1947	1204	1965	1594
1948	1675	1966	1327
1949	1934	1967	1152
1950	2277	1968	1062
1951	1767	1969	1017
1952	1853	1970	1027
1953	1932	1971	860
1954	2067	1972	673
1955	2068	1973	541
1956	2061	1974	487
1957	1889	1975	419
1958	2074	1976	348
1959	2060	1977	333
1960	2000	1978	306
1961	1923	1979	317
1962	1862	1980	320
		1981	317

(Source: MARAD Report, FY 1981)

Virginia; Beaumont, Texas; and Suisun Bay, California. In the event of an activation, some or all of these vessels would be towed to various shipyards and be put into service.

Part of the NRDF is the Ready Reserve Fleet (RRF). This is a program whereby selected ships receive a high degree of maintenance and can be re-activated within 10 days. Table 3 is the RRF Activation Schedule. This program was established in 1976 when the Maritime Administration (MARAD), prompted by changes in the Department of Defense (DOD) sealift requirements that supplemental sealift capacity be made available within 10 days, conducted an investigation which showed that NDRF ships could not be activated in less that 30-40 days. As a result of this investigation, a memorandum of agreement was reached between the Department of Commerce and the Department of the Navy in 1977. This agreement specified that the Chief of Naval Operations, with the concurrance of the Assistant Secretary of Commerce for Maritime Affairs, would determine the number of ships to be called-up, the types of ships, and when these ships would be activated (Evers, p. 42).

Since the NRDF and the RRF are the only assets always available to the MSC, they will be discussed in depth.

As stated earlier, the RRF was created when it was determined that the NRDF could not respond to contingencies quickly enough to meet new DOD requirements. In order to upgrade the response time to comply with DOD directives, the Department of the Navy and the Maritime Administration

Table 3

READY RESERVE FORCE ACTIVATION SCHEDULE

SEQ	VESSEL/LOCATION	RETENTION STATUS	PORT	READINESS DATE
	James River			
1	LAKE Philadelphia	5 days	Philadelphia	M-9
2	PRIDE "	5 days	"	M-9
3	SCAN "	5 days	"	M-9
4	LONE STAR MARINER Baltimore	10 days	Norfolk, VA	M-4
5	AGENT Cheatham Annex	10 days	"	M-4
6	OHIO	10 days	"	M-4
7	PUERTO RICO	10 days	"	M-4
8	CATAWBA VICTORY	10 days	Baltimore, MD	M-2
9	YOUNG AMERICA	10 days	"	M-2
10	GREAT REPUBLIC	10 days	"	M-2
11	AMBASSADOR	10 days	Norfolk, VA	M-2
12	CAPE AVINOF	10 days	"	M-2
13	CAPE ALAVA	10 days	"	M-1
14	CAPE ARCHWAY	10 days	"	M-1
15	CAPE ALEXANDER	10 days	"	M-1
16	CAPE ANN	10 days	"	M
17	ADVENTURER	10 days	"	M
18	CRACKER STATE MARINER	10 days	"	M+1
19	AIDE	10 days	"	M+1
20	OLD DOMINION MARINER	10 days	"	M+1
21	BANNER	10 days	"	M+2
	Beaumont	10 days		
1	PIONEER CRUSADER	10 days	Beaumont, TX	M-4
2	PIONEER CONTRACTOR	10 days	"	M-4
3	SANTA ANA	10 days	Galveston, TX	M-2
4	MAINE	10 days	Beaumont, TX	M-3
5	WASHINGTON	10 days	"	M-3
6	PIONEER COMMANDER	10 days	"	M-2
	Suisun Bay			
1	CALIFORNIA Oakland	5 days	San Francisco, CA	M-9
2	LINCOLN	5 days	"	M-8
3	PRESIDENT	5 days	"	M-8

(Source: Michael Blouin)

conducted feasibility studies and decided to upgrade 30 Victory class ships. After further developments, the decision was made to develop a carrying capacity of 340,000 measurement tons, which is approximately the capacity of 30 Victory class ships. This capacity was to be realized by utilizing a mix of vessels instead of just using the Victories. Of particular importance in the making of this decision was the availability of SEATRAIN vessels, which are excellent vessels in which to carry combat support equipment such as tanks, trucks, artillery, helicopters, etc, due to the ship's wide hatches and clear deck space (Evers, p. 46).

Gradually, the RRF has had vessels added to it until the present time, where it has 33 vessels, with plans to add more in the near future (Blouin, 15 April 1983).

The U.S. civilian fleet presently has about 500 vessels in its inventory. This fleet is composed of many types of vessels, only some of which are of use to the military. Some of the vessels of varying degrees of application to military service are Lift-On, Lift-Off (LOLO) container ships, Roll-on, Roll-Off (RO/RO), Barge Carrying Vessels (BCV's), consisting of both LASH, SEABEE, and break bulk. More will be said about these vessels later in this paper.

CHAPTER II

Degrees of Emergencies

There are various levels, or degrees, of national emergencies. Each degree will require a different response from the merchant marine. In 1954, the Secretary of Commerce and the Secretary of Defense published an agreement, called the Wilson-Weeks Agreement, which divides contingency operations into two categories: war or a declared national emergency; and anything else (Kelly, 1961, pp. 17, 18). This agreement establishes a priority use of shipping during a war, but it does not address situations that are not national emergencies. The ships to be used during a war, in the order listed, are as follows:

1. Military Sealift Command Nucleus Fleet
2. Civilian liner/tramp service
3. Charter of civilian ships
4. National Defense Reserve Fleet
5. Foreign flag charters

A major problem with this agreement is that a war or declared national emergency must exist before this agreement comes into effect. However, this nation's involvement in Korea, Viet Nam, and the Indian Ocean fell into the second category: not a war or declared emergency. Yet these three situations all placed demands on the merchant marine to support a military mission in addition to the

normal peacetime maritime trade.

A second method of determining degrees of crisis was established in a Memorandum between the Department of Commerce and the Military Sealift Command. This agreement delineates four situations ranging from normal peacetime trade to full mobilization and the varying degrees of involvement of the Merchant Marine (Dept. of Commerce/MSC Memorandum, 1978, p. 2).

The first situation is normal peacetime circumstances. In this case, the Military Sealift Command's nucleus fleet is to handle all military cargo. The next situation is defined as a minor emergency. An example of this might be the Iranian hostage situation in 1979-1981. To meet the increased demand for vessels necessary to carry military cargo, the MSC nucleus fleet would be augmented by the Ready Reserve Force (RRF). The third situation would be a Non-Mobilization contingency. An example of this would be the Viet Nam war. The increased need for carrying military cargo would be met by the MSC nucleus fleet, the RRF, the National Defense Reserve Force (NRDF), and civilian shipping. The final situation is defined as a full mobilization. An example of this is World War II. Under these circumstances, all U.S. flag shipping would be called upon.

Missions 2, 3, and 4 of the Military Sealift Command are accomplished in peacetime with little difficulty. Planning for contingencies, providing peacetime logistical

support, and manning special purpose vessels are all routine operations conducted by the MSC. The carriage of peacetime logistical support is accomplished by the nucleus fleet and civilian charters. This results in an excess carrying capacity. MSC justifies this with the reasoning that, during an emergency, this presently wasted space would be utilized (GAO, September, 1980, p. 9).

CHAPTER III

PROBLEMS

It appears that the MSC nucleus fleet can accomplish the peacetime missions of the MSC. In the event of an emergency, however, the civilian industry is going to be called upon to provide additional ships.

Unfortunately, only the nucleus fleet and the chartered fleet are under MSC's direct control. All other vessels are under the control of their owners or other governmental agencies, and can only be called upon when certain circumstances exist. Accordingly, the performance of these vessels depends on the willingness of the crew to obey the dictates of MSC. While this should not be a problem, it does render these vessels, albeit marginally, subject to doubts concerning their willingness to obey MSC orders.

Once the proper conditions have been met, MSC then has access to U.S. flag civilian shipping. There are some problems with this however. The U.S. flag shipping industry is presently in a depressed state due to various economic considerations. As a result, there are relatively few ships available for MSC to call upon. A second problem is that many of these vessels are technologically advanced and require sophisticated port facilities for service. A third

problem is that, with the advent of containerization, there has been a reduction in the number of break-bulk vessels, ships with a high military value due to their ability to self load and unload.

In the event of a long term contingency operation, with normal, peacetime "business as usual" pervailing throughout the rest of the world, the vessels removed from commercial usage on trade routes would be quickly replaced by foreign flag competitor After the termination of the contingency operation, these SRP vessels would experience difficulty in re-entering the trade route. This difficulty could result in the loss of business, the laying up of vessels, and a further reduction in available shipping assets to MSC.

The RRF is an important source of quick response shipping, but, in no way does it lessen the importance of the NDRF. At best, the RRF is simply a stop-gap measure, and an indication that there are problems with the NDRF.

Periodically, the Navy and MARAD conduct tests to ensure that these RRF ships can be ready for loading within 10 days of notification. Thus far, all ships have successfully completed the test. While no attempt has yet been made to activate the entire fleet, it is probable that the majority of these vessels will be ready to go on time (Maritime Administration, 1978, p. 7).

The NDRF situation is completely different than that of the RRF. While the RRF can be activated quickly, it does

not have the carrying capacity that will be required in the event of a large contingency. Therefore, the NDRF will have to be activated, and therein lies the problem. Some of the difficulties in the activation of the NDRF that will have to be overcome are discussed below.

The National Defense Reserve Fleet can be activated only under certain circumstances. The authority to activate ships of the NDRF exists only under conditions where civilian ships are threatened with governmental requisitioning. Section 11 of the Merchant Ship Sales Act of 1946 states that:

> "A vessel placed in such reserve shall in no case be used for any purpose whatsoever except that any such vessel may be used for account of any agency or department of the United States during any period in which vessels may be requisitioned under Section 902 of the Merchant Marine Act of 1936, as amended."

Section 902 of the Merchant Marine Act of 1936 states:

> "Whenever the President shall proclaim that the security of the national defense makes it advisable OR during a national emergency declared by proclamation of the President, it shall be lawful for the commission to requisition..." (Emphasis added)

The result of these two laws is that the NDRF can be activated only when the threat of governmental requisitioning exists, and that requisitioning can occur only when the national security is in danger or during a declared national emergency.

The commercial maritime industry has feared the creation of a national fleet which could compete with them. This

helps to explain the limitation in the laws cited. Industry fears also spurred the Wilson-Weeks agreement, already discussed, which states that the NDRF can be activated only after all commercial assets have been utilized.

Once the proper circumstances exist for the activation of the NDRF, various administrative steps must be taken. These steps are displayed in Table 4.

After the administrative steps have been taken, other problems arise in the activation of NDRF ships. These problems include the availability of shipyard space, hull and machinery repairs, spare parts, manpower in shipyards, manpower for crews, certifications, etc. Some of these problems are discussed below.

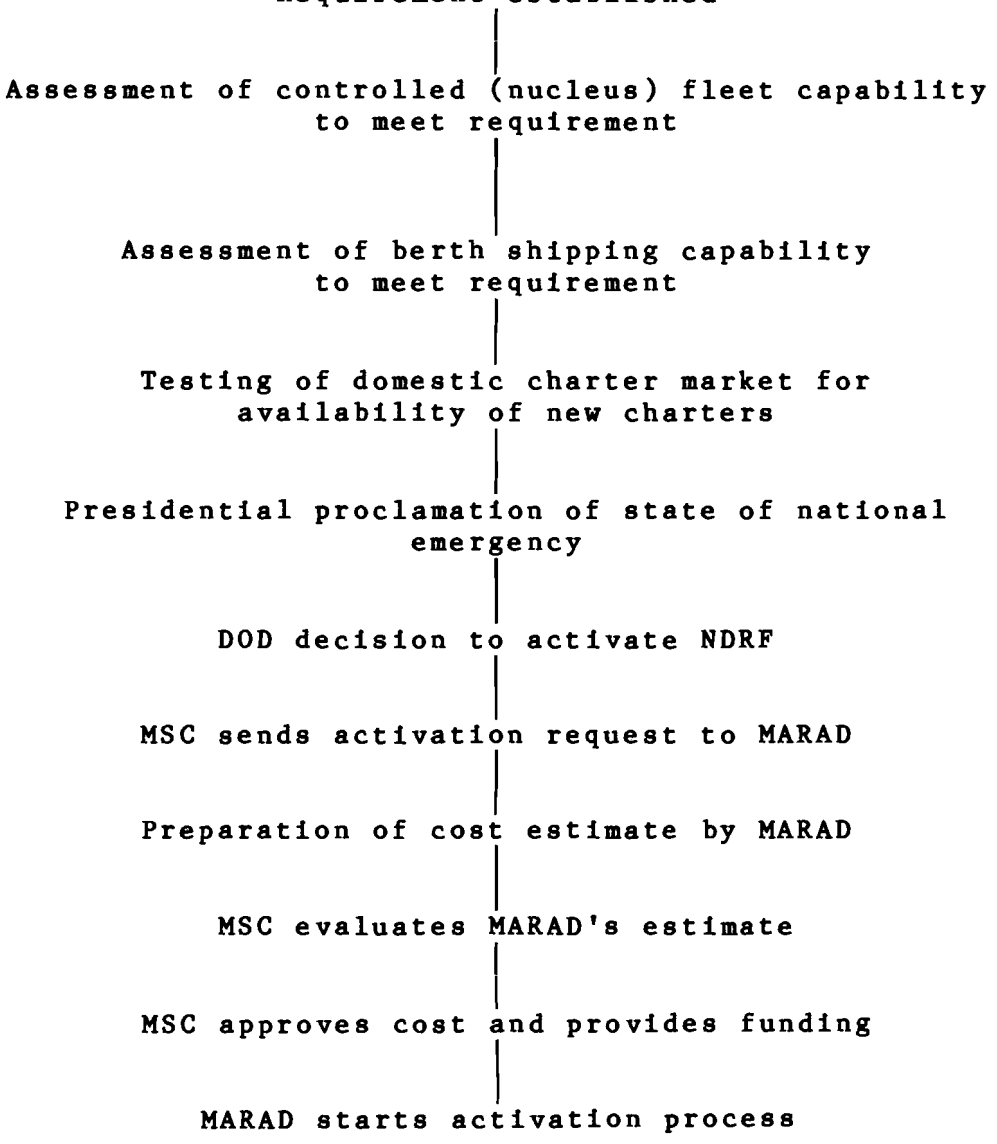
A brief history of the NDRF is important because it allows patterns to emerge. During the "police action" in Korea, ships of the NDRF were activated to support the military mission. Since most of these vessels had seen little service in World War II before their transfer to the reserve fleet, and since activation occurred within six or seven years, the material condition of these vessels was fairly good. On the average, these vessels were ready for service within five to seven days (Maritime Administration, p.7).

While the vessels were available within a short period of time, crewing the vessels proved to be a major problem. The activation of NDRF ships greatly increased the number of sea-going billets. These billets proved to be very

TABLE 4

ADMINISTRATIVE STEPS REQUIRED FOR THE

ACTIVATION OF THE NDRF



(Source: Evers, p.35)

difficult to fill due to the high wages being paid for ashore jobs. As a result, many ships which were materially ready for sailing were delayed due to manpower shortages. Filling the entry level positions was not that difficult, but there were acute problems finding experienced, licensed engineers, radio operators, and able-bodied seamen (MARAD, p. 7).

In summary, vessel activation was accomplished in a timely manner due to the young age of these ships and the lack of deterioration. However, it was difficult to provide manpower for crews.

Upon the completion of the Korean War and the termination of the requirements to have this extra shipping capacity, many vessels were again transferred to the NDRF. While in the reserve, these vessels were preserved by a method called contact preservation. This method of preservation basically consists of covering the ship, both inside and outside, with layers of various preservation materials. This method of preservation is not very effective and, combined with a general lack of maintenance caused by a lack of funding, the material condition of the ships deteriorated steadily (Evers, p. 68)

When, during the Viet Nam conflict, there was an increased demand for carrying capacity, vessels of the NDRF were again activated. However, during this activation process, many problem areas arose, such as increased

activation time, increased costs, shortages of repair yard capability and crew shortages.

The first 14 vessls were ready for service in 21 days (MARAD, p. 42). This was accomplished by around-the-clock shipyard work and shortcuts being taken. Sea trials were also eliminated. However, the next 37 vessels took an average of 42 days to activate, much longer than anticipated. This delay was caused by the deteriorated condition of the ships, and the corresponding need for greater, and longer, repair work. Another cause for the delay was the inability of the shipyards to assign a priority to the NDRF, due to the business as usual attitude pervailing in the industry (MARAD, p. 8).

As the shipyards were working 24 hours a day, costs rose dramatically. In an effort to cut costs, DOD requested that additional ships be activated on a "least cost" basis. Accordingly, the shipyards eliminated the 24 hour shifts. This resulted in more delays. The average time for the activation of the second half of 101 ships was 2 months (MARAD, p. 42).

After activation, a number of ships experienced mechanical failures serious enough to warrant additional shipyard time. Eventually, the majority of ships were adequate for the tasks assigned.

As in the Korean conflict, difficulties were experienced in providing the manpower necessary to crew the ships. The sudden increase in the number of sea going billets far

exceeded the available manpower. Critical shortages occurred in the billets requiring experienced mariners, and some vessels had to sail shorthanded, or delay sailing altogether. From 1966 to 1968, approximately 42 percent of the vessels sailing to Viet Nam had to delay their departure (MARAD, p. 42).

The present manning situation is not very different than that experienced during the Viet Nam war. It has been estimated that, if activated, the NDRF would require over 11,600 additional billets (Dept. of Commerce/MSC Memorandum, 1978, p. 2). It would be extremely difficult to find the manpower that these billets require.

However, all is not hopeless. There are approximately 4,000 civil servant mariners not assigned to MSC. These mariners work for NOAA, Department of the Interior, and the Army Corps of Engineers. In an emergency, and with the concurrance of the various departments, these mariners could be transferred to the MSC. In addition, there are numerous peripheral vessels which may be viewed as a source of manpower. These vessels include oil exploration ships, ferries, barges, tugs, and research vessels (DOT/MSC Memo, p. 2).

Unfortunately, the MSC must rely on the patriotism of these mariners to volunteer for service. There is presently no authority to draft civilians and make them work on ships during an emergency situation (DOT/MSC Memo, p. 2).

While there has been a decline in sea going billets, there are other emergency sources of manpower. The U.S.

Merchant Marine Academy and the five state maritime academies can provide officers. Emergency legislation could allow retired mariners to be recalled to active service. Reduction of vacation time and a lower turnover rate would make more mariners available. Other solutions include the utilization of peripheral vessel personnel, increased recruitment, lower standards, and easier licensing of crewmembers.

One bright spot to this otherwise dismal picture is that the crewmen on civilian vessels frequently work for three months with the next three months off as vacation time. In effect, then, each vessel has two complete crews, each crew working for half of the year. Since there are approximately 12,000 billets in the vessels of the civilian industry, and each billet has 2 crewmen, then by keeping one crew on a vessel for the whole year, an additional 12,000 crewmen are available for service on another ship. This alone would go a long way towards solving the manpower problem in manning NDRF ships. The real difficulty with this solution is getting the maritime unions to agree with it (Coffey, 29 March 1983). This will probably require almost a full mobilization effort.

Three different situations will be briefly examined concerning the manpower constraints: minor emergency, non-mobilization contingency, and full mobilization. A minor emergency is defined as a situation where the RRF would be activated, there would be shortages in experienced engineering and radio officers. The maritime unions would have to give priority to manning RRF ships. In a non-mobilization contingency,

almost full mobilization activity would be required to man the RRF and the NDRF. Not only would the unions have to give priority to manning NDRF ships, they would also have to cut back drastically on vacation time. Shortages would still occur. During a full mobilization, the unions would have to reduce the vacation time of their members even further. Even with this activity, many vessels would have to sail shorthanded, or delay sailing altogether.

In summary, finding the manpower to crew the ships presently available in the RRF and the NDRF would require an almost full mobilization effort. Retired mariners would be recalled, a massive recruitment would be instigated, vacation time would be curtailed, and some vessels would sail shorthanded.

Since the Viet Nam activation of the NDRF, numerous changes have occurred in the preservation of the vessels. A major problem with the previous method, the contact method, was that the layers tended to harden over time. As a result, it became very time-consuming and expensive to remove these layers when the ship was activated. These vessels are also protected by cathodic protection. Under the new method of preservation, vessels are sealed and dehumidified. This severely retards deterioration. In this method, metal plates are located in the harbor floor directly beneath the ships. An electrical currect is passed through the plates and into the hulls. This serves to harden the hull and is very effective in the prevention of oxidation,

or rust.

A problem that has existed in the past and continues to plague the NDRF is the lack of funding for maintenance. As each year goes by, the age of the NDRF increases, requiring greater attention to maintenance tasks to ensure that these ships will be ready to respond quickly to an activation order. However, the budgetary allowance for maintenance is less than 1 percent of the MARAD budget (MARAD FY 1981 Report, p. 49). This level of funding is insufficient to prevent deterioration.

Ships today must comply with a variety of regulations to be allowed to operate in the U.S. Most of these regulations were issued after the ships of the NDRF were built. As a result, many, if not most, NDRF vessels cannot meet the new regulations. These new regulations include anti-pollution devices such as an oily waste tank to hold contaminated bilge water and sanitation equipment to prevent the discharge of raw sewage into the harbor. It is a fairly simple matter to modify existing facilities of these vessels to comply with these particular requirements, but some of the other regulations are not as easily satisfied. In some instances, compliance will require extensive modifications that are both expensive and time consuming (Evers, p. 73).

The U.S. Coast Guard (USCG) and the American Bureau of Shipping (ABS) both require inspections. These inspections, especially in the case of the ABS, are extensive and thorough. It is presently unlikely that the ships in the NDRF could

pass these inspections. The Coast Guard will waive many requirements, but that does not absolve the government from any claims of damage caused by vessels not meeting the published standards. The ABS inspection is primarily for the commercial industry. It insures that a shipper is not sending his cargo on a vessel that is unseaworthy. Since the shipper on NDRF vessels will be the United States Government, this inspection should not cause too great a concern.

CHAPTER IV

SHIP TYPES

Once the proper circumstances exist for the utilization of merchant shipping for military purposes, the next area to be discussed is the types of vessels available. This section analyzes the various types of merchant vessels presently in the commercial inventory and their possible uses in a military situation.

There are three general categories of vessels: dry cargo, passenger, and tanker. In addition, each category has various types of vessels included within it. The following is a discussion of the types and categories of vessels and the possible application of each in various military situations.

Under the category of dry cargo, there are breakbulk, container/self-sustaining, container/non self-sustaining, Roll-On/Roll-Off (RO/RO), Lighter Aboard Ship (LASH), Sea Barge (SEABEE), and bulk. Each will be discussed in turn.

A breakbulk vessel is one in which general cargo is stored within cargo holds on the ship. A breakbulk vessel stows quantities of various types of cargoes, with little effort made to segregate the cargo, except that separation necessary for the safety of the ship and cargo. For example, a case of food might be stowed next to a case of machinery.

The only limitation as to what dry cargo may be carried is determined by the size of the deck hatches and the hoisting capacity of the cargo cranes.

A vessel of this type is very valuable for military usage. Large deck hatches enable this vessel to carry a variety of cargo, notably tanks, trucks, artillery, and other equipment too large or heavy for a container. With its inherent crane, it needs only a pier or lighters on which to unload its cargo. This feature allows this vessel to operate in fairly primative areas, or areas where, for a variety of reasons (combat damage), sophisticated pier facilities are not available.

The disadvantage of this type of vessel is that it takes a relatively long time to load and unload. In situations where speedy delivery of cargo is essential, this type of vessel may not be able to respond quickly enough.

In 1979, there were 136 vessels of this type flying the U.S. flag and five vessels under effective U.S. control (EUSC)* (Military Sealift Command, April 1979, p. 7) Unfortunately, with the advent of specialization, these general purpose dry cargo vessels are declining in number.

A self-sustained container ship is one in which cargo is first loaded into containers (normally 20'x8'x8' boxes). These containers are then loaded on board the ship. Self-

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* Effective U.S. control means that these ships are owned by U.S. companies, but registered under foreign flags. These are sometimes referred to as "Flags of Convenience" or "Flags of Necessity"

sustained means that these vessels carry their own cranes with which to load and unload cargo.

Containerization is a fairly recent development in the commercial industry which has revolutionized the carriage of goods. The primary advantage of containers is the speed with which cargo can be loaded and unloaded aboard ships. This fast unloading capability, coupled with the vessel's ability to unload itself, make this type of vessel extremely valuable to the military. As with a breakbulk vessel, a self-sustained container ship needs only a pier on which to unload. This feature increases the areas of the world where this type of vessel can be utilized. A faster ability to unload means that this vessel has a shorter turnaround time; therefore fewer ships are necessary for replenishment.

One disadvantage of this type of vessel, for the military, is that not all military cargo can fit into containers. While the Sea Shed idea helps resolve this problem, this still means that some military cargo will have to be sent by other types of vessels.

One future difficulty is that, due to the space that cranes take up on the deck, and the capital costs, most container ships being built today do not have cranes. As the ships with cranes get older and are retired from service, an extremely important asset will be lost to the military. In 1979, there were fifteen vessels under U.S. flag and two under EUSC (Military Sealift Command, 1979, p. 8).

Non self-sustained container ships are like the vessel

described above, except they do not have cranes installed. The advantages are the same, except that this type of vessel can carry more cargo by utilizing the space for containers where other vessels utilize for cranes.

The disadvantage of this type of vessel is that it requires sophisticated equipment at the pier to load and discharge. This severly limits the areas where this vessel would be useful. Most containers are too heavy to be lifted by helicopter. The U.S. Army is developing watercraft to carry containers to the shore (Schoch, 1979, p. 20). However, until these watercraft are developed and brought to the port, this type of vessel is of limited value in most areas of the world.

Since this vessel is more economical, due to its ability to carry more cargo, there are more non self-sustaining vessels than self-sustaining. In 1979, there were 89 U.S. flag vessels and one EUSC vessel (MSC, 1979, p. 7).

The Roll-On/Roll-Off (RO/RO) vessel is one in which vehicles can be driven on and off under their own power, and they don't have to use a hoist. This vessel is an excellent ship to carry all manner of military vehicles, such as tanks, jeeps, truck, Armoured Personnel Carriers, self-propelled artillery, etc. The vehicles can be unloaded in a matter of hours. The disadvantages of this vessel are that there is wasted space on board, and the fact that

this vessel has almost no compartmentization*. Also, the decks of commercial vessels may not be strong enough to carry heavy military equipment.

The next two types of vessels are the Lighter Aboard Ship (LASH) and the Sea Barge (SEABEE). Both types of vessels are similar in that in both types cargo placed in self-contained barges (lighters), and the vessels themselves have the capability to load these containers. The LASH utilizes a crane, while the SEABEE uses an elevator.

Both vessels are very important for military uses because neither vessel requires more than the most rudimentary of port facilities, if any facilities are required at all. All that is required is a tug, or something that can ferry the lighters or barges from the ship to the shore. As a result, these vessels can be used even in the most battle damaged areas. In 1979, there were nineteen LASH/SEABEE type vessels under the U.S. flag and four under EUSC (MSC, 1979, p. 7).

The second general category is passenger vessels. These are vessels which carry passengers and some cargo. They tend to cater to the creature comforts of their passengers, and as such are not of too much use to the military. However, as the British so ably demonstrated, passenger liners can be converted into troop carriers fairly

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* Compartmentization is a method of eliminating large open spaces in the ship as a damage control precaution. This makes the ship more survivable if it is damaged.

quickly and easily, and troop carriers have a high military importance. Passenger vessels can also serve as hospital ships. There are presently two passenger vessels flying the U.S. flag: Oceanic Independance and Constitution.

The final category is that of tankers. These vessels normally carry petroleum products, but there are special purpose tankers that carry a variety of liquid cargoes. Table 5 shows the inventory of U.S. controlled ships.

Tankers have an obvious military importance. Napoleon stated that an army marches on its stomach. If he were around today, he would probably say that an army drives on its gas tank. Todays military is highly mechanized, and requires vast amounts of gasoline and aviation fuel. Tankers will allow the military to move.

Table 5

INVENTORY OF U.S. CONTROLLED SHIPS

TYPE	U.S. FLAG NO.	U.S. FLAG DWT *	FOREIGN FLAG NO.	FOREIGN FLAG DWT *
Dry cargo				
breakbulk	136	1,863	5	49
Container self-sus.	15	233	2	5
Container non self-sus.	89	1,637	1	10
RO/RO	20	318	6	36
LASH/SEABEE	19	706	4	120
Passenger	0	0	9	67
Tanker				
major	227	12,838	292	42,892
Special	24	888	25	910

* DWT in 1,000 tons

(Source: SHIP REGISTER, Military Sealift Command, Department of the Navy, Washington, D.C., p.7.)

CHAPTER V

SCENARIOS

Having conducted an examination of the various shipping assets available to the Military Sealift Command in the four types of situations, it is appropriate here to analyze the response of these shipping assets in each of the various levels of emergency.

In these scenarios, it is assumed that a "business as usual" attitude prevails throughout the world with the exception of the area of emergency. This has been the case during the Korean War, the Viet Nam War and the Iranian Hostage situation.

During normal peacetime operations, the purpose of the civilian fleet, to conduct the maritime trade of the United States, is handled through a combination of domestic and foreign flag vessels. While the domestic flag fleet is unable to carry more than a small fraction of this nation's trade, foreign flag competitors carry the remaining portion of the trade. The net result is that international trade is conducted satisfactorily. It is probably unwise to be so dependant on foreign flag vessels for U.S. commerce; however, the peacetime mission is accomplished.

The Military Sealift Command sends cargo on the Nucleus Fleet and on chartered civilian vessels. This excess

capacity results in the wasting of government money, but it does allow for quick response to situations.

The planning mission of MSC concerning the expansion of sealift capabilities during an emergency is being carried out. A Sealift Readiness Branch has been formed in MSC to manage the acquisition and operation of the ship mobilization programs (MSC, June 1981). In summary, all peacetime missions are being accomplished, although not by U.S. vessels.

If a minor emergency situation would occur, the MSC Nucleus Fleet would attempt to carry the increased cargo demanded by this situation. If this was not adequate, then the presently chartered vessels would be utilized. Then, according to the terms of the Wilson-Weeks agreement, civilian liners and charters would be sought.

If the Viet Nam experience is any indication of what can be expected in the future, and there is no reason why it should not, domestic ahip owners will request that the Ready Reserve Force and the National Defense Reserve Force be activated (Blouin, 15 April 1983). During the Viet Nam war, ships of the Sealift Enhancement Program were utilized. However, once these vessels were removed from liner service, they experienced major difficulties in re-entering the trade routes upon completion of their SEP service. As a result, the shipowners were faced with a long-term revenue loss. Accordingly, they requested the activation of the NDRF. It is reasonable to assume that, under similar

circumstances, ship owners will again request that NDRF ships be used.

Under this assumption, the RRF ships will probably be activated. Most, if not all, activated vessels should be ready to load within the ten day time frame. While the ships themselves will be ready, it is likely that shortages will occur in selected billets, at least during the early stages of the emergency. The maritime unions would have to assign a priority to the manning of these ships to avoid delays in sailing. Even so, some ships will sail short-handed. In spite of these spot shortages, the RRF ships will sail.

In summary, the merchant fleet owners will probably request that the NDRF be activated. Again, the mission will be accomplished, but primarily through the RRF, not the civilian fleet.

In a non-mobilization contingency, the nucleus fleet, civilian charters, SEP vessels, and RRF ships would prove to be insufficient to meet the increased demand for carrying capacity. The NDRF would have to be activated. For the same reasons as stated above, the SEP vessels would not be available to the MSC for long. After the RRF is activated, then the rest of the NDRF would be called-up. These vessels will be ready for loading within 60 to 90 days of notification.

The final scenario is that of full mobilization. In this case, all U.S. flag shipping and shipping under effective U.S. control would become available to the MSC. In addition,

it is highly likely that our allies will mobilize their shipping as well. However, assuming that the U.S. is alone in perceiving the emergency, then the domestic flag fleet would be hard pressed to carry out both functions: maritime trade and military support. Most planning concerning full mobilization concentrates on a war involving NATO countries. If the cause of U.S. mobilization were centered away from Europe, in the Arab oil fields, for example, would the NATO nations support the United States if the NATO nations were not directly affected? Because there is legitimate doubt about NATO's support in certain situations, only U.S. controlled assets can be depended upon.

CHAPTER VI

CONCLUSIONS

This paper has examined the assets of the civilian merchant marine and its ability to support operations in four different levels of emergency.

It is apparent that the civilian fleet cannot perform whatever missions are assigned to it. During peacetime, 95 percent by weight of imports and exports are carried by vessels registered in other nations. In the unlikely event that foreign flag vessels refuse to carry domestic commerce, the U.S. industry could not carry the tonnages required to maintain this economy.

In the other levels of emergency, it is always the RRF and the NDRF that is called upon to carry whatever excess tonnages are necessary in the situation. The potential utilization of the Sealift Readiness Program vessels has caused howls of protest from shipowners. It is only in a full mobilization that domestic shipping assets are made available to the MSC, and, even then, these assets are insufficient to adequately carry out the two assigned missions. When U.S. assets presently carry less than 5 percent by weight of domestic cargo, it is ludicrous to expect these assets to carry the other 95 percent.

While it is highly unlikely that foreign flag vessels

will stop calling at U.S. ports and that our NATO allies will forsake us, there have been instances where the United States has stood alone and risked the emnity of the rest of the world. A recent example of this is the refusal of the United States to sign the Law of the Sea Treaty. Should emotions run high during some future crisis, the dependance on foreign flag shipping may hurt the U.S. economically and militarily.

There are some possible solutions to the problem of the inability of the merchant marine to perform its missions. The easiest solution is to simply leave thing as they are. The U.S. merchant marine should not be expected to do too much since it can not. The missions of the merchant fleet should be re-assigned elsewhere. For example, the RRF and the NDRF should be assigned total responsibility for the carriage of military cargo. Since the peacetime mission of the merchant marine is being carried out by foreign flag vessels, the U.S. can simply assign the mission of carriage of trade to those vessels. To do this would acknowledge reality.

The least expensive solution to the U.S. is the adoption of the UNCTAD treaty. If the treaty is adopted, this would be a tremendous boost to the maritime industry. The cargo reservations provisions within the treaty guarantee U.S. vessels up to 40 percent of international trade. This would allow for a greater number of vessels, built by the shipowners, and provide for better assets for use during a

mobilization. However, given the "free market" philosophy of the Reagan Administration, adoption of this treaty is unlikely.

A final possible solution is the creation of a nationalized merchant marine. Since governmental ownership and/or subsidies appear to be the norm rather than the exception, this solution would simply cause the U.S. to be part of the majority. This solution runs contrary to the current administration's plan to eliminate subsidies, which is evidenced by the non-continuation of the Construction Differential Subsidy (CDS). There are also many valid reasons against nationalization. Never-the-less, nationalization should be considered as a possible solution.

Without some solution to the present situation, the U.S. merchant marine cannot be considered to be a realistic asset to the United States, since it has failed to perform any mission, even normal peacetime trade, successfully.

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