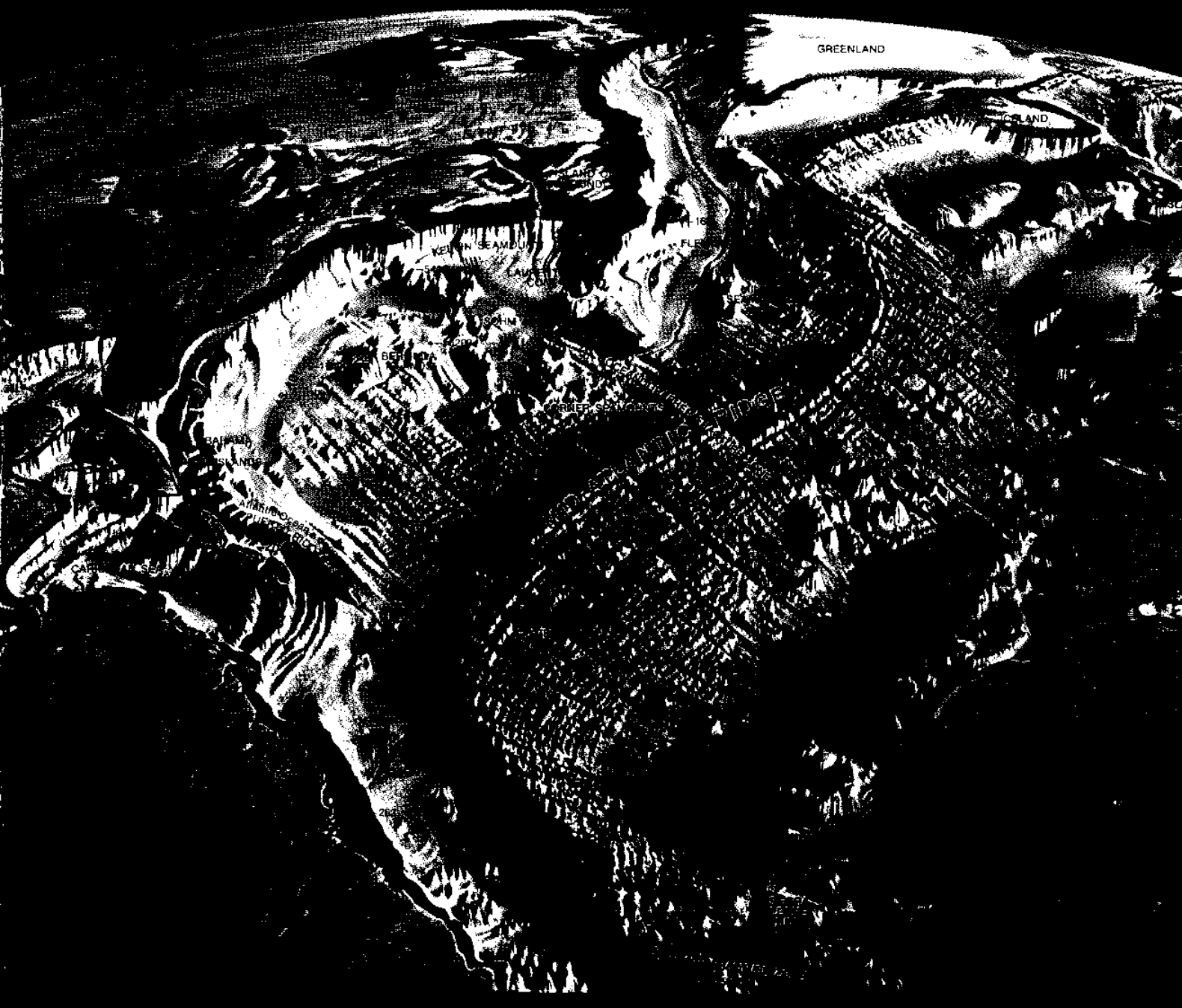
New Dimensions of U.S. Marine Policy

Norman J. Padelford and Jerry E. Cook



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NEW DIMENSIONS OF U.S. MARINE POLICY

by

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The materials contained in this book were assembled and written by Professor Norman J. Padelford and Mr. Jerry E. Cook, and were vital elements in the conduct of a graduate seminar, a joint offering of the Departments of Naval Architecture and Marine Engineering and of Political Science, as part of the Ocean Engineering Program.

Alfred H. Keil, Director
Sea Grant Program

April 1971

PREFACE

This volume follows by a year a work entitled PUBLIC POLICY FOR THE SEAS. In that book an attempt was made to identify the principal features of ocean policy and to collect into meaningful categories some of the cardinal statements of United States policy and agreements with other countries.

The success achieved by that volume has encouraged us to apply the same techniques for looking at a rather extraordinary combination of policy actions that have occurred since 1969. These have clearly added new dimensions to U.S. marine policy. They can be seen in part as complementing what has gone before. Taken as a whole, they have a unity of their own marking a turning point in policy. This volume is therefore a complement to the earlier collection, but may be viewed as having its own internal consistency.

The object of this collection is to assist the reader both to comprehend the trends in contemporary policy regarding the oceans and to develop an understanding of the processes by which broad concepts and goals are translated into specific policy actions.

Further, through this book we seek to stimulate interaction between those scientists and engineers who are concerned directly with the marine environment and policy-makers who operate in the political arena. Clearly, the work of the ocean scientist, as of the officer of government, and the practicing engineer, is influenced by decisions that bear

upon the extent of territorial waters, the freedom of the seas, the utilization of the coastal zones, the development of marine resources, control of pollution, strengthening the merchant marine, and other problems. Only as the enlightened views of the scientist and engineer are made known to those who make decisions at the political level, and who frame the laws and regulations to carry them out, can the common interests of the nation and the scientific community be assured and advanced.

In thinking about policy we suggest that the place to begin is to consider the nature of the problem at hand, assembling the pertinent facts to elucidate its nature. One may then usefully inquire what are the national goals and objectives. To help answer this question we present in Chapter One a number of statements by the President and the Congress. Following these, as the reader continues through the position papers and documents, he should ask himself what the national interest requires with respect to the situation. Possible alternatives should then be identified, with the advantages and disadvantages of each weighed. Finally, considering those which are practicable, realizable, and politic, the reader should come to a conclusion as to what action should be taken.

By following some such process the reader can think through pragmatically the questions that must be resolved as events unfold and decisions are reached.

Many friends have assisted the authors in the present venture. The Hon. James H. Wakelin, Jr., Chairman of the President's Task Force on Oceanography, now Assistant Secretary of Commerce for Science and Technology, suggested that materials bearing upon the rather unusual series of decisions taken on marine affairs in 1969-70 should be assembled for reflective study. The principal author benefited from several discussions with him, as well as with President Paul M. Fye of the Woods Hole Oceanographic Institution, with whom he served on the President's Task Force on Oceanography. Indebtedness is also due to Edward Wenk, Jr., former Executive Secretary of the Marine Sciences Council, for pointing up a number of the contributions made by that body between 1967 and 1970. We are also indebted to Dr. Julius A. Stratton, Chairman of the President's Commission on Marine Science, Engineering and Resources, for the many farsighted recommendations contained in the report of that commission entitled OUR NATION AND THE SEA--A PLAN FOR NATIONAL ACTION. We have profited much from pondering these comprehensive, liberal-minded proposals for policy action and urge that all our readers peruse them.

Particular appreciation is due to Professor Alfred H. Keil, Chairman of the Department of Ocean Engineering at M.I.T., for encouraging this enterprise and for suggestions with respect to the organization of this volume. Without his enthusiastic aid the effort would have lagged. We are also indebted to Dean A. Horn, Executive Officer of the Sea Grant Office at M.I.T., for tangible assistance in the

production of the book. We further record our thanks to Eleanor Baker for typing the manuscript, and to members of the seminar on Public Policy for the Ocean for fruitful ideas on content as the book took form. Finally, we express our gratitude to the National Sea Grant Program for assistance which enabled us to gather, edit, and prepare the materials for this analysis of the new trends taking shape in national ocean policy.

Norman J. Padelford

Jerry E. Cook

Cambridge, Massachusetts
March 1971

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ILLUSTRATIONS

In the decade following 1956 accomplishments in marine science and engineering added substantial increments to knowledge of the ocean.

Some Notable Accomplishments 1956-66

Among the notable attainments of the period after the mid-fifties were the passage of nuclear submarines under the ice of the Arctic Ocean opening a new world to navigation and investigation. The U.S.S. *Trieste* took men safely to the bottom of the deepest chasm in the ocean. Open-sea saturation diving was accomplished for 48 hours at a depth of 432 feet. Oil was produced from wells drilled in over 200 feet of water in the Gulf of Mexico. *Sealab-II* remained on the sea bottom for 45 days at 200 feet with divers performing various work projects in and out of the laboratory. Twelve nations participating in the International Indian Ocean Expedition in a coordinated effort amassed quantities of hitherto unknown information on the biological, geophysical, and oceanographic properties of that ocean. Eighty-six nations meeting at the Law of the Sea Conference in Geneva hammered out agreements upon four conventions dealing with the territorial sea, the continental shelf, the high seas, and conservation of the living resources of the seas. Although numerous signatories have failed to ratify one or another of these conventions, an important stride was taken in codifying the international law of the sea. Other conventions were concluded on the pollution of

the seas, regulation of fisheries, and the establishment of a series of specialized international bodies to gather and disseminate information. Cooperative measures were undertaken to study the mechanics of violent storms and the characteristics of giant waves touched off by underwater seismic disturbances.

At the national level a Committee on Oceanography of the National Academy of Sciences, formed at the instigation of the Office of Naval Research, made an influential report in 1959 on the needs and opportunities for oceanography, and has remained active since then. It was paralleled in the sixties by an Ocean Engineering Committee in the National Academy of Engineering, and the two have exerted important influence upon the shaping of national policy. Also worthy of note are the professional societies that have sprung into being, especially the Marine Technology Society. These provide great public service through disseminating knowledge of the marine environment, helping to create a broader understanding of the relationships of marine science and technology to public policy, and bringing leaders of industry, government, and the academic community concerned with marine-related programs together in periodic conferences.

Responding to the needs of the times President Eisenhower appointed an Inter-Agency Committee on Oceanography to coordinate policy within the government. This, in turn, made an important report in 1963 entitled "Oceanography - The Ten Years Ahead - A Long-Range National Oceanographic Plan 1963-1972"

which charted out many of the paths that have been followed since then.

The decade, in short, was a period of substantial progress. Three factors were vital in this--increasingly liberal funding by the Federal Government, a new impetus from marine scientists and engineers, and the availability of new research tools. But this was not enough. The Federal Government still lacked a unified structure for marine affairs. Over twenty offices and bureaus had missions of one kind or another relating to the marine environment, often overlapping one another. Programs sponsored by these agencies often resulted in confusing actions.

The Marine Resources and Engineering Development Act

The passage of the Marine Resources and Engineering Development Act of 1966 marked an epochal turning point in national policy. In this the Congress identified eight specific objectives, while at the same time affirming its will that marine affairs occupy a high place in national decision-making to enable the country to remain a leader in marine affairs.

To achieve this goal the Congress created a temporary Cabinet-level Council on Marine Resources and Engineering Development (subsequently called the Marine Sciences Council) under the chairmanship of the Vice President, pending the recommendations of a Presidential study commission of a long-range program and a permanent organizational structure. For the first time the country obtained an appropriate mechanism for initiating,

coordinating, and implementing national policy. On this foundation the National Oceanic and Atmospheric Administration (NOAA) was formed.

A salient addition to the 1966 legislation was the passage of the Sea Grant Colleges and Programs Act. This supplement to the Marine Resources and Engineering Development Act laid a foundation for Federal assistance for marine research activities and for a broadened program of education and training to draw more experts into this field. Programs in more than twenty universities have received major assistance from the National Sea Grant Office.

These two acts mark a significant advance for marine science and engineering. They afford a basic framework of objectives for policy. They have been instrumental in strengthening education and research.

Federal funding will be a critical factor in affecting the speed with which knowledge and capability in the sea are expanded. Assuming that reasonable funding is available, it is not too much to think that substantial progress will be made in meaningful utilization of the oceans and their resources. Important steps have been taken already in this direction since 1966.

Significant Achievements in Recent Years

Free-swimming divers have operated in over 700 feet of water, while simulation dives have taken place in laboratories under pressures exceeding those of 1,000-foot depths. The

Lockheed-built submersible *Deepquest* has made several excursions to 8,000-foot depths. A deep submergence recovery system has been devised to rescue lost submariners and the first of a series of DSRV vehicles has been built with a rated depth of 3,500 feet. Others will follow with capabilities for deeper penetration. To a wide range of experimental submersibles of varying types, now numbering some twenty-five different craft, the Navy has recently added a nuclear-powered research submersible - NR-1 - to carry out long-range deeply-submerged ocean research. *Sealab-III* has been built to function on the sea bottom at 600 feet for extended periods of time. Another significant advance was made by the submersible laboratory-type vehicle *Ben Franklin* drifting submerged in the Gulf Stream from Florida to Cape Cod enabling scientists to observe the characteristics of the stream from within.

The historic voyage of the tanker S.S. *Manhattan* from Philadelphia through the ice-packed Northwest Passage to Point Barrow and return demonstrated the technical feasibility of commercial navigation through this short northern sea route. Witn the extensive instrumentation carried on shipboard quantities of hitherto unknown data were gathered on air, ice, and sea conditions, as well as navigation and communication when operating in the vicinity of the magnetic north pole. New avenues of thought were opened by the voyage, even though difficulties with the ice raised serious questions about year-round use of this route without the presence of more powerful icebreakers

than now exist in North America.

Another notable achievement is the deep ocean bottom drilling project with the S.S. *Glomar Challenger*, directed by five oceanographic research institutes. The amazing sequence of successful coring taken from the seabeds of the Atlantic, the Pacific and Indian Oceans as well as the Gulf of Mexico from water depths as great as 19,000 feet has given knowledge of the ocean bottom a quantum jump. Furthermore, by joining technology and engineering capability scientists are now able to effect reentry of holes previously drilled. Among the most important findings of this project are the corroborations of the theory of continental drift. By showing similarities of rock formations on both sides of the Mid-Atlantic Ridge, and evidence of movement on the part of the great continental plates, support is lent to the theory that the principal continents were once parts of a single land mass.

Among the economically most significant discoveries have been those of new deposits of oil and natural gas beneath the continental shelf. Over 16 percent of today's production of petroleum and gas comes from offshore wells, some ten thousand of which have been drilled since 1966. Important strikes have been made in the Gulf of Mexico, off Santa Barbara, in the Cook Inlet of Alaska, at Prudhoe Bay, in the North Sea, the Gulf of Guinea, off Indonesia, around Australia, and between Taiwan and Okinawa. Beyond this it is thought that the continental shelf off the East Coast of the United States and Canada, in Hudson

Bay, and within the Canadian Arctic may contain large reserves. For the long run, the advanced countries seem reasonably assured of ample supplies of oil for their industries through the remainder of the century.

Another significant development has been the identification of large quantities of manganese nodules on the continental shelf off the East Coast of the United States and in the Pacific. Samples indicate that these contain commercially recoverable quantities of manganese, nickel, and cobalt. Resource experts see the possibilities of supplementing dwindling reserves with these new supplies.

Deepsea Ventures, Inc., a subsidiary of the Tenneco Corporation, has successfully tested a continuous hydraulic dredging system for recovering these nodules from 3,300 feet of water off South Carolina. It is now completing a separation and refining plant, and is preparing its dredging system to work the richer stores located in 15-18,000 feet of water in the Pacific. The hope is to have a complete mining, separation, refining, and marketing system in operation by 1973 utilizing an international consortium drawing upon American, German, and Japanese capital and technology in a new type of business venture that may become a model for others.

Some Problems Seen by Policy Makers

1. The Threat of Pollution

One of the disturbing elements associated with offshore oil production and transportation is the quantity of oil passing

into the ocean from accidental spills, oil well blowouts, tanker disasters, and the dumping of oily wastes.

The large amount of pollution pouring into the nation's waterways and into the ocean from municipal sewage outfalls, waste disposal, industrial effluents, and other sources, has combined to make reduction of pollution a major issue for national policy and international cooperation in the Seventies. Popular outcries are demanding tighter regulations and imposition of stiff fines for those who fail to clean up their discharges.

Sensing the need for action President Nixon made improvement of the environment a principal theme of his first State of the Union address. Building upon this, he appointed the Council on Environmental Quality to advise him on policy, and the Environmental Protection Agency to enforce compliance. A flood of bills introduced into the Congress are seeking ways and means of cleaning up the environment while there is yet time. Not since the days of Theodore Roosevelt has there been comparable concern for preserving lands and waters. These concerns, and some of the actions taken to implement them, are touched on in readings found in Chapters One to Four and Five.

2 Preserving the Coastal Zone and Wetlands

Acute problems exist in the rapid buildup going on in the coastal zones and in the progressive destruction of estuarial wetlands. The need for improved action was signaled by the President's Commission on Marine Science, Engineering and

Resources in their report entitled "Our Nation and the Sea - A Plan for National Action." Since then numbers of states have undertaken inventories of their coastal resources, enacting legislation to preserve open spaces and to protect the estuarial nurseries of small fish populations. Sample actions of this nature are given in Chapter Two.

Much still remains to be done to prevent further wastage of open spaces along the coast, but moves are being made by state and Federal governments to set aside additional lands for parks and recreational areas. Again, although the hour is late, the problem has been identified, alternatives are being weighed, and programs are being formulated. These are prerequisites to wise action.

In the offshore area a continuing dispute over jurisdiction prevails between the Federal Government and states. Although many thought that legislation in 1953, together with a Supreme Court ruling in the case of the United States vs. California (1965), had laid this to rest, the complaint lodged by the U.S. Department of Justice against a group of East Coast states in 1969 suggests that the issue is not yet resolved. The original complaint and an answer are given in Chapter Two.

3. Utilizing the Resources of the Ocean

A further serious concern revolves about the declining yield of ocean fisheries being taken by U.S. fishermen. Efforts to stimulate catching have heretofore failed. What direction should policy now take? Should it attempt to encourage

controlled inshore fish farming? Should it continue to offer subsidies for the construction of vessels, or allow fishermen to acquire their craft from cheaper builders abroad? Should it leave the fisheries to take their own course, placing emphasis instead upon production of fish protein concentrate, while accepting unlimited imports? The choices are difficult ones. They affect the livelihood of important segments of the population. One thing is clear, nevertheless. The world must have an increased yield of food from the sea by the 1980's to keep up with the rising population. Readings in Chapter Three give a basis for thinking about these and other questions relating to development of ocean resources. For instance, experts see possibilities of supplementing dwindling reserves of various minerals from resources located in the sea. Fortunately, the state of technology places this country in a position to take early advantage of ocean stores. The question for policy is what course should be taken, and with what safeguards for the environment.

4. What to Do about the Deep Seabeds?

The advances in technology have posed another set of issues. What shall the nations do about a potential rush of claimants to exclusive preserves in the high seas? One state after another has claimed possession of resources on its continental shelf, while others have extended their national waters to embrace large areas offshore for exclusive fisheries. Fears are being voiced that the day may come when the seas will

literally be fenced off into a series of national lakes.

Steps initiated at the United Nations to have this body take a fresh look at the problem have led some to call for the U.N. assuming title to the seabeds. Others have proposed a supranational agency to regulate use of the seas. Still others oppose such extensions of power.

An imaginative answer has been given by the United States in the form of a draft treaty for limiting claims to the 200-meter isobath, recognizing a limited area beyond this to be an "international trusteeship area" in which the adjacent coastal state will have full rights to control mining and other activity. For the supervision of the seabeds beyond national limits the U.S. has proposed an international seabed agency modeled after the U.N. and a fund based on licenses and royalties for assisting the technologically less advanced states.

This proposal is sure to arouse debate at home and abroad. It will be among the plans submitted to a law of the sea conference that is to be convened in 1973. Meanwhile, under U.S. and Soviet joint initiative the nations have signed a treaty to forbid the placement of nuclear weapons on the seabed beyond the 12-mile line. This is a beginning upon agreement on both the seas and arms limitation. Readings given in Chapter Five bear upon these several moves to bring a measure of order into use of the deep seabeds.

National Organization for Marine Affairs

Two major steps have been taken in the organization of marine affairs at the national level since 1966. The first of these was the creation of the Council on Marine Resources and Engineering Development--often referred to as the Council on Marine Sciences--which made outstanding contributions to the formulation and conduct of U.S. marine policy during the four years of its active functioning. As a result of its energetic leadership the United States for the first time obtained a carefully-thought-out, well-coordinated, program for the marine environment.

A second step was taken by President Nixon in establishing the National Oceanic and Atmospheric Administration (NOAA), with the approval of the Congress, in 1970. Although many experts urged that this be made an independent executive agency at Cabinet level, the President decided to place it within the Department of Commerce under the supervision of an Assistant Secretary of Commerce for Science and Technology. Some, but not all, of the bureaus and offices concerned with marine affairs were brought within NOAA.

For the near future emphasis will be placed upon enhancing the quality of the marine environment, cleaning up the nation's waterways, managing the coastal zone in order to preserve a balance among the multiple interests focusing here, funding research for advancing capabilities in the sea, and similar activities. NOAA will also have the task of advising the President, the Congress, and the public on marine questions.

Industry, oceanographers, engineers, scientists, and others will look to NOAA for forward-thrusting leadership in policy.

With the broad mandate given to NOAA by the President's executive order, and the capable leadership given to the enterprise, the stage is set for moving ahead once more, provided the Executive and the Congress will back the organization with adequate funding and political support. Steps will be needed to provide some measure of interagency coordination, and to establish liaison with the oceanic community. The readings contained in Chapter Six speak to some of these questions.

The volume concludes with a brief attempt to look ahead to some of the subjects that will merit attention during the years to come. The catalogue of thoughts contained in Chapter Six is by no means complete. Among the concerns that must figure in the Seventies and Eighties will be a coupling of long-range plans for ocean utilization with planning for coastal zone development. Problems that can be seen in this regard will include: (a) port development in the light of changing ocean transportation requirements and industrial growth; (b) the siting of power plants, especially nuclear, along the shore and the handling of thermal pollution; (c) increasing needs for fuel energy supplies with attendant use of supertankers, enlarged oil terminals and refineries, and offshore production; and (d) recreational needs for the rising urban population coupled with the protection of the coastal environment. Each of these areas contain many unresolved questions. Issues relating to these will press

upon decision-makers with mounting intensity as urban growth combines with the needs of industry and public awareness of the power of political action.

As the tasks are many, so the challenges are open-ended. There is more remaining to be done than men have yet dreamed of. The frontiers of inner space have barely begun to be explored.

CHAPTER ONE

NEW GOALS FOR OCEAN POLICY

Introductory Note

A major focus of marine policy for the Seventies is the concern manifest in both the executive and legislative branches of government for the preservation and improvement of the environment. Members of both national political parties are vying for leadership in promoting measures to clean up conditions threatening to degradate the environment. Environmental protection has become a key concept of national policy--to preserve what the nation has in irreplaceable resources and to advance the quality of life.

There are those who advocate that no man-made structures should mar the sea's horizon and that the benefits from offshore oil production are outweighed by the risks of despoiling the ocean and shores. Certainly, the competing demands of recreation, economics, and environmental preservation require careful consideration as marine policy evolves. Controversy along these lines is present in Maine regarding the construction of an oil refinery in a small coastal town. On one side of the argument are those defending the construction on the basis that a refinery will lower fuel oil prices in New England as well as give a significant boost to the area's economy. On the other side it is argued that an area of great scenic beauty will be injured if a refinery is built; that pollution of sea and air will spoil one of the nation's prime recreation

areas, and may destroy important fisheries.

As the nation gropes its way forward, increasing attention is being directed to preserving or correcting environmental quality. Social costs are being weighed along with economic benefits. The tides of legislative and of policy actions are moving strongly in this direction as evidenced by the context of President Nixon's State of the Union Address in January 1970, his special message on Ocean Dumping, together with legislative proposals thereon, Environmental Quality Acts passed in 1970. Each of these is touched upon in the pages that follow. Senator Edmund Muskie (Dem., Maine) has also made environmental protection a major concern in his drive for the Presidential nomination through sponsorship of clean air and water legislation. In signing an historic pollution control act on December 31, 1970, enacted through the cooperative efforts of both parties on Capitol Hill, President Nixon declared that 1970 would be remembered as a "year of the beginning" in cleaning up the environment, and 1971 as a year of "action" that would see far-reaching recommendations placed before the Congress by the Environment Protection Agency and his Administration.

A second major concern of national ocean policy at the turn of the decade is the deplorable condition of the merchant marine. With a fleet the average age of which is twenty years, and with labor costs soaring, the United States has seen its vessels carrying but six percent of the nation's foreign trade. Ton-by-ton foreign-built shipping has been taking business away

from the slower, older, outmoded vessels flying the American flag. Sadder yet has been the withdrawal of the passenger liners from the Atlantic routes, including the blue-ribbon record-holder *United States*, pride of the U.S. merchant marine, and such other famous name ships as the *Brazil*, *Argentina*, *Constitution* and *Independence*. Decreasing passenger lists, combined with rising labor costs and disputes, have made these once proud vessels unable to compete with jet planes and the lower operating costs of European liners.

U.S. shipping has the potential to be a strong industry. And American shipyards have revealed time and again throughout the national history that they can turn out vessels able to sweep all before them on the high seas. The tonnage of cargo carried by sea has doubled in the past twenty years. It is expected to do so again by the year 2000. Ninety-eight percent of U.S. foreign trade is carried by ship. Despite the recent publicity accorded high-volume air transport, few products have a value to weight ratio justifying the higher costs of air freight. As U.S. and world commerce expand, sea transport will continue to be of primary importance, and U.S. shipping should claim its part. This should be done not only for the economic value of ocean shipping, but also to keep a reserve fleet in the event of national emergency, and to keep alive a technologically-advanced shipbuilding industry.

How to reinvigorate the United States merchant marine sufficiently to compete with foreign shipping, and how to

keep domestic shipyards operating in competition with Japanese and European builders having lower costs is the heart of the issue that has been facing the Administration and the Congress. Making a new attack upon the problem, President Nixon proposed and the Congress passed legislation (the Merchant Marine Act of 1970) calling for the construction of thirty ships a year for a ten-year period. The ships will be of standard design to permit savings in costs through mass production. Builders will be reimbursed by the Government for costs exceeding those of construction of comparable vessels in foreign yards. Operational subsidies will be gradually reduced, on the other hand, to 35 percent of costs from today's 55 percent level. Built into the new package are also inducements to maritime labor to attain parity with foreign counterparts in efficiency. To lower the costs of governmental planning and supervising, the Maritime Administration was made an integral part of the Department of Commerce, instead of remaining an independent executive agency.

The test of whether this new policy can succeed in capturing a larger share of the world's maritime commerce and in keeping a higher percentage of the country's merchant marine active upon the Seven Seas will rest in large measure upon the relationship between management and labor, an area that has had many ups and downs in recent decades. Only with honesty, fairness, and cooperation can peace be made to prevail on the waterfront. This, in turn, must also be matched

with enlightened port administration that will replace old, inefficient facilities with modern ones better adapted to today's needs.

A third aspect of ocean policy of major concern at the start of the decade has been the nature of the national ocean administration. With the coincidence of a new Administration coming to office just as the Commission on Marine Science, Engineering and Resources (Stratton Commission) completed its three-year study, pursuant to the 1966 legislation, the stage was set for a top-level review of the means of handling public policy. To advise him on how to organize the national effort, President Nixon appointed the so-called Ash Council on Executive Reorganization, and a special Presidential Task Force on Oceanography. In the end, a choice was made to locate the new National Oceanic and Atmospheric Administration (NOAA) in the Department of Commerce on a plane of equality with the Maritime Administration. Whether the NOAA will be able to serve the nation as well as the Marine Sciences Council did in the 1967-70 period in this lowered status must remain to be seen. Many in the marine profession were disheartened with the decision, as with the small fundings given to the new agency. But others believe that with effort the nation's ocean endeavor can once more be put into high gear. Further attention will be given to the implementation of this goal in Chapter Six.

Other goals of national marine policy look toward increased emphasis upon protection of the coastal zones, restoring

clean water in the Great Lakes, stepping up research and development on the continental shelf and in the mineral-rich Arctic, and promoting cooperation at the international level. In this last area, policy seeks in particular to prevent the deep seabeds from becoming a scene of the arms race, to further cooperation in oceanographic research, and to work toward agreement upon a new regime of the high seas and seabeds during the Seventies.

In the chapters that follow we shall trace some of the steps being taken to realize these new goals in marine policy.

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THE NEED FOR A CLEANER ENVIRONMENT

President's State of the Union Address[1]

January 21, 1970

(Extracts)

I now turn to a subject which, next to our desire for peace, may well become the major concern of the American people in the decade of the seventies.

In the next 10 years we shall increase our wealth by 50 per cent. The profound question is--does this mean that we will be 50 per cent richer in a real sense, 50 per cent better off, 50 per cent happier?

Or, does it mean that in the year 1980 the President standing in this place will look back on a decade in which 70 per cent of our people lived in metropolitan areas choked by traffic, suffocated by smog, poisoned by pollution, deafened by noise and terrorized by crime?

These are not the great questions that concern world leaders at summit conferences. But people do not live at the summit. They live in the foothills of everyday experience. It is time for us all to concern ourselves with the way real people live in real life.

The great question of the seventies is, shall we surrender to our surroundings, or shall we make our peace with nature and begin to make reparations for the damage we have done to our air, our land and our water?

Restoring nature to its natural state is a cause beyond party and beyond factions. It has become a common cause of all the people of America. It is a cause of particular concern to young Americans--because they more than we will reap the grim consequences of our failure to act on programs which are needed now if we are to prevent disaster later.

Clean air, clean water, open spaces--these should once again be the birthright of every American. If we act now--they can be.

We still think of air as free. But clean air is not, and neither is clean water. The price tag on pollution control is high. Through our years of past carelessness we incurred a debt to nature, and now that debt is being called.

The program I shall propose to Congress will be the most comprehensive and costly program in this field ever in the nation's history.

It is not just a program for the next year. A year's plan in this field is no plan at all. This is a time to look ahead not a year, but five or 10 years--whatever time is required to do the job.

I shall propose to this Congress a $10 billion nationwide clean waters program to put modern municipal waste treatment plants in every place in America where they are needed to make our waters clean again and do it now.

We have the industrial capacity, if we begin now, to build them all within five years. This program will get them built within five years.

As our cities and suburbs relentlessly expand, those priceless open spaces needed for recreation areas accessible to their people are swallowed up--often forever. Unless we preserve these spaces while they are still available, we will have none to preserve. Therefore, I shall propose new financing methods for purchasing open space and parklands, now, before they are lost to us.

The automobile is our worst polluter of the air. Adequate control requires further advances in engine design and fuel composition. We shall intensify our research, set increasingly strict standards and strengthen enforcement procedures--and we shall do it now.

We no longer can afford to consider air and water common property, free to be abused by anyone without regard to the consequences. Instead, we should begin now to treat them as scarce resources, which we are no more free to contaminate than we are free to throw garbage in our neighbor's yard. This requires comprehensive new regulations.

It also requires that, to the extent possible, the price of goods should be made to include the costs of producing and disposing of them without damage to the environment.

Now I realize the argument is often made that a fundamental contradiction has arisen between economic growth and the quality of life, so that to have one we must forsake the other.

The answer is not to abandon growth, but to redirect it. For example, we should turn toward ending congestion and eliminating smog the same reservoir of inventive genius that created them in the first place.

Continued vigorous economic growth provides us with the means to enrich life itself and to enhance our planet as a place hospitable to man.

Each individual must enlist if this fight is to be won.

It has been said that no matter how many national parks and historical monuments we buy and develop, the truly significant environment for each of us is that in which we spend 80 per cent of our time--that is, our homes, our places of work and the streets over which we pass.

Street litter, rundown parking strips and yards, dilapidated fences, broken windows, smoking automobiles, dingy working places, all should be the object of our fresh view.

We have been much too tolerant of our surrounding and too willing to leave it to others to clean up our environment. It is time for those who make massive demands on society to make some minimal demands on themselves.

Each of us must resolve that each day he will leave his home, his property and the public places of his city or town a little cleaner, a little better, a little more pleasant for himself and those around him.

With the help of people we can do anything. Without their help we can do nothing. In this spirit, together, we can reclaim our land for ours and generations to come.

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1. White House Press Release, January 21, 1970.

NATIONAL ENVIRONMENTAL POLICY ACT OF 1969

Public Law 91-190
91st Congress, 1st Session
January 1, 1969
83 Stat. 852

Be it enacted...That this act may be cited as the "National Environmental Policy Act of 1969."

PURPOSE

Sec. 2. The purposes of this Act are: To declare a national policy which will encourage productive and enjoyable harmony between man and his environment; to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man; to enrich the understanding of the ecological systems and natural resources important to the Nation; and to establish a Council on Environmental Quality.

TITLE I

DECLARATION OF NATIONAL ENVIRONMENTAL POLICY

Sec. 101.

(a) The Congress, recognizing the profound impact of man's activity on the interrelations of all components of the natural environment, particularly the profound influences of population growth, high-density urbanization, industrial expansion, resource exploitation, and new and expanding technological advances and recognizing further the critical importance of restoring and maintaining environmental quality to the overall welfare and development of man, declares that it is the continuing policy of the Federal Government, in cooperation with State and local governments, and other concerned public and private organizations, to use all practicable means and measures, including financial and technical assistance, in a manner calculated to foster and promote the general welfare, to create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans.

(b) In order to carry out the policy set forth in this Act, it is the continuing responsibility of the Federal Government to use all practicable means, consistent with other essential considerations of national policy,

to improve and coordinate Federal plans, functions, programs, and resources to the end that the nation may--

(1) fulfill the responsibilities of each generation as trustee of the environment for succeeding generations;

(2) assure for all Americans safe, healthful, productive, and esthetically and culturally pleasing surroundings;

(3) attain the widest range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable and unintended consequences;

(4) preserve important historic, cultural, and natural aspects of our national heritage, and maintain, wherever possible, an environment which supports diversity and variety of individual choice;

(5) achieve a balance between population and resource use which will permit high standards of living and a wide sharing of life's amenities; and

(6) enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.

(c) The Congress recognizes that each person should enjoy a healthful environment and that each person has a responsibility to contribute to the preservation and enhancement of the environment.

Sec. 102. The Congress authorizes and directs that, to the fullest extent possible: (1) the policies, regulations, and public laws of the United States shall be interpreted and administered in accordance with the policies set forth in this Act, and (2) all agencies of the Federal Government shall--

(A) utilize a systematic, interdisciplinary approach which will insure the integrated use of the natural and social sciences and the environmental design arts in planning and in decision-making which may have an impact on man's environment;

(B) identify and develop methods and procedures, in consultation with the Council on Environmental Quality established by title II of this Act, which will insure that presently unquantified environmental amenities and values may be given appropriate consideration in decision-making along with economic and technical considerations;

(C) include in every recommendation or report on proposals for legislation and other major Federal actions significantly affecting the quality of the human environment, a detailed statement by the responsible official on--

(i) the environmental impact of the proposed action,

(ii) any adverse environmental effects which cannot be avoided should the proposal be implemented,

(iii) alternatives to the proposed action,

(iv) the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity, and

(v) any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented.

Prior to making any detailed statement, the responsible Federal official shall consult with and obtain the comments of any Federal agency which has jurisdiction by law or special expertise with respect to any environmental impact involved. Copies of such statement and the comments and views of the appropriate Federal, State, and local agencies, which are authorized to develop and enforce environmental standards, shall be made available to the President, the Council on Environmental Quality and to the public as provided by section 552 of title 5, United States Code, and shall accompany the proposal through the existing agency review processes;

(D) study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources;

(E) recognize the worldwide and long-range character of environmental problems and, where consistent with the foreign policy of the United States, lend appropriate support to initiatives, resolutions, and programs designed to maximize international cooperation in anticipating and preventing a decline in the quality of mankind's world environment;

(F) make available to States, counties, municipalities, institutions, and individuals, advice and information in the planning and development of resource-oriented projects; and

(H) assist the Council on Environmental Quality established by title II of this Act.

Sec. 103. All agencies of the Federal Government shall review their present statutory authority, administrative regulations, and current policies and procedures for the purpose of determining whether there are any deficiencies or inconsistencies therein which prohibit full compliance with the purposes and provisions of this Act and shall propose to the President not later than July 1, 1971, such measures as may be necessary to bring

their authority and policies into conformity with the intent, purposes, and procedures set forth in this Act.

Sec. 104. Nothing in Section 102 or 103 shall in any way affect the specific statutory obligations of any Federal agency (1) to comply with criteria or standards of environmental quality, (2) to coordinate or consult with any other Federal or State agency, or (3) to act, or refrain from acting contingent upon the recommendations or certification of any other Federal or State agency.

Sec. 105. The policies and goals set forth in this Act are supplementary to those set forth in existing authorizations of Federal agencies.

TITLE II

COUNCIL ON ENVIRONMENTAL QUALITY

Sec. 201. The President shall transmit to the Congress annually beginning July 1, 1970, an Environmental Quality Report (hereinafter referred to as the "report") which shall set forth (1) the status and condition of the major natural, manmade, or altered environmental classes of the Nation, including, but not limited to, the air, the aquatic, including marine, estuarine, and fresh water, and the terrestrial environment, including, but not limited to, the forest, dryland, wetland, range, urban, suburban, and rural environment; (2) current and foreseeable trends in the quality, management and utilization of such environments and the effects of those trends on the social, economic, and other requirements of the Nation; (3) the adequacy of available natural resources for fulfilling human and economic requirements of the Nation in the light of expected population pressures; (4) a review of the programs and activities (including regulatory activities) of the Federal Government, the State and local governments, and nongovernmental entities or individuals, with particular reference to their effect on the environment and on the conservation, development and utilization of natural resources; and (5) a program for remedying the deficiencies of existing programs and activities, together with recommendations for legislation.

Sec. 202. There is created in the Executive Office of the President a Council on Environmental Quality (hereinafter referred to as the "Council"). The Council shall be composed of three members who shall be appointed by the President to serve at his pleasure, by and with the advice and consent of the Senate. The President shall designate

one of the members of the Council to serve as Chairman. Each member shall be a person who, as a result of his training, experience, and attainments, is exceptionally well qualified to analyze and interpret environmental trends and information of all kinds; to appraise programs and activities of the Federal Government in the light of the policy set forth in title I of this Act; to be conscious of and responsive to the scientific, economic, social, esthetic, and cultural needs and interests of the Nation; and to formulate and recommend national policies to promote the improvement of the quality of the environment.

Sec. 203. The Council may employ such officers and employees as may be necessary to carry out its functions under this Act. In addition, the Council may employ and fix the compensation of such experts and consultants as may be necessary for the carrying out of its functions under this Act, in accordance with section 3109 of title 5, United States Code (but without regard to the last sentence thereof).

Sec. 204. It shall be the duty and function of the Council--

(1) to assist and advise the President in the preparation of the Environmental Quality Report required by section 201;

(2) to gather timely and authoritative information concerning the conditions and trends in the quality of the environment both current and prospective, to analyze and interpret such information for the purpose of determining whether such conditions and trends are interfering, or are likely to interfere, with the achievement of the policy set forth in title I of this Act, and to compile and submit to the President studies relating to such conditions and trends;

(3) to review and appraise the various programs and activities of the Federal Government in the light of the policy set forth in title I of this Act for the purpose of determining the extent to which such programs and activities are contributing to the achievement of such policy, and to make recommendations to the President with respect thereto;

(4) to develop and recommend to the President national policies to foster and promote the improvement of environmental quality to meet the conservation, social, economic, health, and other requirements and goals of the Nation;

(5) to conduct investigations, studies, surveys, research and analyses relating to ecological systems and environmental quality;

(6) to document and define changes in the natural environment, including the plant and animal systems, and to accumulate necessary data and other information for a continuing analysis of these changes or trends and an interpretation of their underlying causes;

(7) to report at least once each year to the President on the state and condition of the environment; and

(8) to make and furnish such studies, reports thereon, and recommendations with respect to matters of policy and legislation as the President may request.

Sec. 205. In exercising its powers, function, and duties under this Act, the Council shall--

(1) consult with the Citizens' Advisory Committee on Environmental Quality established by Executive Order numbered 11472, dated May 29, 1969, and with such representatives of science, industry, agriculture, labor, conservation organizations, State and local governments and other groups, as it deems advisable; and

(2) utilize to the fullest extent possible, the services, facilities, and information (including statistical information) of public and private agencies and organizations, and individuals, in order that duplication of effort and expense may be avoided, thus assuring that the Council's activities will not unnecessarily overlap or conflict with similar activities authorized by law and performed by established agencies.

Sec. 206. Members of the Council shall serve full time and the Chairman of the Council shall be compensated at the rate provided for Level II of the Executive Schedule Pay Rates (5 U.S.C. 5313). The other members of the Council shall be compensated at the rate provided for Level IV of the Executive Schedule Pay Rates (5 U.S.C. 5315).

Sec. 207. There are authorized to be appropriated to carry out the provisions of this Act not to exceed $300,000 for fiscal year 1970, $700,000 for fiscal year 1971, and $1,000,000 for each fiscal year thereafter.

Approved January 1, 1970.

WATER AND ENVIRONMENTAL QUALITY IMPROVEMENT ACT OF 1970[1]

(Extracts)

TITLE I--WATER QUALITY IMPROVEMENT

Sec. 101. This title may be cited as the "Water Quality Improvement Act of 1970."

Sec. 102. Existing sections 17 and 18 of the Federal Water Pollution Control Act, as amended, are hereby repealed....

"CONTROL OF POLLUTION BY OIL

Sec. 102...."(b)(1) The Congress hereby declares that it is the policy of the United States that there should be no discharges of oil into or upon the navigable waters of the United States, adjoining shorelines, or into or upon the waters of the contiguous zone.

"(2) The discharge of oil into or upon the navigable waters of the United States, adjoining shorelines, or into or upon the waters of the contiguous zone in harmful quantities as determined by the President under paragraph (3) of this subsection, is prohibited, except (A) in the case of such discharges into the waters of the contiguous zone, where permitted under article IV of the International Convention for the Prevention of Pollution of the Sea by Oil, 1954, as amended, and (B) where permitted in quantities and at times and locations or under such circumstances or conditions as the President may, by regulation, determine not to be harmful. Any regulations issued under this subsection shall be consistent with maritime safety and with marine and navigation laws and regulations and applicable water quality standards.

"(3) The President shall, by regulation, to be issued as soon as possible after the date of enactment of this paragraph, determine for the purposes of this section, those quantities of oil the discharge of which, at such times, locations, circumstances, and conditions, will be harmful to the public health or welfare of the United States, including, but not limited to, fish, shellfish, wildlife, and public and private property, shorelines, and beaches, except that in the case of the discharge of oil into or upon the waters of the contiguous zone, only those discharges which threaten the fishery resources of the contiguous zone or threaten to pollute or contribute to the pollution of the territory or the territorial sea of the United States may be determined to be harmful....

"(5) Any owner or operator of any vessel, onshore facility, or offshore facility from which oil is knowingly discharged in violation of paragraph (2) of this subsection shall be assessed a civil penalty by the Secretary of the department in which the Coast Guard is operating of not more than $10,000 for each offense....

"(c)(1) Whenever any oil is discharged, into or upon the navigable waters of the United States, adjoining shorelines, or into or upon the waters of the contiguous zone, the President is authorized to act to remove or arrange for the removal of such oil at any time, unless he determines such removal will be done properly by the owner or operator of the vessel, onshore facility, or offshore facility from which the discharge occurs.

"(2) Within sixty days after the effective date of this section, the President shall prepare and publish a National Contingency Plan for removal of oil pursuant to this subsection. Such National Contingency Plan shall provide for efficient, coordinated, and effective action to minimize damage from oil discharges, including containment, dispersal, and removal of oil....

"(d) Whenever a marine disaster in or upon the navigable waters of the United States has created a substantial threat of a pollution hazard to the public health or welfare of the United States, including, but not limited to, fish, shellfish, and wildlife and the public and private shorelines and beaches of the United States, because of a discharge, or an imminent discharge, of large quantities of oil from a vessel the United States may (A) coordinate and direct all public and private efforts directed at the removal or elimination of such threat; and (B) summarily remove, and, if necessary, destroy such vessel by whatever means are available without regard to any provision of law governing the employment of personnel or the expenditure of appropriated funds....

"(f)(1) Except where an owner or operator can prove that a discharge was caused solely by (A) an act of God, (B) an act of war, (C) negligence on the part of the United States Government for the actual costs incurred under subsection (c) for the removal of such oil by the United States Government in an amount not to exceed $100 per gross ton of such vessel or $14,000,000, whichever is lesser, except that where the United States can show that such discharge was the result of willful negligence or willful misconduct within the privity and knowledge of the owner, such owner or operator shall be liable to the United States Government for the full amount of such costs....

"CONTROL OF HAZARDOUS POLLUTING SUBSTANCES

"Sec. 12. (a) The President shall, in accordance with subsection (b) of this section, develop, promulgate, and revise as may be appropriate, regulations (1) designating as hazardous substances, other than oil as defined in section 11 of this Act, such elements and compounds which, when discharged in any quantity into or upon the navigable waters of the United States or adjoining shorelines or the waters of the contiguous zone, present an imminent and substantial danger to the public health or welfare, including, but not limited to, fish, shellfish, wildlife, shorelines, and beaches; and (2) establishing, if appropriate, recommended methods and means for the removal of such substances....

"(d) Whenever any hazardous substance is discharged into or upon the navigable waters of the United States or adjoining shorelines or the waters of the contiguous zone, unless removal is immediately undertaken by the owner or operator of the vessel or onshore or offshore facility from which the discharge occurs or which caused the discharge, pursuant to the regulations promulgated under this section, the President, if appropriate, shall remove or arrange for the removal thereof in accordance with such regulations. Nothing in this subsection shall be construed to restrict the authority of the President to act to remove or arrange for the removal of such hazardous substance at any time....

"CONTROL OF SEWAGE FROM VESSELS

...."(b)(1) As soon as possible, after the enactment of this section and subject to the provisions of section 5(j) of this Act, the Secretary, after consultation with the Secretary of the department in which the Coast Guard is operating, after giving appropriate consideration to the economic costs involved, and within the limits of available technology, shall promulgate Federal standards of performance for marine sanitation devices (hereafter in this section referred to as 'standards') which shall be designed to prevent the discharge of untreated or inadequately treated sewage into or upon the navigable waters of the United States from new vessels and existing vessels, except vessels not equipped with installed toilet facilities. Such standards shall be consistent with maritime safety and the marine and navigation laws and regulations and shall be coordinated with the regulations issued under this subsection by the Secretary of the department in which the Coast Guard is operating. The Secretary of the department in which the Coast Guard is operating shall promulgate regulations, which are consistent with standards promulgated under this subsection and with maritime

safety and the marine and navigation laws and regulations, governing the design, construction, installation, and operation of any marine sanitation device on board such vessels....

"(c)(1) Initial standards and regulations under this section shall become effective for new vessels two years after promulgation; and for existing vessels five years after promulgation. Revisions of standards and regulations shall be effective upon promulgation, unless another effective date is specified, except that no revision shall take effect before the effective date of the standard or regulation being revised....

"(d) The provisions of this section and the standards and regulations promulgated hereunder apply to vessels owned and operated by the United States unless the Secretary of Defense finds that compliance would not be in the interest of national security. With respect to vessels owned and operated by the Department of Defense, regulations under the last sentence of subsection (b)(1) and certifications under subsection (g)(2) of this section shall be promulgated and issued by the Secretary of Defense....

"(f) After the effective date of the initial standards and regulations promulgated under this section, no State or political subdivision thereof shall adopt or enforce any statute or regulation of such State or political subdivision with respect to the design, manufacture, or installation or use of any marine sanitation device on any vessel subject to the provisions of this section. Upon application by a State, and where the Secretary determines that any applicable water quality standards require such a prohibition, he shall by regulation completely prohibit the discharge from a vessel of any sewage (whether treated or not) into those waters of such State which are the subject of the application and to which such standards apply....

[Subsequent sections of the Act deal with Area Acid and Other Mine Water Pollution; Pollution Control in the Great Lakes; Training Grants and Contracts.]

"COOPERATION BY ALL FEDERAL AGENCIES
IN THE CONTROL OF POLLUTION

"Sec. 21. (a) Each Federal agency (which term as used in this section includes Federal departments, agencies, and instrumentalities) having jurisdiction over any real property or facility, or engaged in any Federal public works activity of any kind, shall, consistent with the paramount interest of the United States as determined by the President, insure compliance with applicable water quality standards and the

purposes of this Act in the administration of such property, facility, or activity....

FINDINGS, DECLARATIONS, AND PURPOSES

Sec. 202. (a) The Congress finds--

(1) that man has caused changes in the environment;
(2) that many of these changes may affect the relationship between man and his environment; and
(3) that population increases and urban concentration contribute directly to pollution and the degradation of our environment.

(b)(1) The Congress declares that there is a national policy for the environment which provides for the enhancement of environmental quality. This policy is evidenced by statutes heretofore enacted relating to the prevention, abatement and control of environmental pollution, water and land resources, transportation, and economic and regional development.

(2) The primary responsibility for implementing this policy rests with State and local governments.
(3) The Federal Government encourages and supports implementation of this policy through appropriate regional organization established under existing law.

(c) The purposes of this title are--

(1) to assure that each Federal department and agency conducting or supporting public works activities which affect the environment shall implement the policies established under existing law; and
(2) to authorize an Office of Environmental Quality, which, notwithstanding any other provision of law, shall provide the professional and administrative staff for the Council on Environmental Quality established by Public Law 91-190.

OFFICE OF ENVIRONMENTAL QUALITY

Sec. 203. (a) There is established in the Executive Office of the President an office to be known as the Office of Environmental Quality (hereafter in this title referred to as the "Office"). The Chairman of the Council on Environmental Quality established by Public Law 91-190 shall be the Director of the Office. There shall be in the Office a Deputy Director who shall be appointed by the President, by and with the advice and consent of the Senate....

(d) In carrying out his functions the Director shall assist and advise the President on policies and programs of the Federal Government affecting environmental quality by--

(1) providing the professional and administrative staff and support for the Council on Environmental Quality established by Public Law 91-190;
(2) assisting the Federal agencies and departments in appraising the effectiveness of existing and proposed facilities, programs, policies, and activities of the Federal Government, and those specific major projects designated by the President which do not require individual project authorization by Congress, which affect environmental quality;
(3) reviewing the adequacy of existing systems for monitoring and predicting environmental changes in order to achieve effective coverage and efficient use of research facilities and other resources;
(4) promoting the advancement of scientific knowledge of the effects of actions and technology on the environment and encourage the development of the means to prevent or reduce adverse effects that endanger the health and well-being of man;
(5) assisting in coordinating among the Federal departments and agencies those programs and activities which affect, protect, and improve environmental quality;
(6) assisting the Federal departments and agencies in the development and interrelationship of environmental quality criteria and standards established through the Federal Government;
(7) collecting, collating, analyzing, and interpreting data and information on environmental quality, ecological research, and evaluation....

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1. Public Law 91-224; 84 Stat. 91, 91st Congress, 2nd Session.

ENVIRONMENTAL PROTECTION AGENCY

MESSAGE OF THE PRESIDENT TO THE CONGRESS REGARDING CREATION OF NEW AGENCY

July 9, 1970[1]

TO THE CONGRESS OF THE UNITED STATES:

As concern with the condition of our physical environment has intensified, it has become increasingly clear that we need to know more about the total environment--land, water and air. It also has become increasingly clear that only by reorganizing our Federal efforts can we develop that knowledge, and effectively ensure the protection, development and enhancement of the total environment itself....

Environmental Protection Agency (EPA)

Our national government today is not structured to make a coordinated attack on the pollutants which debase the air we breathe, the water we drink, and the land that grows our food. Indeed, the present governmental structure for dealing with environmental pollution often defies effective and concerted action.

Despite its complexity, for pollution control purposes the environment must be perceived as a single, interrelated system. Present assignments of departmental responsibilities do not reflect this interrelatedness....

In organizational terms, this requires pulling together into one agency a variety of research, monitoring, standard-setting and enforcement activities now scattered through several departments and agencies. It also requires that the new agency include sufficient support elements--in research and in aids to State and local anti-pollution programs, for example--to give it the needed strength and potential for carrying out its mission. The new agency would also, of course, draw upon the results of research conducted by other agencies.

Components of the EPA

Under the terms of Reorganization Plan No. 3, the following would be moved to the new Environmental Protection Agency:

--The functions carried out by the Federal Water Quality Administration (from the Department of the Interior).

--Functions with respect to pesticides studies now vested in the Department of the Interior.

--The functions carried out by the National Air Pollution Control Administration (from the Department of Health, Education, and Welfare).

--The functions carried out by the Bureau of Solid Waste Management and the Bureau of Water Hygiene, and portions of the functions carried out by the Bureau of Radiological Health of the Environmental Control Administration (from the Department of Health, Education and Welfare).

--Certain functions with respect to pesticides carried out by the Food and Drug Administration (from the Department of Health, Education and Welfare).

--Authority to perform studies relating to ecological systems now vested in the Council on Environmental Quality.

--Certain functions respecting radiation criteria and standards now vested in the Atomic Energy Commission and the Federal Radiation Council.

--Functions respecting pesticides registration and related activities now carried out by the Agricultural Research Service (from the Department of Agriculture).

With its broad mandate, EPA would also develop competence in areas of environmental protection that have not previously been given enough attention, such, for example, as the problem of noise, and it would provide an organization to which new programs in these areas could be added....

Advantages of Reorganization

This reorganization would permit response to environmental problems in a manner beyond the previous capability of our pollution control programs. The EPA would have the capacity to do research on important pollutants irrespective of the media in which they appear, and on the impact of these pollutants on the total environment. Both by itself and together with other agencies, the EPA would monitor the condition of

the environment--biological as well as physical. With these data, the EPA would be able to establish quantitative "environmental baselines"--critical if we are to measure adequately the success or failure of our pollution abatement efforts.

As no disjointed array of separate programs can, the EPA would be able--in concert with the States--to set and enforce standards for air and water quality and for individual pollutants. This consolidation of pollution control authorities would help assure that we do not create new environmental problems in the process of controlling existing ones. Industries seeking to minimize the adverse impact of their activities on the environment would be assured of consistent standards covering the full range of their waste disposal problems. As the States develop and expand their own pollution control programs, they would be able to look to one agency to support their efforts with financial and technical assistance and training.

In proposing that the Environmental Protection Agency be set up as a separate new agency, I am making an exception to one of my own principles: that, as a matter of effective and orderly administration, additional new independent agencies normally should not be created. In this case, however, the arguments against placing environmental protection activities under the jurisdiction of one or another of the existing departments and agencies are compelling.

In the first place, almost every part of government is concerned with the environment in some way, and affects it in some way. Yet each department also has its own primary mission--such as resource development, transportation, health, defense, urban growth or agriculture--which necessarily affects its own view of environmental questions.

In the second place, if the critical standard-setting functions were centralized within any one existing department, it would require that department constantly to make decisions affecting other departments--in which, whether fairly or unfairly, its own objectivity as an impartial arbiter could be called into question.

Because environmental protection cuts across so many jurisdictions, and because arresting environmental deterioration is of great importance to the quality of life in our country and the world, I believe that in this case a strong, independent agency is needed. That agency would, of course, work closely with and draw upon the expertise and assistance of other agencies having experience in the environmental area.

Roles and Functions of EPA

The principal roles and functions of the EPA would include:

--The establishment and enforcement of environmental protection standards consistent with national environmental goals.

--The conduct of research on the adverse effects of pollution and on methods and equipment for controlling it, the gathering of information on pollution, and the use of this information in strengthening environmental protection programs and recommending policy changes.

--Assisting others, through grants, technical assistance and other means in arresting pollution of the environment.

--Assisting the Council on Environmental Quality in developing and recommending to the President new policies for the protection of the environment.

One natural question concerns the relationship between the EPA and the Council on Environmental Quality, recently established by Act of Congress.

It is my intention and expectation that the two will work in close harmony, reinforcing each other's mission. Essentially, the Council is a top-level advisory group (which might be compared with the Council of Economic Advisers), while the EPA would be an operating "line" organization. The Council will continue to be a part of the Executive Office of the President and will perform its overall coordinating and advisory roles with respect to all Federal programs related to environmental quality.

The Council, then, is concerned with all aspects of environmental quality--wildlife preservation, parklands, land use, and population growth, as well as pollution. The EPA would be charged with protecting the environment by abating pollution. In short, the Council focuses on what our broad policies in the environmental field should be; the EPA would focus on setting and enforcing pollution control standards. The two are not competing, but complementary--and taken together, they should give us, for the first time, the means to mount an effectively coordinated campaign against environmental degradation in all of its many forms.

RICHARD NIXON

THE WHITE HOUSE
July 9, 1970

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1. Press Release. The White House, Washington, July 9, 1970.

PRESIDENT'S MESSAGE TO THE CONGRESS ON OCEAN DUMPING, 1970[1]

To the Congress of the United States:

The oceans, covering nearly three-quarters of the world's surface, are critical to maintaining our environment, for they contribute to the basic oxygen-carbon dioxide balance upon which human and animal life depends. Yet man does not treat the oceans well. He has assumed that their capacity to absorb waste is infinite, and evidence is now accumulating on the damage that he has caused. Pollution is now visible even on the high seas--long believed beyond the reach of man's harmful influence. In recent months, worldwide concern has been expressed about the dangers of dumping toxic wastes in the oceans.

In view of the serious threat of ocean pollution, I am today transmitting to the Congress a study I requested from the Council on Environmental Quality [entitled "Ocean Dumping: A National Policy"].[2] This study concludes that:

- the current level of ocean dumping is creating serious environmental damage in some areas.

- the volume of wastes dumped in the ocean is increasing rapidly.

- a vast new influx of wastes is likely to occur as municipalities and industries turn to the oceans as a convenient sink for their wastes.

- trends indicate that ocean disposal could become a major, nationwide environmental problem.

- unless we begin now to develop alternative methods of disposing of these wastes, instituional and economic obstacles will make it extremely difficult to control ocean dumping in the future.

- the nation must act now to prevent the problem from reaching unmanageable proportions.

The study recommends legislation to ban the unregulated dumping of all materials in the oceans and to prevent or rigorously limit the dumping of harmful materials. The recommended legislation would call for permits by the Administrator of the Environmental Protection Agency for the transportation and dumping of all materials in the oceans and in the Great Lakes.

I endorse the Council's recommendations and will submit specific legislative proposals to implement them to the next Congress. These recommendations will supplement legislation my Administration submitted to the Congress in November, 1969 to provide comprehensive management by the States of the land and waters of the coastal zone and in April, 1970 to control dumping of dredge spoil in the Great Lakes.

The program proposed by the Council is based on the premise that we should take action before the problem of ocean dumping becomes acute. To date, most of our energies have been spent cleaning up mistakes of the past. We have failed to recognize problems and to take corrective action before they became serious. The resulting signs of environmental decay are all around us, and remedial actions heavily tax our resources and energies.

The legislation recommended would be one of the first new authorities for the Environmental Protection Agency. I believe it is fitting that in this recommended legislation, we will be acting--rather than reacting--to prevent pollution before it begins to destroy the waters that are so critical to all living things.

RICHARD NIXON

THE WHITE HOUSE, October 7, 1970.

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1. Department of State Bulletin, Vol. LXIII, No. 1640 (November 30, 1970), pp. 669-670.

2. Washington: Government Printing Office, 1970.

UNITED STATES MERCHANT MARINE

PRESIDENT'S MESSAGE TO THE CONGRESS ANNOUNCING A NEW MARITIME PROGRAM FOR THE NATION

October 23, 1969[1]

To the Congress of the United States:

The United States Merchant Marine--the fleet of commercial ships on which we rely for our economic strength in time of peace and our defense mobility in time of war--is in trouble.

While only one-fourth of the world's merchant ships are more than twenty years old, approximately three-fourths of American trading vessels are at least that antiquated. In the next four years, much of our merchant fleet will be scrapped. Yet we are now producing only a few new ships a year for use in our foreign trade. Building costs for American vessels are about twice those in foreign shipyards and production delays are excessive. Operating expenses also are high by world standards, and labor-management conflicts have been costly and disruptive.

Both government and industry share responsibility for the recent decline in American shipping and shipbuilding. Both government and industry must now make a substantial effort to reverse that record. We must begin immediately to rebuild our merchant fleet and make it more competitive. Accordingly, I am announcing today a new maritime program for this nation, one which will replace the drift and neglect of recent years and restore this country to a proud position in the shipping lanes of the world.

Our program is one of challenge and opportunity. We will challenge the American shipbuilding industry to show that it can rebuild our Merchant Marine at reasonable expense. We will challenge American ship operators and seamen to move toward less dependence on government subsidy. And, through a substantially revised and better administered government program, we will create the opportunity to meet that challenge.

The need for this new program is great since the old ways have not worked. However, as I have frequently pointed out, our budget constraints at this time are also significant.

Our program, therefore, will be phased in such a way that it will not increase subsidy expenditures during the rest of fiscal year 1970 and will require only a modest increase for fiscal year 1971. We can thus begin to rebuild our fleet and at the same time meet our fiscal responsibilities.

THE SHIPBUILDING INDUSTRY

Our shipbuilding program is designed to meet both of the problems which lie behind the recent decline in this field: low production rates and high production costs. Our proposals would make it possible for shipbuilders to build more ships and would encourage them to hold down the cost of each vessel. We believe that these two aspirations are closely related. For only as we plan a major long-range building program can we encourage builders to standardize ship design and introduce mass production techniques which have kept other American products competitive in world markets. On the other hand, only if our builders are able to improve their efficiency and cut their costs can we afford to replace our obsolescent merchant fleet with American-built vessels. These cost reductions are essential if our ship operators are to make capital investments of several billion dollars over the next ten years to build new, high-technology ships.

Our new program will provide a substantially improved system of construction differential subsidies, payments which reimburse American shipbuilders for that part of their total cost which exceeds the cost of building in foreign shipyards. Such subsidies allow our shipbuilders--despite their higher costs--to sell their ships at world market prices for use in our foreign trade. The important features of our new subsidy system are as follows:

1. We should make it possible for industry to build more ships over the next ten years, moving from the present subsidy level of about ten ships a year to a new level of thirty ships a year.

2. We should reduce the percentage of total costs which are subsidized. The government presently subsidizes up to 55 percent of a builder's total expenses for a given vessel. Leaders of the shipbuilding industry have frequently said that subsidy requirements can be reduced considerably if they are assured a long-term market. I am therefore asking that construction differential subsidies be limited to 45 percent of total costs in fiscal year 1971. That percentage should be reduced by 2 percent in each subsequent year until the maximum subsidy payment is down to 35 percent of total building expenses.

We are confident that the shipbuilding industry can meet this challenge. If the challenge is not met, however, then the Administration's commitment to this part of our program will not be continued.

3. Construction differential subsidies should be paid directly to shipbuilders rather than being channeled through shipowners as is the case under the present system. A direct payment system is necessary if our program is to encourage builders to improve designs, reduce delays, and minimize costs. It will also help us to streamline subsidy administration.

4. The multi-year procurement system which is now used for other government programs should be extended to shipbuilding. Under this system, the government makes a firm commitment to build a given number of ships over a specified and longer period of time, a practice which allows the industry to realize important economies of scale and to receive lower subsidies.

5. The increased level of ship construction will require a corresponding increase in the level of federally insured mortgages. Accordingly, we should increase the ceiling on our present mortgage insurance programs from $1 billion to $3 billion.

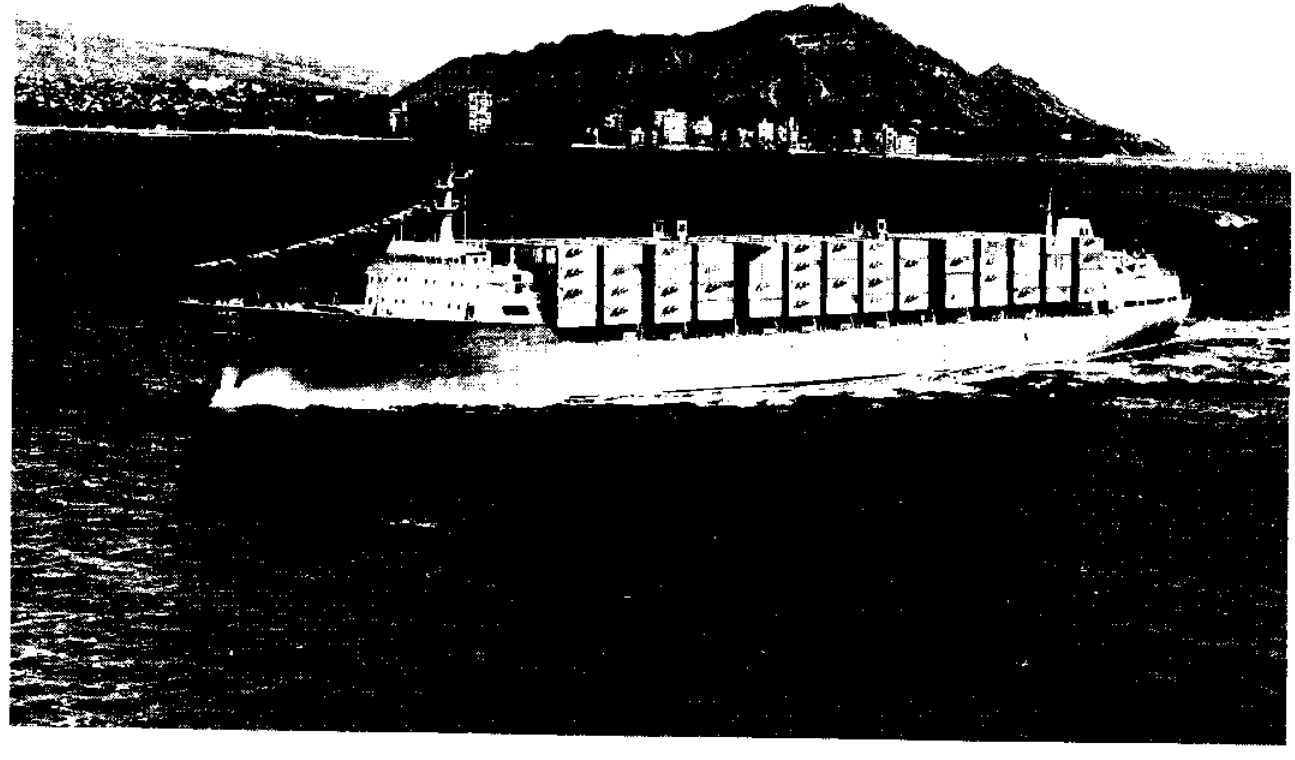
6. We should extend construction differential subsidies to bulk carriers, ships which usually carry ore, grain, or oil and which are not covered by our present subsidy program.

7. A Commission should be established to review the status of the American shipbuilding industry, its problems, and its progress toward meeting the challenge we have set forth. The Commission should report on its findings within three years and recommend any changes in government policy which it believes are desirable.

THE SHIP OPERATING INDUSTRY

My comments to this point have related to the building of merchant vessels. The other arm of our maritime policy is that which deals with the operation of these ships. Here, too, our new program offers several substantial improvements over the present system.

1. Operating differential subsidies should be continued only for the higher wage and insurance costs which American shipping lines experience. Subsidies for maintenance



NEW SHIPS FOR THE MERCHANT MARINE

Courtesy Matson Navigation Company

and repair and for subsistence should be eliminated. Instead of paying the difference between the wages of foreign seamen and actual wages on American ships, however, the government should compare foreign wages with prevailing wage levels in several comparable sectors of the American economy. A policy which ties subsidies to this wage index will reduce subsidy costs and provide an incentive for further efficiencies. Under this system, the operator would no longer lose in subsidies what he saves in costs. Nor would he continue to be reimbursed through subsidies when his wage costs rise to higher levels.

2. At the same time that we are reducing operating subsidies, it is appropriate that we eliminate the "recapture" provisions of the Merchant Marine Act of 1936. These provisions require subsidized lines to pay back to the government a portion of profits. If the recapture provisions are removed, the purpose for which they were designed will be largely accomplished by corporate taxes, which were at much lower rates when these provisions were instituted. We will also save the cost of administering recapture provisions.

3. Many bulk carriers presently receive indirect operating subsidies from the government because of the statutory requirement that certain government cargos must be shipped in United States vessels at premium rates. When the Department of Agriculture ships grain abroad, for example, it pays higher rates out of its budget than if it were allowed to ship at world market rates. We will propose a new, direct subsidy system for such carriers, thus allowing us to phase out these premium freight rates and reduce the costs of several nonmaritime government programs.

4. Ship operators now receiving operating differential subsidies are permitted to defer Federal tax payments on reserve funds set aside for construction purposes. This provision should be extended to include all qualified ship operators in the foreign trade, but only for well-defined ship replacement programs.

5. Past government policies and industry attitudes have not been conducive to cooperation between labor and management. Our program will help to improve this situation by ending the uncertainty that has characterized our past maritime policy. Labor and management must now use this opportunity to find ways of resolving their differences without halting operations. If the desired expansion of merchant shipping is to be achieved, the disruptive work stoppages of the past must not be repeated.

6. The larger capital investment necessary to construct a modern and efficient merchant fleet requires corresponding port development. I am therefore directing the Secretary of Commerce and the Secretary of Transportation to work with related industries and local governments in improving our port operations. We must take full advantage of technological advances in this area and we should do all we can to encourage greater use of intermodal transportation systems, of which these high-technology ships are only a part.

EQUAL EMPLOYMENT OPPORTUNITIES

The expansion of American merchant shipbuilding which this program makes possible will provide many new employment opportunities. All of our citizens must have equal access to these new jobs. I am therefore directing the Secretary of Commerce and the Secretary of Labor to work with industry and labor organizations to develop programs that will insure all minority groups their rightful place in this expansion.

RESEARCH AND DEVELOPMENT

We will also enlarge and redirect the maritime research and development activities of the Federal government. Greater emphasis will be placed on practical applications of technological advances and on the coordination of Federal programs with those of industry.

The history of American commercial shipping is closely intertwined with the history of our country. From the time of the Colonial fishing sloops, down through the great days of the majestic clipper ships, and into the new era when steam replaced the sail, the venturesome spirit of maritime enterprise has contributed significantly to the strength of the nation.

Our shipping industry has come a long way over the last three centuries. Yet, as one of the great historians of American seafaring, Samuel Eliot Morrison, has written: "all her modern docks and terminals and dredged channels will avail nothing, if the spirit perish that led her founders to 'trye all ports.'" It is that spirit to which our program of challenge and opportunity appeals.

It is my hope and expectation that this program will introduce a new era in the maritime history of America, an era in which our shipbuilding and ship operating

industries take their place once again among the vigorous, competitive industries of this nation.

RICHARD NIXON

The White House
October 23, 1969

MERCHANT MARINE ACT OF 1970

October 21, 1970[1]

To Amend the Merchant Marine Act of 1946

(Excerpts)

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That...the Merchant Marine Act, 1936 (46 U.S.C. 1101), is amended as follows:...

SEC. 9(2)..."If a qualified purchaser under the terms of this title desires to purchase a vessel to be constructed in accordance with an application for construction-differential subsidy under this title, the Secretary of Commerce may, in lieu of contracting to pay the entire cost of the vessel under section 502, contract to pay only construction-differential subsidy and payments for the cost of national defense features shall be based upon the lowest responsible domestic bid unless the vessel is constructed at a negotiated price as provided by section 502(a) or under a contract negotiated by the Secretary of Commerce as provided in section 502(b) in which event the construction-differential subsidy and payments for the cost of national defense features shall be based upon such negotiated price."...

SEC. 201. MARITIME ADMINISTRATOR.--There shall be at the head of the Maritime Administration...a Maritime Administrator....The Assistant Secretary of Commerce for Maritime Affairs shall, ex officio, be the Administrator. The Administrator shall perform such duties as the Secretary of Commerce shall prescribe."...

SEC. 41. (1) There is hereby established a commission to be known as the Commission on American Shipbuilding.... The Commission shall be composed of seven members appointed by the President....The President shall designate one of the members of the Commission as Chairman....

(7) The Commission shall review the status of the American shipbuilding industry, its problems and its progress toward increasing its productivity and reducing production costs. The Commission shall determine whether the American shipbuilding industry can achieve a level of productivity by the fiscal year 1976 such that the construction-differential subsidy payable under title V of the Merchant Marine Act, 1936, will not exceed 35 per centum of the United States construction cost. The Commission shall recommend a course of

action which should be taken on the part of Government and industry to improve the competitive situation of the United States shipbuilding industry in world shipbuilding markets and if the Commission shall determine that the construction-differential subsidy cannot be reduced to 35 per centum of the United States cost it shall recommend alternatives to the ship construction program then in effect....

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1. Public Law 91-469. 91st Congress. 84 Stat. 1018.

PRESERVING OPEN SPACES AND UNSPOILED BEACHES

Courtesy Hawaii Visitors Bureau

CHAPTER TWO

THE COASTAL ZONE AND CONTINENTAL SHELF

Introductory Note

The coastal zone and continental shelf have been receiving a good deal of attention in recent times, and rightly so. For this is the region where the land and ocean meet. The coastal lands are where society seeks recreational outlets by the sea. Here towns and cities have sprung up to take advantage of the transition between land and ocean. Here great ports are located where commerce transships from rail and road transport to ocean carriage. Along the coastlines much industry is located, often using raw materials brought from elsewhere by water, and again often despatching its products by water to other markets at home or abroad. Along the coast are also located tidal marshes, estuaries, and bays where large quantities of fish are reared in quiet backwaters. Offshore in the continental shelf vast resources of minerals--sand and gravel, manganese nodules, sulfur deposits, and rich fields of natural gas and oil--are being found.

The coastal land and waters, together with their offshore projection in the geological shelf and slope, are a vital focus of national interests closely related to economic and social well-being, the national defense, and the ongoing growth of industrial strength.

To the coastal spaces have come large complexes of industry that employ products of the sea, depend upon ocean-

borne commerce for resources and markets. And here in particular shipbuilding yards and naval bases are situated.

One hundred and fifty million people live in the thirty states adjacent to the seas and Great Lakes in this country. More than 45 percent of the populace live in counties touching these waters. Over half of the largest cities in the continent are situated by the oceans, on the Great Lakes, or on navigable waterways connected with them. And more than 70 percent of our industrial capacity is placed close to the coasts or the Great Lakes. Through coastal ports move over 850 million tons of commerce a year.

There is much truth in an observation of President Lyndon B. Johnson that "The scope, diversity, and significance of activities in the coastal zone are so broad that practically all institutions in our society have become involved in its use and management."

With the large numbers of people moving to the coasts for residence or vacation-time living, as well as the location of so much business and industry there, the pressures for land have become heavy. Land developers have laid their hands upon much of the remaining unoccupied land, including marshes. They aim to "improve" this and to open it up for construction by draining and filling low-lying areas. Meantime, public pressures for more parklands and for recreational areas for leisure-time use are forcing states and the national government to acquire added property for the public domain. Clearly, land-use policies need to be evolved at both the local, state

and national levels. The Stratton Commission strongly recommended the creation of new land-use management techniques for insuring balanced use of the remaining open spaces.

In the pages that follow sample legislative acts recently enacted by the states of Connecticut, New Jersey, and Michigan for the protection and management of coastal areas are given. These are representative of a rising tide of concern within states for conserving marginal areas and reflect the growing influence of conservation groups as well.

Legislation of this nature has been occasioned by widespread pollution, as well as uncontrolled draining, dredging, and land filling. Such activities heretofore have been largely unchecked, with little concern given to the broader implications for the preservation of wildlife or the ecological balance. The object of such legislation is to prevent further destruction and despoliation of the delicate wetland areas, and to give the states a voice in determining how these, and other coastal spaces, shall be handled for the common interest.

One example of what can happen was a dramatic reduction in shrimp catches following dredging operations in Tampa Bay, Florida, which destroyed millions of young shrimp. The backwaters of the bay served as a nursery for the young shrimp before they moved out into deeper water. Another project affecting the environment, the cross-Florida canal, was halted by President Nixon when one-third of the excavation was done in order to forestall further irreparable damage to the ecology. States are now striving to avert such mistakes

through developing long-range programs for the optimal use of coastal areas for economic and recreational purposes.

One of the readings in this chapter relates to an original suit filed in the United States Supreme Court by the Attorney General of the U.S. against the states bordering on the Atlantic coast, challenging their rights to ownership of submerged lands. The Federal Government argues that with the formation of the United States the former colonies relinquished ownership and title to offshore waters and the continental shelf to the United States of America. Being aware of the potentially rich natural resources of the shelf, some state governments have claimed that, as colonies, they were awarded extensive jurisdiction in the seas off their shores by Royal Patents, and that these rights were not given up when they joined the Union. Washington, on the other hand, insists that it inherited title to everything belonging to the colonies beyond low water. By the Submerged Lands Act of 1953 the Congress returned to the states "the title to and ownership of the submerged lands and natural resources lying in the Atlantic Ocean within the boundaries of said states, but not extending seaward more than three geographical miles from the ordinary low-water mark." This area is not in controversy. Rather it is the question of control of the seabed beyond the three-mile limit to the outer edge of the continental shelf which is of concern. The state of Maine has disclaimed any intent to exercise powers beyond the three-mile line as alleged by the U.S. Nonetheless, the suit has been referred by the Supreme

Court to a special Master for study.

Following the documents relating to the Federal suit, there appear regulations and orders issued by the United States Geological Survey governing mineral and drilling operations on the continental shelf. These were issued following the blowout of the Union Oil Company well in the Santa Barbara Channel to tighten up safety precautions in order to prevent repetitions of such disasters. These are within the authority given to the Geological Survey to regulate operations conducted in leasehold areas controlled by the Federal Government. Notwithstanding insistence upon the installation of storm chokes in the drilling columns, and other measures, two blowouts have occurred since Santa Barbara in the Gulf of Mexico off Louisiana resulting in serious oil spills. Episodes such as these, as well as the inability of petroleum operators and the Coast Guard to contain such spills when they occur, have led to a rising crescendo of complaint about ongoing drilling operations on the continental shelf and the harm being done to marine life with the large spills. Industry is seeking ways of reducing the hazards of offshore oil production, and some progress has been made in developing new techniques and apparatus for coping with spills. But there is no complete answer yet to the problem of oil in the sea, whether from blowouts or marine casualties.

This may be one of the risks that have to be taken for the sake of industrial progress and the higher standards of living which the revolution in energy fuels has made possible.

Nevertheless, the assertion made by Jacques Cousteau, French oceanographer, that pollution has already destroyed 40 percent of the living resources of the seas is a grim warning that society can ill afford to have unlimited quantities of municipal sewage, industrial wastes, acids and metals, as well as large quantities of petroleum, pouring into coastal waters and the high seas. Aside from the damage to marine life and private property, there is a general degradation of the environment taking place with the pollution. Policy planning must add these variables to the other inputs requiring consideration in how to handle the coastal zones and continental shelf in the coming decade.

Suggested References for Further Reading

Marine Science Affairs, 1970.

Chapter 3, "Enhancing the Benefits from the Coastal Zone."

Our Nation and the Sea.

Chapter 3, "Management of the Coastal Zone."

Teal, John and Mildred, *Life and Death of the Salt Marsh*. Boston: Atlantic Monthly Press, 1969.

Waste Management Concepts for the Coastal Zone. A Joint Study. Washington: National Academy of Sciences/National Academy of Engineering, 1970.

The following articles also touch on coastal preservation:

Gentry, R. Cecil, "Modifying the Greatest Storm on Earth--The Hurricane." *Underwater Science and Technology Journal*, Vol. 2, No. 4, December 1970, pp. 204-214.

Schaeffer, John, "Reviving the Great Lakes." *Saturday Review*, November 7, 1970, pp. 62-65.

Teclaff, Ludwick, "The Coastal Zone - Control over Encroachments into the Tidewater," *Journal of Maritime Law and Commerce*, Vol. 1, No. 2, January 1970, pp. 241-290.

STATE OF CONNECTICUT

AN ACT CONCERNING THE PRESERVATION OF WETLANDS AND TIDAL MARSH AND ESTUARINE SYSTEMS, 1969[1]

(Excerpts)

Section 1. The following words and phrases, as used in this act, shall have the following meanings: "Commissioner" means the commissioner of agriculture and natural resources; (2) "wetland" means those areas which border on or lie beneath tidal waters, such as, but not limited to, banks, bogs, salt marsh, swamps, meadows, flats, or other low lands subject to tidal action, including those areas now or formerly connected to tidal waters, and whose surface is at or below an elevation of one foot above local extreme high water;...(3) "regulated activity" means any of the following: Draining, dredging, excavation, or removal of soil, mud, sand, gravel, aggregate of any kind or rubbish from any wetland or the dumping, filling or depositing thereon of any soil, stones, sand, gravel, mud, aggregate of any kind, rubbish or similar material, driving of pilings, or placing of obstructions, whether or not changing the tidal ebb and flow....

Sec. 2. It is declared that much of the wetlands of this state has been lost or despoiled by unregulated dredging, dumping, filling and like activities and that the remaining wetlands of this state are all in jeopardy of being lost or despoiled by these and other activities; that such loss or despoliation will adversely affect, if not entirely eliminate, the value of such wetlands as sources of nutrients to finfish, crustacea and shellfish of significant economic value; that such loss or despoliation will destroy such wetlands as habitats for plants and animals of significant economic value and will eliminate or substantially reduce marine commerce, recreation and aesthetic enjoyment; and that such loss or despoliation will, in most cases, disturb the natural ability of tidal wetlands to reduce flood damage and adversely affect the public health and welfare; that such loss or despoliation will substantially reduce the capacity of such wetlands to absorb silt and will thus result in the increased silting of channels and harbor areas to the detriment of free navigation. Therefore, it is declared to be the public policy of this state to preserve the wetlands and to prevent the despoliation and destruction thereof.

Sec. 3. The commissioner shall promptly make an inventory of all tidal wetlands within the state. The boundaries of such wetlands shall be shown on suitable reproductions or aerial photographs....Such lines shall generally define the

areas that are at or below an elevation of one foot above local extreme high water. Such maps shall be prepared to cover entire subdivisions of the state as determined by the commissioner. Upon completion of the tidal wetlands boundary maps for each subdivision, the commissioner shall hold a public hearing....After considering the testimony given at such hearing and any other facts which may be deemed pertinent and after considering the rights of affected property owners and the purposes of this act, the commissioner shall establish by order the bounds of each of such wetlands....

Sec. 4. The commissioner shall appoint such hearing officers as may be necessary to carry out the purposes of this act.

Sec. 5. No regulated activity shall be conducted upon any wetland without a permit.

Sec. 6. Any person proposing to conduct or cause to be conducted a regulated activity upon any wetland shall file an application of a permit with the commissioner, in such form and with such information as the commissioner may prescribe. Such application shall include a detailed description of the proposed work and a map showing the area of wetland directly affected, with the location of the proposed work thereon, together with the names of the owners of record of adjacent land and known claimants of water rights in or adjacent to the wetland of whom the applicant has notice....No sooner than thirty days and not later than sixty days of the receipt of such application, the commissioner or his duly designated hearing officer shall hold a public hearing on such application....

Sec. 7. In granting, denying or limiting any permit the commissioner or his duly designated hearing officer shall consider the effect of the proposed work with reference to the public health and welfare, marine fisheries, shell-fisheries, wildlife, the protection of life and property from flood, hurricane and other natural disasters, and the public policy set forth in this act....In granting a permit the commissioner may require a bond in an amount and with surety and conditions satisfactory to it securing to the state compliance with the conditions and limitations set forth in the permit. The commissioner may suspend or revoke a permit if the commissioner finds that the applicant has not complied with any of the conditions or limitations set forth in the permit or has exceeded the scope of the work as set forth in the application. The commissioner may suspend a permit if the applicant fails to comply with the terms and conditions set forth in the application. The commissioner shall state upon his record, his findings and reasons for all actions taken pursuant to this

section. The commissioner shall cause notice of his order in issuance, denial, revocation or suspension of a permit to be published in a daily newspaper having a circulation in the town or towns wherein the wetland lies.

Sec. 8. An appeal may be taken by the applicant or any person or corporation, municipal corporation or interested community group other than the applicant who has been aggrieved by such order from the denial, suspension or revocation of a permit or the issuance of a permit or conditional permit within thirty days after publication of such issuance, denial, suspension or revocation of any said permit to the superior court for Hartford county. If the court finds that the action appealed from is an unreasonable exercise of the police power, it may set aside the order....

Sec. 9. Such appeal shall be brought by a complaint in writing, stating fully the reasons therefor with a proper citation, signed by a competent authority, and shall be served at least twelve days before the return date upon the commissioner and upon all parties having an interest adverse to the appellant....

Sec. 10. Any person who knowingly violates any privision of this act shall be liable to the state for the cost of restoration of the affected wetland to its condition prior to such violation insofar as that is possible, and shall forfeit to the state a sum not to exceed one thousand dollars, to be fixed by the court for each offense. Each violation shall be a separate and distinct offense, and, in the case of a continuing violation, each day's continuance thereof shall be deemed to be a separate and distinct offense. The attorney general, upon complaint of the commissioner, shall institute a civil action to recover such forfeiture. The superior court shall have jurisdiction in equity to restrain a continuing violation of this act at the suit of any person or agency of state or municipal government.

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1. Public Act 695. Effective October 1, 1969.

ACT RELATING TO DREDGING, FILLING, ALTERING OR POLLUTING COASTAL WETLANDS

State of New Jersey, 1970[1]

AN ACT concerning the protection of natural resources in coastal wetlands, providing for the designation by the Commissioner of Environmental Protection of certain coastal wetlands after public hearing, and requiring permits from the commissioner prior to the dredging, removing, filling or otherwise altering or polluting coastal wetlands.

BE IT ENACTED *by the Senate and General Assembly of the State of New Jersey:*

1. a. The Legislature hereby finds and declares that one of the most vital and productive areas of our natural world is the so-called "estuarine zone," that area between the sea and the land; that this area protects the land from the force of the sea, moderates our weather, provides a home for water fowl and for 2/3 of all our fish and shellfish, and assists in absorbing sewage discharge by the rivers of the land; and that in order to promote the public safety, health and welfare, and to protect public and private property, wildlife and marine fisheries and the natural environment, it is necessary to preserve the ecological balance of this area and prevent its further deterioration and destruction by regulating the dredging, filling, removing or otherwise altering or polluting thereof, all to the extent and in the manner provided herein.

b. The Commissioner of Environmental Protection shall, within 2 years of the effective date of this act, make an inventory and maps of all tidal wetlands within the State. The boundaries of such wetlands shall generally define the areas that are at or below high water and shall be shown on suitable maps, which may be reproductions or aerial photographs....

2. The Commissioner may from time to time, for the purpose of promoting the public safety, health and welfare, and protecting public and private property, wildlife and marine fisheries, adopt, amend, modify or repeal orders regulating, restricting or prohibiting dredging, filling, removing or otherwise altering, or polluting, coastal wetlands. For the purposes of this act the term "coastal wetlands" shall mean any bank, marsh, swamp, meadow, flat or other low land subject to tidal action in the State of New

Jersey along the Delaware bay and Delaware river, Raritan bay, Barnegat bay, Sandy Hook bay, Shrewsbury river including Navesink river, Shark river, and the coastal inland waterways extending southerly from Manasquan Inlet to Cape May Harbor, or at any inlet estuary of tributary waterway, including those areas now or formerly connected to tidal waters whose surface is at or below an elevation of 1 foot above local extreme high water and upon which may grow or is capable of growing some, but not necessarily all, of the following: Salt meadow grass..., spike grass..., black grass..., salt-marsh grass....The term "coastal wetlands" shall not include any land or real property subject to the jurisdiction of the Hackensack Meadowlands Development Commission pursuant to the provisions of P.L. 1968, chapter 404, sections 1 through 84....

3. The commissioner shall, before adopting, amending, modifying or repealing any such order, hold a public hearing thereon in the county in which the coastal wetlands to be affected are located, giving notice thereof to each owner having a recorded interest in such wetlands by mail at least 21 days prior thereto...

4. a. For purposes of this section "regulated activity" includes but is not limited to draining, dredging, excavation or removal of soil, mud, sand, gravel, aggregate of any kind or depositing or dumping therein any rubbish or similar material or discharging therein liquid wastes, either directly or otherwise, and the erection of structures, drivings of pilings, or placing of obstructions, whether or not changing the tidal ebb and flow. "Regulated activity" shall not include continuance of commercial production of salt hay or other agricultural crops or activities conducted under section 7 of this act.

b. No regulated activity shall be conducted upon any wetland without a permit.

d. In granting, denying or limiting any permit the commissioner shall consider the effect of the proposed work with reference to the public health and welfare, marine fisheries, shell fisheries, wildlife, the protection of life and property from flood, hurricane and other natural disasters, and the public policy set forth in section 1. a. of this act.

5. The Superior Court shall have jurisdiction to restrain violations of orders issued pursuant to this act....

6. ...If the court finds the order or permit to be an unreasonable exercise of the police power, the court shall

enter a finding that such order or permit shall not apply to the land of the plaintiff;...

9. Any person who violates any order by the commissioner, or violates any of the provisions of this act, shall be liable to the State for the cost of restoration of the affected wetland to its condition prior to such violation insofar as that is possible, and shall be punished by a fine of not more than $1,000.00 to be collected in accordance with the provisions of the Penalty Enforcement Law (N.J.S. 2A:58-1 et seq.)....

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1. Public Law 1970, Chapter 272. State of New Jersey. Approved November 5, 1970.

STATE OF MICHIGAN

SHORELANDS PROTECTION AND MANAGEMENT ACT OF 1970[1]

AN ACT to provide for the protection and management of shorelands; to provide for zoning and zoning ordinances; to provide certain powers and duties; to authorize certain studies; to provide for development of certain plans; to promulgate rules; and to provide for certain remedies for violations of rules.

The People of the State of Michigan enact:

Sec. 1. This act shall be known and may be cited as the "shorelands protection and management act of 1970."

Sec. 2. As used in this act:

(a) "Commission" means the water resources commission.

(b) "Connecting waterway" means the St. Marys river, Detroit river, St. Clair river, Keeweenaw waterway or Lake St. Clair.

(c) "Department" means the department of natural resources.

(d) "Environmental area" means an area of the shoreland which is determined by the department on the basis of studies and surveys to be necessary for the preservation and maintenance of fish and wildlife.

(e) "High risk area" means an area of the shoreland which is determined by the commission on the basis of studies and surveys to be subject to erosion.

(f) "Land to be zoned" means the land in this state which borders or is adjacent to a Great Lake or a connecting waterway situated within 1,000 feet landward from the ordinary high water mark as defined in section 2 of Act No. 247 of the Public Acts of 1955, as amended, being section 322.702 of the Compiled Laws of 1948.

(g) "Local agency" means a county, city, village or township.

(h) "Shoreland" means the land, water and land beneath the water which is in close proximity to the shoreline of a Great Lake or a connecting waterway.

(i) "Shoreline" means that area of the shorelands where land and water meet.

Sec. 3. Within 1 year after the effective date of this act, the commission shall make or cause to be made an engineering study of the shoreland to determine:

(a) The high risk areas.

(b) The areas of the shorelands which are platted or have buildings or structures and which require protection from erosion.

(c) The type of protection which is best suited for an area determined in subdivision (b).

(d) A cost estimate of the construction and maintenance for each type of protection determined in subdivision (c).

Sec. 4. Within 1 year after the effective date of this act the department shall make or cause to be made an environmental study of the shoreland to determine:

(a) The environmental areas.

(b) The areas of marshes along and adjacent to the shorelands.

(c) The marshes and fish and wildlife habitat areas which should be protected by shoreland zoning.

Sec. 5. The commission in accordance with section 3 shall determine if the use of a high risk area shall be regulated to prevent property loss or if suitable methods of protection shall be installed to prevent property loss. The commission shall notify a local agency of its determinations and recommendations relative to a high risk area which is in a local agency.

Sec. 6. The department in accordance with section 4 shall notify a local agency of the existence of any environmental area which is in a local agency and shall recommend to the commission appropriate use regulations necessary to protect an environmental area.

Sec. 7. Within 3 years after the effective date of this act a county, pursuant to rules promulgated under section 12 and Act No. 183 of the Public Acts of 1943, as amended...may zone any shoreland and land to be zoned which is in the county.

Sec. 8. Within 3 years after the effective date of this act a city or village...may zone any shoreland and land to be zoned which is in the city or village.

Sec. 9. Within 3 years after the effective date of this act a township...may zone any shoreland and land to be zoned which is in the township.

Sec. 10. An existing zoning ordinance or a zoning ordinance or a modification or amendment thereto which regulates a high risk area or an environmental area shall be submitted to the commission for approval or disapproval. The commission shall determine if the ordinance, modification or amendment adequately prevents property damage or prevents damage to an environmental area or a high risk area. If an ordinance, modification or amendment is disapproved by the commission, it shall not have force or effect until modified by the local agency and approved by the commission.

Sec. 11. (1) The commission, in order to regulate the uses and development of high risk areas and environmental areas and to implement the purposes of this act, shall promulgate rules in accordance with and subject to the provisions of Act No. 306 of the Public Acts of 1969, being sections 24.201 to 24.313 of the Compiled Laws of 1948.

(2) A circuit court upon petition and a showing by the commission that a violation of a rule promulgated under subsection (1) exists, shall issue any necessary order to the defendant to correct the violation or to restrain the defendant from further violation of the rule.

Sec. 12. (1) Within 18 months after the effective date of this act the commission shall, in compliance with the purposes of this act, prepare a plan for the use and management of shoreland. The plan shall include but not be limited to:

(a) An inventory and identification of the use and development characteristics of the shoreland; the general physical and man-influenced shoreline features; the existing and proposed municipal and industrial water intakes and sewage and industrial waste outfalls; and high risk areas and environmental areas.

(b) An inventory of existing federal, state, regional and local plans for the management of the shorelands.

(c) An identification of problems associated with shoreland use, development, conservation and protection.

(d) A provision for a continuing inventory of shoreland and estuarine resources.

(e) Provisions for further studies and research pertaining to shoreland management.

(f) Identification of the high risk and environmental areas which need protection.

(g) Recommendations which shall:

(i) Provide procedures for the resolution of conflicts arising from multiple use.

(ii) Foster the widest variety of beneficial uses.

(iii) Provide for the necessary enforcement powers to assure compliance with plans and to resolve conflicts in uses.

(iv) Provide criteria for the protection of shorelands from erosion or inundation, for aquatic recreation, for shore growth and cover, for low lying lands and for fish and game management.

(v) Provide criteria for shoreland layout for residential, industrial and commercial development, and shoreline alteration control.

(vi) Provide for building setbacks from the water.

(vii) Provide for the prevention of shoreland littering, blight harbor development and pollution.

(viii) Provide for the regulation of mineral exploration and production.

(ix) Provide the basis for necessary future legislation pertaining to efficient shoreland management.

(2) Upon completion of the plan, the commission shall hold regional public hearings on the recommendations of the plan. Copies of the plan shall be submitted with the hearing records to the governor and the legislature.

Sec. 13. The department and commission may enter into an agreement jointly or separately or to make contracts with the federal government, other state agencies, local agencies or private agencies for the purposes of making studies and plans for the efficient use, development, preservation or

management of the state's shoreland resources. Any study, plan or recommendation shall be available to a local agency in this state which has shoreland. The recommendations and policies set forth in the studies or plans shall serve as a basis and guideline for establishing zoning ordinances and developing shoreland plans by local agencies and the commission.

Sec. 14. For the purposes of this act, the department and the commission may receive, obtain or accept any moneys, grants or grants-in-aid for the purpose of research, planning or management of shoreland.

Sec. 15. It is the intent of the legislature that any additional cost of the implementation of section 3 of this act shall only be financed from federal funds.

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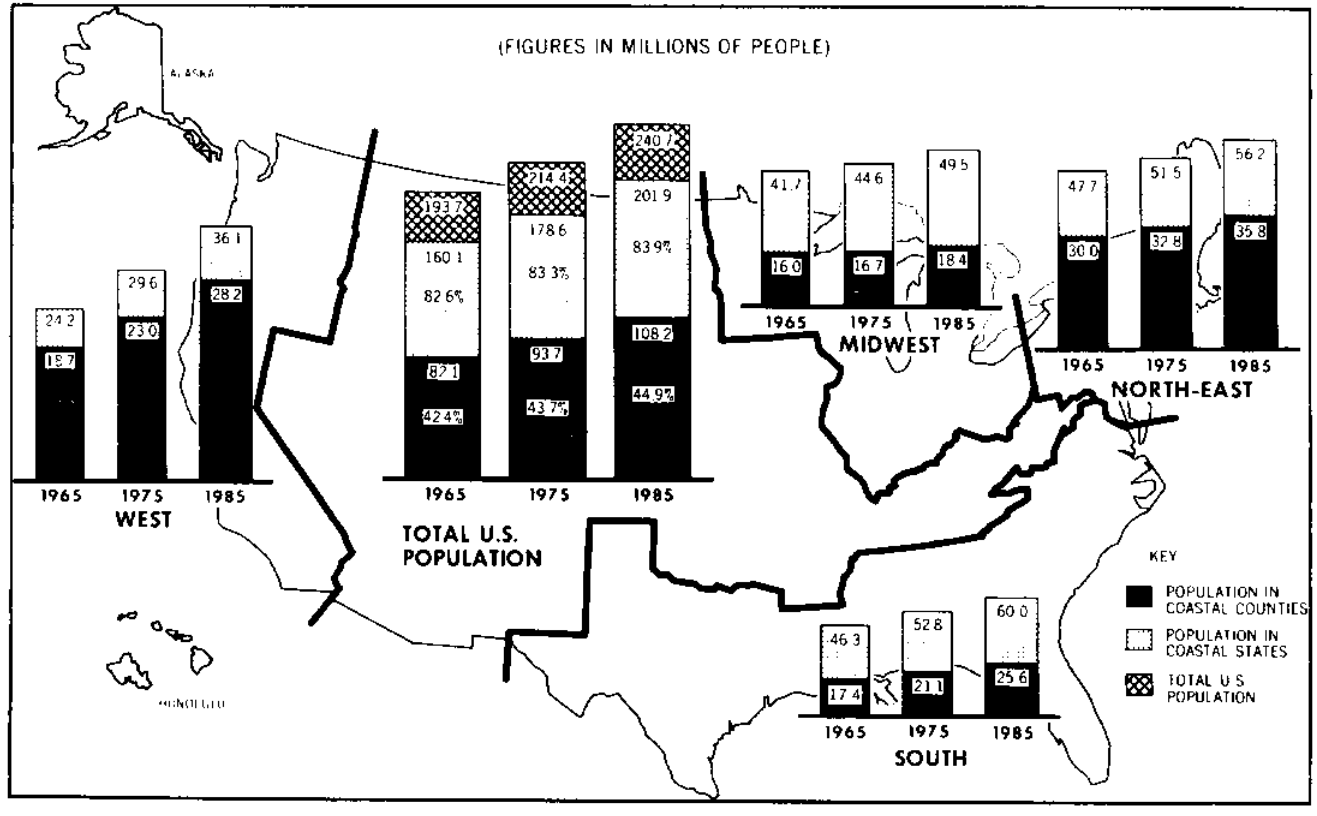
1. 75th Legislature, Regular Session, 1970.

Population Growth in Nation's Coastal Zone



Courtesy Marine Sciences Council

OFFSHORE JURISDICTION IN THE ATLANTIC OCEAN

SUPREME COURT OF THE UNITED STATES[1]

United States of America, Plaintiff

vs.

States of Maine, New Hampshire, Massachusetts, Rhode Island, New York, New Jersey, Delaware, Maryland, Virginia, North Carolina, South Carolina, Georgia, and Florida.

COMPLAINT

FIRST CAUSE OF ACTION

(Against the State of Maine)

(Excerpts)

I

The jurisdiction of this Court is invoked under Article III, Section 2, paragraph 2, of the Constitution of the United States, and Title 28, United States Code, Section 1251(b)(2).

II

At all times herein material, the United States was and, except as set forth in Paragraph III hereof, has ever since been and now is entitled, to the exclusion of the defendant State, to exercise sovereign rights over the seabed and subsoil underlying the Atlantic Ocean, extending seaward from the ordinary low-water mark and from the outer limit of inland waters on the coast to the outer edge of the continental shelf, for the purpose of exploring the area and exploiting its natural resources; and the State, except as set forth in Paragraph III hereof, has never had and does not now have any title thereto or property interest therein.

III

On May 22, 1953, by Public Law 31 of the 83rd Congress, known as the Submerged Lands Act, 67 Statutes at Large 29, the United States granted to the State the title to and ownership of the submerged lands and natural resources lying in the Atlantic Ocean within the boundaries of said State, but not extending seaward more than three geographic miles from

the ordinary low-water mark or from the outer limit of inland waters; and by said Act the United States released its claim for money or damages arising out of any operations by the State or under its authority in the area so granted.

IV

The State claims some right, title or interest in the seabed and subsoil of the continental shelf underlying the Atlantic Ocean more than three geographic miles seaward from the ordinary low-water mark and from the outer limit of inland waters, adverse to the United States.

V

In the exercise of the rights claimed by it, the State has purported to grant exclusive oil and gas exploration and exploitation rights in approximately 3.3 million acres of land submerged in the Atlantic Ocean in the area in controversy.

VI

By reason of the foregoing, the United States is now entitled, to the exclusion of the defendant State, to exercise sovereign rights over the seabed and subsoil underlying the Atlantic Ocean, lying more than three geographical miles seaward from the ordinary low-water mark and from the outer limit of inland waters on the coast, extending seaward to the outer edge of the continental shelf, for the purpose of exploring the area and exploiting its natural resources, and is entitled to an accounting for all sums of money derived by the State from the area lying more than three geographical miles seaward from the ordinary low-water mark and from the outer limit of inland waters on the coast, which are properly owing to the United States.

VII

On August 7, 1953, by Public Law 212 of the 83rd Congress, known as the Outer Continental Shelf Lands Act, 67 Statutes at Large 462, 468, Congress declared the "urgent need for further exploration and development of the oil and gas deposits of the submerged lands of the Outer Continental Shelf" and provided that such need should be met by the issuance of mineral leases in that area by the Secretary of the Interior to private operators. By its conduct and claims described in Paragraphs IV and V hereof the State is interfering with and obstructing, or threatens to obstruct the orderly and effective exploration, leasing, and development of said mineral resources, and will continue to do so and will

thereby cause great and irreparable injury to the United States unless the rights of the United States are declared and established by the Court. The United States has no other adequate remedy.

VIII

The original jurisdiction of this Court is invoked because there is urgent need for prompt and final settlement of the controversy, because the fundamental question in issue relates to aspects of the foreign policy of the United States which are most appropriately a subject for original adjudication by this Court, and because only in this Court is it possible to join all the defendant States whose participation is necessary to the orderly adjudication of issues in which they have a common interest....

* * *

BRIEF IN SUPPORT OF MOTION

* * *

STATEMENT

The purpose of this litigation is to establish, as against the defendant States, the rights of the United States in the lands and natural resources of the bed of the Atlantic Ocean, beginning at a line three geographical miles seaward from the ordinary low-water mark and from the outer limit of inland waters and extending seaward to the edge of the continental shelf.

The thirteen original colonies did not separately acquire ownership of the three-mile belt in the adjacent sea or of the soil under it. Such ownership was acquired by the national government after the formation of the Union and the federal government rather than the States had paramount rights in and power over the three-mile belt in the marginal sea, including full dominion over the underlying mineral resources. *United States v. California*, 332 U.S. 19.

Under Presidential Proclamation No. 2667, dated September 28, 1945, 59 Stat. 884, the United States claimed the natural resources of the subsoil and seabed of the Continental Shelf beneath the high seas but contiguous to the coast

of the United States. In 1953, by enacting the Submerged Lands Act, 67 Stat. 29, 43 U.S.C. 1301-1315, Congress gave the defendant States ownership of the bed of the three-mile territorial sea within their boundaries.* Beyond that the situation in the Atlantic Ocean remains as it was. In the same year, Congress passed the Outer Continental Shelf Lands Act, 67 Stat. 462, 43 U.S.C. 1331-1343. This Act asserted jurisdiction of the United States over the Outer Continental Shelf. On March 24, 1961, by ratifying the Convention on the Continental Shelf, 15 U.S.T. (Pt. 1) 471, the United States affirmed the rights of a coastal nation over the Continental Shelf to explore and exploit its natural resources.

Maine claims title to submerged lands extending 100 miles into the Atlantic Ocean on the basis of provisions contained in a number of colonial charters. Relying on this claim, Maine has issued a permit purporting to grant exclusive oil and gas exploration and exploitation rights in approximately 3.3 million acres of these submerged areas in the Atlantic Ocean, more than three miles from the coast. The other defendant States have asserted that the same or similar charter provisions entitle them to submerged lands and resources of the continental shelf more than three miles from the coast in the Atlantic Ocean. To permit complete adjudication of these common claims, we have joined as defendants all the Atlantic Coast States.

ANSWER OF THE STATE OF MAINE[2]

Comes now the sovereign State of Maine (hereinafter for brevity called "Maine"), principal defendant in this cause, by and through its Attorney General,...[and denies each allegation contained in the United States *First Causee of Action*, numbered paragraphs I through VIII above].

AFFIRMATIVE DEFENSE

By way of affirmative defense, Maine alleges that as successor in title to certain grantees of the Crown of England,

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*Section 4 of the Submerged Lands Act, 43 U.S.C. 1312, confirmed the boundary of each of the original States as a line three geographical miles distant from its coast line, and approved and confirmed past or future claims to this distance by other States.

Maine is now, and ever since its admission to the Union has been, entitled to exercise dominion and control over the exploration and development of such natural resources as may be found in, on or about the seabed and subsoil underlying the Atlantic Ocean adjacent to its coast line to the exclusion of any other political entity whatsoever, including the Plaintiff (subject, however, to the limits of national seaward jurisdiction established by the Plaintiff); that the power to exercise dominion and control is not prohibited to Maine by the Constitution of the United States, has never in fact or by operation of law been delegated by Maine to the Plaintiff; and that any attempt by the Plaintiff to assert such power with respect to Maine violates the provisions of the Tenth Amendment to the Constitution of the United States and is void and of no effect.

PRAYER

WHEREFORE, Maine prays that a decree be entered that, as against Maine, the Plaintiff possesses no right to exercise dominion and control over the exploration and development of such natural resources as may be found in, on and about the sea bed and subsoil underlying the Atlantic Ocean adjacent to its coastline and to the limit of national seaward jurisdiction; and for its cost....

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1. The United States complaint was placed before the Court on April 1, 1969. After the filing of arguments for and opposed to the complaint the matter was referred by the Court to a special Master for examination.

2. Formal answer to complaint and First Cause of Action filed in the U.S. Supreme Court, September 17, 1969.

Reprinted from International Legal Materials, Vol. 8, No. 4, July 1969, pp. 850-855, and ibid., Vol. 8, No. 6, November 1969, pp. 1245-1247, by permission of the American Society of International Law.

REGULATIONS GOVERNING MINERAL OPERATIONS IN LEASED AREAS OF OUTER CONTINENTAL SHELF

UNITED STATES GEOLOGICAL SURVEY, 1969[1]

(Extracts)

§250.1 Purpose and authority.

The Outer Continental Shelf Lands Act enacted on August 7, 1953 (67 Stat. 462), referred to in this part as "the act," authorizes the Secretary of the Interior at any time to prescribe and amend such rules and regulations, to be applicable to all operations conducted under a lease issued or maintained under the provisions of the act, as he determines to be necessary and proper to provide for the prevention of waste and conservation of the natural resources of the Outer Continental Shelf, and the protection of correlative rights therein....

§250.2 Definitions.

...(d) *Outer Continental Shelf.* All submerged lands (1) which lie seaward and outside of the area of lands beneath navigable waters as defined in the Submerged Lands Act (67 Stat. 29) and (2) of which the subsoil and seabed appertain to the United States and are subject to its jurisdiction and control....

§250.10 Jurisdiction.

Subject to the supervisory authority of the Secretary and the Director, drilling and production operations, handling and measurement of production, determination and collection of rental and royalty, and, in general, all operations conducted on a lease by or on behalf of a lessee are subject to the regulations in this part, and are under the jurisdiction of the supervisor for any region as delineated by the Director....

§250.12 Regulation of operations.

(a) *Duties of supervisor.* The supervisor in accordance with the regulations in this part shall inspect and regulate all operations and is authorized to issue OCS Orders and other orders and rules necessary for him to effectively supervise operations and to prevent damage to, or waste or, any natural resource, or injury to life or property. The supervisor shall receive, and shall, when in his judgment it is necessary, consult with or solicit advice from lessees, field officials of interested Departments and agencies, including the Fish and

Wildlife Service, Federal Water Pollution Control Administration, Bureau of Land Management, Coast Guard, Department of Defense, Corps of Engineers, and representatives of State and local governments.

(b) *Departures from orders.* (1) The supervisor may prescribe or approve in writing, or orally with written confirmation, minor departures from the requirements of OCS Orders and other orders and rules issued pursuant to (a) of this section, when such departures are necessary for the proper control of a well, conservation of natural resources, protection of aquatic life, protection of human health and safety, property, or the environment....

(c) *Emergency suspensions.* The supervisor is authorized, either in writing or orally with written confirmation, to suspend any operation, including production, which in his judgment threatens immediate, serious, or irreparable harm or damage to life, including aquatic life, to property, to the leased deposits, to other valuable mineral deposits or to the environment. Such emergency suspension shall continue until in his judgment the threat or danger has terminated.....

(3) The supervisor is authorized by written notice to the lessee to suspend any operation, including production, for failure to comply with applicable law, the lease terms, the regulations in this part, OCS Orders, or any other written order or rule including orders for filing of reports and well records or logs within the time specified....

§250.15 Drilling and abandonment of wells.

The supervisor shall demand drilling in accordance with the terms of the lease and of the regulations in this part; and shall require plugging and abandonment, in accordance with such plan as may be approved or prescribed by him, of any well no longer used or useful, and upon failure to secure compliance with such requirement, perform the work at the expense of the lessee, expending available public funds, and submit such report as may be needed to furnish a basis for appropriate action to obtain reimbursement.

§250.16 Well potentials and permissible flow.

The supervisor is authorized to specify the time and method for determining the potential capacity of any well and to fix, after appropriate notice, the permissible production of any such well that may be produced when such action is necessary to prevent waste or to conform with such proration rules, schedules, or procedures as may be established by the Secretary.

§250.17 Well locations and spacing.

The supervisor is authorized to approve well locations and well spacing programs necessary for proper development giving consideration to such factors as the location of drilling platforms, the geological and reservoir characteristics of the field, the number of wells that can be economically drilled, the protection of correlative rights, and minimizing unreasonable interference with other uses of the Outer Continental Shelf area.

§250.18 Rights of use and easement.

(a) In addition to the rights and privileges granted to a lessee under any lease issued or maintained under the act, the supervisor may grant such lessee, subject to such reasonable conditions as said supervisor may prescribe, the right of use or an easement to construct and maintain platforms, fixed structures, and artificial islands, and to use the same for carrying on operations, including drilling, directional drilling, producing, treating, handling, and storing production, and housing personnel engaged in operations, not only in connection with the lease on which the platform, structure, or island, is situated, but for the conduct of operations on any other lease, State or Federal....

§250.19 Platforms and pipelines.

(a) The supervisor is authorized to approve the design, other features, and plan of installation of all platforms, fixed structures, and artificial islands as a condition of the granting of a right of use....

§250.20 Rentals, royalties, and other payments.

The supervisor shall determine pursuant to the lease and regulations the rental and the amount or value of production accruing to the lessor as royalty, the loss through waste or failure to drill and produce protection wells on the lease, and the compensation due to the lessor as reimbursement for such loss....

§250.39 Samples, tests, and surveys.

(a) The lessee, when required by the supervisor, shall make adequate tests or surveys in an acceptable manner, without cost to the lessor, to determine the reservoir energy; the presence, quantity and quality of oil, gas, sulphur, other mineral deposits, or water; the amount and direction of deviation of any well from the vertical; or the formation,

casing, tubing, or other pressures.

(b) The lessee shall take such formation samples or cores to determine the identity and character of any formation in accordance with reasonable requirements of the supervisor prescribed at the time of approval of the notice to drill or redrill any well.

§250.40 Directional survey.

(a) An angular deviation and directional survey shall be made of the finished hole of each well directionally drilled....

§250.41 Control of wells.

(a) *Drilling wells.* The lessee shall take all necessary precautions to keep all wells under control at all times, shall utilize only personnel trained and competent to drill and operate such wells, and shall utilize and maintain materials and high-pressure fittings and equipment necessary to insure the safety of operating conditions and procedures. The design of the integrated casing, cementing, drilling mud, and blowout prevention program shall be based upon sound engineering principles, and must take into account the depths at which various fluid or mineral-bearing formations are expected to be penetrated, and the formation fracture gradients and pressures expected to be encountered, and other pertinent geologic and engineering data and information about the area....

(3) *Blowout prevention equipment.* The lessee shall install, use, and test blowout preventers and related well-control equipment in a manner necessary to prevent blowouts. Such installation, use and testing must meet the standards or requirements prescribed by the supervisor; provided, however, in no event shall the lessee conduct drilling below the conductor string of casing until the installation of at least one remotely controlled blowout preventer and equipment shall be pressure tested when installed, after each string of casing is cemented, and at such other times as prescribed by the supervisor. Blowout preventers shall be activated frequently to test for proper functioning as prescribed by the supervisor....

§250.43 Pollution and waste disposal.

(a) The lessee shall not pollute land or water or damage the aquatic life of the sea or allow extraneous matter to enter and damage any mineral- or water-bearing formation.

The lessee shall dispose of all liquid and nonliquid waste materials as prescribed by the supervisor. All spills or leakage of oil or waste materials shall be recorded by the lessee and, upon request of the supervisor, shall be reported to him. All spills or leakage of a substantial size or quantity, as defined by the supervisor, and those of any size or quantity which cannot be immediately controlled also shall be reported by the lessee without delay to the supervisor and to the Coast Guard and the Regional Director of the Federal Water Pollution Control Administration....

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1. Revised Title 30, Code of Federal Regulations, 1969.

ORDER REGARDING DRILLING AND OTHER OPERATING PROCEDURES ON CONTINENTAL SHELF OFF CALIFORNIA

United States Geological Survey

OCS Order No. 10, March 28, 1969[1]

1. The applicability of OCS Order No. 2, March 31, 1965, to operations off California is terminated and the following requirements substituted therefor. Each Application to Drill (Form 9-331-C) submitted for approval shall include the casing, cement, mud, and blowout preventer programs for the well which shall comply with these requirements....

A. Well Casing and Cementing. All wells shall be cased and cemented in a manner which will prevent communication between separate fluid-bearing strata through the well bore, directly or indirectly, except hydrocarbon bearing zones to be commingled, and will prevent release of fluids or hydrocarbons from any stratum through the well bore, directly or indirectly, into the ocean. Casing strings shall be installed in sufficient number and be of adequate size, strength, and of suitable material to withstand collapse, bursting, tensile, and other stresses.

Casing program design safety factors shall be of sufficient magnitude to provide optimum protection while drilling and to assure safe operations for the life of the well....

(1) Drive or Structural Casing. This casing shall extend to a depth of approximately 100 feet below the ocean floor to provide hole stability for initial drilling operations. This casing may be set by driving or drilling in to this depth....In case this string is set by drilling, the drilling fluid shall be limited to ocean water to avoid pollution. This casing may be omitted on fixed platforms if there is geological evidence that hydrocarbons will not be encountered while drilling the hole for the conductor casing and is not needed for hole stability.

(2) Conductor Casing (First String). This casing shall be set before drilling into shallow

formations known to contain oil or gas or, if unknown, upon encountering such formations. Conductor casing ordinarily shall extend to a minimum depth of 300 feet or to a maximum depth of 500 feet below the ocean floor or to such greater depth as may be necessary to extend into a competent (consolidated) formation....

(3) Surface Casing--General Principles. Surface casing shall be set in a manner which will protect fresh water sands and provide well control until the next string of casing is set. Determination of proper surface casing setting depth shall be based on all geologic factors including the presence or absence of hydrocarbons in the interval above the surface casing setting depth and water depth on a well-for-well basis. The surface casing setting depth and that of subsequent casing strings shall take into account formation fracture gradients and hydrostatic pressure to be contained within the well bore....

(4) Intermediate Casing (Fourth String). A string of intermediate casing shall be set when required by well conditions. Sufficient cement shall be used to cover and isolate all zones behind the pipe which contain oil, gas or fresh water. When a liner is utilized as an intermediate string, the pipe overlap and cement procedure used shall be tested by a fluid entry or pressure test to insure a seal between the liner top and next higher string and this test shall be witnessed by a Geological Survey representative.

(5) Production Casing. Production casing shall be set prior to completion for production. The production string shall be cemented in a manner which will cover or isolate all zones which contain oil, gas, or fresh water....

(6) All casing strings except the drive or structural casing will be pressure tested to 2/10 psi per foot of depth (but to a minimum of 200 psi), or such other pressure test as may be approved, prior to drilling the plug after cementing....

(7) Requests for major variances from the requirements of (1) through (6) above cannot be acted on at the field level but must be submitted to the headquarters office of the Geological Survey for review and action.

B. Blowout Prevention

(1) Blowout Prevention Equipment. Blowout preventers and related well control equipment shall be installed, used, and tested in a manner which will prevent blowouts. Blowout prevention equipment adequate to prevent blowouts shall be installed before drilling below the Conductor Casing (First String) as indicated below and shall be maintained ready for use until drilling operations have been completed. drilling below the Conductor Casing, at least one remotely controlled blowout preventer will be installed with provisions for circulating the drilling fluid to the drilling structure.

During drilling operations below the Surface Casing (Second String) the blowout preventer equipment shall include a minimum of (a) three remotely controlled blowout preventers of adequate capacity....

Blowout preventers and related control equipment shall be pressure tested when installed, before drilling out after each string of casing is cemented and not less than once each week while drilling. Blowout preventers shall be actuated to test proper functioning at least once each day while drill pipe is in use. All blowout preventer tests shall be recorded on the driller's log. A blowout prevention drill will be conducted once each week for each drilling crew to insure that all equipment is operational and that crews are properly trained to carry out emergency duties....

In addition to the top Kelly cock a safety valve shall be installed at the bottom of the Kelly of such design that it can be run through the blowout preventers. The bore hole shall be kept full of mud at all times....

C. Mud Program. The characteristics, use, and testing of drilling mud and the conduct of related drilling procedures shall be such as will prevent the blowout of any well. Sufficient quantities of mud having the characteristics required to prevent blowouts shall be maintained readily accessible for use.

Mud testing equipment shall be maintained on the drilling platform at all times and mud tests shall be performed frequently....

2... All wells completed for flowing production shall be equipped with an approved storm choke or similar subsurface safety device which shall be installed in the tubing to prevent escape of oil, gas, or other fluid into the ocean in the event of damage to the well or its equipment. Such equipment shall be installed and tested at regular intervals at a depth of 100 feet or greater below the ocean floor....

Artificial lift equipment required for non-flowing wells must be of a type that will automatically shut-down and not cause escape of oil, gas or other fluid into the ocean, in the event of damage to the well. Safety valves shall be installed at each well head on platforms and tested at regular intervals. All oil and gas gathering lines shall have check valves at the flowline manifold assembly....

3. Gathering Pipelines. Production from existing wells and commencement of producing operations from new wells will not be authorized until all gathering pipelines which transport oil, gas, condensate, or other oil field fluids from a well or platform to the point of sale have been inspected. The inspection shall confirm that all such lines have in good working order (1) automatically controlled shut-off valves, (2) properly engineered corrosion protection, (3) necessary check valves, and (4) such other safety equipment which will prevent spillage of oil, gas, and other fluids into the ocean.

4. Inspections. Inspections, both scheduled and unannounced, will be conducted frequently by Geological Survey personnel. Failure to permit inspection or to comply with all applicable operating regulations will result in immediate suspension of operations and further actions as provided in the lease and applicable regulations.

5. Production Platform Requirements.

Production platforms will have the following safety and anti-pollution devices installed and in proper operating condition:

(1) Gas detector and alarm system at strategic locations on platforms.

(2) Approved firefighting system.

a. Automatic sprinkler system in well bay areas.

b. Closed loop firewater system with standby firefighting pump.

c. Portable fire extinguishers located in strategic areas.

(3) High and low level or pressure alarms and shut-down devices in all production vessels and water separation devices.

(4) Remote and local automatic platform and well shut-down devices.

(5) High and low pressure oil pipeline alarm and control devices to shut down shipping pumps and to shut in all wells in event of actuation.

(6) Approved sewage disposal system.

(7) Curbs, gutters, and drains in all deck areas to collect contaminates for pumping to shore for treatment.

(8) Auxiliary power supply equipment.

(9) Approved waste water handling and disposal system of the agency having jurisdiction.

6. Pollution Control Equipment.

Standby pollution control containment and removal equipment shall be maintained on or immediately available to each platform, floating drilling ship, and floating platform. This equipment shall include inflatable or other acceptable booms, skimming apparatus, and approved chemical dispersants, to be operational in the vicinity of the platform or floating drilling rig. All equipment shall be available prior to the commencement of drilling operations. The equipment and plan of containment shall be approved by the Geological Survey. This equipment will be regularly inspected. Additional equipment and containment procedures can be required by the Geological Survey from time to time.

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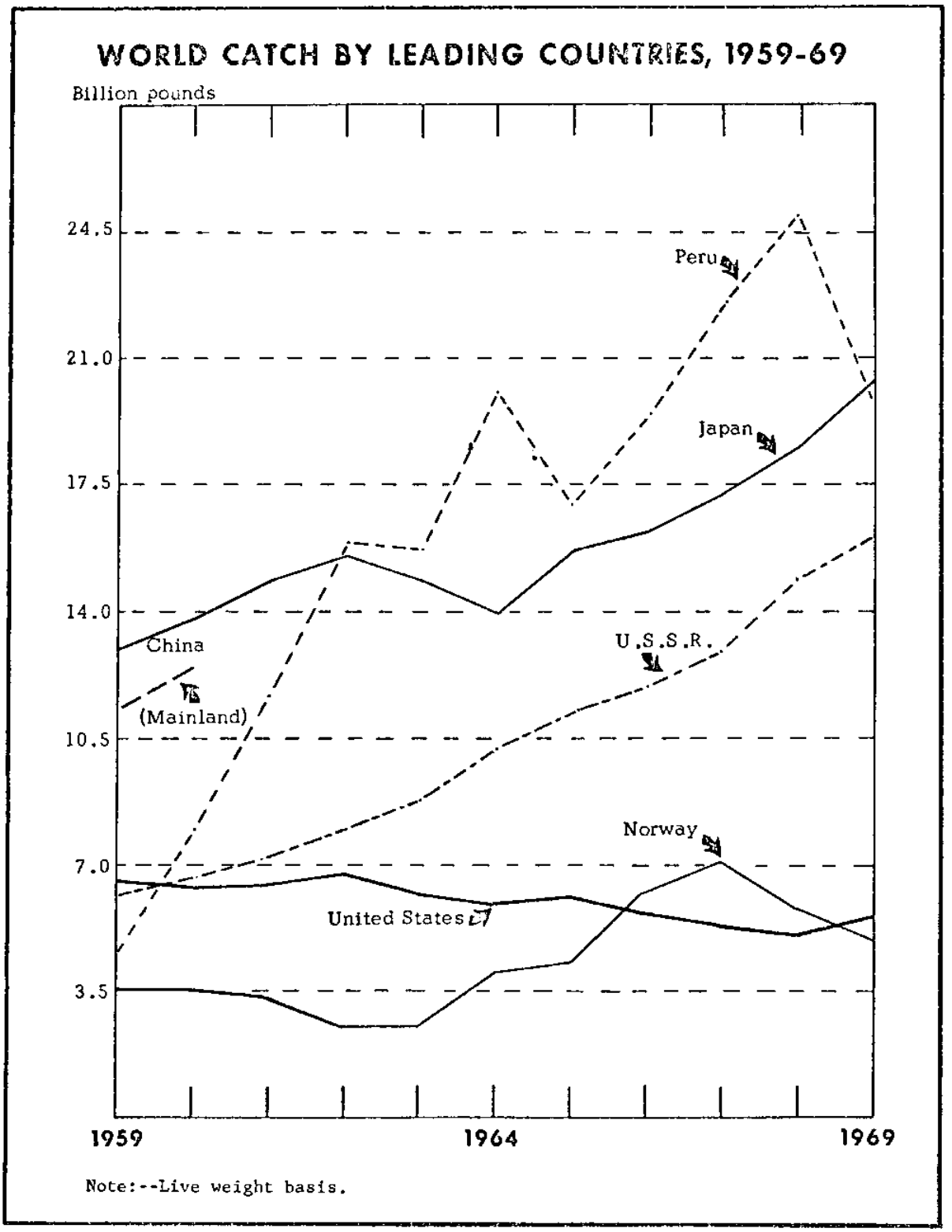
1. Issued by U.S. Department of the Interior, Geological Survey, Conservation Division, following blowout of well in Santa Barbara Channel.



Courtesy Bureau of Commercial Fisheries

CHAPTER THREE

MARINE UTILIZATION

Introductory Note

One of the oldest areas in which the United States has maintained a maritime policy is in the realm of marine fisheries. Since early in the history of the Republic, the Government has been concerned with the promotion of commercial fisheries, an industry that occupied a leading role until modern times. Early in the century Washington went to arbitration with Great Britain at the Permanent Court of Arbitration at The Hague over fishing rights along the coasts of the North Atlantic. Since 1911 it has taken an active hand in promoting conservation of fishing resources through negotiating agreements with other countries to control annual catches of endangered species. The first such agreement related to fur sealing in the Bering Sea in 1911. Since then, government action has continued to seek regulatory agreements with other governments whenever mutual interests have been found. It has also espoused construction of modernized vessels in American yards to increase efficiency of catching.

The U.S. position regarding utilization of living resources of the sea has, however, continued to deteriorate. This is evidenced by the decline in the tonnage of fish landed. During the 1930's the U.S. ranked second among the nations of the world in terms of the total tonnage of fish landed. Today it ranks fifth. In the same period, the U.S.

population has increased 23 percent, per capita consumption of fish has increased, and fish imports have more than doubled. Clearly, government action has not prevented the fishing industry from entering a declining state nor enabled it to compete effectively with other nations. Soviet, Polish, Romanian, Japanese and other foreign vessels now fish just outside of U.S. territorial waters within sight of shore. These activities have led the Congress to extend U.S. fishing jurisdiction to 12 miles and to insist on other nations negotiating annual fishery agreements for fishing between the 3- and 12-mile lines. The U.S.-Polish agreement reproduced in the pages that follow is a sample arrangement.

Recognizing the need for new aims and directives the Congress, in enacting the Marine Resources and Engineering Development Act of 1966 (PL 89-454), declared the nation's intent to "accelerate development of the resources of the marine environment" and to "rehabilitate our commercial fisheries." The complexity of this task can be seen by a simple example.

As the number of fishermen with modern equipment and high mobility increases, the initial result is a marked improvement in catch, followed by a decline as the species is depleted. The competitive fisherman responds to the reduction in catch by greater effort and efficiency--such as the substitution of seining for the hook method of catching tuna. As the catch declines further, a cry arises from the fishermen.

Governments, attempting to bring order to the industry and lessen the chance of exhausting a species, respond by imposing regulations on equipment and limits on catch size, areas to be fished, and fishing seasons. Hence, the goal of conservation is often accomplished only at the price of inefficiency.

Since numerous fish range widely over the oceans during their life cycle, the problem is often complicated by international fisheries relations. Numerous multinational conventions and agreements have been concluded to preserve the catch of tuna, whales, seals, salmon, and ground fish caught in international waters. These attest to the international character of the industry. The success of these agreements varies. Some, like the agreements for the Northwest Atlantic fisheries, the halibut treaties for the Northeast Pacific, and the Fur Sealing Convention have functioned reasonably well, limiting catches, controlling fishing seasons, and exchanging information. One difficulty with such regulation is that little is known of the biological, migratory, and ecological factors that relate to each species of fish, and interpretations of existing data differ among countries. Responsibility for gathering and interpreting fishery data is placed in the hands of the Bureau of Commercial Fisheries in the United States. Laws, such as the Commercial Fisheries Research and Development Act of 1964 (PL 88-309), have provided funds for research along these lines with a view to conserving the nation's fishery resources and improving the economic status of the industry. Other acts, such as the

Fishery Vessel Construction-Differential Subsidy Program (PL 86-516), have sought to modernize the fishery fleet. Although these efforts are in line with the policy aims of the Marine Resources and Engineering Development Act, they are only two avenues that may be followed toward solution of the fisheries problem.

Another approach to the development of living resources is the rearing of marine organisms in culture ponds within the confines of one's own territorial limits, in netted-in bays or coastal waters. Ocean farming of this nature would circumvent the complex international and ecological problems now faced. Such organisms as shrimp, lobster, oysters, crab, and some fish have been commercially farmed. This has come to be termed "aquaculture." Although this technique is relatively new to the United States, it is very old in some Asian nations. Ponds in Java, covering 316,000 acres have produced a crop of fish valued at 100 million dollars a year. Aquaculture is also very old in Japan and China where the techniques are highly developed. By comparison, one American biologist has claimed that the U.S. lags 700 years behind Asia in its approach to marine resource utilization. Steps are being taken to develop fish farming in enclosed bays in Florida and elsewhere for shrimp and oyster cultivation. Emphasis in U.S. policy could well consider shifting in the future to include aquaculture if marine foods are to be increased in quantity sufficiently to keep pace with the increasing needs for protein throughout the world.

Coupled with this is the further need for perfection of fish protein concentrate in acceptable form for wide general human use. Progress in the technology of production should be able to make this available in quantity at low prices within the near future.

One of the interesting new developments in ocean engineering that has a bearing upon the future of aquaculture is the pumping of nutrient-rich cold water from the deep ocean into fish-rearing ponds. Experiments along this line, being conducted by Columbia University Lamont-Doherty Laboratory scientists in the Virgin Islands, are promising. With unlimited quantities of cold water available off both the East and West coasts of this country, it is only a question of time until cold water engineering is harnessed to fish farming on or near land.

The development of ocean mineral resources is arousing widespread interest as a means of supplementing decreasing supplies on land. A principal reason for the interest has been the success of offshore oil well drilling in the Gulf of Mexico, off California and in Cook Inlet in Alaska. Unless repeated disasters such as the blowout in Santa Barbara Channel, and oil well fires in the Gulf of Louisiana compel severe restriction of offshore activity, it is expected that between 4,000 and 5,000 new wells per year will be drilled by 1980. The reserves of continental shelf petroleum in the Gulf of Mexico alone are estimated to be equal to those of the entire United States on land. Petroleum geologists estimate that

the reserves underlying the Santa Barbara Channel off southern California amount to between two and ten billion barrels. The continental shelf off the eastern coast of the United States and Canada is believed to contain large deposits of petroleum and natural gas, although this has been little explored thus far. The enormous findings at Prudhoe Bay, Alaska [10 to 14 billion barrels], further suggest that there may be very large reserves locked beneath the ice and sea floor of the Arctic Ocean.

These findings, together with other exciting discoveries in the North Sea, off Australia, and between Taiwan and Japan, point to a bright future for the offshore petroleum industry. This may well change the entire nature of the world oil game by developing large stores of oil close to the principal world markets and shifting away from the politically uncertain Middle East with the long sea carriages to European, American and Japanese markets. In 1970 offshore drilling was being carried on by teams of American oil drilling companies off the coasts of thirty-six countries around the world, with more ventures in the offing in the near future. The epochal voyage of the SS *Manhattan* through the icebound Northwest Passage of Canada from Baffin Bay to off Prudhoe and return further demonstrated that, when the time is ripe, American industry can overcome even the most severe obstacles in the Far North to transport oil to the markets of the East Coast.

In the non-fuel minerals, excepting sulfur, attempts at utilizing offshore resources are in their infancy.

Manganese nodules, photographed in great quantities on the ocean floor in the Atlantic and Pacific, are a logical first choice for exploitation. The quantities of the nodules which carpet the sea floor, and also contain cobalt, copper and nickel in small but significant quantities, make them commercially attractive if they can be recovered by continuous dredging processes. Extant reserves of high-grade manganese on land are expected to be depleted by the year 1990. Save for low-grade reserves, the United States has negligible domestic supplies of manganese and nickel and must rely upon importation to satisfy its needs.

Deepsea Ventures, Inc., a subsidiary of Tenneco Inc., made the first successful dredging operation for nodules in 1970 on the Blake Plateau off South Carolina in 3,300 feet of water, bringing up over 40 tons of ore using a hydraulic lift apparatus. It is now retooling to try out its system at 15,000 feet in the Pacific where richer-content nodules are located. It expects to be operational by 1973, barring unforeseen delays.

With the advance of industry into deeper water has arisen a need for improving man's ability to work at greater depths than in the past. Many small submarines have been developed during the 1960's for oceanographic surveys, experimentation, and small-object recovery. Such vehicles, even when equipped with remote manipulator arms having a variety of specialized tools, are a poor substitute for the dexterity and mobility that a diver has in performing such work as undersea servicing of oil wells or construction. The Navy's Man-

in-the-Sea program is probing at considerable depths and has as one of its objectives "the safe and efficient operation by divers to depths of 1,000 feet for periods of up to 30 days." A report on the objectives and progress being attained in this area is included in this chapter.

Among the important steps taken to enable men to work at depth in the seas have been what has been known as Project Tektite and the development of Sealab II and III. These bottom-emplaced habitats have permitted teams of saturation divers to live and work for periods of days or weeks within the seas, locking themselves in and out of their habitats, raising sunken objects, and accustoming themselves to life under pressure in the ocean. An accident, unfortunately resulting in a loss of life, prematurely put a stop to Sealab III which had been planned to operate in 650 feet of water for three weeks. Activities of this nature are steps along the way to the establishment of sea-bottom laboratories on seamounts and mid-ocean ridges later in the decade of the Seventies as man looks forward to mastery of inner space in the coming years, much as he has conquered exploration in outer space in the 1960's.

Suggested References for Further Reading

Marine Science Affairs, 1970.

Chapter 5, "Encouraging Development of Marine Mineral Resources."
Chapter 6, "Accelerating Use of Food from the Sea."
Chapter 8, "Advancing Man in the Sea."
Chapter 11, "Furthering Marine Science Research and Manpower."

Our Nation and the Sea.

Chapter 5, "Living Resources of the Sea and Their Regulation."
Chapter 6, "Mineral Resources and Their Exploitation."

The following selected articles bear upon aspects of marine utilization:

Undersea Technology, "Commercial Shrimp Farming in Florida." Vol. 11, No. 10, October 1970, pp. 21-26.

Klima, Edward F., "An Advanced High Seas Fishery and Processing System." Marine Technology Society Journal, Vol. 4, No. 5, September-October 1970, pp. 80-87.

Nunn, Robert R., "Fish Protein Concentrate Production on the Rise." Ocean Industry, Vol. 3, No. 11, November 1968, pp. 47-50; ibid., Vol. 4, No. 1, January 1969, pp. 36-42.

Pinchot, Clifford, "Marine Farming." Scientific American, Vol. 223, No. 6, December 1970, pp. 15-21.

Kauffman, Alvin, "The Economics of Ocean Mining." Marine Technology Society Journal, Vol. 4, July-August 1170, pp. 58-65.

FISHERIES OF THE UNITED STATES...1969[1]

(Excerpts)

U.S. Fisheries in 1969

United States fishermen caught 4,292 million pounds of fish and shellfish in 1969 that sold for $518 million--the highest dollar value in our history. The value of the catch was $47.0 million more than in 1968 and 31 percent above the previous 10-year average. The volume taken was 176.4 million pounds or about 4 percent more than in 1968 and the largest catch since 1966.

There were record landings of Gulf menhaden, Pacific anchovies, yellowfin tuna, shrimp, spiny lobsters, tanner crabs, Dungeness crabs, and surf clam meats in 1969; and sharp increases in the catches of Atlantic cod, Pacific halibut, and blue crabs. Landings of Atlantic flounders, pollock, and soft clams were also higher in 1969 than in 1968. On the other side of the ledger, offsetting any real gain in the overall productivity of the domestic fisheries, were serious declines in landings of haddock, Atlantic sea herring, Pacific salmon, whiting, otter-trawl-caught industrial fish, sea scallop meats, and king crab. Production of jack mackerel, Atlantic ocean perch, and oyster meats were also below the 1968 levels.

Fishermen were paid a record high average of 12.08 cents per pound for the larger 1969 catch--well above the 11.46 cents paid in 1968 and 10.84 cents paid in 1967. The average price for many fishery items increased substantially in 1969 while other prices were somewhat higher or at least held steady. The smaller 1969 whiting catch (down 41 percent) actually gave fishermen as much money as did the larger 1968 catch. Average prices paid for most of the other failing fisheries also increased to where the total exvessel value paid was nearly equal to that received for the larger 1968 catches. Average prices paid to fishermen as measured by the indexes of exvessel prices received by fishermen (see page 56) were up 13 percent from 1968 and 40 percent above the 1957-59 average. The index for all finfish prices rose 14 percent in 1969 because of sharp increases in prices for New England finfish, salmon, tuna, and industrial fish. Prices paid for all shellfish increased 14 percent in 1969. Prices for shrimp increased 9 percent while other shellfish prices were up 17 percent.

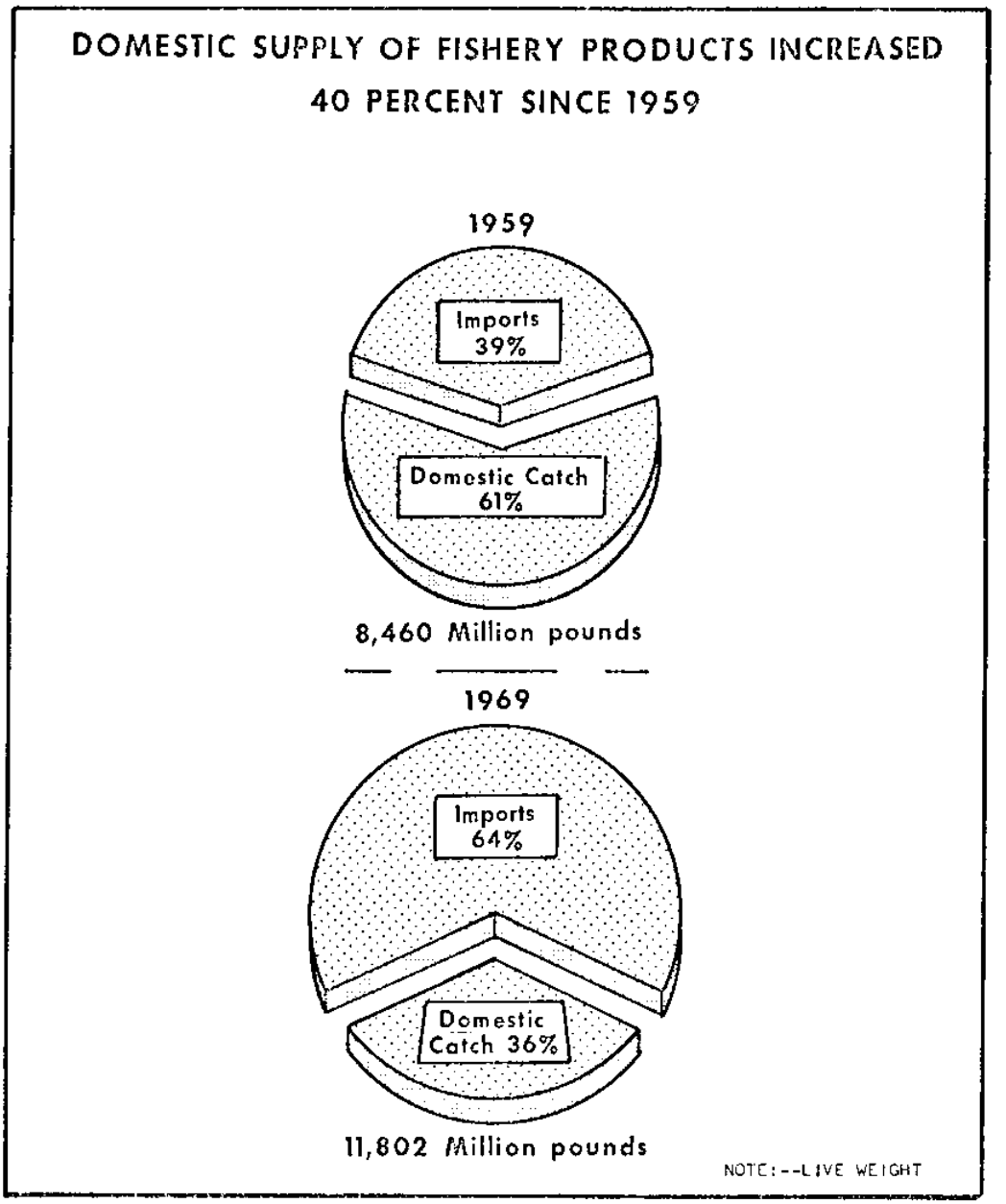
The 1969 value of processed fishery products produced in this country from both domestic and imported raw material

was $1.5 billion--about 6 percent above that of 1968. The canned pack of 40.3 million standard cases was valued at $580.8 million--just slightly below the record 1968 value of $583.9 million. Canned tuna was produced at about the same level as in the previous year while the packs of crab meat, shrimp, and clam products were larger. Industrial products registered an increase of $14.5 million in value. The remarkable fish stick and portion industry continued to set new volume and value records--production was 329.8 million pounds valued at $134.7 million. Breaded shrimp processors turned out 104.6 million pounds (just short of breaking the 1966 record production of 104.9 million pounds) valued at a new high of $110.5 million. Domestic production of groundfish fillets and steaks, as expected, continued to decline but there was an increase in the output of other fillets and steaks--total production of these items increased both in volume and value in 1969. Processors of fish and shellfish speciality dinners and other packaged fish and shellfish products continued to produce in greater volume in 1969 with products valued at over $438 million--8 percent above the 1968 level. Exports of domestically-produced fishery products were worth a record $104.5 million--a gain of $36.8 million--while imports also reached a new high of $844.3 million.

At year end, some segments of the industry were facing declines in resource availability caused by both natural causes and heavy fishing but other segments remained highly competitive with foreign fleets and production. With only few exceptions, prices for fishery products generally increased at all levels: exvessel, wholesale, and retail. Fishermen got a high dollar exvessel value in 1969 and the fish fishery processing industry generally made excellent gains in production. Many canned items, fish sticks and portions, fillets and steaks, shellfish (lobsters, crab, shrimp) products, and other fish and shellfish products were in good demand throughout 1969 and many of these items made new inroads in foreign countries. Civilian per capita consumption of edible fishery products in the United States increased from 11 pounds of edible meat in 1968 to 11.1 pounds in 1969--the highest since 1954....

World Catch Highlights

- Peru was the world leader in total fishery landings in 1968 followed by Japan, Union of Soviet Socialist Republics, China (Mainland), Norway, and the United States.



Courtesy Bureau of Commercial Fisheries

- Japan led all nations in per capita consumption of fishery products with 67.6 pounds of edible meat---followed by Portugal, 47.5 pounds---Denmark, 46.7 pounds---Sweden 45.1 pounds---and the Philippines, 36.2 pounds. The percapita consumption of fishery products in the United States was 11.1 pounds of edible meat in 1969.

- In 1969, about 2.2 billion pounds of the domestic catch of fishery products was used as human food. It was estimated that the 1969 domestic catch was marketed as follows: 1,509 million pounds (round weight) as fresh and frozen, 935 million pounds for canning, 70 million pounds for cured products, and 1,778 million pounds for reduction to meal, oil, etc....

Foreign Trade in Fishery Products

Foreign trade in fishery products.....United States foreign trade in fishery products was worth a record $948.8 million in 1969--an increase of $58.4 million compared with 1968. Imports for consumption were valued at $844.3 million and exports, $104.5 million--a gain of $21.6 in imports and $36.8 in exports compared with the previous years.

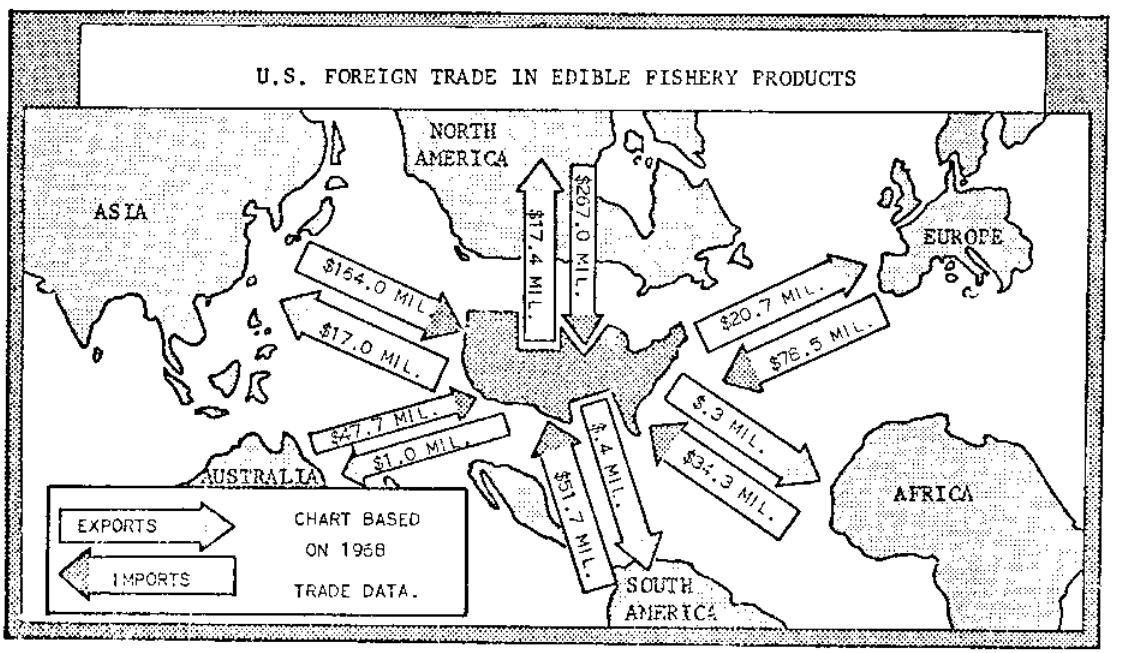
Imports of edible products were 1.7 billion pounds worth $704.8 million--2 percent less in volume but 10 percent more in value than in 1968. There were increases in imports of blocks and slabs, fillets and steaks, halibut, shrimp, and canned tuna in brine. Imports of nonedible fishery products were valued at $139.5 million--$40.0 million less than in 1968 due almost entirely to a 58 percent decrease in receipts of fish meal. Major reasons for the large gain in dollar value of exports were good increases in exports of frozen and canned salmon, frozen shrimp, cured salmon roe, herring roe on kelp, and greatly increased shipments of menhaden oil....

Fish Meal, Oil, and Solubles

A total of 252,564 tons of fish meal was produced in the United States, American Samoa, and Puerto Rico in 1969. This was an increase of 7 percent compared with the 1968 production.

Production of marine animal oil in the United States, American Samoa, and Puerto Rico totaled 169.8 million pounds. Menhaden oil (149.2 million pounds) was 2.9 million pounds less than the production in 1968.

Production of fish solubles was 81,692 tons--9,859 tons more than the 1968 production of 71,833 tons.



1. U.S. Department of the Interior, Bureau of Commercial Fisheries, Fisheries of the United States...1969. Washington: March 1970. C.F.S. No. 5300, p. vii et seq.

AGREEMENT BETWEEN THE UNITED STATES AND THE UNION OF SOVIET SOCIALIST REPUBLICS ON FISHERIES IN THE WESTERN AREA OF THE MIDDLE ATLANTIC OCEAN

Washington, December 13, 1968[1]

The Government of the United States of America and the Government of the Union of Soviet Socialist Republics,

Considering it desirable that the fisheries in the Western areas of the high seas in the Middle Atlantic Ocean be conducted on a rational basis with due attention to their mutual interests, proceeding from generally recognized principles of international law,

...with due consideration of the state of fish stocks, based on the results of scientific investigation, for the purpose of ensuring the maintenance of maximum sustainable yields and the maintenance of the said fisheries,

Taking into account the need for expanding and coordinating scientific research in the field of fisheries and the exchange of scientific data,

Have agreed on the following:

1. The Government of the United States of America and the Government of the Union of Soviet Socialist Republics consider it desirable to expand research pertaining to the species of fish of interest to both parties, on a national basis as well as in the form of coordinated research according to agreed programs. The competent agencies of both Governments shall ensure the following, at least on an annual basis:

a. An exchange of scientific and statistical data, published works and the results of fishery research;

b. Meetings of scientists and, in appropriate cases, the participation of the scientists of each Government in fishery research conducted on the research vessels of the other Government.

Each Government will take the necessary steps to ensure that its competent agencies conduct the corresponding fishery research and develop the most rational fishing technology in accordance with a coordinated program, which has been developed by the scientists of both countries.

AREA COVERED BY THE FISHERIES AGREEMENT BETWEEN THE U.S. AND U.S.S.R.

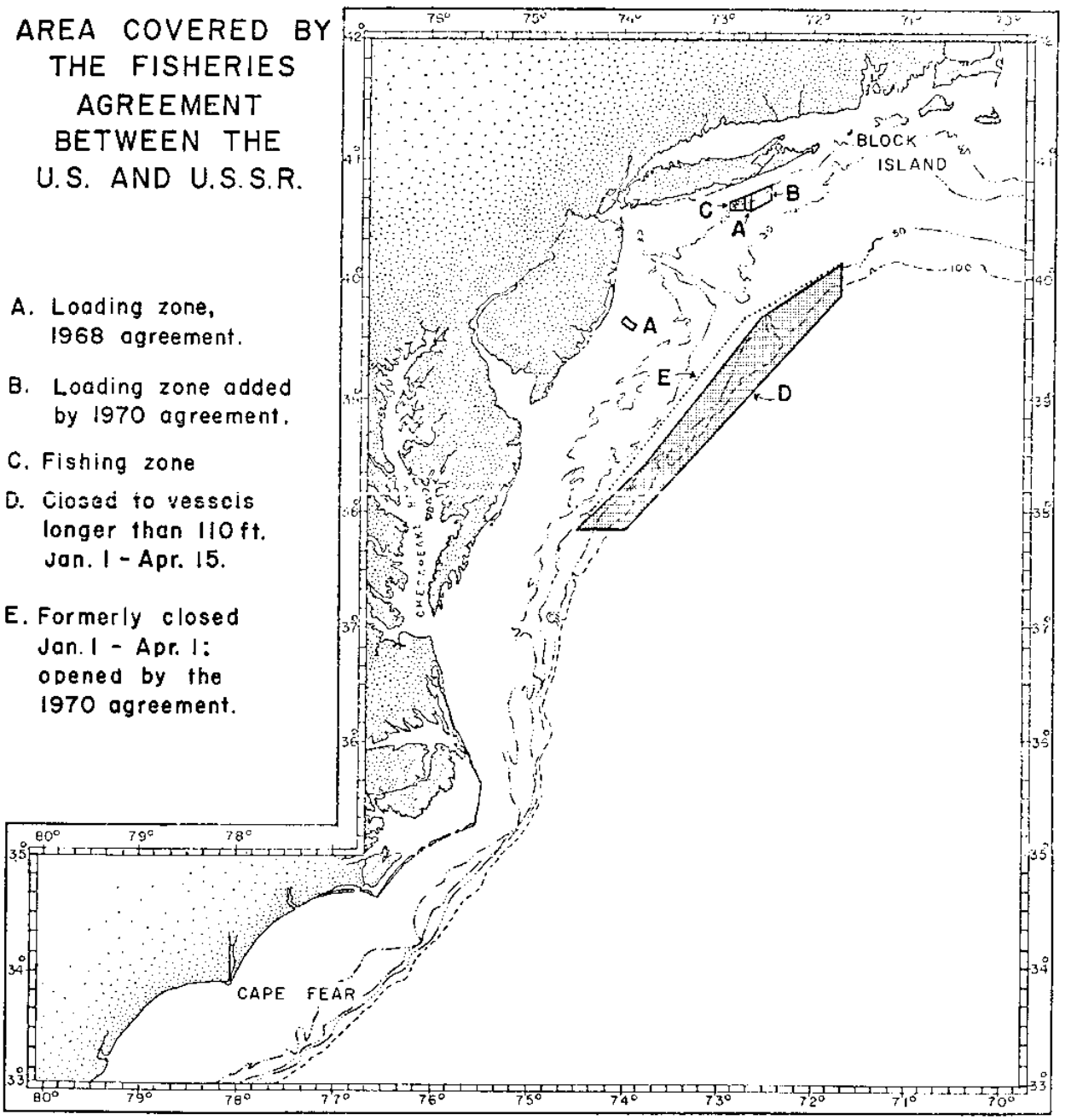
A. Loading zone, 1968 agreement.

B. Loading zone added by 1970 agreement.

C. Fishing zone

D. Closed to vessels longer than 110 ft. Jan. 1 - Apr. 15.

E. Formerly closed Jan. 1 - Apr. 1: opened by the 1970 agreement.



2. The Government of the United States of America and the Government of the Union of Soviet Socialist Republics, for the purpose of reproduction and maintenance of fish stocks, will take appropriate measures to ensure that their citizens and vessels will:

a. Refrain from fishing during the period from January 1 to April 1, to ensure access of red hake and silver hake to the spawning grounds and to protect certain winter concentrations of scup and flounders; said abstention will apply to an area of the Mid-Atlantic bounded by straight lines connecting the following coordinates in the order listed:

North Latitude	West Longitude
40°05'	71°40'
39°50'	71°40'
37°50'	74°00'
37°50'	74°25'
39°40'	72°40'

b. Refrain from increasing the catch of red hake, silver hake, scup, or flounders above the 1967 levels in the waters situated west and south of Sub-area 5 of the Convention area of the 1949 International Convention for Fisheries in the Northwest Atlantic and north of Cape Hatteras;

c. Refrain, in the waters specified in sub-paragraph b. of this paragraph, from conducting specialized fisheries for scup and flounders in all instances, and from increasing their incidental catch of these species, that is, the catch taken unintentionally when conducting specialized fisheries for other species.

The provisions of this paragraph shall not apply to vessels under 110 feet in length, nor to vessels fishing for crustacea or molluscs.

3. Both Governments will take appropriate measures to ensure that their citizens and vessels will, in the waters covered by this Agreement, conduct their fishing with due regard for the conservation of the stocks of fish.

4. Fishing vessels of the Union of Soviet Socialist Republics may conduct loading operations in the waters of the nine-mile fishery zone contiguous to the territorial sea of the United States of America in the following areas bounded by straight lines connecting the coordinates in the order listed:

a. during the period from November 15 to May 15

North Latitude	West Longitude
40°40'55"	72°40'00"
40°34'31"	72°40'00"
40°33'28"	72°43'44"
40°39'48"	72°43'44"

b. during the period from September 15 to May 15

North Latitude	West Longitude
39°38'05"	74°02'06"
39°35;06"	73°55'24"
39°32'30"	73°57'18"
39°35'30"	74°04'00"

5. Fishing vessels of the Union of Soviet Socialist Republics may fish during the period from January 1 to April 1, within the nine-mile fishery zone contiguous to the territorial sea of the United States of America, in the waters bounded by straight lines connecting the following coordinates in the order listed:

North Latitude	West Longitude
40°40'55"	72°40'00"
40°34'31"	72°40'00"
40°32'41"	72°46'26"
40°32'32"	72°53'26"
40°36'54"	72°53'26"

6. Each Government will, within the scope of its domestic laws and regulations, facilitate entry into appropriate ports for fishing and fishery research vessels of the other Government. This shall apply with respect to the procedure for presenting crew lists for the above-mentioned vessels and to the providing of fresh water, fuel and provisions.

7. Under conditions of force majeure, each Government will, within the scope of its domestic laws and regulations, facilitate entry of fishing and fishery research vessels into its respective open ports after appropriate notification has been given.

8. Both Governments consider it useful to arrange, when appropriate, for visits of representatives of fishermen's organizations of the two countries to each other's fishing vessels operating in the western part of the Middle Atlantic.

Such visits may be arranged on mutually agreeable terms determined in each particular case by the Regional Director of the United States Bureau of Commercial Fisheries in Gloucester, Massachusetts and the chief of the joint fleet expeditions of the Main Administrations "ZAPRYBA" or "SEVRYBA" as appropriate.

9. Nothing in this Agreement shall be interpreted as prejudicing the views of either Government with regard to freedom of fishing on the high seas or to traditional fisheries.

10. This Agreement constitutes an extension and modification of the provisions of the Agreement between the Government of the United States of America and the Government of the Union of Soviet Socialist Republics signed in Moscow on November 25, 1967 and extended through December 31, 1968 by an exchange of notes.[2] The present Agreement shall enter into force on January 1, 1969 and shall remain in force through December 31, 1970. At the request of either Government on or before November 1, 1969, representatives of the two Governments will meet with a view to modifying the present Agreement. Any agreed modifications will enter into effect on January 1, 1970, unless otherwise agreed. In any event, representatives of the two Governments will meet at a mutually convenient time prior to the expiration of the period of validity of this Agreement to review the operation of this agreement and to decide on future arrangements....[3]

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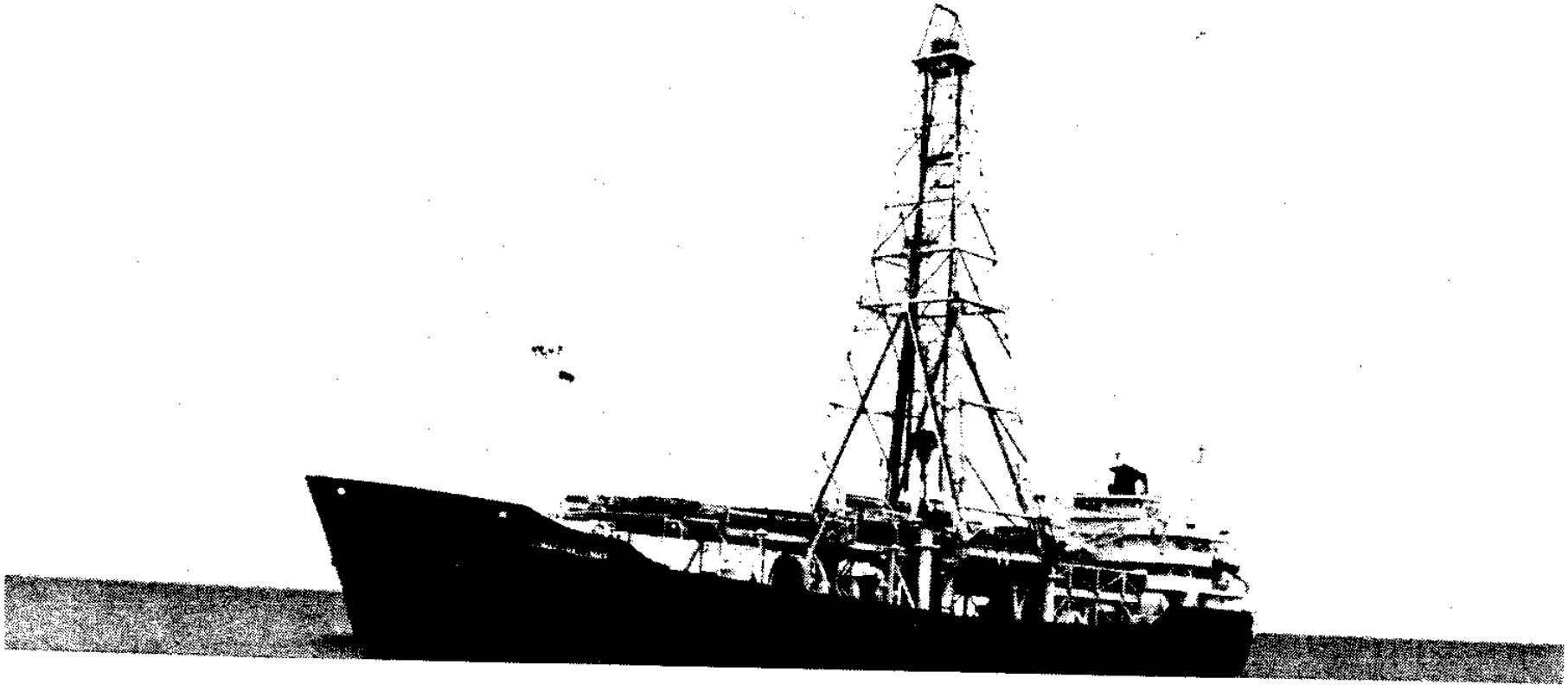
1. United States Treaties and International Agreements Series, 1968. Washington: Department of State, 1970, No. 6603, pp. 7661-7667.

2. TIAS 6377, 6602; 18 UST 2864; ante, p. 7658. The notes are dated Oct. 9 and Dec. 3, 1968.

3. New Agreement signed December 11, 1970 covers fishing for river herring and question of port calls. Fishing for menmenhaden prohibited from January through April. Agreement extended southward to Cape Fear, N.C.



DEEP SEA DRILLING PROJECT VESSEL S.S. GLOMAR CHALLENGER

Courtesy Woods Hole Oceanographic Institution

DEEP SEA DRILLING PROJECT ENGINEERS ESTABLISH REENTRY CAPABILITY[1]

National Science Foundation

1970

Engineers and drillers aboard an American ship have lowered a drill string through water two miles deep and successfully steered the drill bit back into a 12-inch hole on the ocean floor.

The technological feat, conducted from the ship Glomar Challenger in connection with the National Science Foundation's Deep Sea Drilling Project (DSDP), constitutes a major technological advance according to Dr. William D. McElroy, NSF Director.

"The establishment of the capability of reentering a deep ocean-floor drill hole is a major and exciting technological achievement for which the contributing scientists, engineers, and technicians are to be congratulated. This achievement certainly broadens the scientific possibilities of the Drilling Project and opens the door to a new era in ocean exploration for scientific and industrial purposes."

Scientific and industrial ocean floor explorers now have a means whereby they can drill and core in any material on the deep ocean floor. When their drill bit is worn, they simply pull the drill string from the bore hole, change bits and then reenter the same hole to continue drilling. Formerly when working in such water depths a worn or broken drill bit meant the end of drilling in any given hole--a restriction that greatly hampered scientists who sought to drill at great depths to core the ocean's sediments and basaltic rocks beneath.

Glomar Challenger arrived in Boston Harbor today after 12 days of reentry trials in the Atlantic Ocean. The tests were conducted by engineers of EDO Western, which supplied the scanning sonar used in the reentry system; Global Marine, Inc., which owns and operates the ship and performs the drilling; and Scripps Institution of Oceanography, which manages the DSDP under contract to the National Science Foundation.

Glomar Challenger has completed 22 highly successful months of drilling in the Atlantic and Pacific Oceans and the Gulf of Mexico. Scientists who have worked aboard the ship have contributed greatly to a better understanding of the dynamically changing Earth, including the theories of sea-floor spreading and continental drift.

The 10,000-foot drill string was maneuvered into the existing bore hole for the first time on June 14 by Glomar Challenger Captain Joe Clarke. In the reentry process, there was no guide between the drill string and the hole on the ocean floor other than a sonar scanner.

Composition of Reentry System

The reentry system consists of a high-resolution scanning sonar system that "looks" downward through the drill bit on the lower end of the drill string, a funnel-shaped reentry cone mounted on the ocean floor, and a system for steering the drill pipe toward the cone.

The scanning sonar system consists of an underwater transmitter-receiver, a control-display unit on the bridge of the vessel and a remote display unit at the drilling derrick. The underwater sound transmitter-receiver (transducer) is lowered down the inside of the drill pipe and protrudes through the core opening in the drill bit.

The transducer, commanded to scan the ocean floor acoustically, sends out a sound-signal and receives information in the form of underwater echoes which it amplifies and transmits to the control-display unit for processing and display as a radar-like picture of sound-reflecting objects on the sea floor. Maximum range of target acquisiton is 500 feet.

The large reentry cone is hexagonal, is 16 feet across at the top, and stands 14 feet tall. There are three acoustic reflectors equally spaced around the outside of the cone about 4 feet beyond its rim. The reentry cone is keel-hauled to a position directly beneath an opening in the vessel under the drilling derrick and lowered to the ocean floor on the drill pipe. It remains on the ocean bottom when the drill pipe is pulled to the surface for a change of drill bits.

The drill pipe positioning system consists of the dynamic positioning system of Glomar Challenger and a sideward-thrusting water jet (jet-sub) located approximately 60 feet above the drill bit on the drill string. Sea water is pumped from the surface down the drill string and out the jet.

More or less "rough" maneuvering of the drill string relative to the reentry cone is carried out by shifting the ship itself, but final fine positioning of the drill pipe is conducted by the water jet. The jet develops enough thrust to shift the drill pipe laterally as much as 800 feet.

Procedure

The drill string, aimed at reentering a bore hole, is lowered toward the ocean floor. The sonar transducer at the end of the string picks up an echo of its signal from the three reflectors near the reentry cone and a display of this target appears on the bridge. The dynamic positioning system of Challenger is used to maneuver the drill pipe closer than 100 feet to the reentry cone. At this point, the jet sub is used to maneuver the drill pipe over the reentry cone. When the visual display unit indicates the drill bit is centered between the acoustic reflectors, the drill pipe is lowered into the funnel.

This deep water system for reentry as used on the trials was developed as part of Project Mohole, also supported by the National Science Foundation but terminated before completion because of rising costs. Global Marine, Inc., of Los Angeles, California, designed and built the reentry cone.

* * * * * * * *

The Joint Oceanographic Institutions for Deep Earth Sampling (JOIDES) are assisting Scripps with scientific planning for the project. The members are Woods Hole Oceanographic Institution, Columbia University's Lamont-Doherty Geological Observatory, the Institute for Marine and Atmospheric Sciences of the University of Miami (Florida), University of Washington (Seattle), and Scripps.

Dr. William A. Nierenberg, Director of Scripps, is principal investigator for the Deep Sea Drilling Project and Kenneth E. Bruno is project manager.

Mr. A. R. McLerran, field project officer for the Deep Sea Drilling Project, is the Foundation's representative at Scripps.

Operations manager V. F. "Swede" Larson and project engineer Darrell L. Sims, who was project officer for reentry, co-directed the trial.

Dr. Melvin N. A. Peterson, project chief scientist, Dr. Terry Edgar, project coordinating staff geologist, and Captain Clark conducted extensive studies on drill string behavior in deep water through the use of the scanning sonar at the bottom of the drill string and the vessel positioning system.

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1. National Science Foundation, Washington, D.C. Press Release, June 17, 1970.

OFFSHORE MINERAL RESOURCES - A CHALLENGE AND OPPORTUNITY

Report of President's Panel on Oil Spills[1]

1969

(Excerpts)

Introduction

The mineral resources of the United States Continental Shelf represent a new opportunity - a new opportunity to add needed fuels, energy, metals and non-metals to our economy and monies to the gross national product....

These sub-oceanic resources represent the largest single area of mineral resources within the boundaries of the United States that we have not yet developed. This fact alone should cause us to exercise special care that we make use of them as wisely as possible. The coastal waters in which they occur are also the site of heavy commercial traffic, recreation and natural beauty, a unique ecological setting in which exist kinds and types of wildlife that cannot exist elsewhere, and an environment difficult for man to work in. These areas and these resources are the property of all the people. All of their needs and wishes should be considered when deciding on the resources' use.

The oil leak in the Santa Barbara Channel should serve us as a grave reminder of responsibilities for the wise use of these resources and for the long future spreading out before us in which we will also need resources. It is not simply a matter of monetary damages or personal injury....

Pollution and Safety

Safety hazards in offshore development are considerable. A variety of hazards are endemic to those who work on the sea to extract these resources. Having received considerable attention from both the operators and the government, these hazards now appear fairly well under control, although there is always need for careful review....

The pollution possibilities of offshore development are hazards of a special kind. Offshore mining and dredging may produce considerable pollution and these matters deserve

serious attention before extensive offshore exploitation of hard minerals is undertaken. In the case of offshore oil and gas we now have sufficient experience to make some comment. Since 1954, approximately 8000 offshore wells have been drilled. 25 blowouts have occurred of which 17 leaked gas only. Two resulted in serious oil pollution incidents and 9 constituted serious blowouts that persisted for several days with fires (9 cases) or fire hazards and hazards to personnel (29 deaths). If offshore development continues to expand at the present rate and the frequency of accidents remains the same, 3000 to 5000 wells will be drilled annually by 1980 and we can expect to have a major pollution incident somewhere every year. This frequency appears to us to imply far too large a future incidence of pollution and therefore we welcome the Secretary of the Interior's efforts to stiffen offshore drilling regulations in an effort to make blowouts less likely....

Evaluation of Offshore Resources.

Evaluation of offshore mineral resources is frequently made in terms of number of barrels of oil or cubic feet of gas that may be produced from a particular area or a particular structure, in terms of money that may flow into the economy from the exploitation of these resources, in terms of contributions to the supply of energy available to our country, and in terms of the dollars yielded to the federal treasury for lease sales and royalties. But these are not the only sets of values associated with offshore resource development. Many others are at stake, most of them by no means to quantify, yet equally important. In principle one could evaluate the losses or gains to the fishing industry owing to competition for offshore resource areas. It would be far more difficult to measure the impact on recreational uses or tourist trade. Most difficult of all, it is hard to know where to begin to measure the loss to the man who is offended by the appearance of an offshore oil platform in the seascape which attracted him to a particular seashore location....

There ought to be a choice whereby it is possible to set aside resources which may be developed eventually but which by conscious choice, and after examination of all interests and values, should not be exploited now....

Central Planning and Local Interest.

There is a critical need for planning in the development of our offshore mineral resources. The country's needs and supplies of energy resources need to be considered for the

whole nation in terms of resource availability, price, export-import regulation and availability of foreign supplies and markets. Resource planning on a nationwide basis may conflict with multiple use considerations in the sense that the conflicting use problem is usually regional or local. Wise use therefore requires at least a two-stage process - one stage in which the resource use is considered as part of a national picture, and a second stage in which national policies interact with more local interests. Participation in the decision-making process by the citizens and the local governments which are affected by the decision in question is essential at this stage....

FINDINGS AND RECOMMENDATIONS

1. In keeping with the desire to make the wisest possible use of our public resources and to provide a source of independent advice for the Secretary of the Interior we recommend that a Resource Advisory Board be established to advise on all matters pertaining to the development of resources. This Board should consist of twelve to fifteen persons drawn from outside the Federal Government including, but not limited to, resource economists, lawyers, experts in finding and producing resources, geologists, and experts on environmental matters. The Board should include representatives from universities, industry and non-proft groups. The principal task of the Board would be to consider proposed use of our resources and provide their recommendations to the Secretary of the Interior about new areas to be exploited and the continuation of present development of resources....

2. The occurrences of resources offshore and the multiple uses to which offshore areas are subjected are not respecters of political boundaries. Therefore we recommend that prompt and meaningful efforts be made to incorporate the opinions, advice and policies of state and local governments into the plans for development of the Federal offshore mineral resources....

3. Development of our offshore resources may have effects on the citizens of the area which are very difficult to measure in economic terms. While every effort should be made to assess these opportunity costs in planning, some will still remain vague and difficult. We recommend that well-publicized public hearings be held in the areas where offshore resource developments are contemplated and that opportunities be afforded to private citizens, commercial interests and others to present their views to the government....

4. At present, disputes about the development of new offshore mineral resource areas are usually between exploitation

now and prohibition of development for all time. We suggest that there are potential offshore resources which fall into neither of these categories and that wise employment of our natural resources and preservation of our environment are ill served by the existence of only these two extreme positions. We therefore recommend that a class of escrow resources be recognized as a matter of policy. These resources would be placed in escrow for fixed periods of time (perhaps five Years) instead of being extracted at present. At the conclosuion of the fixed time period the decision would be reviewed and the resources could be developed, put in escrow for another time period, or made into a permanent preserve....

5. Common sense and the public interest demand that adequate information be available to those making decisions about offshore resources. We therefore recommend that, through negotiation, purchase or possibly regulation, data necessary for resource evaluation held by private companies, state and local governments and any other parties to exploration and development of offshore mineral resources be made available to those who must make decisions about their exploitation....

7. We recommend that the presently existing standards for construction of offshore structures be reviewed area by area to determine their appropriateness. We further recommend that the proposed plans of offshore lessees be at least spot checked in detail to be certain that the standards are being met. Standards do exist for construction of oil platforms, pipelines, and other offshore structures. We have not examined them in detail; however, all important topics are treated. Nevertheless hazards from storms, earthquakes, etc., vary greatly from region to region and we suggest that it may be time for a review of these regulations and a comparison with existing state and local regulations to determine whether or not new or different standards are required. At present industry merely certifies to the Department of the Interior that standards are met and with the exception of foundation structures and navigational hazards no detailed review of industry plans takes place. The Panel compliments industry on its low incidence of accidents. Nevertheless, the possibility of one operator erecting substandard structures suggests that it is important that some review, even spot checks on a random basis, be held within the Federal Government so that no unscrupulous operator could conclude that he is safe from review and possible prosecution for failure to meet standards.

8. We recommend that the Secretary of the Interior and his advisers seek out any advancements in technology which may tend to simplify the multiple use conflicts offshore resources. In particular, we recommend that the Government

move now toward a policy that within specified areas offshore oil and gas production be accomplished from structures totally beneath the surface of the sea unless application is made and granted for an exception that would permit erection of above water structures. We do not suggest that all the structures can or should be beneath the water but that many can. The technology now exists for completion of producing oil and gas wells completely underwater in shallow water. Several types of installations have been in operation for as much as seven years with considerable success. Newer types of technology suitable for deeper water are now being developed but have not yet been applied. We recommend this type of policy decision because structures beneath the surface of the water would mitigate many of the storm and navigation hazards and eliminate the aesthetic unsightliness of offshore oil structures. We recommend that underwater completions be made the policy so that applications for exception, that is, to erect above water structures, would provide an opportunity for opposition to such structures to be registered before permission is granted for erection.

9. The geological features in which offshore resources occur do not coincide with our political subdivisions. We therefore recommend that necessary steps be taken such that unitization of production from offshore oil structures and mineral deposits be practiced so that the wisest use of our offshore resources may be made, maximum safety may be obtained. It has long been recognized as desirable practice in the case of an oil field that the field be treated as a unit and its total development be planned to yield maximum return as well as to minimize blowout hazards and inefficient yield of the oil and gas resources....

10. The conflicts arising from multiple uses of offshore areas may result in offshore mineral production activity being a social burden on the community. Recognizing that certain areas may require more stringent regulations and more careful supervision than other areas where the multiple-use conflicts are not so pressing, we recommend that the Secretary of the Interior and his advisers review offshore areas for which leasing or development is proposed to determine which areas may require more extensive supervision and more stringent regulations and to consider whether, for some of these areas, the resources should be placed in escrow or in ecological preserves. Included in these considerations should be the indirect effects on the nearshore communities....

11. The offshore resources belong to the public as a whole. The multiple uses, public and private, must be considered equally with the economic balance of profit and cost. There is every evidence that recreational, wildlife, and mineral

resources may be in equally short supply in the not very distant future. We therefore recommend that the Secretary of the Interior strengthen those branches of the Department concerned with offshore resources and the total ecology in which the resources occur. Among the early assignments of these ecological groups should be an inventory of recreational reserves comparable to the inventories of oil and gas reserves. To the extent possible dollar equivalent values should be placed on recreational values, wildlife, and natural beauty, and public interest in these areas should be catalogued as carefully as possible whether quantitative values can be recorded or not. Such an inventory should be made public in much the same way as assessments of oil and gas reserves are presently made public. Only then can the American people register their opinions about the future choices affecting our environmental quality and way of life.

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1. Second Report of Panel, 1969, Washington: Executive Office of the President, Office of Science and Technology.

UNDERSEA RECOVERY AND MAN-IN-THE-SEA[1]

This portion of the Navy's comprehensive program in ocean engineering is intended to improve the Navy's deep ocean operational capability in submarine rescue and escape, search and location, salvage and recovery, and diving operations. The need for such a capability was first emphasized by the loss of the submarine *Thresher* in 1963. This need was reemphasized in 1966 with the loss of an unarmed nuclear weapon off Palomares, Spain, and again in 1968 with the loss of the submarine *Scorpion*.

The systems under development in the deep submergence program respond to Navy mission requirements for--

(1) Submarine location, escape, and rescue;
(2) Object location and small object recovery;
(3) Man-in-the-sea;
(4) A nuclear-powered research and engineering submersible, (NR-1);
(5) Large object salvage; and
(6) Deep submergence biomedicine.

The submarine location, escape and rescue program is developing a system which will give the Navy the capability to--

(1) Locate a distressed submarine;
(2) Provide personnel escape techniques and equipment for individual escapes from depths to 850 feet; and
(3) Provide an all-weather rescue system, operational to submarine collapse depths using deep submergence rescue vehicles (DSRV's).

Construction of the first DSRV is complete; the vehicle was launched in January 1970; and an extensive at-sea test program has commenced. Fabrication of DSRV II is nearing completion, and its testing schedule will follow that of DSRV I by about 6 months. DSRV I is scheduled to mate with a simulated submarine in distress, then mate with and be transported by the test and evaluation submarine *Salmon*, which will be configured as a DSRV "mother" submarine.

Two new catamaran hull submarine rescue ships, capable of transporting and maintaining DSRV's, have been launched. The *Pigeon* (ASR-21) is scheduled for delivery in late 1970; it will be followed by the *Ortolan* (ASR-22) in early 1971.

The U.S. Navy has been evaluating the submarine escape

DSRV I

Courtesy United States Navy Department

and immersion equipment being developed by the Royal Navy to determine its suitability for use on U.S. submarines.

The development objective of the object location and small object recovery system is to develop the capability to locate and recover small objects at depths as great as 20,000 feet. Development of necessary fabrication techniques and tests of structural and buoyancy materials are proceeding. The present capability for location and recovery of small objects at these depths rests with the proven but limited bathyscaph *Trieste II*. This vehicle viewed and photographed the *Scorpion* hulk in greater than 10,000 feet of water during a record 120 hours submerged, which spanned nine dives in a 7-week operating period.

The Navy's man-in-the-sea project is directed toward developing new equipment to permit men to live and do useful work underwater. Both the Navy and private industry have cooperated in developing the equipment and techniques by which divers can work for longer periods in the sea, at greater depths, and with better tools and increased safety. Some aspects of these activities are discussed more fully in chapter VIII.

The Navy's Sealab III experiment has been the recent focal point of this project. As a result of the many lessons learned, Sealab III has been restructured as a four-phase experiment. The first three phases involve the evaluation of aquanaut equipment and techniques and the validation of biomedical data at progressively deeper depths until a 600-foot capability has been verified. The fourth phase will include the habitat living experiment; however, this phase has been delayed until fiscal year 1972 due to funding limitations.

In support of man-in-the-sea goals, a program with Duke University tested thermal protection systems for divers, under saturated diving conditions, to simulated depths of 600 feet. Psychological tests were conducted at water temperatures of 90° and 45°F and indicated that with adequate thermal protection and underwater breathing systems diver performance was satisfactory.

The Navy's nuclear-powered research and engineering submersible, NR-1, was delivered in October 1969, upon the completion of successful sea trials. In addition to demonstrating the feasibility of nuclear propulsion at deep depths, NR-1 provides a valuable capability to conduct extended search, recovery, survey, and surveillance missions to her test depth. A shakedown cruise is scheduled in 1970, to

demonstrate the endurance and performance of both the submersible and her crew. This will include surveys of the ocean bottom, canyon navigation, visual inspection of a sunken hulk, and other mission-oriented exercises preparatory to her operational utilization.

The large object salvage system (LOSS) development responds to a Navy mission requirement to be able to recover large objects, including intact submarine hulls, from depths down to 850 feet. Culminating a 2-year effort, the related MK-I portable deep dive system was delivered and is now being tested at progressively deeper depths down to 850 feet. Air-transportable, this system has been designed primarily to support worldwide salvage requirements from ships of opportunity. Feasibility studies, lift hardware development, and coordination with other deep ocean projects is in progress to devise an integrated salvage systems package.

In August 1969, the Navy successfully accomplished the largest deep recovery on record. The deep submersible *Alvin* was recovered from a depth of over 5,000 feet in the North Atlantic, where she had been lost almost a year earlier. This recovery feat was primarily accomplished through the cooperation of the Navy research ship *Mizar* and the commercial submersible *Aluminaut*. The combination of great depth, long lift, and great weight posed unprecedented problems. After several exploratory dives, *Aluminaut* attached a toggle bar to *Alvin's* hatch which led to a 4-1/2 inch nylon lift line led through the *Mizar's* center well. Once surfaced, *Alvin* was suspended under a salvage pontoon and towed homeward, in remarkably good condition after her long submergence.

The Navy has an integrated deep submergence biomedical development program which has as one of its objectives the safe and efficient underwater operations by divers to depths of 1,000 feet for periods of up to 30 days. The Bureau of Medicine and Surgery has produced a development plan for attainment of this objective by 1977. Total biomedical efforts now underway support all facets of Navy's deep submergence program, including ambient pressure diving and vehicle and habitat occupancy.

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1. Marine Science Affairs - Selecting Priority Programs. Annual Report of the President to the Congress of Marine Resources and Engineering Development. April 1970, pp. 175-177.

REPORT OF FINDINGS OF BOARD OF INVESTIGATION INTO ACCIDENT RELATING TO SEALAB III[1]

1969

(Excerpts)

The Secretary of the Navy, John H. Chafee, announced today that the record of the Board of Investigation which probed the death of SEALAB III aquanaut Berry L. Cannon on February 17, 1969, concluded that, although the cause of death could not be established beyond all doubt, it was most probably the result of carbon dioxide poisoning.

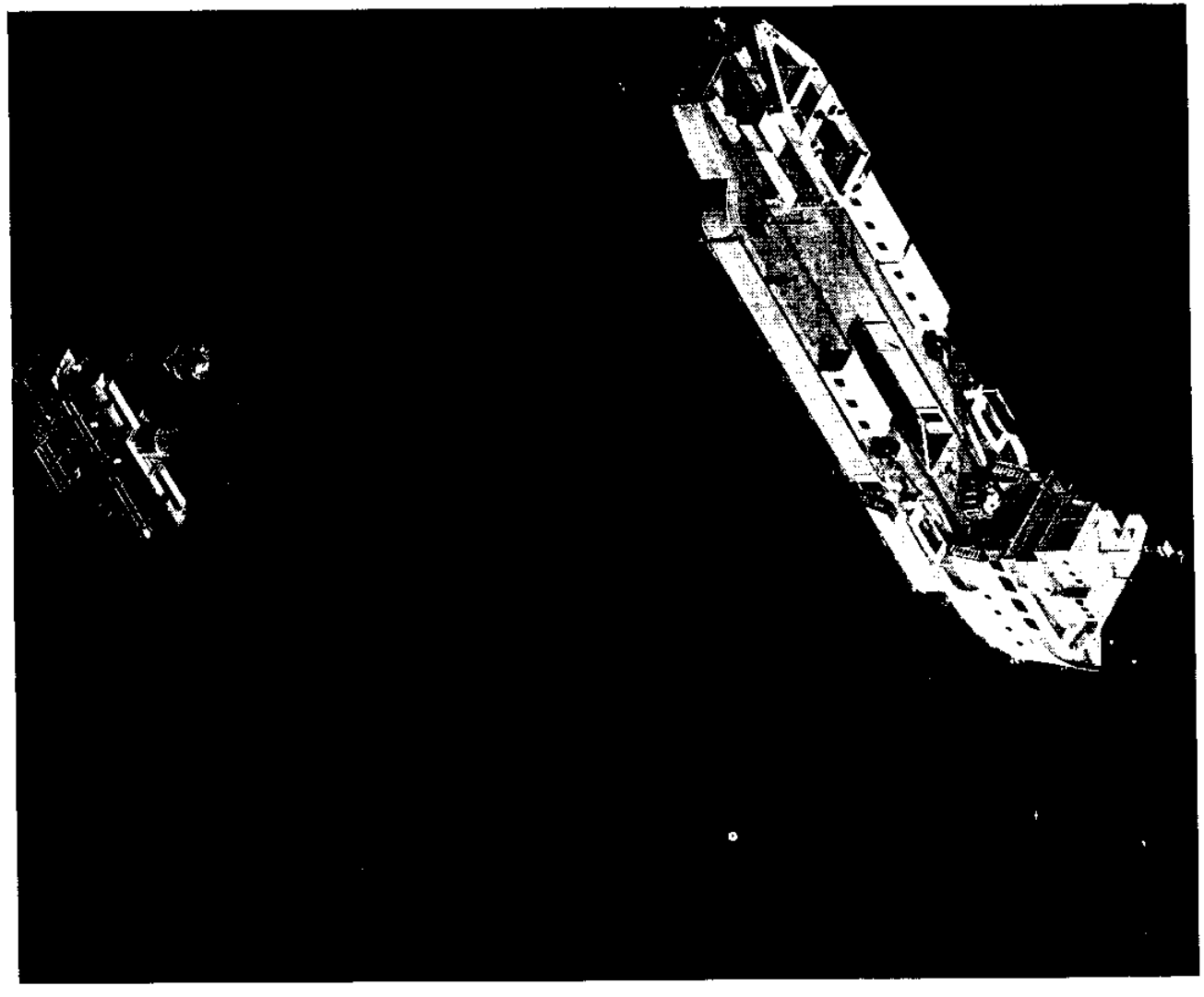
A canister in the diving gear worn by Mr. Cannon during his last dive had not been filled with a substance for filtering carbon dioxide from his breathing mixture. Autopsy and toxicological findings supported this diagnosis, although stress due to cold and difficulty in breathing were believed to be contributing factors....

SEALAB III is an experimental program designed to evaluate and develop techniques and equipment to further Navy operational capabilities in the deep ocean. It is part of the Navy's broader Man-in-the-Sea Program.

On February 15, 1969, SEALAB III units were embarked off San Clemente Island, Calif., and completed lowering an unmanned habitat (an ocean-bottom house) to the sea floor, 610 feet below the surface.

The normal procedure in transferring divers to the habitat is to subject them to compression in a deck decompression chamber on board a tending vessel, prior to lowering them in a pressurized capsule to the habitat. A team of four divers, including Mr. Cannon, a Navy civilian employee and volunteer aquanaut, were lowered in the capsule on February 16. Mr. Cannon and his teammate, Chief Warrant Officer Robert A. Barth, USN, swam out of the capsule and completed all measures preparatory to opening the habitat. Experiencing unexpected cold and breathing difficulties, they returned to the surface before trying to open the habitat's hatch.

They remained in the decompression chamber, where they continued in a pressurized state. The next morning, they again proceeded to the habitat in the transfer capsule. Mr. Cannon and CWO Barth swam together approximately 35-50



SEALAB III

Courtesy United States Navy Department

feet to the habitat. At the habitat CWO Barth noticed that Mr. Cannon was having difficulty. He immediately tried to insert a breathing device in Mr. Cannon's mouth, but was unsuccessful. He then carried Mr. Cannon back to the capsule, assisted by another teammate. Unsuccessful resuscitative attempts were made while the capsule was being raised to the surface. After arrival at the decompression chamber, Mr. Cannon was pronounced dead by one of the doctors in attendance.

All deep diving operations were immediately suspended pending completion of the investigation. Resumption of SEALAB III habitat operations has not yet been scheduled.

The assembly and checking of Mr. Cannon's equipment was the responsibility of Chief Wells, who was not able to say positively that the canister had been properly filled before the breathing apparatus was issued for use. The board found the Senior Chief Petty Officer to be thoroughly experienced. In considering disciplinary action against him, the fact that he had eighteen years of competent service in diving duties, had been selected as an aquanaut, and enjoyed a personal reputation for conscientiousness, ability, and personal integrity were all taken into account. The board considered him to have been negligent in signing log entries to the effect that a fresh canister of carbon-dioxide absorbent had been inserted into the rig when he had not in fact checked this fact or had it checked by others....

The board was of the opinion that Mr. Cannon's death was accidental. All proper emergency procedures were followed when he was seen to be in difficulty, but his death occurred either when he was returned to the capsule or while it was being raised to the surface. Mr. Cannon was considered to be in good health prior to the dives and well trained and experienced for the work....

The Board of Investigation also submitted recommendations regarding changes in organization, procedures, testing, and further research to enhance the margin of diver safety and effectiveness of equipment in an effort to reduce the possibility of recurrences.

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1. News Release, Office of Assistant Secretary of Defense (Public Affairs), Washington, D.C., September 24, 1969.

Suggested References for Further Reading

Marine Science Affairs, 1970.

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Chapter 6, "Accelerating Use of Food from the Sea."
Chapter 8, "Advancing Man in the Sea."
Chapter 11, "Furthering Marine Science Research and Manpower."

Our Nation and the Sea.

Chapter 5, "Living Resources of the Sea and Their Regulation."
Chapter 6, "Mineral Resources and Their Exploitation."

The following selected articles bear upon aspects of marine utilization:

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Klima, Edward F., "An Advanced High Seas Fishery and Processing System." *Marine Technology Society Journal*, Vol. 4, No. 5, September-October 1970, pp. 80-87.

Nunn, Robert R., "Fish Protein Concentrate Production on the Rise." *Ocean Industry*, Vol. 3, No. 11, November 1968, pp. 47-50; *ibid.*, Vol. 4, No. 1, January 1969, pp. 36-42.

Pinchot, Clifford, "Marine Farming." *Scientific American*, Vol. 223, No. 6, December 1970, pp. 15-21.

Kauffman, Alvin, "The Economics of Ocean Mining." *Marine Technology Society Journal*, Vol. 4, July-August 1170, pp. 58-65.

CHAPTER FOUR

POLLUTION OF THE SEAS

Introductory Note

The turn of the decade of the Seventies has seen a new public awareness of the magnitude of pollution in the sea and the need for curbing the indiscriminate dumping of waste. This is one part of the more general concern for preserving the quality of the environment to avoid destroying the ecological balance. Legislation to compel manufacturers to clean up automobile exhausts, to establish water quality standards, to stop use of DDT and the dumping of phosphates and toxic wastes into lakes and streams, to prohibit factories pouring fumes into the air, to force communities to treat sewage before releasing it into lakes, rivers, bays and tidal waters, to impose stiff regulations upon oil drillers and tankers to prevent spillage of oil into the sea, and liabilities upon those responsible for spillage, are manifestations of the new outlook.

Looking back, it can be seen that two episodes in particular helped promote the wave of recent legislation and regulation seeking to curb pollution. The first was the disaster of the tanker *Torrey Canyon* off southwest England in 1967 with its spilling of 118,000 tons of crude oil that floated onto the beaches of England and France, doing great damage to wildlife and property. The second incident was the blowout of the oil well in Federally-leased acreage in the Santa Barbara Channel, loosing another torrent of thick black oil onto

beaches and shorefront properties. The outcries that followed these desecrations unleashed widespread demands for cleaner waters and better precautions. These were even tied in with the mounting concerns of ecologists and conservationists over the poisoning of the atmosphere and the destruction of values taking place generally as a result of industrialization.

With over one-half of our population living close to the shores, the problem of pollution on land is related to that of the ocean. The cumulative effects of the outflows of sewage, thermal effluents, and toxic wastes from cities and industries, repeated spillages of oil from passing vessels, the dumping of all manner of solid wastes by cities and the military in the ocean, as well as the plague of oil spills from offshore drilling platforms, and the mounting discharge of raw sewage and garbage from pleasure boats and marinas, have caused many coastal waters to become turgid with filth. Disgusting as this is to man, lowering the value of the environment and inhibiting its use for recreation, it is more serious for animals that spend their lives in this locale.

The extent of the damage already done is not fully known. But the amounts of DDT and mercury poisoning found concentrated in Great Lakes' salmon, pike and other fish, in shellfish taken in East Coast tidal flats, and in tuna and swordfish caught far at sea in the Pacific, warn that the deleterious effects have become very far-reaching. Nor are they limited to the waters of this hemisphere. Fish and birds taken in remote areas of the Pacific, even in the Antarctic,

have contained traces of poisons spread from industrial centers.

The upshot of this is that mankind can no longer afford to treat the ocean, even with its vast expanse, as a free disposal site for wastes. The heavy kills of fish and other organisms that have turned up in recent years in rivers, lakes and coastal waters signal the damage that is being done to marine ecosystems. Areas of the sea that have experienced heavy urban dumping, as off the New Jersey coast, are found to be virtually devoid of life. And the quantities of shellfish taken from nearby sewage outfalls that are found to contain hepatitis, polio, and other pathogens inform us that by pouring our human wastes into the seas we have set up a biological multiplier link that reaches back to man via the food chain. Very little is known as yet about the effects of heavy metals, chlorinated organic compounds, and possible carcinogenic components of petroleum upon marine life that are released into the seas.

Likewise unknown to man, as experts of the Pentagon, and even Russell Train, chairman of the National Council on Environmental Quality, had to testify before the Congress in the summer of 1970, are the ultimate effects of sinking large quantities of leaking nerve gas containers in the high seas off Florida by the United States Army. This episode was serious enough, however, to lead the British Government to lodge a formal protest with Washington, causing the Army to announce it would dump no more containers in the sea.

Philip H. Abelson, President of the National Academy of Sciences, has written in Science, "The recent measurements of mercury in tuna and of DDT in other fishes should warn us that we cannot count on the ocean as an almost infinite sink. We have awakened to the fact of very large concentrating effects, and we shall probably find more examples....We would be imprudent not to take action against heavy metal pollution. It would also be imprudent not to expand greatly a search for man-made and petroleum-derived chemicals in marine biota." Mr. Abelson concludes his editorial in Science with the cautionary word that "we should do whatever is necessary to decrease the amount of petroleum released to the environment and to regulate the discharge of raw sewage into the oceans."[1]

The Federal Government has made decisive responses to some of the problems. Regulations have been issued to prevent and control water pollution by federal activities, although this did not deter the Army from dumping nerve gases in the ocean. An Environmental Protection Agency to research, coordinate, and monitor pollution control activities has been organized, along with an Environmental Quality Council to advise on further steps. Regulations governing liability for the discharge of oil at sea and the assigning of fines are now in effect. Contingency plans have been established for mobilizing the appropriate agencies of government to deal with large-scale

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[1] Philip H. Abelson, "Marine Pollution," Science, Vol. 171, No. 3966 (8 January 1971), p. 21.

oil spills. These efforts are certain to continue notwithstanding the ambivalences that exist.

President Nixon in his January 1970 State of the Union Message stressed that in the Seventies pollution may well occupy a position of importance second only to that of peace. He proposed a $10 billion nationwide program to assist municipalities to build modern waste treatment plants, the setting of increasingly strict standards regarding automobile exhausts, and declared that the prices of goods sold should include the costs of producing and disposing of them without damage to the environment.

As technology advances, further intrusion of man into the sea is bound to occur. This is especially true with respect to the mining and energy fuel industries. Already offshore wells produce 16 percent of the world's supply of fuel oil. New drilling is proceeding at a rate approaching 5,000 wells a year. Dredging spoil dumped by the Army Corps of Engineers from clearing harbors and estuaries is a large contributor to marine pollution. It will not be long before industry is dredging continuously in deep water for manganese and possibly other metals, bringing up quantities of mud, gravel and other detritus that will be released to float back down through the sea. What this disturbance of the environment will do to living forms in the sea cannot be said. That it will have some effect can hardly be doubted. As Mr. Abelson wisely phrased it: It would be "imprudent" not to consider what the effects of this added disturbance may be.

Only by enlisting the cooperation of all agencies of government, as well as of industry, and maintaining an aroused public opinion can adequate measures be taken in proper time to avert further serious pollution of the marine environment. Those working in the sea must be made cognizant of the potential dangers of their actions and be forced to minimize their harmful effects.

The documents that follow describe some of the steps taken by government at the beginning of the Seventies to curb pollution and to clean up serious after effects. They bespeak a progressive tightening of controls, an awareness that the resources of government must be employed to save mankind from the consequences of its own mindless practices. The accounts of filth encountered in over 1,500 miles of the ocean crossing by Thor Heyerdahl's reed sailing craft *Ra-II* from Morocco to Barbados attest that there is no time to lose in curbing pollution of the ocean if man is to preserve a clean, healthy environment for recreation and nurture of life.

Suggested References for Further Reading

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Chapter 2, "A Perspective for Marine Science Affairs."
Chapter 8, "Facilitating Transport and Trade."

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Chapter 7, "Pollution of Waters."

Council on Environmental Quality, Ocean Dumping - A National Policy. Washington: Government Printing Office, 1970.

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Holcomb, Robert W., "Oil in the Ecosystem." Science, Vol. 166, No. 3902, October 10, 1969, pp. 204-206.

Lehr, W. E., "Progress in High Seas Oil Pollution Prevention." Marine Technology Society Journal, Vol. 5, No. 1, January-February 1971, pp. 7-14.

THE OIL SPILL PROBLEM

First Report of the President's Panel on Oil Spills[1]

Summary of Findings and Recommendations

1969

1. Although oil spills cannot be eliminated entirely, steps can be taken to reduce the probability that they will occur. Steps can also be taken to prepare for oil spills so that the damage and deleterious effects are reduced. Despite the lessons learned from the Torrey Canyon, Santa Barbara and other spills, the nation is not doing enough in these areas.

2. The United States does not have at this time sufficient technical or operational capability to cope satisfactorily with a large scale oil spill in the marine environment. A research, development and deployment program to monitor and control massive spills should be implemented to advise the public of the probability and predictability of oil spills and of the existence and effectiveness of standby cleanup capabilities.

3. Responsibility for developing technology on oil spills should be vested in a single federal authority, with mandates to stimulate private industry involvement and to work coordinately with local governments. The authority responsible for developing an oil spill technology should also undertake the jobs of forecasting the probable incidences of oil spill events and arranging for deployment of emergency equipment accordingly.

4. Similarly, there is need to assign to a single agency the operational responsibility for dealing with an oil spill. The current contingency plan should be revised and implemented and it should provide for a fund upon which the commander of an oil spill team can draw for meeting the costs of operations to control an oil spill.

5. In all oil spill events, the contingency plan should also provide for assembling, separate from the operations team to combat the spill, a group of ecologists, environmental scientists, engineers, economists, and others with expertise in the area concerned, to advise the operations team and to recommend actions for appropriate studies and analyses to assess the effects of the spill.

6. There is no clear policy for determining when the public interest in an oil spill should preempt private interests.

Jurisdictional responsibilities and liability for damage are not clearly defined. A review of legislative and administrative practices in these areas is recommended.

7. There is need for a quasi-independent advisory group on oil pollution to provide an overview of this subject for the benefit of the President, the Congress, and the public at large. We recommend that an Advisory Board on Oil Pollution and Hazardous Fluids be established to advise the President and the National Interagency Committee with respect to policies, programs, and plans relative to the prevention or mitigation of pollution from the transportation, processing and utilization of oily substances and other hazardous fluids.

8. Coastal areas of potentially high environmental risks relative to oil tanker shipping lanes and terminals should be identified. Steps should be taken immediately to negotiate international agreements providing firm regulatory control of shipping lanes used for transportation of oil and hazardous materials.

9. Within the federal agencies an authority and responsibility should be clearly identified and delegated for:

(a) Design specification and inspections of ships, barges and port facilities with respect to overall size, compartments, loading equipment, navigational equipment and ship control, and pollution control equipment.

(b) Monitoring and regulating ship movement in the territorial waters of the United States.

(c) Design specification, construction of pipelines carrying oil and hazardous fluids.

(d) Monitoring major spillage incidents with chronological estimates of oil contamination, and informing the operational agency responsible for cleanup.

10. Along many coastal regions the production of oil and gas is one of the most valuable industrial activities for direct economic return. Nevertheless in certain areas of great population density and high recreation and aesthetic value it is essential that: oil well operations be conducted under stringent regulations and supervision using the most up-to-date technology in order to minimize the possibility of oil leakage; and any oil companies holding offshore leases be required to show their capability for control, containment and removal of spilled oil from the sea to the responsible agencies.

11. Because of variable oceanographic characteristics and differing beneficial uses of the ocean, the potential consequences or environmental degradation in case of well leakage are highly variable. Therefore, some situations require higher standards of operation and supervision than others. If special problems are encountered then special regulations and procedures may be required.

1. First Report of Panel, 1969. Washington: Executive Office of the President, Office of Science and Technology.

OFFSHORE OIL POLLUTION

Message from President Nixon to the Congress

May 20, 1970

To the Congress of the United States:

The oil that fuels our industrial civilization can also foul our natural environment.

The threat of oil pollution from ships--both at sea and in our harbors--represents a growing danger to our marine environment. With the expansion of world trade over the past three decades, seaborne oil transport has multiplied tenfold and presently constitutes more than 60 percent of the world's ocean commerce.

This increase in shipping has increased the oil pollution hazard. Within the past ten years, there have been over 550 tanker collisions, four-fifths of which have involved ships entering or leaving ports. The routine discharge by tankers and other ships of oil and oily wastes as a part of their regular operation is also a major contributor to the oil pollution problem.

The development of world commerce and industry and its growing dependence on oil need not result in these added dangers. The growing threat from oil spills can be contained--not by stopping industrial progress--but through a careful combination of international cooperation and national initiatives.

This message outlines a number of actions which the Congress should take to reduce the risks of oil pollution. It also announces additional executive measures which will promote this same end and calls for the cooperation of industry and the American public to aid in this important effort.

1. *International Conventions*

The problem of oil spills is a major international environmental problem and any remedy must deal effectively with its global implications. Last year in Brussels, working under the auspices of the Intergovernmental Maritime Consultative Organization, an arm of the United Nations, the United States joined with other nations in reaching important agreements in this area. We signed two new

TANKER DISASTERS - SOURCE OF OIL POLLUTION

Courtesy Wide World Photos

conventions which would allow us to take actions within an international framework to prevent oil spill damages and to assure compensation when spills occur.

Today, I am transmitting these conventions to the Senate for its advice and consent. The ratification of the first of these conventions will empower us, by international agreement, to take preventive action against vessels on the high seas which threaten imminent pollution danger to our coasts. Had this treaty been in force at the time of the Torrey Canyon disaster in 1967, effective action could have been initiated without delay to prevent or limit the damaging effects. The second convention imposes strict civil liability upon the owner of vessels responsible for pollution damage to coastal areas, regardless of the location of the vessel. The Congress should consider the differences between existing domestic legislation and this convention and, if necessary, enact conforming legislation. In ratifying these conventions, we will demonstrate our firm belief that the danger of oil pollution is an urgent matter for international regulation, and that innocent victims of oil spills should not go uncompensated.

Another major international action to curb oil pollution was the adoption last year of amendments to the 1954 Convention for the Prevention of Pollution of the Sea by Oil. These amendments deal principally with the intentional discharge of oil or oily wastes on the high seas and establish new rules prohibiting the discharge of oil within 50 miles of our coast. These amendments are also being submitted to the Senate for its advice and consent, and legislation will be submitted to provide for the effective enforcement of these new international requirements.

The amendments to the 1954 Convention may not go into effect for some time, since they require ratification by other nations. This process could take several years. Therefore, I am instructing appropriate United States authorities to bring the provisions of these amendments into effect with respect to American vessels as soon as the implementing legislation is adopted. I hope that other nations will take similar action to implement these changes for their own vessels before the treaty amendments go into effect.

The government of the United States is eager to participate in any international forum considering the problems of marine pollution. We particularly support the efforts of NATO's Committee on the Challenges of Modern Society which will sponsor a conference this fall in Brussels to exchange information and make recommendations for further inter-

national action concerning oil spills.

2. *International Standards for Ship Construction and Operation*

The best way to protect our ocean resources and coastal areas from oil damage is to prevent the occurrence of oil spills. The establishment of more effective international standards for both the construction and the operation of tanker vessels will materially reduce the potential hazard.

The Secretary of State is being instructed to seek effective multilateral action to prescribe international standards for the construction and operation of tankers. The Secretary of Commerce, with the assistance of the Secretary of Transportation, will develop the specific technical standards or criteria which could form the basis for multilateral actions.

3. *Ports and Waterways Safety Act*

I am asking the Congress to enact the Ports and Waterways Safety Act of 1970, a law which would give the Coast Guard additional authority to protect against oil spills in several important ways. It would allow the Coast Guard to control vessel traffic in the inland waters and the territorial seas of the United States, to regulate the handling and storage of dangerous cargoes on the waterfront, to establish safety requirements for waterfront equipment and facilities, and to set up safety zones or other controlled access areas in and near U.S. ports and harbors. This legislation could significantly enhance our drive to prevent oil pollution and I hope the Congress will give it early and favorable attention.

4. *Increased Surveillance*

A large number of oil spills occur in waters close to our shores. Many of these spills result from willful violations of laws which limit the discharging of oil. Such spills can be reduced by more stringent surveillance procedures. All government agencies are being directed to instruct their vessel and aircraft commanders and other personnel to immediately report all oil spills to the Coast Guard. Every citizen who observes a spill of oil should do likewise. The Commandant of the Coast Guard will increase offshore air patrols in the areas of highest spill potential and will enforce vigorously all of our anti-pollution laws.

5. *Harbor Advisory Radar Systems*

Just as air traffic controllers are necessary to the safe operation of airplanes, so an improved traffic control system is needed in our nation's most active harbors. A system which is known as the Harbor Advisory Radar System has been developed and is now operating successfully in the San Francisco area. The Secretary of Transportation will establish more such systems in ports that have a heavy traffic of oil-bearing vessels. These radar systems, operated by the Coast Guard, will enable tankers and other vessels to move through congested areas with much less risk of collision and will make ports such as New York, New Orleans and Houston safer than they are at present. Pilots who use these ports will receive harbor surveillance data and traffic information by radio from a control center that will be manned 24 hours a day throughout the year.

6. *Research and Development: Emergency Oil Transfer and Storage Systems*

In addition to specific legislation and regulations that can contribute significantly to the reduction of oil spill hazards, a broad program of research and development concerning oil pollution must also be pursued. These efforts must be sufficiently diverse to treat all aspects of spill prevention, cleanup and the mitigation of ecological damage. Many such programs are now underway in government agencies and university laboratories. These research and development efforts will continue to receive emphasis until satisfactory solutions are found.

One notable result of our research is the test which was conducted last week of an ingenious system for collecting and removing oil from damaged vessels. Using this system, up to 20,000 tons of oil a day could be pumped from stranded or leaking tankers into oil-tight plastic bags. These bags could be delivered by air to the scene of the accident and could be towed away safely. The Secretary of Transportation will examine the results of the current tests and will make such a system available for use on both the east and west coasts of this country as soon as practicable.

7. *Cooperation of Private Industry and Port Authorities*

If we are to stop or even reduce the discharge of waste oil at sea, then we must provide alternate means of disposing of it. Port areas should be equipped with facilities, stationary or mobile, to receive oily discharges from vessels upon their arrival in port. If the amendments

to the 1954 Oil Pollution Convention I have referred to are adopted and permissible oil discharges at sea are further reduced, then such facilities will be indispensable. Therefore, I am calling upon private industry and port authorities to develop additional facilities for the reception of oily wastes. The Secretary of Commerce with the assistance of the Secretaries of Interior and Transportation will coordinate this effort.

8. *Radiotelephones*

Vessels in the United States navigable waters are presently required only to use whistle signals to communicate with other vessels. Direct radio communications between vessels would supplement and clarify the information they are able to exchange as they maneuver in close proximity to one another. Legislation to require the use of bridge-to-bridge radiotelephones is now pending in the Congress and I urge its prompt enactment.

9. *The Licensing of Towboat Operators*

Legislation is also pending in the Congress that would require uninspected towing vessels to be under the direction and control of a licensed operator. I endorse that concept and call for its consideration by the Eongress. We must do everything we can to increase the margin of safety for maritime traffic.

10. *Financing Cleanup Operations*

When oil spills occur, considerable resources are required to finance the cleanup operation. The provisions of the Water Quality Improvement Act of 1970 call for the establishment of a revolving fund which will assure that money is immediately available to initiate and conduct such efforts. The law provides that the fund shall be reimbursed by those who are responsible for the spill.

Today, I am announcing the formal establishment of that fund and am delegating responsibility for its administration to the Secretary of Transportation. As soon as regulations governing the operations of this fund are completed and approved, I will forward to the Congress a request for $35 million to finance its operations.

* * * * * * * *

This Administration is committed to protect the national environment without retarding social and economic progress.

The program outlined in this message involves significant national and international actions which will help us to meet this commitment. By working to reduce and prevent oil spills and by responding more effectively to those spills which do occur, these measures will help to improve the quality of life in our nation and in all parts of our world.

RICHARD NIXON

THE WHITE HOUSE, May 20, 1970.

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1. Department of State Bulletin, Vol. LXII, No. 1616, June 15, 1970, pp. 754-756.

INTERNATIONAL CONVENTION FOR THE PREVENTION OF POLLUTION OF THE SEA BY OIL, 1954, AS AMENDED 1969[1]

(Excerpts)

Article I

(1) For the purposes of the present Convention, the following expressions shall (unless the context otherwise requires) have the meanings hereby respectively assigned to them , that is to say:

'The Bureau' has the meaning assigned to it by Article XXI;

'Discharge' in relation to oil or to oily mixture means any discharge or escape howsoever caused;

'Heavy diesel oil' means diesel oil, other than those distillates of which more than 50 per cent by volume distils at a temperature not exceeding 340°C when tested by A.S.T.M. Standard Method D.86/59;

'Instantaneous rate of discharge of oil content' means the rate of discharge of oil in litres per hour at any instant divided by the speed of the ship in knots at the same instant.

'Mile' means a nautical mile of 6,080 feet or 1,852 metres;

'Nearest land.' The term 'from the nearest land' means 'from the base-line from which the territorial sea of the territory in question is established in accordance with the Geneva Convention on the Territorial Sea and the Contiguous Zone, 1958';

'Oil' means crude oil, fuel oil, heavy diesel oil and lubricating oil, and 'oily' shall be construed accordingly;

'Oily mixture' means a mixture with any oil content;

'Organization' means the Inter-Governmental Maritime Consultative Organization;

'Ship' means any sea-going vessel of any type whatsoever, including floating craft, whether self-propelled or

towed by another vessel, making a sea voyage; and 'tanker' means a ship in which the greater part of the cargo space is constructed or adapted for the carriage of liquid cargoes in bulk and which is not, for the time being, carrying a cargo other than oil in that part of its cargo space.

(2) For the purposes of the present Convention, the territories of a Contracting Government mean the territory of the country of which it is the Government and any other territory for the international relations of which it is responsible and to which the Convention shall have been extended under Article XVIII.

Article II

(1) The present Convention shall apply to ships registered in any of the territories of a Contracting Government and to unregistered ships having the nationality of a Contracting Party, except:

(a) tankers of under 150 tons gross tonnage and other ships of under 500 tons gross tonnage, provided that each Contracting Government will take the necessary steps, so far as is reasonable and practicable, to apply the requirements of the Convention to such ships also, having regard to their size, service and the type of fuel used for their propulsion;

(b) ships for the time being engaged in the whaling industry when actually employed on whaling operations;

(c) Ships for the time being navigating the Great Lakes of North America and their connecting and tributary waters as far east as the lower exit of St. Lambert Lock at Montreal in the Province of Quebec, Canada;

(d) naval ships and ships for the time being used as naval auxiliaries.

(2) Each Contracting Government undertakes to adopt appropriate measures ensuring that requirements equivalent to those of the present Convention are, so far as is reasonable and practicable, applied to the ships referred to in subparagraph (d) or paragraph (1) of this Article.

Article III

Subject to the provisions of Articles IV and V:

(a) the discharge from a ship to which the present Convention applies, other than a tanker, of oil or oily mixture shall be prohibited except when the following conditions are all satisfied:

(i) the ship is proceeding en route;

(ii) the instantaneous rate of discharge of oil content does not exceed 60 litres per mile;

(iii) the oil content of the discharge is less than 100 parts per 1,000,000 parts of the mixture;

(iv) the discharge is made as far as practicable from land;

(b) the discharge from a tanker to which the present Convention applies of oil or oily mixture shall be prohibited except when the following conditions are all satisfied:

(i) the tanker is proceeding en route;

(ii) the instantaneous rate of discharge of oil content does not exceed 60 litres per mile;

(iii) the total quantity of oil discharged on a ballast voyage does not exceed 1/15,000 of the total cargo-carrying capacity;

(iv) the tanker is more than 50 miles from the nearest land;

(c) the provisions of sub-paragraph (b) of this Article shall not apply to:

(i) the discharge of ballast from a cargo tank which, since the cargo was last carried therein, has been so cleaned that any effluent therefrom, if it were discharged from a stationary tanker into clean calm water on a clear day, would produce no visible traces of oil on the surface of the water; or

(ii) the discharge of oil or oily mixture from machinery space bilges, which shall be governed by the provisions of sub-paragraph (a) of this Article.

Article IV

Article III shall not apply to:

(a) the discharge of oil or of oily mixture from a ship for the purpose of securing the safety of a ship, preventing damage to a ship or cargo, or saving life at sea;

(b) the escape of oil or of oily mixture resulting from damage to a ship or unavoidable leakage, if all reasonable precautions have been taken after the occurrence of the damage or discovery of the leakage for the purpose of preventing or minimizing the escape.

Article V

Article III shall not apply to the discharge of oily mixture from the bilges of a ship during the period of twelve months following the date on which the present Convention comes into force for the relevant territory in accordance with paragraph (1) of Article II.

Article VI

(1) Any contravention of Articles III and IX shall be an offence punishable under the law of the relevant territory in respect of the ship in accordance with paragraph (1) of Article II.

(2) The penalties which may be imposed under the law of any of the territories of a Contracting Government in respect of the unlawful discharge from a ship of oil or oily mixture outside the territorial sea of that territory shall be adequate in severity to discourage any such unlawful discharge and shall not be less than the penalties which may be imposed under the law of that territory in respect of the same infringements within the territorial sea.

(3) Each Contracting Government shall report to the Organization the penalties actually imposed for each infringement.

Article VII

(1) As from a date twelve months after the present Convention comes into force for the relevant territory in respect of a ship in accordance with paragraph (1) of Article II, such a ship shall be required to be so fitted as to prevent, as far as reasonable and practicable, the escape of oil into bilges, unless effective means are provided to ensure that the oil in the bilges is not discharged in contravention of this Convention.

(2) Carrying water ballast in oil fuel tanks shall be avoided if possible.

Article VIII

(1) Each Contracting Government shall take all appropriate steps to promote the provision of facilities as follows:

(a) according to the needs of ships using them, ports shall be provided with facilities adequate for the reception, without causing undue delay to ships, of such residues and oily mixtures as would remain for disposal from ships other than tankers if the bulk of the water had been separated from the mixture;

(b) oil loading terminals shall be provided with facilities adequate for the reception of such residues and oily mixtures as would similarly remain for disposal by tankers;

(c) ship repair ports shall be provided with facilities adequate for the reception of such residues and oily mixtures as would similarly remain for disposal by all ships entering for repairs.

(2) Each Contracting Government shall determine which are the ports and oil loading terminals in its territories suitable for the purposes of sub-paragraphs (a), (b) and (c) of paragraph (1) of this Article.

(3) As regards paragraph (1) of this Article, each Contracting Government shall report to the Organization, for transmission to the Contracting Government concerned, all cases where the facilities are alleged to be inadequate.

Article IX

(1) Of the ships to which the present Convention applies, every ship which uses oil fuel and every tanker shall be provided with an oil record book, whether as part of the ship's official log book or otherwise, in the form specified in the Annex to the Convention.

(2) The oil record book shall be completed on each occasion, on a tank-to-tank basis, whenever any of the following operations take place in the ship:

(a) for tankers:

(i) loading of oil cargo;

(ii) transfer of oil cargo during voyage;

(iii) discharge of oil cargo;

(iv) ballasting of cargo tanks;

(v) cleaning of cargo tanks;

(vi) discharge of dirty ballast;

(vii) discharge of water from slop-tanks;

(viii) disposal of residues;

(ix) discharge overboard of bilge water containing oil which has accumulated in machinery spaces whilst in port, and the routine discharge at sea of bilge water containing oil unless the latter has been entered in the appropriate log book.

(b) for ships other than tankers:

(i) ballasting or cleaning of bunker fuel tanks;

(ii) discharge of dirty ballast or cleaning water from tanks referred to under (i) this sub-paragraph;

(iii) disposal of residues;

(iv) discharge overboard of bilge water containing oil which has accumulated in

machinery spaces whilst in port, and the routine discharge at sea of bilge water containing oil unless the latter has been entered in the appropriate log book.

In the event of such discharge or escape of oil or oily mixture as is referred to in Article IV, a statement shall be made in the oil record book of the circumstances of, and the reason for, the discharge or escape.

(3) Each operation described in paragraph (2) of this Article shall be fully recorded without delay in the oil record book so that all the entries in the book appropriate to that operation are completed. Each page of the book shall be signed by the officer or officers in charge of the operations concerned and, when the ship is manned, by the master of the ship. The written entries in the oil record book shall be in an official language of the relevant territory in respect of the ship in accordance with paragraph (1) of Article II, or in English or French.

(4) Oil record books shall be kept in such a place as to be readily available for inspection at all reasonable times, and, except in the case of unmanned ships under tow, shall be kept on board the ship. They shall be preserved for a period of two years after the last entry has been made.

(5) The competent authorities of any of the territories of a Contracting Government may inspect on board any ship to which the present Convention applies, while within a port in that territory, the oil record book required to be carried in the ship in compliance with the provisions of this Article, and may make a true copy of any entry in that book and may require the master of the ship to certify that the copy is a true copy of such entry. Any copy so made which purports to have been certified by the master of the ship as a true copy of an entry in the ship's oil record book shall be made admissible in any judicial proceedings as evidence of the facts stated in the entry. Any action by the competent authorities under this paragraph shall be taken as expeditiously as possible and the ship shall not be delayed.

Article X

(1) Any Contracting Government may furnish to the Government of the relevant territory in respect of the ship in accordance with paragraph (1) of Article II particulars in writing of evidence that any provision of the present Convention has been contravened in respect of that ship,

wheresoever the alleged contravention may have taken place. If it is practicable to do so, the competent authorities of the former Government shall notify the master of the ship of the alleged contravention.

(2) Upon receiving such particulars, the Government so informed shall investigate the matter, and may request the other Government to furnish further or better particulars of the alleged contravention. If the Government so informed is satisfied that sufficient evidence is available in the form required by its laws to enable proceedings against the owner or master of the ship to be taken in respect of the alleged contravention, it shall cause such proceedings to be taken as soon as possible. That Government shall promptly inform the Government whose official has reported the alleged contravention, as well as the Organization, of the action taken as a consequence of the information communication.

Article XI

[Nothing in the present Convention shall be construed as derogating from the powers of any Contracting Government to take measures within its jurisdiction in respect of any matter to which the Convention relates or as extending the jurisdiction of any Contracting Government.]

Article XII

[Each Contracting Government shall send to the Bureau and to the appropriate organ of the United Nations:

(a) the text of laws, decrees, orders and regulations in force in its territories which give effect to the present Convention;...

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1. Amendments adopted at Assembly of Inter-Governmental Maritime Consultative Organization meeting, London, October 21, 1969. Text from IMCO Document A VI/Res. 175, January 16, 1970.

INTERNATIONAL CONVENTION RELATING TO INTERVENTION ON THE HIGH SEAS IN CASES OF OIL POLLUTION CASUALTIES

Brussels, November 29, 1969[1]

(Excerpts)

The States Parties to the present Convention,

CONSCIOUS of the need to protect the interests of their peoples against the grave consequences of a maritime casualty resulting in danger of oil pollution of sea and coastlines,

CONVINCED that under these circumstances measures of an exceptional character to protect such interests might be necessary on the high seas and that these measures do not affect the principle of freedom of the high seas,

HAVE AGREED as follows:

ARTICLE I

1. Parties to the present Convention may take such measures on the high seas as may be necessary to prevent, mitigate or eliminate grave and imminent danger to their coastline or related interests from pollution or threat of pollution of the sea by oil, following upon a maritime casualty or acts related to such a casualty, which may reasonably be expected to result in major harmful consequences.

2. However, no measures ahll be taken under the present Convention against any warship or other ship owned or operated by a State and used, for the time being, only on government non-commercial service.

ARTICLE II

For the purposes of the present Convention:

1. "maritime casualty" means a collision of ships, stranding or other incident of navigation, or other occurrence on board a ship or external to it resulting in material damage or imminent threat of material damage to a ship or cargo;...

5. "Organization" means the Inter-Governmental Maritime Consultative Organization.

ARTICLE III

When a coastal State is exercising the right to take measures in accordance with Article I, the following provisions shall apply:

(a) before taking any measures, a coastal State shall proceed to consultations with other States affected by the maritime casualty, particularly with the flag State or States;

(b) the coastal State shall notify without delay the proposed measures to any persons physical or corporate known to the coastal State, or made known to it during the consultations, to have interests which can reasonably be expected to be affected by those measures. The coastal State shall take into account any views they may submit;

(c) before any measure is taken, the coastal State may proceed to a consultation with independent experts, whose names shall be chosen from a list maintained by the Organization;

(d) in cases of extreme urgency requiring measures to be taken immediately, the coastal State may take measures rendered necessary by the urgency of the situation, without prior notification or consultation or without continuing consultations already begun;

(e) a coastal State shall, before taking such measures and, during their course, use its best endeavours to avoid any risk to human life, and to afford persons in distress any assistance of which they may stand in need, and in appropriate cases to facilitate the repatriation of ships' crews, and to raise no obstacle thereto;

(f) measures which have been taken in application of Article I shall be notified without delay to the States and to the known physical or corporate persons concerned, as well as to the Secretary-General of the Organization.

ARTICLE IV

1. Under the supervision of the Organization, there shall be set up and maintained the list of experts contemplated by Article III...

ARTICLE V

1. Measures taken by the coastal State in accordance with Article I shall be proportionate to the damage actual or threatened to it.

2. Such measures shall not go beyond what is reasonably necessary to achieve the end mentioned in Article I and shall cease as soon as that end has been achieved; they shall not unnecessarily interfere with the rights and interests of the flag State, third States and of any persons, physical or corporate, concerned.

3. In considering whether the measures are proportionate to the damage, account shall be taken of:

(a) the extent and probability of imminent damage if those measures are not taken; and

(b) the likelihood of those measures being effective; and

(c) the extent of the damage which may be caused by such measures.

ARTICLE VI

Any Party which has taken measures in contravention of the provisions of the present Convention causing damage to others, shall be obliged to pay compensation to the extent of the damage caused by measures which exceed those reasonably necessary to achieve the end mentioned in Article I....

ARTICLE XII

1. The present Convention may be denounced by any Party at any time after the date on which the Convention comes into force for that State.

2. Denunciation shall be effected by the deposit of an instrument with the Secretary-General of the Organization.

3. A denunciation shall take effect one year, or such longer period as may be specified in the instrument of denunciation, after its deposit with the Secretary-General of the Organization....

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1. Reprinted from International Legal Materials, Vol. IX, No. 1, January 1970, by permission of the American Society of International Law.

INTERNATIONAL CONVENTION ON CIVIL LIABILITY FOR OIL POLLUTION DAMAGE

Brussels, November 29, 1969[1]

(Excerpts)

The States Parties to the present Convention,

CONSCIOUS of the dangers of pollution posed by the worldwide maritime carriage of oil in bulk,

CONVINCED of the need to ensure that adequate compensation is available to persons who suffer damage caused by pollution resulting from the escape or discharge of oil from ships,

DESIRING to adopt uniform international rules and procedures for determining questions of liability and providing adequate compensation in such cases,

HAVE AGREED as follows:

ARTICLE I

(Definitions)

ARTICLE II

This Convention shall apply exclusively to pollution damage caused on the territory including the territorial sea of a Contracting State and to preventive measures taken to prevent or minimize such damage.

ARTICLE III

1. Except as provided in paragraphs 2 and 3 of this Article, the owner of a ship at the time of an incident, or where the incident consists of a series of occurrences at the time of the first such occurrence, shall be liable for any pollution damage caused by oil which has escaped or been discharged from the ship as a result of the incident.

2. No liability for pollution damage shall attach to the owner if he proves that the damage:

(a) resulted from an act of war, hostilities, civil war, insurrection or a natural phenomenon of an exceptional, inevitable and irresistible character, or

(b) was wholly caused by an act or omission done with intent to cause damage by a third party, or

(c) was wholly caused by the negligence or other wrongful act of any Government or other authority responsible for the maintenance of lights or other navigational aids in the exercise of that function.

3. If the owner proves that the pollution damage resulted wholly or partially either from an act or omission done with intent to cause damage by the person who suffered the damage or from the negligence of that person, the owner may be exonerated wholly or partially from his liability to such person.

4. No claim for compensation for pollution damage shall be made against the owner otherwise than in accordance with this Convention. No claim for pollution damage under this convention or otherwise may be made under this Convention or otherwise may be made against the servants or agents of the owner.

5. Nothing in this Convention shall prejudice any right of recourse of the owner against third parties.

ARTICLE IV

When oil has escaped or has been discharged from two or more ships, and pollution damage results therefrom, the owners of all the ships concerned, unless exonerated under Article III, shall be jointly and severally liable for all such damage which is not reasonably separable.

ARTICLE V

1. The owner of a ship shall be entitled to limit his liability under this Convention in respect of any one incident to an aggregate amount of 2,000 francs for each ton of the ship's tonnage. However, this aggregate amount shall not in any event exceed 210 million francs.

2. If the incident occurred as a result of the actual fault or privity of the owner, he shall not be entitled to avail himself of the limitation provided in paragraph 1 of this Article.

3. For the purpose of availing himself of the benefit of limitation provided for in paragraph 1 of this Article the

owner shall constitute a fund for the total sum representing the limit of his liability with the Court or other competent authority of any one of the Contracting States in which action is brought under Article IX. The fund can be constituted either by depositing the sum or by producing a bank guarantee or other guarantee, acceptable under the legislation of the Contracting State where the fund is constituted, and considered to be adequate by the Court or another competent authority.

4. The fund shall be distributed among the claimants in proportion to the amounts of their established claims....

10. For the purpose of this Article the ship's tonnage shall be the net tonnage of the ship with the addition of the amount deducted from the gross tonnage on account of engine room space for the purpose of ascertaining the net tonnage....

ARTICLE VIII

Rights of compensation under this Convention shall be extinguished unless an action is brought thereunder within three years from the date when the damage occurred. However, in no case shall an action be brought after six years from the date of the incident which caused the damage....

ARTICLE XI

1. The provisions of this Convention shall not apply to warships or other ships owned or operated by a State and used, for the time being, only on Government non-commercial service.

2. With respect to ships owned by a Contracting State and used for commercial purposes, each State shall be subject to suit in the jurisdictions set forth in Article IX and shall waive all defences based on its status as a sovereign State.

ARTICLE XII

This Convention shall supersede any International Conventions in force or open for signature, ratification or accession at the date on which the Convention is opened for signature, but only to the extent that such Conventions would be in conflict with it; however, nothing in this Article shall affect the obligations of Contracting States to non-Contracting States arising under such International Conventions....

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1. Reprinted from International Legal Materials, Vol. IX, No. 1, January 1970, by permission of the American Society of International Law.

NATO EXPERTS RECOMMEND INTERNATIONAL ACTION ON OCEAN OIL SPILLS

November 1970

Statement by Secretary of Transportation John A. Volpe[1]

(Excerpts)

The oceans of the world are a truly international resource. They constitute the connecting link over which move vast quantities of international commerce. They are an indispensable source of supply for millions of tons of the world's food supply. They form a unified part of the world's food supply. They form a unified part of the world's environmental system, contributing to the maintenance of the atmospheric balance of oxygen and carbon dioxide, influencing global climate, and providing the base for the world's water system. We use the oceans in many and increasing ways, and we must harmonize these uses if we are to make rational and efficient future use of the seas.

The oceans are threatened by pollutants of many kinds from many sources. Municipal, industrial, and agricultural wastes enter the oceans through our river systems. These and other pollutants also enter the oceans directly by deliberate dumping. There are pollutants which enter the oceans from the exploitation of the ocean floor and from the transportation system, the collision of the *Pacific Glory* and *Allegro* being only a too recent reminder.

The problems facing us in marine pollution are of many disciplines and transnational in nature. The sources are varied, and adequate controls are lacking.

The magnitude, complexity, and pressing nature of oil pollution problems and marine pollution generally is evidenced, in part, by the growing number of international organizations addressing the pollution problems we face in the world oceans.

Every NATO nation is actively participating in one or more of the intergovernmental organizations at work in the marine pollution field: IMCO, FAO, UNESCO and the IOC, the United Nations.* The action-oriented recommendations flowing

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*Key to abbreviations: IMCO, Intergovernmental Maritime Consultative Organization; FAO, Food and Agriculture Organization; UNESCO, United Nations Educational, Scientific and Cultural Organization; IOC, Intergovernmental Oceanographic Commission.

from this conference should thus prove of value not only to the nations of the North Atlantic Treaty Organization but also to the international bodies in which these nations participate. Additionally, the oil shipping industry and international industry committees are working toward increased safety and more effective pollution control....

[This] conference affords NATO nations the opportunity to demonstrate responsible leadership that will be clearly recognized around the world, to recommend actions that will sharpen the focus of international attention, and to work a catalytic effect on international progress in this field....

My Government proposes that NATO nations resolve to achieve--by mid-decade--a complete halt to all intentional discharge of oil and oily wastes into the oceans by tankers and other vessels. This is a fundamental and major goal; it may involve steps such as improved ship design aimed at clean ballast operations and the development of adequate port facilities to receive waste, oily bilge and ballast waters....

TEXT OF RESOLUTION[2]

The nations of the Alliance deeply concerned over the serious and immediate adverse consequences of discharges and spills of oil and oily waste into the oceans; regarding this problem as a matter of urgency for the preservation of the marine environment and man's use of the oceans; acknowledging their responsibilities as major users and beneficiaries of the oceans; recognizing that the problem of open water spills and discharges affects all countries and calls for international cooperation and solutions;

Resolve to support and accelerate attention on the part of international organizations, in particular IMCO, on the annexed recommendations of the conference,* and declare as follows:

NATO nations resolve at this time to achieve by mid-decade the elimination of intentional discharges of oil and oily wastes into the sea, and the minimization of accidental spills. The NATO nations will make every effort towards the realization of this goal, including but not limited to the following measures:

A. To pursue all necessary effective techniques and measures which would achieve the above goal, including the

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*Not printed here.

development of ship design features providing clean ballast operations, provision of adequate port facilities to receive oily wastes, mandatory requirements for tanker construction and design, traffic control in high density areas, and the introduction of regulations prohibiting all intentional discharges of oil and oily wastes into the sea by vessels under their flag.

B. To urge the convening of a special session of the IMCO Assembly in 1971 for the preparation and effective implementation of such measures in a treaty to be drafted and adopted in 1973 at the International Conference on Marine Pollution called for in IMCO Assembly resolution 176(IV) of 23 October 1969 whereby the organization is committed to work toward the prevention of marine pollution "with all possible speed."

C. To ratify rapidly the 1969 amendments of the 1954 Convention on the Prevention of Pollution of the Sea by Oil and in advance of these amendments coming into force internationally to urge their early universal adoption as guidelines for the preparation of national legislation for the purpose of their practical application and enforcement.

D. To render to each other all possible assistance in order to minimize and prevent damage caused by oil spills or threats of damage posed by stranding of oil tankers or collision.

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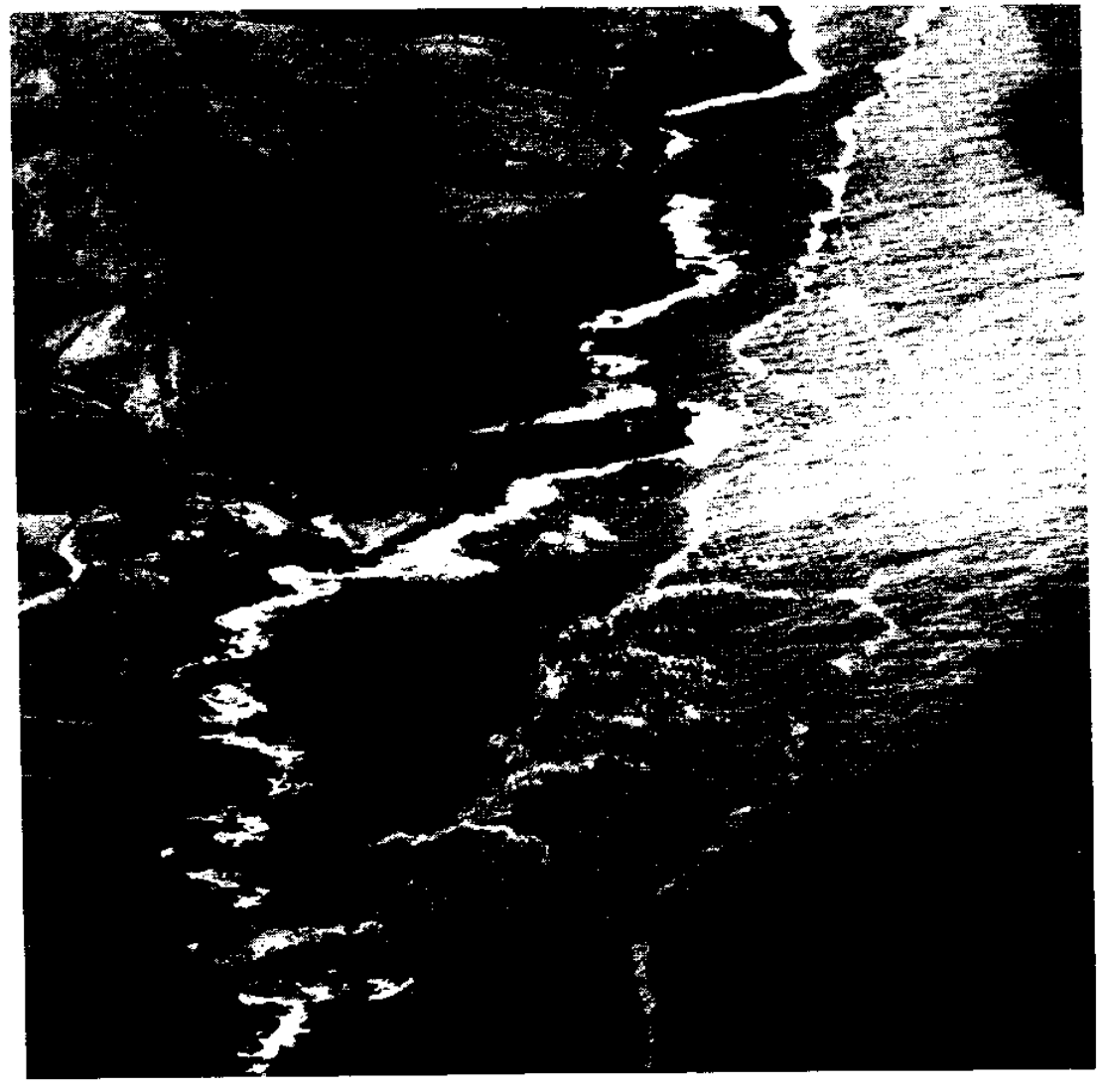
1. Department of State Bulletin, Vol. LXIII, No. 1640 (November 30, 1970), pp. 666-668.

2. Adopted on November 6, 1970.



POLLUTION IN COASTAL WATERS

Courtesy Federal Water Pollution Control Administration

ADMINISTRATION OF REFUSE ACT PERMIT PROGRAM

Executive Order of the President[1]

December 23, 1970

By virtue of the authority vested in me as President of the United States, and in furtherance of the purposes and policies of section 13 of the Act of March 3, 1899, c. 425, 30 Stat. 1152 (33 U.S.C. 407), the Federal Water Pollution Control Act, as amended (33 U.S.C. 1151 et seq.), the Fish and Wildlife Coordination Act, as amended (16 U.S.C. 661-666c), and the National Environmental Policy Act of 1969 (42 U.S.C. 4321-4347), it is hereby ordered as follows:

SECTION 1. *Refuse Act permit program.* The executive branch of the Federal Government shall implement a permit program under the aforesaid section 13 of the Act of March 3, 1899 (hereinafter referred to as "the Act") to regulate the discharge of pollutants and other refuse matter into the navigable waters of the United States or their tributaries and the placing of such matter upon their banks.

SEC. 2. *Responsibilities of Federal agencies.* (a)(1) The Secretary shall, after consultation with the Administrator respecting water quality matters, issue and amend, as appropriate, regulations, procedures, and instructions for receiving, processing, and evaluating applications for permits pursuant to the authority of the Act.

(2) The Secretary shall be responsible for granting, denying, conditioning, revoking, or suspending Refuse Act permits. In so doing:

(A) He shall accept findings, determinations, and interpretations which the Administrator shall make respecting applicable water quality standards and compliance with those standards in particular circumstances, including findings, determinations, and interpretations arising from the Administrator's review of State or interstate agency water quality certifications under section 21(b) of the Federal Water Pollution Control Act has been denied, or where issuance would be inconsistent with any finding, determination, or interpretation of the Administrator pertaining to applicable water quality standards and considerations.

(B) In addition, he shall consider factors, other than water quality, which are prescribed by or may be lawfully considered under the Act or other pertinent laws.

(3) The Secretary shall consult with the Secretary of the Interior, with the Secretary of Commerce, with the Administrator, and with the head of the agency exercising administration over the wildlife resources of any affected State, regarding effects on fish and wildlife which are not reflected in water quality considerations, where the discharge for which a permit is sought impounds, diverts, deepens the channel, or otherwise controls or similarly modifies the stream or body of water into which the discharge is made.

(4) Where appropriate for a particular permit application, the Secretary shall perform such consultations respecting environmental amenities and values, other than those specifically referred to in paragraphs (2) and (3) above, as may be required by the National Environmental Policy Act of 1969.

(b) The Attorney General shall conduct the legal proceedings necessary to enforce the Act and permits issued pursuant to it.

SEC. 3. *Coordination by Council on Environmental Quality.* (a) The Council on Environmental Quality shall coordinate the regulations, policies, and procedures of Federal agencies with respect to the Refuse Act permit program.

(b) The Council on Environmental Quality, after consultation with the Secretary, the Administrator, the Secretary of the Interior, the Secretary of Commerce, the Secretary of Agriculture, and the Attorney General, shall from time to time or as directed by the President advise the President respecting the implementation of the Refuse Act permit program, including recommendations regarding any measures which should be taken to improve its administration.

SEC. 4. *Definitions.* As used in this order, the word "Secretary" means the Secretary of the Army, and the word "Administrator" means the Administrator of the Environmental Protection Agency.

RICHARD NIXON

THE WHITE HOUSE,
December 23, 1970

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1. Federal Register, Vol. 35, No. 250--Friday, December 25, 1970, pp. 19627-19628.

CHAPTER FIVE

THE INTERNATIONAL SEABED AREA

Introductory Note

One of the most sweeping moves by the United States regarding the oceans in modern times took place with President Nixon's statement of policy for the seabeds in May 1970. This far-reaching declaration calling for a new regime of the beds of the high seas placed the United States at the forefront in proposing concrete steps for the creation of new machinery to regulate use of the deep-ocean beds. To be effective the President's announcement must be followed by the conclusion of a multilateral treaty that must then be ratified by the United States Senate and by other governments--bridges that have yet to be crossed.

United States policy, in Mr. Nixon's words, aims at resolving "the issue of whether the oceans will be used rationally and equitably and for the benefit of mankind, or whether they will become an arena of unrestricted exploitation and conflicting jurisdictional claims in which even the most advantaged nations will be losers." Otherwise, he warns, nations will take unilateral actions rendering international conflict virtually inevitable.

Specifically, the President recommended that:

a) The limits of national possession on the ocean bottom terminate at the 200-meter depth contour. Beyond this the seabeds should be viewed as the International Sea-

bed Area, a part of the "common heritage of all mankind."

b) The portion of the continental shelf extending seaward from the 200-meter isobath to specific points to be agreed upon, but including the slope and a part of the rise, should be declared to be an International Trusteeship Area. This area would at the same time be placed under the administration of the adjacent coastal state to control who works there and apply its laws thereon, and to take such measures as it deems necessary for its own security.

c) An International Seabed Resource Authority, composed of the contracting parties, be formed as a center for discussion of mutual interests, registration of leases, and settlement of disputes relating to use of the deep-sea beds. The Authority would be supported by fees received from lessees and a portion of royalties from production in the international seabed area.

d) A portion of the royalties from production beyond the 200-meter depth line would go into a special fund for assisting the economic growth of the less advanced countries.

The introduction of a draft convention "working paper" at the U.N. by the United States delegation incorporating the President's proposals, as well as the comparably novel draft treaty to ban emplacement of nuclear weapons on the ocean floor beyond territorial limits, which was approved by the General Assembly in 1970, were designed to counter the

rhetoric of criticism voiced by the smaller states that they were about to be denied a rightful share in the resources of the high seas, and were threatened by the possibilities of nuclear weapons being installed in the ocean. A summary of the international seabed area paper and the text of the treaty on the nonplacement of nuclear weapons on the floor of the high seas are contained in the pages that follow.

The President's move speaks to the demands widely voiced at the United Nations for international control of the deep seabeds and for sharing a portion of the profits derived from mining beyond national limits. The statement concedes the justifiability of the broader principle and seeks to establish reasonable arrangements to protect both the general interest and that of coastal states in particular. By being the first country to respond to the expressed wish of the U.N. General Assembly to have proposals for suitable machinery laid before it, the United States placed itself in a favorable negotiating position.

The international seabed area proposal sets a high framework of reference for thinking about new arrangements. It insured wide publicity for the United States positions, an opportunity to set the parameters for negotiations, and caused others to react to the U.S. suggestions rather than putting Washington on the defensive.

Two features of the plan call for special mention. The first is the designation of the 200-meter depth line as the limit of national possession on the continental shelf, and the

suggestion that the slope and a part of the rise beyond this be declared to be an International Trusteeship Area under the administrative control of the coastal state.

The objectives of these provisions are, first, to oppose claims for wider seabed areas than encompassed within the 200-meter depth line, which was agreed upon at Geneva in 1958. It would be disadvantageous if states were progressively to extend sovereign claims as they have over territorial waters by going to 50, 100 and 200 miles. At the same time, the proposal recognizes that the rights which states received at Geneva beyond the 200-meter line must be protected. To this end it proposes declaring the slope and a portion of the rise to be an "international trusteeship area"--an idea taken from former President Franklin D. Roosevelt's original conceptions of the trusteeship system for the United Nations.

In the trusteeship area the coastal state will retain plenary discretion to issue, suspend, and revoke licenses for mineral exploration and exploitation. It will be entitled to exercise criminal and civil jurisdiction and apply such laws and regulations as it deems necessary. It will retain up to one-half of whatever fees and payments are decided upon. And it will have authority to inspect all underwater activities carried on in the area. This may in principle involve giving up some rights to title on the shelf beyond the 200-meter line acquired by those able to work beyond this depth--as United States oil companies are able to do. Nevertheless, the provisions insure states the right to control who may work in

the slope and rise and what goes on there. The parties that may experience some sacrifice will be oil or mining companies that will have to pay a fee or royalty to the International Seabed Resource Authority, where they now pay only the licensing state for working in these areas. This may add to the costs of extraction. Hopefully, the arrangements for decisions on fees will insure the industrially-advanced countries sufficient voice, however, to hold the fees within reasonable bounds.

The trusteeship area idea is seen as a political concession the advanced states can make in order to induce the less advanced to accept other elements of the proposed system.

The second feature that merits attention in the seabed area paper is the proposed location of the decision-making power in a Council made up of the six most-industrially-advanced countries, plus eighteen other elected members. Decisions will require approval by a majority of both groups. Amendments to the convention will require the approval of the Council plus two-thirds of the Assembly, and will come into force only when ratified by two-thirds of the contracting parties, including each of the six most-industrially-advanced contracting states. This provision, drawn after the principles relating to the amendment of the United States Charter, is designed to safeguard the interests of the more advanced states from being overrun by fickle voting majorities. It in fact gives the more advanced powers a veto over any proposed change.

The United States proposal contains elements calling for

some give on the part of both the more- and the less-advanced states. The developing countries can have a new regime of the seas, but at the price of agreeing to limit sovereign claims in the seabeds to the 200-meter isobath and to giving the more advanced states both a preferential voting position in the Council and in the amending process.

The most advanced states will give up a right they enjoy under Article 1 of the Geneva Convention on the Continental Shelf to claim portions of the slope where they have a capability of working. But they will receive a contractual right to exercise plenary jurisdiction over all activity on the slope off their coasts. They will also obtain a special position in the ISRA Council, and a right to block any changes by amendment of which they do not approve.

The sacrifices parties will be called upon to make will thus be offset by gains in other directions. Furthermore, the new regime being based upon a voluntarily-concluded treaty will give any state that wishes to do so, for reasons of its own choice, freedom not to enter into the arrangement if it so desires, and to withdraw from it at any time. Speculation is fruitless at this point as to how many states will join such an arrangement. But it may be fair to assume that some at least will adopt a wait-and-see attitude.

From the point of view of United States interests, it appears fairly clear that this country can afford to take the gamble of participating. The United States has historically taken the position that its interests are best served by holding

to a narrow belt of territorial waters and jurisdiction. It has long stood for freedom of the seas. So long as American oceanographers, engineers, and extraction companies are able to operate freely in the high seas, and by conforming to local law are permitted to function on a most-favored-nation treaty basis within the marginal waters of other states, there is much to be gained through holding sovereign claims in the seas to as close limits as possible. It is also clear that with the technological capabilities possessed by this country, its industry will be a leader in working in the deep seabed for a long time to come. The technological capabilities of this country will entitle it to a position as one of the "most-industrially-advanced" states, as specified in the draft. This will give it *a priori* rights in the organization.

If a majority of the other powers refuse to accept such an arrangement and insist upon something quite different, placing United States interests at a disadvantage, Washington will, of course, reconsider its stand in the light of the new situation. Given the economic and technological assets this country has, it is difficult to believe that others will fail to see the advantages of a regime that Washington is prepared to accept. This is the virtue of its having been first on the scene with a specific proposal.

Members of the United States Senate who scrutinized the State Department draft before it was sent to Geneva expressed considerable doubt about parts of the document. They were instrumental in bringing about several changes in the original

version and in persuading Secretary of State Rogers to have it introduced in the less formal context of a "working paper." Their views are summarized in a note following the Summary of the Draft Convention. In the long run, if a treaty is concluded for the seabed area, it will have to receive the concurrence and assent of two-thirds of the members of the Senate. It is thus important that the views of members of the Congress be sought along the way and given thoughtful attention. Although the Senators were outwardly altruistic in their views, one can sense doubts over the wisdom of giving up as much as is proposed, and of setting up such an elaborate and costly Authority. These ideas will certainly have to be weighed with care. Sound justification will have to be given for following another course.

President Nixon's statement of United States policy for the international seabeds also recognized the urgent need for defining territorial limits in the marginal seas.

As far back as the Geneva Law of the Sea Conference in 1958, the variations in the seas claimed were recognized, and an attempt was made to reach some agreement. The only accord acceptable to the participating parties was to affirm that the coastal state has sovereignty over that breadth of marginal waters that is determined by the will of the state. Agreement on precise limits proved to be equally impossible. In the following years one state after another has extended its sovereignty beyond the historic three-mile line. Today a majority of states claim twelve miles for their marginal waters,

but the situation is deeply confused, as a listing of jurisdictional claims indicates.[1]

One step designed to help clarify the situation was the inclusion of a twelve-mile limit for national jurisdiction in the treaty prohibiting emplacement of weapons of mass destruction on the sea floor approved by the General Assembly in 1970. Although a number of U.N. member states declined to vote for this (i.e., abstained), Peru and El Salvador expressly voted against the resolution because it did not recognize their claim to a 200-mile line. Thus, even this arrangement failed to persuade states that have advanced extreme claims to rally to a more modest common standard.

Agreement was reached at the United Nations in 1970 to convene a new law of the sea conference in 1973. If this can be combined with negotiation on an international seabed treaty limiting claims on the continental shelf to the 200-meter line and offering contributions to an international fund, some progress may be possible.

The success or failure of the negotiations set in motion by President Nixon's stand will have a large impact upon marine policy in the years ahead. If this offer fails to induce states holding extreme claims in the seas to modify their stands, whether on territorial waters or on the shelf, accord will be difficult to attain on restricting national activities on the slope and rise.

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1. A list of the current distances claimed for territorial seas will be found in Norman J. Padelford, Public Policy for the Seas. Revised Edition. Cambridge: The M.I.T. Press, 1970, pp. 62-64.

Before entering into any treaty encompassing nearly two-thirds of the globe, efforts must be made to foresee both future problems and benefits. The international seabed area is of concern to states as a whole. But all do not see their positions in relation to it in the same light. Unless there is some disposition to seek an accommodation that will open the way to conclusion of a multilateral convention, there can be little agreement on sharing the benefits derived from investments of energy and money in mining the seas.

Suggested References for Further Reading

Marine Science Affairs, 1970.

Chapter 13, "Expanding International Cooperation and Understanding."

Our Nation and the Sea.

pp. 141-155, "An International Legal-Political Framework."

Public Policy for the Seas.

Chapter 3, "The Continental Shelf."
Chapter 4, "The Seas and International Law."
Chapter 9, "Models for the Future."

The following articles will be found helpful:

Friedman, Wolfgang, "The North Sea Continental Shelf Cases - A Critique." *American Journal of International Law*, Vol. 64, No. 2, April 1970, pp. 229-240.

Goldie, L. F., "Where is the Continental Shelf Outer Boundary?" *Journal of Maritime Law and Commerce*, Vol. 1, No. 3, April 1970, pp. 461-472.

Miron, George, "The Outer Continental Shelf - Managing (or Mismanaging) Its Resources." *Journal of Maritime Law and Commerce*, Vol. 2, No. 2, January 1971, pp. 267-288.

Ratiner, Leigh, "United States Ocean Policy: An Analysis;" *ibid.*, Vol. 2, No. 2, January 1971, pp. 225-266.

UNITED STATES POLICY FOR THE SEABED

Statement by President Nixon[1]

The nations of the world are now facing decisions of momentous importance to man's use of the oceans for decades ahead. At issue is whether the oceans will be used rationally and equitably and for the benefit of mankind or whether they will become an arena of unrestrained exploitation and conflicting jurisdictional claims in which even the most advantaged states will be losers.

The issue arises now--and with urgency--because nations have grown increasingly conscious of the wealth to be exploited from the seabeds and throughout the waters above and because they are also becoming apprehensive about ecological hazards of unregulated use of the oceans and seabeds. The stark fact is that the law of the sea is inadequate to meet the needs of modern technology and the concerns of the international community. If it is not modernized multilaterally, unilateral action and international conflict are inevitable.

This is the time, then, for all nations to set about resolving the basic issues of the future regime for the oceans--and to resolve it in a way that redounds to the general benefit in the era of intensive exploitation that lies ahead. The United States, as a major maritime power and a leader in ocean technology to unlock the riches of the ocean, has a special responsibility to move this effort forward.

Therefore, I am today proposing that all nations adopt as soon as possible a treaty under which they would renounce all national claims over the natural resources of the seabed beyond the point where the high seas reach a depth of 200 meters (218.8 yards) and would agree to regard these resources as the common heritage of mankind.

The treaty should establish an international regime for the exploitation of seabed resources beyond this limit. The regime should provide for the collection of substantial mineral royalties to be used for international community purposes, particularly economic assistance to developing countries. It should also establish general rules to prevent unreasonable interference with other uses of the ocean, to protect the ocean from pollution, to assure the integrity of the investment necessary for such exploitation, and to provide for peaceful and compulsory settlement of disputes.

I propose two types of machinery for authorizing exploitation of seabed resources beyond a depth of 200 meters.

First, I propose that coastal nations act as trustees for the international community in an international trusteeship zone comprised of the continental margins beyond a depth of 200 meters off their coasts. In return, each coastal state would receive a share of the international revenues from the zone in which it acts as trustee and could impose additional taxes if these were deemed desirable.

As a second step, agreed international machinery would authorize and regulate exploration and use of seabed resources beyond the continental margins.

The United States will introduce specific proposals at the next meeting of the United Nations Seabeds Committee to carry out these objectives.

Although I hope agreement on such steps can be reached quickly, the negotiation of such a complex treaty may take some time. I do not, however, believe it is either necessary or desirable to try to halt exploration and exploitation of the seabeds beyond a depth of 200 meters during the negotiating process.

Accordingly, I call on other nations to join the United States in an interim policy. I suggest that all permits for exploration and exploitation of the seabeds beyond 200 meters be issued subject to the international regime to be agreed upon. The regime should accordingly include due protection for the integrity of investments made in the interim period. A substantial portion of the revenues derived by a state from exploitation beyond 200 meters during this interim period should be turned over to an appropriate international development agency for assistance to developing countries. I would plan to seek appropriate congressional action to make such funds available as soon as a sufficient number of other states also indicate their willingness to join this interim policy.

I will propose necessary changes in the domestic import and tax laws and regulations of the United States to assure that our own laws and regulations do not discriminate against U.S. nationals operating in the trusteeship zone off our coast or under the authority of the international machinery to be established.

It is equally important to assure unfettered and harmonious use of the oceans as an avenue of commerce and transportation and as a source of food. For this reason

the United States is currently engaged with other states in an effort to obtain a new law-of-the-sea treaty. This treaty would establish a 12-mile limit for territorial seas and provide for free transit through international straits. It would also accommodate the problems of developing countries and other nations regarding the conservation and use of the living resources of the high seas.

I believe that these proposals are essential to the interests of all nations, rich and poor, coastal and landlocked, regardless of their political systems. If they result in international agreements, we can save over two-thirds of the earth's surface from national conflict and rivalry, protect it from pollution, and put it to use for the benefit of all. This would be a fitting achievement for this 25th anniversary year of the United Nations.

1. Department of State Bulletin, Vol. LXII, No. 1616, June 15, 1970, pp. 737-738.

EXPLORING THE ANTARCTIC

Courtesy United States Coast Guard

SUMMARY OF DRAFT CONVENTION ON INTERNATIONAL SEABED AREA

U.S. Working Paper Submitted to U.N. Seabeds Committee[1]

1970

(Excerpts)

...In order to carry out the President's objective of achieving an international agreement that will save over two-thirds of the earth's surface from national conflict and rivalry, protect it from pollution, and put it to use for the benefit of all, such agreement must provide a clear system of law generally respected by the international community and deal equitably with a wide variety of national and international interests. The Draft United Nations Convention on the International Seabed Area, which the United States has submitted to the U.N. Seabeds Committee in Geneva as a working document for discussion purposes, is designed to do just that.

The concept, contained in the President's statement and implemented in more detail in the draft convention, of narrow limits on national sovereign rights with respect to the seabed combines with a pragmatic division of revenues and administration in the area beyond national jurisdiction to provide an equitable basis for accommodating these various interests:

1. Maritime states' interest in freedom of navigation and other freedoms of the seas would be served by the limitation of coastal state sovereign rights over the seabed to the point where the high seas reach a depth of 200 meters. This will protect against the risk of coastal state sovereign rights with respect to the seabed beyond a depth of 200 meters expanding through the process of "creeping jurisdiction" to include sovereignty over the waters above. Since all rights coastal states will have in the Trusteeship Area will be specifically delegated in the convention and not derived from any residual sovereignty, there will be no basis for expanding jurisdictional claims.

2. The rights of states to conduct activities other than exploration and exploitation of natural resources in the International Trusteeship Area and beyond would be expressly protected by the convention, and the International Seabed Resource Authority would be empowered to adopt the additional rules necessary to protect these other uses of the marine environment.

3. Coastal states' interest in administering the exploration and exploitation of seabed natural resources would

be fully recognized by the provision for coastal state machinery, pursuant to the convention, in the International Trusteeship Area, including complete discretion to determine who shall exploit these resources.

4. Coastal states' interest in participating in the revenues from exploration and exploitation of the Trusteeship Areas off their coasts would be met directly through the provision for sharing in the payments on production and other payments required to be made under the convention.

5. Developing countries, both coastal and noncoastal, would participate in the revenues derived from seabed mineral exploitation as the ultimate beneficiaries of payments made by the International Seabed Resource Authority to international development organizations.

6. All states parties to the convention, to the extent they or their nationals undertake exploration and exploitation activities in the Trusteeship Area off other countries' shores or in the area beyond the continental margin, would benefit from the general rules of the convention governing exploitation, including protection against arbitrary revocation of licenses or expropriation of investments.

7. The convention would provide a basis for oceanwide rules for the regulation of pollution and the prevention of injury to persons, property, and the marine environment arising from seabed exploration and exploitation activities.

8. Finally, and of particular international importance, by providing for generally agreed rules and compulsory dispute-settlement procedures the draft convention would make a major contribution to the avoidance of international conflict in the oceans....

The draft convention speaks for itself....

- It provides that the International Seabed Area shall be the common heritage of all mankind. This area would begin at the 200-meter isobath.

- It provides that no state has, nor may it acquire, any right, title, or interest in the International Seabed Area or its resources except as provided in the draft convention. It is this provision which gives effect to President Nixon's call for a treaty renouncing national claims beyond 200 meters, with the new draft convention replacing the Continental Shelf Convention beyond this limit.

- It would assure that the International Seabed Area will be open to use by all states and reserve it exclusively for peaceful purposes.

- It would guarantee that revenues will be devoted to the economic advancement of developing countries and provide for some of these revenues to be used in the promotion of international knowledge and technological capability concerning the safe and efficient use of the marine environment.

- It would assure accommodation of the different uses of the marine environment.

- It would assure that all activities will be conducted with strict and adequate safeguards for the protection of human life and safety and the marine environment. A large number of the regulatory provisions of the convention are designed to prevent pollution; for example, all deep drilling requires either a license or a special international permit.

- It provides uniform rules of both a general and detailed character concerning exploration and exploitation of all seabed resources beyond the 200-meter boundary. Many of the general rules are contained in the main section of the draft convention, and the specific rules are contained in appendices which form an integral part of it. These rules are designed to insure, on the one hand, that maximum revenues for international community purposes will be derived from exploitation of marine resources and, on the other hand, to insure a favorable climate for investment.

- It would provide for a coastal state Trusteeship in the area beyond the 200-meter boundary embracing the continental margins. While we have not indicated a precise seaward limit for the area of the coastal state Trusteeship responsibilities, we believe it should be fixed taking into consideration, among other factors, ease of determination, the need to avoid dual administration over single resource deposits, and the avoidance of including excessively large areas in the International Trusteeship Area. The draft convention proposes to use a gradient formula as a means for determining this boundary.

- It would establish the rights and responsibilities of the Trustee State. These include assuring compliance with the rules of the draft convention, as well as the applicable rules of the International Seabed Resource Authority, and guaranteeing the Trustee full discretion to decide whether, how, and to whom licenses should be issued for exploration and exploitation. It would allow the Trustee Party to keep a portion of the required payments and any others it imposes

on exploration and exploitation. A figure between one-third and one-half is suggested. The discretion of the Trustee to decide who may explore and exploit seabed resources in the International Trusteeship Area is the only exception to the requirement of the draft convention that the entire area beyond 200 meters be open to use by all states on a nondiscriminatory basis.

- Over half of the articles of the draft convention are devoted to the powers and duties of a new international organization called the International Seabed Resource Authority.

- The International Seabed Resource Authority would have several important functions. They include comprehensive rulemaking authority beyond the 200-meter boundary; functional responsibilities including inspection of all licensed activities in the same area; licensing responsibilities beyond the Trusteeship Area; adjudication of all disputes arising under the draft convention, with special procedures for approving the delimitation of all boundaries required by the draft convention.

- The principal organs of the International Seabed Resource Authority would be an Assembly composed of all contracting parties, and an independent Tribunal. Three commissions have been included to deal with rulemaking, operations such as licensing, and boundaries.

- The International Seabed Resource Authority would have the responsibility for promulgating its rules in the form of annexes to the convention. The annex-making procedure will insure flexibility and ease of rulemaking in order to assist the Authority in adapting to developing technology....

Basic Principles

Among the basic principles which would become applicable to the entire International Seabed Area (including the International Trusteeship Area) under the convention would be the following:

The International Seabed Area would be the common heritage of mankind, and no state could exercise sovereignty or sovereign rights over this area or its resources or, except as provided in the convention, acquire any right or interest therein.

The International Seabed Area would be open to use by all states without discrimination, except as otherwide provided in the convention, and would be reserved exclusively for peaceful purposes.

Provision would be made for the collection of revenues from mineral production in the Area to be used for international community purposes including economic advancement of developing countries and for promotion of the safe, efficient, and economic exploitation of the mineral resources of the seabed.

Exploration and exploitation of the natural resources of the Area must not result in unjustified interference with other activities in the marine environment, and all activities in the Area must be conducted with adequate safeguards against pollution and for the protection of human life and the marine environment.

A contracting party would be responsible for insuring that those authorized by it (as Trustee in the Trusteeship Area) or sponsored by it (in the area beyond) complied with the convention. Contracting parties would also be responsible for any damage caused by those authorized or sponsored by them.

The general rules would be as follows:

Mineral Resources

All exploration and exploitation of the mineral deposits in the Area would be licensed by the appropriate Trustee in the Trusteeship Area and by the International Seabed Resource Authority in the area beyond, subject to general provisions relating to the terms of licenses included in appendices forming part of the convention, a number of which allow greater discretion to the Trustee State in the case of the Trusteeship Area. The contracting parties would have primary responsibility for inspecting activities licensed or sponsored by them. The International Seabed Resource Authority would also have authority to inspect and determine if a licensed operation violates the convention. Licenses would be revoked only for cause and in accordance with the convention. Expropriation of investments made, or unjustifiable interference with operations conducted pursuant to a license, would be prohibited.

Living Resources of the Seabed

All contracting parties would have the right to explore and exploit these resources (e.g., king crab) subject to necessary conservation measures and the right of the Trustee in the Trusteeship Area to decide whether and by whom such resources should be exploited.

Protection of the Marine Environment, Life, and Property

The International Seabed Resource Authority would be authorized to prescribe rules to protect against pollution of the marine environment and injury to persons and resources resulting from exploration and exploitation and to prevent unjustifiable interference with other activities in the marine environment.

Scientific Research

Each party would agree to encourage, and to obviate interference with, scientific research and to promote international cooperation in scientific research.

International Trusteeship Area

The provisions of the convention relating to the International Trusteeship Area would define the outer limit of this area as a line beyond the base of the continental slope where the downward inclination of the seabed reaches a specified gradient. Such gradient would be determined by technical experts, who would take into account, among other factors, ease of determination, the need to avoid dual administration of single resource deposits, and the avoidance of including excessively large areas in the Trusteeship Area. Other provisions would limit the Trustee's rights to those set forth in the convention. These rights of the Trustee State would include the issuing, suspending, and revoking of mineral exploration and exploitation licenses subject to the rules set forth in the convention and its appendices, full discretion to decide whether a license should be issued and to whom a license should be issued, exercise of criminal and civil jurisdiction over its licensees, and retention of a portion (a figure between 33-1/3 percent and 50 percent is suggested for consideration) of the fees and payments required under the convention for activities in the Area. The Trustee State would also be able to collect and retain additional license and rental fees to defray its administrative expenses and to collect other additional payments, retaining the same portion as indicated above of such other additional payments.

International Seabed Resource Authority

The principal organs of the proposed international Seabed Resource Authority would be an Assembly of all contracting parties; a Council of 24 members, including the six most industrially advanced contracting states, at least 12 developing countries, and at least two landlocked or shelf-locked states; and a Tribunal of from five to nine judges elected by the Council....

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1. Department of State Bulletin, Vol. LXIII, No. 1626, August 24, 1970, pp. 213-218. The text in full is available as U.N. Doc. A/AC.138/25.

NOTE

REGARDING SENATORIAL VIEWS ON DRAFT SEABED CONVENTION

1970

In the summer of 1970 a Special Subcommittee on the Outer Continental Shelf of the United States Senate Committee on Interior and Insular Affairs reviewed the draft Convention on the International Seabed Area sent to it before presentation at Geneva. The Subcommittee, composed of Senators of both political parties, was unanimous in expressing grave doubts about some parts of the draft. As a result of these doubts, which were conveyed to the Secretary of State in writing by Senators Henry M. Jackson, Lee Metcalf, Gordon Allott, and Henry Bellmon, the Department made some modifications in the draft text and agreed to present it at Geneva in the form of a "working paper."

The views of the Senators expressed before the modifications may be summarized in the following manner:

The members of the Senate said that they were committed to supporting the development of a seabed regime which will serve not only the interests of the United States but will be internationally acceptable. They believed, however, that the document sent to the Committee was inconsistent with the national interest in its original form. These points were made with respect to the inconsistency.

(1) Article 28 would provide for the payment of two-thirds of all royalties earned from leases beyond the 200-meter isobath to an international body. It is doubtful, they said, that the Congress would agree to such an automatic payment of such an amount. They expressed surprise that such a proposal should be put forward without prior consultation with the Congress.

(2) Article 2, they said, carries with it an implication that the United States had already renounced its sovereign rights to resources of the seabed of the continental margin beyond the 200-meter depth limit. Such a unilateral renunciation, without insisting that others likewise agree, would be prejudicial.

(3) Article 73, it was thought, would automatically bind the Secretary of the Interior to impose such restrictions on outer shelf leases beyond the 200-meter line as to ensure a virtual moratorium on all leasing there. Under such circumstances no company could safely enter into a lease beyond this point. Such a far-reaching limitation, the Senators said, could be accomplished only after an amendment of the Outer Continental Shelf Lands Act of 1953.

(4) Article 11.2, it was thought, would obligate the United States to impose civil or criminal penalties on any nationals who entered into a lease beyond the 200-meter line with any country, whether party to the treaty or not. Such a provision seemed inconceivable.

(5) The appendices, it was thought, contained elaborate details with respect to licensing that could better be left to the coastal state rather than being spelled out in a treaty. Additionally, they would impose royalty rates up to 40 percent, while the U.S. rate is only one-sixth of this. Other provisions of the appendices, it was thought, would deter industrial initiative to mine in the deep seabed.

(6) Various provisions of the convention would set up an international organization vaster than the United Nations. This, it was thought, was unnecessary and undesirable.

Finally, members of the Senate expressed the view that the international ramifications of the treaty were such that coastal states would hesitate to agree to such terms without substantial revisions.

Hearings on the Outer Shelf were held by the Subcommittee during the summer and fall and are available as Senate documents. The text of the Outer Continental Shelf Lands Act [Public Law 212, 83rd Congress, 1st Session, 67 Stat. 462] will be found in Norman J. Padelford, Public Policy for the Seas, pp. 81-84.

TREATY TO PROHIBIT EMPLACEMENT OF WEAPONS OF MASS DESTRUCTION ON SEABED AND OCEAN FLOOR

Submitted by the United States and the Union of Soviet Socialist Republics to the United Nations General Assembly, 1970[1]

(Revised Text)

The States Parties to this Treaty,

Recognizing the common interest of mankind in the progress of the exploration and use of the seabed and the ocean floor for peaceful purposes,

Considering that the prevention of a nuclear arms race on the seabed and the ocean floor serves the interests of maintaining world peace, reduces international tensions, and strengthens friendly relations among States,

Convinced that this Treaty constitutes a step towards the exclusion of the seabed, the ocean floor and the subsoil thereof from the arms race,

Convinced that this Treaty constitutes a step towards a Treaty on general and complete disarmament under strict and effective international control, and determined to continue negotiations to this end,

Convinced that this Treaty will further the purposes and principles of the Charter of the United Nations, in a manner consistent with the principles of international law and without infringing the freedoms of the high seas,

Have agreed as follows:

ARTICLE I

1. The States Parties to this Treaty undertake not to emplant or emplace on the seabed and the ocean floor and in the subsoil thereof beyond the outer limit of a seabed zone as defined in Article II any nuclear weapons or any other types of weapons of mass destruction as well as structures, launching installations or any other facilities specifically designed for storing, testing or using such weapons.

2. The undertakings of paragraph 1 of this Article shall also apply to the seabed zone referred to in the same paragraph, except that within such seabed zone, they shall not apply either to the coastal state or to the seabed beneath its territorial waters.

3. The States Parties to this Treaty undertake not to assist, encourage or induce any State to carry out activities referred to in paragraph 1 of this Article and not to participate in any other way in such actions.

ARTICLE II

For the purpose of this Treaty the outer limit of the seabed zone referred to in Article I shall be coterminous with the twelve-mile outer limit of the zone referred to in Part II of the Convention on the Territorial Sea and the Contiguous Zone, signed in Geneva on 29 April 1958 and shall be measured in accordance with the provisions of Part I, Section II, of this Convention and in accordance with international law.

ARTICLE III

1. In order to promote the objectives of and ensure compliance with the provisions of this Treaty, each State Party to the Treaty shall have the right to verify through observation the activities of other States Parties to the Treaty on the seabed and the ocean floor and in the subsoil thereof beyond the zone referred to in Article I, provided that observation does not interfere with such activities.

2. If after such observation reasonable doubts remain concerning the fulfilment of the obligations assumed under the Treaty, the State Party having such doubts and the State Party that is responsible for the activities giving rise to the doubts shall consult with a view to removing the doubts. If the doubts persist, the State Party having such doubts shall notify the other States Parties, and the Parties concerned shall cooperate on such further procedures for verification as may be agreed, including appropriate inspection of objects, structures, installations or other facilities that reasonably may be expected to be of a kind described in Article I. The Parties in the region of the activities, including any coastal State, and any other Party so requesting, shall be entitled to participate in such consultation and cooperation. After completion of the further procedures for verification, an appropriate report shall be circulated to other Parties by the Party that initiated such procedures.

3. If the State responsible for the activities giving rise to the reasonable doubts is not identifiable by observation of the object, structure, installation or other facility, the State Party having such doubts shall notify and make appropriate inquiries of States Parties in the region of the activities and of any other State Party. If it is ascertained through these inquiries that a particular State Party is responsible for the activities, that State Party shall consult and cooperate with other Parties as provided in paragraph 2 of this Article. If the identity of the State responsible for the activities cannot be ascertained through

these inquiries, then further verification procedures, including inspection, may be undertaken by the inquiring State Party, which shall invite the participation of the Parties in the region of the activities, including any coastal State, and of any other Party desiring to cooperate.

4. If consultation and cooperation pursuant to paragraphs 2 and 3 of this Article have not removed the doubts concerning the activities and there remains a serious question concerning fulfilment of the obligations assumed under this Treaty, a State Party may, in accordance with the provisions of the Charter of the United Nations, refer the matter to the Security Council, which may take action in accordance with the Charter.

5. Verification pursuant to this Article may be undertaken by any State Party using its own means, or with the full or partial assistance of any other State Party, or through appropriate international procedures within the framework of the United Nations and in accordance with its Charter.

6. Verification activities pursuant to this Treaty shall not interfere with activities of other States Parties and shall not interfere with activities of other States Parties and shall be conducted with due regard for rights recognized under international law including the freedoms of the high seas and the rights of coastal States with respect to the exploration and exploitation of their continental shelves.

ARTICLE IV

Nothing in this Treaty shall be interpreted as supporting or prejudicing the position of any State Party with respect to existing international conventions, including the 1958 Convention on the Territorial Sea and the Contiguous Zone, or with respect to rights or claims which such State Party may assert, or with respect to recognition or non-recognition of rights or claims asserted by any other State, related to waters off its coasts; including inter alia territorial seas and contiguous zones, or to the seabed and the ocean floor, including continental shelves.

ARTICLE V

The Parties to the Treaty undertake to continue negotiations in good faith concerning further measures in the field of disarmament for the prevention of arms race on the seabed, the ocean floor, and the subsoil thereof.

ARTICLE VI

Any State Party may propose amendments to this Treaty. Amendments shall enter into force for each State Party accepting the amendments upon their acceptance by a majority of the States Parties to the Treaty and thereafter for each remaining State Party on the date of acceptance by it.

ARTICLE VII

Five years after the entry into force of this Treaty, a conference of Parties to the Treaty shall be held in Geneva, Switzerland, in order to review the operation of this Treaty with a view to assuring that the purposes of the preamble and the provisions of the Treaty are being realized. Such review shall take into account any relevant technological developments. The review conference shall determine in accordance with the views of a majority of those Parties attending whether and when an additional review conference shall be convened.

ARTICLE VIII

Each State Party to this Treaty shall in exercising its national sovereignty have the right to withdraw from this Treaty if it decides that extraordinary events related to the subject matter of this Treaty have jeopardized the supreme interests of its country. It shall give notice of such withdrawal to all other States Parties to the Treaty and to the United Nations Security Council three months in advance. Such notice shall include a statement of the extraordinary events it considers to have jeopardized its supreme interests.

ARTICLE IX

The provisions of this Treaty shall in no way affect the obligations assumed by States Parties to the Treaty under international instruments establishing zones free from nuclear weapons.

ARTICLE X

1. This Treaty shall be open for signature to all States. Any State which does not sign the Treaty before its entry into force in accordance with paragraph 3 of this Article may accede to it at any time.

2. This Treaty shall be subject to ratification by signatory States. Instruments of ratification and of accession shall

be deposited with the Governments of _____, which are hereby designated the Depositary Governments.

3. This Treaty shall enter into force after the deposit of instruments of ratification by twenty-two Governments, including the Governments designated as Depositary Governments of this Treaty.

4. For States whose instruments of ratification or accession are deposited after the entry into force of this Treaty it shall enter into force on the date of the deposit of their instruments of ratification or accession.

5. The Depositary Governments shall promptly inform the Governments of all signatory and acceding States of the date of each signature, of the date of deposit of each instrument of ratification or of accession, of the date of the entry into force of this Treaty, and of the receipt of other notices.

6. This Treaty shall be registered by the Depositary Governments pursuant to Article 102 of the Charter of the United Nations.

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1. Department of State Bulletin, Vol. LXIII, No. 1631, September 28, 1970, pp. 365-366. The treaty was signed February 11, 1971, in Washington, London and Moscow by 63 nations.

DECLARATION OF PRINCIPLES GOVERNING THE SEABED BEYOND NATIONAL JURISDICTION

UNITED NATIONS GENERAL ASSEMBLY

December 17, 1970[1]

The General Assembly,

Recalling its resolutions 2340 (XXII) of 18 December 1967, 2467 (XXIII) of 21 December 1968 and 2574 (XXIV) of 15 December 1969, concerning the area to which the title of the item refers,

Affirming that there is an area of the sea-bed and the ocean floor, and the subsoil thereof, beyond the limits of national jurisdiction, the precise limits of which are yet to be determined,

Recognizing that the existing legal regime of the high seas does not provide substantive rules for regulating the exploration of the aforesaid area and the exploitation of its resources,

Convinced that the area shall be reserved exclusively for peaceful purposes and that the exploration of the area and the exploitation of its resources shall be carried out for the benefit of mankind as a whole,

Believing it essential that an international regime applying to the area and its resources and including appropriate international machinery should be established as soon as possible,

Bearing in mind that the development and use of the area and its resources shall be undertaken in such a manner as to foster healthy development of the world economy and balanced growth of international trade, and to minimize any adverse economic effects caused by fluctuation of prices of raw materials resulting from such activities,

Solemnly declares that:

1. The sea-bed and ocean floor, and the subsoil thereof, beyond the limits of national jurisdiction (hereinafter referred to as the area), as well as the resources of the area, are the common heritage of mankind.

2. The area shall not be subject to appropriation by any means by States or persons, natural or juridical, and no State shall claim or exercise sovereignty or sovereign rights

over any part thereof.

3. No State or person, natural or juridical, shall claim, exercise or acquire rights with respect to the area or its resources incompatible with the international regime to be established and the principles of this Declaration.

4. All activities regarding the exploration and exploitation of the resources of the area and other related activities shall be governed by the international regime to be established.

5. The area shall be open to use exclusively for peaceful purposes by all States whether coastal or land-locked, without discrimination, in accordance with the international regime to be established.

6. States shall act in the area in accordance with the applicable principles and rules of international law including the Charter of the United Nations and the Declaration on Principles of International Law concerning Friendly Relations and Co-operation among States in accordance with the Charter of the United Nations, adopted by the General Assembly on 24 October 1970, in the interests of maintaining international peace and security and promoting international co-operation and mutual understanding.

7. The exploration of the area and the exploitation of its resources shall be carried out for the benefit of mankind as a whole, irrespective of the geographical location of States, whether land-locked or coastal, and taking into particular consideration the interests and needs of the developing countries.

8. The area shall be reserved exclusively for peaceful purposes, without prejudice to any measures which have been or may be agreed upon in the context of international negotiations undertaken in the field of disarmament and which may be applicable to a broader area. One or more international agreements shall be concluded as soon as possible in order to implement effectively this principle and to constitute a step towards the exclusion of the sea-bed, the ocean floor and the subsoil thereof from the arms race.

9. On the basis of the principles of this Declaration, an international regime applying to the area and its resources and including appropriate international machinery to give effect to its provisions shall be established by an international treaty of a universal character, generally agreed upon. The regime shall, *inter alia* provide for the orderly and safe development and rational management of the area and its resources and for expanding opportunities in the use thereof and ensure the equitable sharing by States in the benefits derived therefrom, taking into particular

consideration the interests and needs of the developing countries, whether land-locked or coastal.

10. States shall promote international co-operation in scientific research exclusively for peaceful purposes:

(a) By participating in international programmes and by encouraging co-operation in scientific research by personnel of different countries;

(b) Through effective publication of research programmes and dissemination of the results of research through international channels;

(c) By co-operation in measures to strengthen research capabilities of developing countries, including the participation of their nationals in research programmes.

No such activity shall form the legal basis for any claims with respect to any part of the area or its resources.

11. With respect to activities in the area and acting in conformity with the international regime to be established, States shall take appropriate measures for and shall co-operate in the adoption and implementation of international rules, standards and procedures for, *inter alia*:

(a) Prevention of pollution and contamination, and other hazards to the marine environment, including the coastline, and of interference with the ecological balance of the marine environment;

(b) Protection and conservation of the natural resources of the area and prevention of damage to the flora and fauna of the marine environment.

12. In their activities in the area, including those relating to its resources, States shall pay due regard to the rights and legitimate interests of coastal States in the region of such activities, as well as of all other States which may be affected by such activities. Consultations shall be maintained with the coastal States concerned with respect to activities relating to the exploration of the area and the exploitation of its resources with a view to avoiding infringement of such rights and interests.

13. Nothing herein shall affect:

(a) The legal status of the waters superjacent to the area or that of the air space above those waters;

(b) The rights of coastal States with respect to measures to prevent, mitigate or eliminate grave and imminent danger to their coastline or related interests from pollution or threat thereof resulting from, or from other hazardous occurrences caused by, any activities in the area, subject to the international regime to be established.

14. Every State shall have the responsibility to ensure that activities in the area, including those relating to its resources, whether undertaken by governmental agencies, or non-governmental entities or persons under its jurisdiction, or acting on its behalf, shall be carried out in conformity with the international regime to be established. The same responsibility applies to international organizations and their members for activities undertaken by such organizations or on their behalf. Damage caused by such activities shall entail liability.

15. The parties to any dispute relating to activities in the area and its resources shall resolve such dispute by the measures mentioned in Article 33 of the Charter of the United Nations and such procedures for settling disputes as may be agreed upon in the international regime to be established.

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1. Resolution 2749 (XXV)(A/C.1/544). Adopted by a vote of 108 to 0, with 14 abstentions.

RESOLUTION FOR CONVENING A NEW LAW OF THE SEA CONFERENCE IN 1973

UNITED NATIONS GENERAL ASSEMBLY

December 17, 1970[1]

The General Assembly,...

Taking into account the results of the consultations undertaken by the Secretary-General in accordance with paragraph 1 of resolution 2574 A (XXIV), which indicate widespread support for the holding of a comprehensive conference on the law of the sea,

Conscious that the problems of ocean space are closely interrelated and need to be considered as a whole,

Noting that the political and economic realities, scientific development and rapid technological advances of the last decade have accentuated the need for early and progressive development of the law of the sea, in a framework of close international co-operation,

Having regard to the fact that many of the present States Members of the United Nations did not take part in previous United Nations conferences on the law of the sea,

Convinced that the elaboration of an equitable international regime for the sea-bed and the ocean floor and the subsoil thereof beyond the limits of national jurisdiction would facilitate agreement on the questions to be examined at such a conference,

Affirming that such agreements on these questions should seek to accommodate the interests and needs of all States, whether land-locked or coastal, taking into account the special interests and needs of the developing countries, whether land-locked or coastal,...

1. *Notes with satisfaction* the progress made so far towards the elaboration of the international regime for the sea-bed and the ocean floor and the subsoil thereof beyond the limits of national jurisdiction through the Declaration of Principles Governing the Sea-Bed and the Ocean Floor, and the Subsoil Thereof, beyond the Limits of National Jurisdiction, adopted by the General Assembly on 17 December 1970;

2. *Decides* to convene in 1973, in accordance with the

provisions of paragraph 3 hereof, a Conference on the Law of the Sea which would deal with the establishment of an equitable international regime--including an international machinery--for the area and the resources of the sea-bed and the ocean floor and the subsoil thereof beyond the limits of national jurisdiction, a precise definition of the area, and a broad range of related issues including those concerning the regimes of the high seas, the continental shelf, the territorial sea (including the question of its breadth and the question of international straits) and contiguous zone, fishing and conservation of the living resources of the high seas (including the question of the preferential rights of coastal States), the preservation of the marine environment (including, *inter alia*, the prevention of pollution) and scientific research;

3. *Decides further* to review at its twenty-sixth and twenty-seventh sessions the reports of the Committee referred to in paragraph 6 below on the progress of its preparatory work with a view to determining the precise agenda of the Conference, its definitive date, location and duration, and related arrangements; if the General Assembly at its twenty-seventh session determines the progress of the preparatory work of the Committee to be insufficient, it may decide to postpone the Conference;

4. *Reaffirms* the mandate of the Committee on the Peaceful Uses of the Sea-Bed and the Ocean Floor beyond the Limits of National Jurisdiction set forth in resolution 2467 A (XXIII), as supplemented by the present resolution;

5. *Decides* to enlarge the Committee by forty-four members, appointed by the Chairman of the First Committee in consultation with regional groups and taking into account equitable geographical representation thereon;

6. *Instructs* the enlarged Committee to hold two meetings in Geneva in March and July-August 1971 in order to prepare for the Conference draft treaty articles embodying the international regime, including an international machinery for the area and the resources of the sea-bed and the ocean floor and the subsoil thereof beyond the limits of national jurisdiction, taking into account the equitable sharing by all States in the benefits to be derived therefrom, bearing in mind the special interests and needs of developing countries, whether coastal or land-locked, on the basis of the Declaration of Principles Governing the Sea-Bed and the Ocean Floor and the Subsoil Thereof beyond the Limits of National Jurisdiction adopted by the General Assembly on 17 December 1970, and a comprehensive list of subjects and issues relating to the law of the sea referred to in paragraph 2 above which should be dealt with by the conference, and draft articles on such subjects and issues;...

10. *Decides* to invite other Member States which are not appointed to the Committee to participate as observers and to be heard on specific points;...

13. *Invites* the United Nations Educational, Scientific and Cultural Organization and its Intergovernmental Oceanographic Commission, the Food and Agriculture Organization of the United Nations and its Committee on Fisheries, the World Health Organization, the Inter-Governmental Maritime Consultative Organization, the World Meteorological Organization, the International Atomic Energy Agency and other intergovernmental bodies and specialized agencies concerned to co-operate fully with the Committee in the implementation of the present resolution, in particular by preparing such scientific and technical documentation as the Committee may request.

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1. Resolution 2750 C (XXV) (A/C.1/562) adopted by a vote of 108 to 7, with 6 abstentions.

CHAPTER SIX

ORGANIZING THE NATIONAL OCEANIC ADMINISTRATION

Introductory Note

After extended deliberation, President Nixon on July 9, 1970, sent a message to Congress recommending the founding of a permanent National Oceanic and Atmospheric Administration (NOAA) within the Department of Commerce. This recommendation was the fruit of studies and investigations first begun under President Eisenhower and continued under various auspices during each succeeding administration.

Key steps along the way to this decision were the passage of the Marine Resources and Engineering Development Act in 1966--the most epochal legislation in the history of the American ocean effort; the appointment and report of the Stratton Commission with its far-reaching recommendations for future progress in the oceans, and the labors of the President's Task Force on Oceanography, which advised the President on the shaping of policy.[1] Portions of the Task Force report are given in the pages immediately following this introductory note.

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[1] The text of the Marine Resources and Engineering Development Act will be found in Norman J. Padelford, Public Policy for the Seas, Revised Edition. Cambridge: The M.I.T. Press, 1970, pp. 19-24. The Stratton Commission Report is entitled Our Nation and the Sea: A Plan for National Action. Washington: Government Printing Office, 1969. This was directed by the Congress to present recommendations for a permanent organization on ocean affairs, which it did in the form of a NOAA, but as an independent executive agency reporting directly to the President.

The National Oceanic and Atmospheric Administration was brought into being through bipartisan collaboration between the President and the Democratically-controlled 91st Congress, and within the Congress itself. Although many Congressmen, and experts, would have preferred to see a Cabinet-level body created, all agreed that NOAA marked a step forward that could be strengthened in the years to come.

The new organization will embrace the Environmental Science Services Administration, functions of the Bureau of Commercial and Sport Fisheries, the National Oceanographic Data Center, the Sea Grant Program Office, and other ocean-oriented agencies formerly spread throughout the Federal Government. The Executive Order establishing NOAA follows the President's message to the Congress shortly hereafter.

NOAA's overall objectives and goals will conform to those previously enunciated in the Marine Resources and Engineering Development Act and in the report of the President's Task Force. Others may be set from time to time by the Congress or the President, or both of them.

The virtue of the NOAA is that a single agency, with operating responsibilities and staff, has been created to handle the principal functions of the civilian oceanographic program. Unity can be given to these activities much better under a single roof than with them scattered among a half dozen departments and independent offices, as they were formerly. Not all ocean-related activities were incorporated with NOAA, however. The Coast Guard, which performs a large amount of

oceanographic research, as well as law enforcement, search and rescue services, icebreaking and weather ship patrol missions, was left with the Department of Transportation. Leading Congressmen, members of the Stratton Commission, and others urged its transfer to NOAA and the Department of Commerce where it could be an integral part of the new program. But its own senior officers preferred to stay where they were situated, at least for the time being, having only lately established their lines of responsibility within the Department of Transportation. Likewise not shifted to NOAA were the offices of the Oceanographer and of Research and Development of the Navy, the Army Corps of Engineers, the oceanographic interests of the Space Agency and of the Office of Science and Technology, or the Maritime Administration. In the latter instance, however, the President's reorganization plans placed MARAD within the Department of Commerce on a par with NOAA under the Secretary of Commerce, thus insuring closer collaboration. Likewise held apart were the personnel and functions of the Department of State assigned to advising on matters of science, technology, and fisheries.

Good reasons existed in each instance for leaving offices and services where they were. The incomplete nature of the unification left many with a feeling, nevertheless, that the job was only partly done; that further steps will still have to be taken. Meantime, an interagency committee or council will be needed to coordinate policy and set priorities among departments.

Whether or not NOAA can handle the task of achieving a well-managed, forward-thrusting national effort regarding the oceans is presently a moot point. Leadership must be drawn from manpower sources of the composite organizations that heretofore were narrow in their responsibilities. These men, as administrators in NOAA, must be capable of expanding the aims of their particular offices or services into the broader aims demanded by their role in the larger organization. Difficulty may be perceived in connection with one of the objectives framed by the Presidential Task Force, namely, achieving effective use of the sea by man "for all purposes currently considered for the terrestrial environment." Clearly, this is a task beyond the scope of a small subagency to accomplish adequately within a limited time span. There is a danger that the infant administration may drop into the pitfall of spreading itself so thin as to lack depth in its treatment of any problem. This could happen if the Congress fails to appropriate adequate funds, or if the Office of Administration and Management that handles budgeting rules against the requests of NOAA's leaders for larger funding. Lack of concern within the former Bureau of the Budget has been a nemesis of an adequately-funded United States ocean science program. Oceanography, unfortunately, still ranks low on the totem pole of national fiscal policy.

NOAA, correspondingly, must be careful not to focus its efforts on a single program. It must give appropriate weight to developing resources and benefits which have a

tangible worth, such as advancing technology. The near collapse of public support for the NASA program after the APOLLO moon landings is an example of what can happen from indulgence in the former. Strong industrial support for ocean activity is lacking at this time, although ocean industry makes up with enthusiasm what it lacks in large numbers of corporations with weighty influence. In time, the industry will gain in influence upon Capitol Hill and in the offices of the executive branch. But only portions of it have such power today. One powerful group whose commitment to NOAA may be lacking is the Defense Department. The Navy has long maintained its own oceanographic capabilities and will continue to provide the mainstay of ocean-oriented national defense efforts, as well as the bulk of money for research and development. The Army Corps of Engineers will also retain its own coastal and harbor engineering activities separately of NOAA and with general appropriations by the Congress.

In short, NOAA does not have today a strong lobby or a claim on funds for national defense. NOAA must therefore select, assign priorities to, and carry out programs in an effective manner if it is to survive in the competition within the Federal framework for funds and manpower resources.

Despite these problems, the President's backing of NOAA , thus giving recognition at the highest level of government to the nation's commitment to progress in the oceans, is a valuable asset. The obstacles of overlapping responsibilities and lack of focus that have restricted progress in the

past will be alleviated to some extent at least. The task is now for ocean scientists, engineers, and technologists to unite behind the new arrangement in order to put drive into the national effort.

A second auspicious factor is the favorable attitude that exists on the Hill toward NOAA. Leaders of both parties, in both the House of Representatives and the Senate, supported the decision to form the new organization within the Department of Commerce. They generally would have preferred to see NOAA an independent executive office with a seat in the Cabinet. But the main concern was for something with an identity and a coherent program.[2] The bipartisan support displayed within the House Committees on Merchant Marine and Fisheries and on Government Operations, and within the powerful Senate Committee on Commerce, auger well for NOAA when programs and appropriation requests are laid before the Congress. Pointed questions will, of course, be asked of NOAA's leadership, and sound justifications will have to be offered. Congressmen that have been waiting for years to see the executive branch take firm action on a marine program will demand good leadership, well-thought-out plans, and real efforts to put the country at the head of the procession in utilizing the resources of the oceans. When convinced that such leadership is in

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[2] See statements of Congressman Alton Lennon (Dem., N. Carolina), Congressman Charles A. Mosher (Rep., Ohio), Secretary of Commerce Maurice H. Stans, and others in "Reorganization Plan No. 4 of 1970 (National Oceanic and Atmospheric Administration)"Hearings before a Subcommittee of the Committee on Government Operations. House of Representatives, 91st Congress, 2d Session, July 28,29, 1970. Washington: Government Printing Office, 1970, pp. 12-38, 56-57.

command, knows where it wants to go, and has the support of the White House as well, leaders in the Congress will give their backing to NOAA. For, since early in the Sixties, eminent Congressmen on both sides of the aisle have been urging the Government to move forward vigorously while there is an opportunity to make the United States, as the 1966 legislation declared, "a leader in marine science and resource development."

Substantial progress was made from 1963 on in building up the oceanographic research fleet, in broadening the base of political and financial support within the Congress, in forging an integrated program among the numerous government agencies, setting priorities, and driving forward. Impressive results were achieved by the Marine Sciences Council from 1967 to 1969 when it enjoyed the enthusiastic backing of President Lyndon B. Johnson.[3] But with the coming of the new Administration in 1969 the Council was allowed to languish while deliberation went on about what to do about location of a permanent organization, how to fashion NOAA, and how to cut back Federal spending. Like a trough in the waves, the years 1969-70 saw a marked decline in interest in oceanic affairs within the government, with a consequential drop both in budgeting, in personnel, and in activities. Vessels were withdrawn, Research monies dried up. Programs were curtailed. Hopes are still held among the ocean engineering fraternity, nonetheless,

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[3] See, for example, the Annual Report of the President to the Congress on Marine Resources and Engineering Development, entitled Marine Science Affairs - Selecting Priority Programs. April 1970. Washington: The White House, 1970.

that like the succession of waves in the seas, the curve of support will rise again. With the NOAA in being and fresh initiative, it is hoped that sooner or later a new crest will be reached surpassing previous endeavors. But this will take careful planning, strong backing from many sides, and resolute leadership. The ingredients are not lacking. The problem is one of will.

One aspect of the present organizational arrangement that cannot be overlooked is the continuing need for some instrument of overall coordination. Although NOAA brings together a number of bureaus and offices previously scattered throughout the Government, there are, as was remarked above, important functions relating to the ocean left with other departments, including those of Defense, Transportation, Interior, State, NASA and the Atomic Energy Commission. As a subagency of the Department of Commerce, NOAA is not in a strong position to direct overall policy planning where other powerful departments and independent executive agencies are involved. It is not the equal in this respect of the Marine Sciences Council. Something resembling the Inter-Agency Committee on Oceanography established by President Eisenhower, or the Marine Sciences Council created by the 1966 Act, will be needed to bring the agency heads, or their deputies, together for collective planning, the setting of priorities, and decision on what offices shall take the leading roles on various phases of the program. This, indeed, was the virtue of the Marine Sciences

Council made up of department heads which reported directly to the President. The need for such a mechanism has indeed been acknowledged by the prolongation of the Council itself. We believe such a body is needed on a permanent basis under the chairmanship of a designee by the President.

Finally, it would be desirable to have some formal means by which eminent leaders in industry, ocean science and engineering, and the academic world could be brought into regular association with the National Oceanic and Atmospheric Administration and the top-level policy-making machinery. This could be most useful if such a group were constituted as an advisory committee to review policies and programs. Such a body of practicing oceanographers, engineers, and broadly experienced leaders could bring helpful thought to bear untrammeled by the burdens of daily administration. Fresh ideas would be infused into the program. Needs for new activities would be signaled. At the same time, the leaders of the ocean program would have the benefit of reactions by outstanding spokesmen in the community. The President would gain through knowledge that those under him had checked their plans with influential citizens and were continually in touch with those on the frontiers of knowledge and activity in the ocean. Furthermore, the presence of such an advisory committee or council could be helpful both to the Administration and to the Congress in considering appropriations and legislation. For they would be in a position to testify independently and would therefore bring considerable weight to bear in the political process. Such a

group of advisers would also be a useful arm of communication to the country at large.

An advisory body of this kind was recommended both by the Stratton Commission and by the President's Task Force on Oceanography. The idea was well received by members of the Congress, and the chairman of the Subcommittee on Oceanography of the House Committee on Merchant Marine and Fisheries, with Republican support, to establish such a committee.

With the addition of an interagency committee on ocean policy for high-level planning and coordination, and a citizen's advisory committee drawn from outside of the government, the national oceanic administration would be in a good position to move forward with the measure of firmness the oceanic community has been asking for since 1956. The ideas are at hand. Technology is available. A sufficient body of trained personnel is in existence. The means can be found. The country looks to the President to exercise the prerogatives of his high office to lead the country forward on the unexplored frontier of the ocean.

Suggested References for Further Reading

Marine Science Affairs, 1969.

Chapter 15, "National Policy Planning and Coordination."

Marine Science Affairs, 1970.

Chapter 7, "Advancing the Sea Grant Program."

Our Nation and the Sea.

Chapter 7, "Organizing a National Ocean Effort."
Chapter 8, "A Financial Plan for Marine Science."

Reorganization Plan No. 4 of 1970 (National Oceanic and Atmospheric Administration). Hearings before a Subcommittee on Government Operations, House of Representatives, 91st Congress, 2nd Session, July 28 and 29, 1970.

La Motte, Clyde, "NOAA Shapes Up." Ocean Industry, Vol. 5, No. 12, December 1970, pp. 19-22.

MOBILIZING THE USE THE SEAS

REPORT OF PRESIDENT'S TASK FORCE ON OCEANOGRAPHY[1]

June 1970

CHAPTER I

THE OCEAN AND OUR NATIONAL INTERESTS

The ocean offers a major source of benefits, opportunities, and challenges for the United States.

Intelligent use of the oceans is vital for our economy, our defense, and the quality of life of our people.

Within the ocean are proteins for the undernourished, water for arid lands, medicine for the sick, resources for industry, opportunities for recreation, and other benefits for mankind. The ocean also presents problems of national importance, some of which we have allowed to grow to major proportions. Of immediate concern is the quality of our environment and the management of the coastal zone. Major problem areas include pollution, beach erosion, inadequate port facilities, and damage to shore property by storms and by inappropriate human use.

A rapidly increasing national population, a general migration to the already crowded coastal zone, and a rising standard of living have created problems of pollution, living space and diminishing natural resources. For such common needs as oil, minerals, fresh water and recreation, increasingly we are being forced to turn to the sea to supplement our traditional resources on dry land. The scope of international commercial activity using the seas is expanding and regional economic organizations are evolving around ocean basins.

Our ability to utilize the ocean, once a source of national pride, has now fallen far behind our rapidly increasing appreciation of its potential value. Marine scientists and engineers have made progress toward understanding the marine environment and working in it. Although these efforts have added to our knowledge of the attainable benefits of the ocean, they have been insufficient in comparison with the apparent total potential.

Resurgent interest in marine affairs as a matter of primary national importance was expressed in the statement of policy contained in the Marine Resources and Engineering Development Act of 1966. Evidence of the importance of the oceans is abundant in recent reports of the Commission on Marine Science, Engineering and Resources (Stratton Commission), the National Council on Marine Resources and

Engineering Development, the President's Science Advisory Committee, many State Governments, the National Academy of Sciences, the National Academy of Engineering, and the National Security Industrial Association.

The security, the economic well being, and the welfare of our nation will be well served if the Government of the United States provides effective leadership and coordination in marine affairs.

It is our basic premise that marine affairs is an area of major importance to our country and now deserves corresponding recognition at the top levels of government. The immediate action we recommend rests on this proposition.

CHAPTER II

NATIONAL GOALS IN MARINE AFFAIRS

The responsibilities of the United States Government in marine affairs are related primarily to defense, transportation, commerce, general welfare and health, promotion of science and industry, conservation of natural resources, and development of international law regarding the use of the sea.

To meet these responsibilities, the following goals are suggested within the context of the policy established by the Marine Resources and Engineering Development Act. They are proposed to provide national guidance for the development of a marine program and to extend the role of the United States as a leader in exploration and use of the sea.

1. Utilize the sea to promote national security and economic strength.

2. Preserve and improve the quality of life and the ecology in the marine coastal environment and provide open spaces for recreation and public use.

3. Explore and investigate the oceans to extend our knowledge of marine phenomena, processes, and resources.

4. Develop and utilize all resources of the seas to the fullest extent.

5. Develop the ability to predict and modify storms and other oceanic phenomena affecting our safety and economy.

6. Encourage the growth of private initiative in the use of the marine environment.

7. Promote state and regional cooperation in marine affairs.

8. Promote international cooperation in ocean affairs.

CHAPTER III

NEED FOR NATIONAL ACTION

Marine activities characteristically are diffused throughout the governmental, economic, and cultural aspects of our nation. In addition to the interdependent relationships of national, state, regional, and private marine interests here in the United States, there are complicated relationships between our country and other maritime nations.

Because of this diffusion of activities and diversity of interests, programs in marine technology and exploration have been fragmented. Uncoordinated approaches have inhibited a strong national thrust into the sea.

Action is required now to achieve a well-managed and coordinated effort. Meaningful marine effort requires an effective overall management that can provide direction; maintain a continuous overview and assessment of the nation's marine goals and activities; identify short-term and long-term goals and priorities; establish the balance required between exploration, engineering, and science; and help to define marine regulations and international maritime law in the best interests of the nation.

Action is also required now to insure that the military and non-military marine programs complement each other, to provide stability and adequate funding for the existing programs, and to initiate new ones that are in the national interest. Additional reasons for action are cited below.

The Public Has Expressed Major Interest and Awaits Action

The accelerating awareness of the public concerning the importance of marine affairs to our defense, economy,

and general welfare; the public realization that the ocean is more than an area for scientific investigation; the attention being given to marine affairs by the States; and the introduction of more than one hundred marine-related bills for legislative action in this session of Congress are evidence that the public is ready for significant action to be taken at the highest federal level.

Preservation and Improvement of the Environment Must Not Be Postponed

The deep concern about ecology, pollution, restoration of lakes and estuaries, and enhancement of our beaches, demands that corrective and preventive steps be undertaken at once. Unless immediate action is taken we will greatly diminish our ability to develop optimum multiple use of the environment, including preservation and improvement of the quality of the environment. Properly planned use of the marine environment for transportation systems, wetlands, coastal cities, wildlife preserves, marine industry, resources, recreational facilities, and other purposes, is essential to the vitality of our nation.

As technological developments permit us to extend more of our activities into deeper water, our primary contact with the oceans will no longer be confined to the coastal zone. In the next decade major activities may well extend beyond the continental shelf and into the deep sea, with accompanying opportunities and problems.

National Program Requires Continual Appraisal

The existing commitments to marine programs, such as those in resource development and management, environmental services, commerce, research, and technology by the United States Government require reexamination to determine their effectiveness. We believe that most of the essential programs appropriate for government action have been identified in previous detailed studies. Some have already been initiated.

It remains now to assign priorities for programs that have been identified and not yet started, and to reassign priorities to those initiated. This requires a complete and continual reappraisal by those responsible for both planning and operation.

The five-point program recently endorsed by the Administration is an excellent start in this direction. The major elements in the program are Coastal Zone Management, Establishment of Coastal Laboratories, Lake Restoration,

International Decade of Ocean Exploration, and Arctic Environmental Research.

International Economic Pressures Require Improved Capability to Use the Ocean

Other nations are pushing ahead with plans and programs to use the ocean and to exploit its wealth. We must improve our understanding and capability in the ocean to guide us effectively in making decisions on the utilization of this world resource.

For example, we need to undertake a more systematic program of exploration in the Coastal Zone, Continental Shelf, and Deep Sea. We need to support long-term, stable funding of basic marine research commensurate with the mission effort in marine activities. Support and management of multipurpose engineering development adequate for the requirements associated with current and projected marine programs undertaken by government agencies are required.

Our inadequate and outmoded state and national laws and regulations, and management and labor practices inhibit our domestic enterprise and prevent us from competing effectively with foreign enterprise. This is especially true in shipping, shipbuilding, and fishing. There is need for corrective action.

The Importance of Recent International Proposals Requires Increased United States Interest in the Deep Sea

Of immediate concern are questions of seabed disarmament agreements and other international proposals relating to use of the sea. The United States needs a strong technological basis and a continuing overview of these issues in order to make wise decisions in accordance with our national interests. With an increased effort, the United States will obtain the knowledge and capability to insure that its interests will be safeguarded as this region of the ocean becomes more important.

CHAPTER IV

NEED FOR A NEW AGENCY

We have come to the conclusion that there must be a focus for leadership and management for the marine activities of the federal government. We believe that this is urgently needed now....

As immediate action we believe that many of the important national objectives in marine affairs that we and other, including the Stratton Commission, have proposed can be fulfilled by an independent agency, which does not require that large components be transferred from existing departments....

The President Should Have a Single Accountable Agency Head for the National Marine Program...

A Central Federal Agency Is Needed to Coordinate and Revitalize the National Programs...

Planning and Future Funding Adequate for Required Programs Can Be Achieved More Effectively with a New Agency...

A New Agency Is Needed to Provide a Federal Focus for the Marine Activities in the Coastal Zone...

Establishment of a New Agency Is a Necessary Step for Effective Management of Programs in Marine Affairs...

The broad set of requirements for effective marine leadership can best be met through a management group acting as a focal point for the national program. Such a function does not require restructuring marine affairs in the U.S. Government into a new monolithic operating agency.

As long as there is interagency representation for coordination, nongovernmental representation for appraisal and advice, and a focal point with adequate authority, responsibility, accountability, and funding, all the ingredients for managing a successful national program are present.

CHAPTER V

RECOMMENDED PRESIDENTIAL ACTION

We Recommend the Establishment of an Independent Agency Which Could Be Called the National Marine Agency

The Director of the agency should report directly to the President.

The agency should accomplish its mission primarily through existing federal, state, regional, industrial, academic, and private organizations and should have authority to fund programs in such areas as marine technology and engineering.

Initial program emphasis should be directed toward the solution of marine problems in the coastal zone. Concurrently, anticipating the concerns of our citizens as their interests move offshore, the agency should evaluate and establish priorities for initiation of long-term specific objectives and programs on the continental shelf and in the deep ocean as well as in the coastal zone.

The functions of the National Marine Agency should include the following:

1. Advise the President on national marine affairs and, under this direction, provide leadership, guidance, and accountability for the promotion and implementation of a sustained comprehensive marine effort.

2. Be responsible for administration of programs including:

    a. A program of long-term exploration and surveying.

    b. A program of basic multipurpose engineering directed in support of national requirements, including the dissemination of engineering information to the governmental and nongovernmental sectors.

    c. The gathering, storing, retrieval, and dissemination of marine data. It should thus assume responsibility for the National Oceanographic Data Center.

d. Promotion of the development of and provision for test services for oceanographic instrumentation of adequate quality. Toward this end it should assume responsibility for the National Oceanographic Instrumentation Center.

e. Assistance in the development of a national technical capability through assuming the responsibility for the National Sea Grant Program, and through providing institutional support for University-National Laboratories, and Coastal Zone Laboratories.

3. Be responsible for the coordination of marine affairs among the various agencies and for assisting them by:

   a. Supporting and promoting marine programs relevant to the missions of various departments and agencies.

   b. Insuring effective utilization of both military and non-military marine capabilities in meeting the national goals.

   c. Promoting a stable marine scientific research effort.

4. Serve as a focal point between the United States Government and other governmental and nongovernmental sectors for:

   a. Marine coastal zone affairs.

   b. Technical advice in international marine affairs.

   c. Action responsive to the needs of private enterprise.

We Recommend the Establishment of a National Marine Advisory Committee

This Committee should consist of knowledgeable individuals appointed by the President from the private sector with observers from the United States Government and State Governments. This is similar to the concept of a National Advisory Committee on the Oceans as proposed by the Stratton Commission.

This Committee, with its appropriate panels and subcommittees, would be responsible for advice and consultation to the Director of the National Marine Agency, the President, and Congress through periodic meetings and reports on:

1. The assessment of the national marine stature with particular attention to long-term policies and programs of the United States Government.

2. The relevance of United States Government programs to national goals.

3. A continuing assessment of the operational structure of the United States Government's marine program.

We Recommend the Establishment of a Marine Coordinating Committee

The Coordinating Committee, of which the Director of the National Marine Agency should be Chairman, should consist of representatives from all United States Government agencies with marine interests and should:

1. Review the status of the total marine effort of the United States Government (military and non-military) and assure proper information exchange.

2. Recommend the development of required capabilities and facilities, taking into account the maximum utilization of existing capabilities and avoiding unintentional duplication through inter-agency cooperation.

3. Provide recommendations on the areas of importance for the National Marine Agency supported effort in basic engineering development.

4. Provide recommendations on levels of effort for continuing scientific research.

* * *

The Task Force believes that the establishment of the National Marine Agency, the National Marine Advisory Committee, and the Marine Coordinating Committee will provide leadership in national marine affairs and will produce visible and immediate evidence that our government has recognized the national importance of our use of the sea.

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1. Report of the President's Task Force on Oceanography. The White House, June 1970

PRESIDENT'S MESSAGE TO THE CONGRESS REGARDING ESTABLISHMENT OF A NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

July 9, 1970[1]

TO THE CONGRESS OF THE UNITED STATES:

As concern with the condition of our physical environment has intensified, it has become increasingly clear that we need to know more about the total environment--land, water, air. It also has become increasingly clear that only by reorganizing our Federal efforts can we develop that knowledge, and effectively ensure the protection, development and enhancement of the total environment itself.

The Government's environmentally-related activities have grown up piecemeal over the years. The time has come to organize them rationally and systematically. As a major step in this direction, I am transmitting today two reorganization plans: one to establish an Environmental Protection Agency, and one to establish, within the Department of Commerce, a National Oceanic and Atmospheric Administration....

National Oceanic and Atmospheric Administration

The oceans and the atmosphere are interacting parts of the total environmental system upon which we depend not only for the quality of our lives, but for life itself.

We face immediate and compelling needs for better protection of life and property from natural hazards, and for a better understanding of the total environment--an understanding which will enable us more effectively to monitor and predict its actions, and ultimately, perhaps to exercise some degree of control over them.

We also face a compelling need for exploration and development leading to the intelligent use of our marine resources. The global oceans, which constitute nearly three-fourths of the surface of our planet, are today the least-understood, the least-developed, and the least-protected part of our earth. Food from the oceans will increasingly be a key element in the world's fight against

hunger. The mineral resources of the ocean beds and of the oceans themselves, are being increasingly tapped to meet the growing world demand. We must understand the nature of these resources, and assure their development without either contaminating the marine environment or upsetting its balance.

Establishment of the National Oceanic and Atmospheric Administration--NOAA--within the Department of Commerce would enable us to approach these tasks in a coordinated way. By employing a unified approach to the problems of the oceans and atmosphere, we can increase our knowledge and expand our opportunities not only in those areas, but in the third major component of our environment, the solid earth, as well.

Scattered through various Federal departments and agencies, we already have the scientific, technological and administrative resources to make an effective, unified approach possible. What we need is to bring them together. Establishment of NOAA would do so.

By far the largest of the components being merged would be the Commerce Department's Environmental Science Services Administration (ESSA), with some 10,000 employees (70 percent of NOAA's total personnel strength) and estimated Fiscal 1970 expenditures of almost $200 million. Placing NOAA within the Department of Commerce therefore entails the least dislocation, while also placing it within a Department which has traditionally been a center for service activities in the scientific and technological area.

Components of NOAA

Under terms of Reorganization Plan No. 4, the programs of the following organizations would be moved into NOAA:

-- The Environmental Science Services Administration (from within the Department of Commerce).

-- Elements of the Bureau of Commercial Fisheries (from the Department of the Interior).

-- The marine sport fish program of the Bureau of Sport Fisheries and Wildlife (from the Department of the Interior).

-- The Marine Minerals Technology Center of the Bureau of Mines (from the Department of the Interior).

-- The Office of Sea Grant Programs (from the National Science Foundation).

-- Elements of the United States Lake Survey (from the Department of the Army).

In addition, by executive action, the programs of the following organizations would be transferred to NOAA:

-- The National Oceanographic Data Center (from the Department of the Navy).

-- The National Oceanographic Instrumentation Center (from the Department of the Navy).

-- The National Data Buoy Project (from the Department of Transportation).

In brief, these are the principal functions of the programs and agencies to be combined:

The Environmental Science Services Administration (ESSA) comprises the following components:

-- The Weather Bureau (weather, marine, river and flood forecasting and warning).

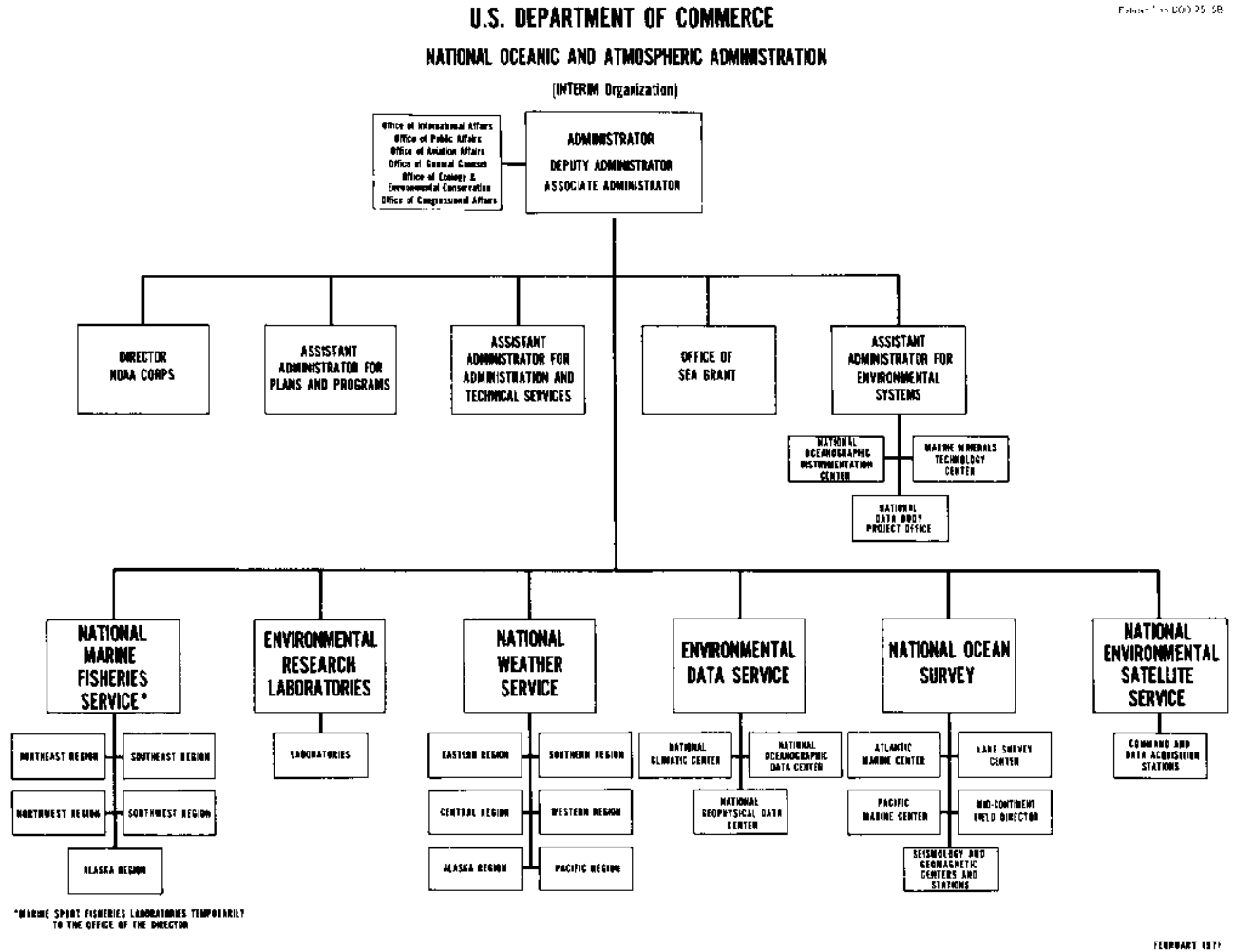
-- The Coast and Geodetic Survey (earth and marine description, mapping and charting).

-- The Environmental Data Service (storage and retrieval of environmental data).

-- The National Environmental Satellite Center (observation of the global environment from earth-orbiting satellites).

-- The ESSA Research Laboratories (research on physical environmental problems).

ESSA's activities include observing and predicting the state of the oceans, the state of the lower and upper atmosphere, and the size and shape of the earth. It maintains the nation's warning systems for such natural hazards as hurricanes, tornadoes, floods, earthquakes and seismic sea waves. It provides information for national defense, agriculture, transportation and industry.



NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

Courtesy U.S. Department of Commerce (NOAA)

ESSA monitors atmospheric, oceanic and geophysical phenomena on a global basis, through an unparalleled complex of air, ocean, earth and space facilities. It also prepares aeronautical and marine maps and charts.

Bureau of Commercial Fisheries and marine sport fish activities. Those fishery activities of the Department of the Interior's U.S. Fish and Wildlife Service which are ocean-related and those which are directed toward commercial fishing would be transferred. The Fish and Wildlife Service's Bureau of Commercial Fisheries has the dual function of strengthening the fishing industry and promoting conservation of fishery stocks. It conducts research on important marine species and on fundamental oceanography, and operates a fleet of oceanographic vessels and a number of laboratories. Most of its activities would be transferred. From the Fish and Wildlife Service's Bureau of Sport Fisheries and Wildlife, the marine sport fishing program would be transferred. This involves five supporting laboratories and three ships engaged in activities to enhance marine sport fishing opportunities.

The Marine Minerals Technology Center is concerned with the development of marine mining technology.

Office of Sea Grant Programs. The Sea Grant Program was authorized in 1966 to permit the Federal Government to assist the academic and industrial communities in developing marine resources and technology. It aims at strengthening education and training of marine specialists, supporting applied research in the recovery and use of marine resources, and developing extension and advisory services. The Office carries out these objectives by making grants to selected academic institutions.

The U.S. Lake Survey has two primary missions. It prepares and publishes navigation charts of the Great Lakes and tributary waters and conducts research on a variety of hydraulic and hydrologic phenomena of the Great Lakes' waters. Its activities are very similar to those conducted along the Atlantic and Pacific coasts by ESSA's Coast and Geodetic Survey.

The National Oceanographic Data Center is responsible for the collection and dissemination of oceanographic data accumulated by all Federal agencies.

The National Oceanographic Instrumentation Center provides a central Federal service for the calibration and testing of oceanographic instruments.

The National Data Buoy Development Project was established to determine the feasibility of deploying a system of automatic ocean buoys to obtain oceanic and atmospheric data.

Role of NOAA

Drawing these activities together into a single agency would make possible a balanced Federal program to improve our understanding of the resources of the sea, and permit their development and use while guarding against the sort of thoughtless exploitation that in the past laid waste to so many of our precious natural assets. It would make possible a consolidated program for achieving a more comprehensive understanding of oceanic and atmospheric phenomena, which so greatly affect our lives and activities. It would facilitate the cooperation between public and private interests that can best serve the interests of all.

I expect that NOAA would exercise leadership in developing a national oceanic and atmospheric program of research and development. It would coordinate its own scientific and technical resources with the technical and operational capabilities of other government agencies and private institutions. As important, NOAA would continue to provide those services to other agencies of government, industry and private individuals which have become essential to the efficient operation of our transportation systems, our agriculture and our national security. I expect it to maintain continuing and close liaison with the new Environmental Protection Agency and the Council on Environmental Quality as part of an effort to ensure that environmental questions are dealt with in their totality and that they benefit from the full range of the government's technical and human resources.

Authorities who have studied this matter, including the Commission on Marine Science, Engineering and Resources, strongly recommended the creation of a National Advisory Committee for the Oceans. I agree. Consequently, I will request, upon approval of the plan, that the Secretary of Commerce establish a National Advisory Committee for the Oceans and the Atmosphere to advise him on the progress of governmental and private programs in achieving the nation's oceanic and atmospheric objectives.

An On-Going Process

The reorganizations which I am here proposing afford both the Congress and the Executive Branch an opportunity to re-evaluate the adequacy of existing program authorities involved in these consolidations. As these two new organizations come into being, we may well find that supplementary legislation to perfect their authorities will be necessary. I look forward to working with the Congress in this task.

In formulating these reorganization plans, I have been greatly aided by the work of the President's Advisory Council on Executive Organization (the Ash Council), the Commission on Marine Science, Engineering and Resources (the Stratton Commission, appointed by President Johnson), my special task force on oceanography headed by Dr. James Wakelin, and by the information developed during both House and Senate hearings on proposed NOAA legislation.

Many of those who have advised me have proposed additional reorganizations, and it may well be that in the future I shall recommend further changes. For the present, however, I think the two reorganizations transmitted today represent a sound and significant beginning. I also think that in practical terms, in this sensitive and rapidly developing area, it is better to proceed a step at a time--and thus to be sure that we are not caught up in a form of organizational indigestion from trying to rearrange too much at once. As we see how these changes work out, we will gain a better understanding of what further changes--in addition to these--might be desirable.

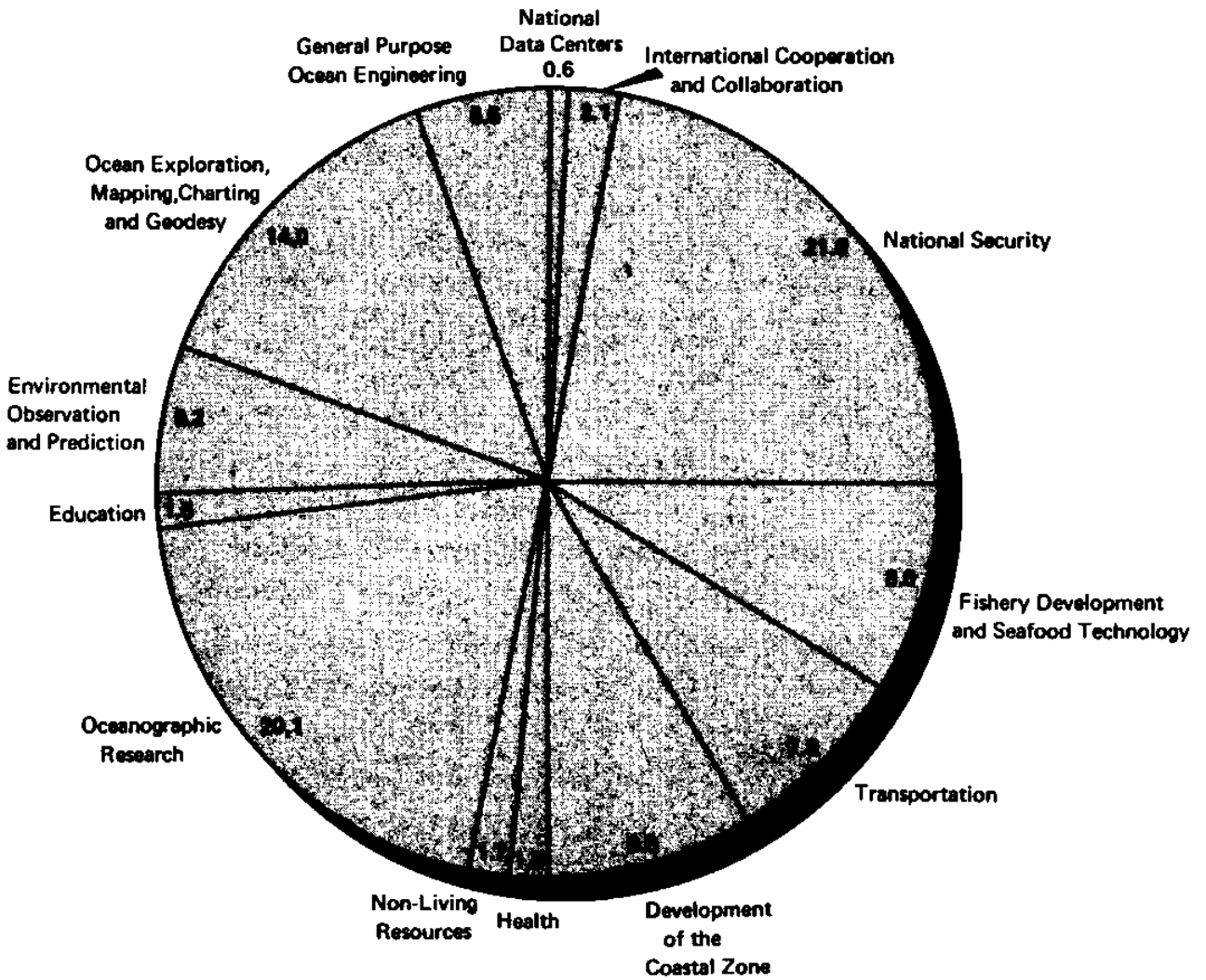
Ultimately, our objective should be to insure that the nation's environmental and resource protection activities are so organized as to maximize both the effective coordination of all and the effective functioning of each.

The Congress, the Administration and the public all share a profound commitment to the rescue of our natural environment, and the preservation of the Earth as a place both habitable by and hospitable to man. With its acceptance of these reorganization plans, the Congress will help us fulfill that commitment.

RICHARD NIXON

THE WHITE HOUSE,

July 9, 1970.



THE MARINE SCIENCE AND TECHNOLOGY DOLLAR

Courtesy Marine Sciences Council

ESTABLISHMENT OF NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

Executive Order of the President[1]

October 3, 1970

SECTION 1. *Transfers to Secretary of Commerce.* The following are hereby transferred to the Secretary of Commerce:

(a) All functions vested by law in the Bureau of Commercial Fisheries of the Department of the Interior or in its head, together with all functions vested by law in the Secretary of the Interior or the Department of the Interior which are administered through that Bureau or are primarily related to the Bureau, exclusive of functions with respect to (1) Great Lakes fishery research and activities related to the Great Lakes Fisheries Commission, (2) Missouri River Reservoir research, (3) the Gulf Breeze Biological Laboratory of the said Bureau at Gulf Breeze, Florida, and (4) Trans-Alaska pipeline investigations.

(b) The functions vested in the Secretary of the Interior by the Act of September 22, 1959 (Public Law 86-359, 73 Stat. 642, 16 U.S.C. 760e-760g; relating to migratory marine species of game fish).

(c) The functions vested by law in the Secretary of the Interior, or in the Department of the Interior or in any officer or instrumentality of that Department, which are administered through the Marine Minerals Technology Center of the Bureau of Mines.

(d) All functions vested in the National Science Foundation by the National Sea Grant College and Program Act of 1966 (80 Stat. 998), as amended (33 U.S.C. 1121 et seq.).

(e) Those functions vested in the Secretary of Defense or in any officer, employee, or organizational entity of the Department of Defense by the provision of Public Law 91-144, 83 Stat. 326, under the heading "Operation and maintenance, general" with respect to "surveys and charting of northern and northwestern lakes and connecting waters," or by other law, which come under the mission assigned as of July 1, 1969, to the United States Army Engineer District, Lake Survey, Corps of Engineers, Department of the Army and relate to (1) the conduct of hydrographic surveys of the Great Lakes and their outflow rivers, Lake Champlain, New York State Barge Canals, and the Minnesota-Ontario border lakes, and the compilation and publication of navigation charts, including

recreational aspects, and the Great Lakes Pilot for the benefit and use of the public, (2) the conception, planning, and conduct of basic research and development in the fields of water motion, water characteristics, water quantity, and ice and snow, and (3) the publication of data and the results of research projects in forms useful to the Corps of Engineers and the public, and the operation of a Regional Data Center for the collection, coordination, analysis, and the furnishing to interested agencies of data relating to water resources of the Great Lakes.

(f) So much of the functions of the transferor officers and agencies referred to in or affected by the foregoing provisions of this section as is incidental to or necessary for the performance by or under the Secretary of Commerce of the functions transferred by those provisions or relates primarily to those functions. The transfers to the Secretary of Commerce made by this section shall be deemed to include the transfer of authority, provided by law, to prescribe regulations relating primarily to the transferred functions.

SEC. 2. *Establishment of Administration.* (a) There is hereby established in the Department of Commerce an agency which shall be known as the National Oceanic and Atmospheric Administration, hereinafter referred to as the "Administration."

(b) There shall be at the head of the Administration the Administrator of the National Oceanic and Atmospheric Administration, hereinafter referred to as the "Administrator." The Administrator shall be appointed by the President, by and with the advice and consent of the Senate, and shall be compensated at the rate now or hereafter provided for Level III of the Executive Schedule Pay Rates (5 U.S.C. 5314).

(c) There shall be in the Administration a Deputy Administrator of the National Oceanic and Atmospheric Administration who shall be appointed by the President, by and with the advice and consent of the Senate, and shall be compensated at the rate now or hereafter provided for Level IV of the Executive Schedule Pay Rates (5 U.S.C. 5315). The Deputy Administrator shall perform such functions as the Administrator shall from time to time assign or delegate, and shall act as Administrator during the absence or disability of the Administrator or in the event of a vacancy in the office of Administrator.

(d) There shall be in the Administration an Associate Administrator of the National Oceanic and Atmospheric Administration who shall be appointed by the President, by and with

the advice and consent of the Senate, and shall be compensated at the rate now or hereafter provided for Level V of the Executive Schedule Pay Rates (5 U.S.C. 5316). The Associate Administrator shall perform such functions as the Administrator shall from time to time assign or delegate, and shall act as Administrator during the absence or disability of the Administrator and Deputy Administrator. The office of Associate Administrator may be filled at the discretion of the President by appointment (by and with the advice and consent of the Senate) from the active list of commissioned officers of the Administration in which case the appointment shall create a vacancy on the active list and while holding the office of Associate Administrator the officer shall have rank, pay, and allowances not exceeding those of a vice admiral.

(e) There shall be in the Administration three additional officers who shall perform such functions as the Administrator shall from time to time assign or delegate. Each such officer shall be appointed by the Secretary, subject to the approval of the President, under the classified civil service, shall have such title as the Secretary shall from time to time determine, and shall receive compensation at the rate now or hereafter provided for Level V of the Executive Schedule Pay Rates (5 U.S.C. 5316).

(f) The President may appoint in the Administration, by and with the advice and consent of the Senate, two commissioned officers to serve at any one time as the designated heads of two principal constituent organizational entities of the Administration, or the President may designate one such officer as the head of such an organizational entity and the other as the head of the commissioned corps of the Administration. Any such designation shall create a vacancy on the active list and the officer while serving under this subsection shall have the rank, pay, and allowances of a rear admiral (upper half).

(g) Any commissioned officer of the Administration who has served under (d) or (f) and is retired while so serving or is retired after the completion of such service while serving in a lower rank or grade, shall be retired with the rank, pay, and allowances authorized by law for the highest grade and rank held by him; but any such officer, upon termination of his appointment in a rank above that of captain, shall, unless appointed or assigned to some other position for which a higher rank or grade is provided, revert to the grade and number he would have occupied had he not served in a rank above that of captain and such officer shall be an extra number in that grade.

SEC. 3. *Performance of transferred functions.* The provisions of sections 2 and 4 of Reorganization Plan No. 5 of 1950 (64 Stat. 1263) shall be applicable to the functions transferred hereunder to the Secretary of Commerce.

SEC. 4. *Incidental transfers.* (a) So much of the personnel, property, records, and unexpended balances of appropriations, allocations, and other funds employed, used, held, available, or to be made available in connection with the functions transferred to the Secretary of Commerce by this reorganization plan as the Director of the Office of Management and Budget shall determine shall be transferred to the Department of Commerce at such time or times as the Director shall direct.

(b) Such further measures and dispositions as the Director of the Office of Management and Budget shall deem to be necessary in order to effectuate the transfers referred to in subsection (a) of this section shall be carried out in such manner as he shall direct and by such agencies as he shall designate.

(c) The personnel, property, records, and unexpended balances of appropriations, allocations, and other funds of the Environmental Science Services Administration shall become personnel, property, records, and unexpended balances of the National Oceanic and Atmospheric Administration or of such other organizational entity or entities of the Department of Commerce as the Secretary of Commerce shall determine.

(d) The Commissioned Officer Corps of the Environmental Science Services Administration shall become the Commissioned Officer Corps of the National Oceanic and Atmospheric Administration. Members of the Corps, including those appointed hereafter, shall be entitled to all rights, privileges, and benefits heretofore available under any law to commissioned officers of the Environmental Science Services Administration, including those rights, privileges, and benefits heretofore accorded by law to commissioned officers of the former Coast and Geodetic Survey.

(e) Any personnel, property, records, and unexpended balances of appropriations, allocations, and other funds of the Bureau of Commercial Fisheries not otherwise transferred shall become personnel, property, records, and unexpended balances of such organizational entity or entities of the Department of the Interior as the Secretary of the Interior shall determine.

SEC. 5. *Interim officers.* (a) The President may authorize any person who immediately prior to the effective date of this reorganization plan held a position in the executive branch of the Government to act as Administrator until the office of Administrator is for the first time filled pursuant to provisions of this reorganization plan or by recess appointment, as the case may be.

(b) The President may similarly authorize any such person to act as Deputy Administrator and authorize any such person to act as Associate Administrator.

(c) The President may similarly authorize a member of the former Commissioned Officer Corps of the Environmental Science Services Administration to act as the head of one principal constituent organizational entity of the Administration.

(d) The President may authorize any person who serves in an acting capacity under the foregoing provisions of this section to receive the compensation attached to the office in respect of which he so serves. Such compensation, if authorized, shall be in lieu of, but not in addition to, other compensation from the United States to which such person may be entitled.

SEC. 6. *Abolitions.* (a) Subject to the provisions of this reorganization plan, the following, exclusive of any functions, are hereby abolished:

(1) The Environmental Science Services Administration in the Department of Commerce (established by Reorganization Plan No. 2 of 1965, 79 Stat. 1318), including the offices of Administrator of the Environmental Science Services Administration and Deputy Administrator of the Environmental Science Services Administration.

(2) The Bureau of Commercial Fisheries in the Department of the Interior (16 U.S.C. 742b), including the office of Director of the Bureau of Commercial Fisheries.

(b) Such provisions as may be necessary with respect to terminating any outstanding affairs shall be made by the Secretary of Commerce in the case of the Environmental Science Services Administration and by the Secretary of the Interior in the case of the Bureau of Commercial Fisheries.

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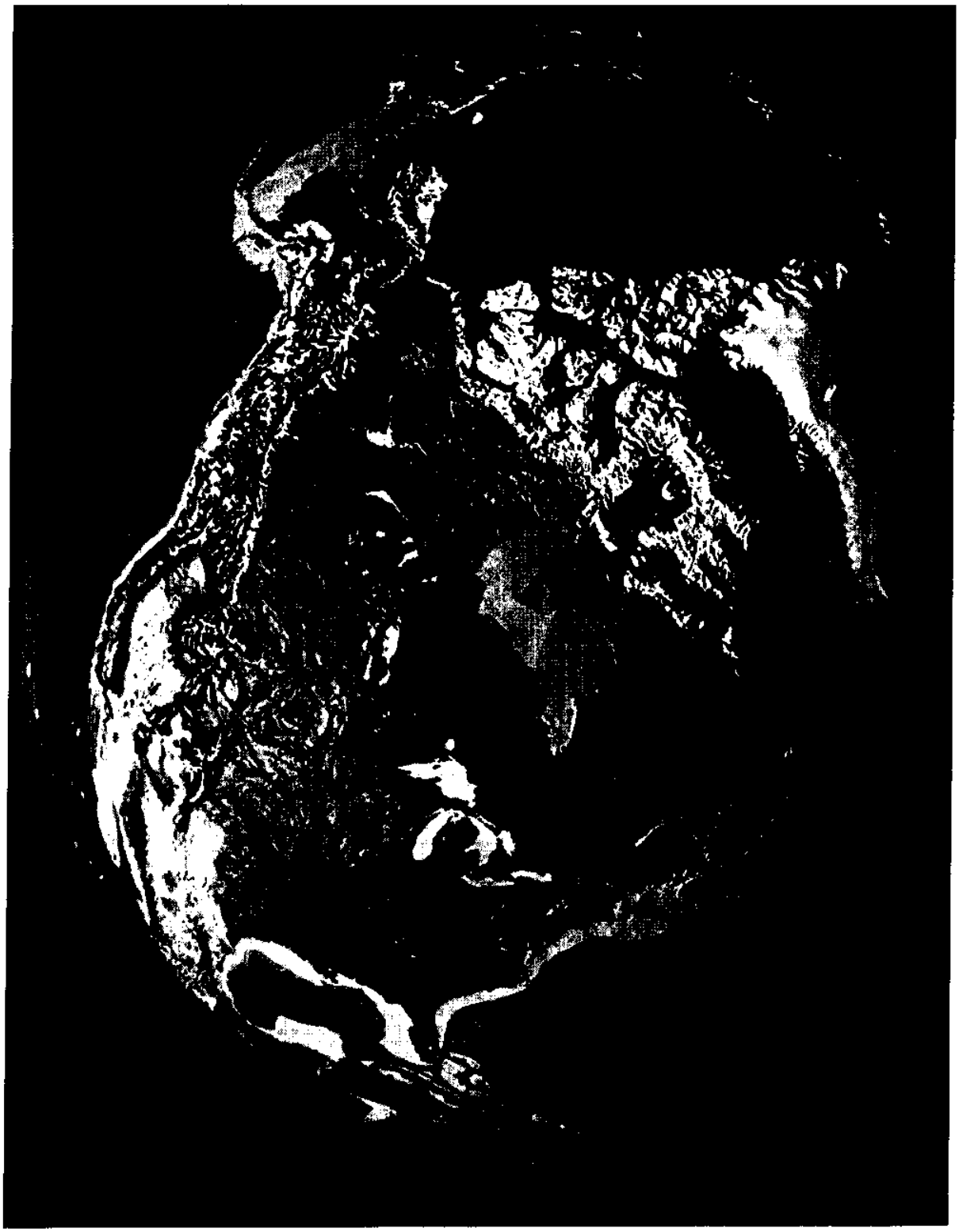
1. Federal Register, Vol. 35, No. 194, October 6, 1970, pp. 15627-15630.



FOCUS ON SHORT WATER ROUTES IN THE ARCTIC

Courtesy Standard Oil Company (N.J.)

CHAPTER SEVEN

LOOKING TO THE FUTURE

Introductory Note

In attempting to assess the future pattern of U.S. marine involvement one can be overwhelmed by a multitude of projections. It is difficult to imagine anyone who has not read of the discoveries of minerals and energy fuel resources in the sea, or become concerned with the pollution of waterways, or learned of the remarkable achievements of the deep-sea drilling project, or, in an extreme case, does not expect to have a conversation with "Flipper" the porpoise. We are now, however, making the transition from the ten-percent inspirational stage of marine involvement to that of the ninety-percent perspiration and hard work.

Much has been accomplished in fashioning policy decisions on what to do about pollution, in creating the National Oceanic and Atmospheric Administration, in formulating guidelines for international agreement on the seabed, and in forging forward-looking research and development programs. In these programs and those that follow will be found the goal of balancing social, economic, and strategic aims. Although strategic aims in the military sense have not been considered in this book, they remain, nonetheless, an inherent part of policy thinking and action relating to the seas, due to the military applications of many programs.

Engineering and science must be focused upon finding solutions to specific problems of technological development and

utilization of the seas. One area of critical need in relation to the use of the large supertankers is that most harbors cannot accommodate such vessels. Consequently, offshore deep-water mooring facilities will be needed with pipelines connecting to storage terminals on shore. Rising labor costs also dictate a need to reduce the costs of ship operation. Increased automation, use of computers, electronic navigational aids, and other features may enable industry to move forward in the maritime field.

The Government must provide environmental prediction data for design purposes to help avert calamities such as occurred in connection with Hurricane Camille and other violent storms. This is needed for improved protection both of shipping, offshore oil rigs, and onshore property of many kinds. The rising cost of insurance fees has already led to diminishing activity in areas where there are recurrent destructive storms of large magnitude. Instrumented environmental buoys can perhaps assist metereologists to give improved advance warning of the progress of dangerous storms. Researches conducted in recent years have resulted in progress being made, pointing to eventual ability to modify weather patterns. But economic and political problems may arise if storms are diverted to other countries or farmers are denied customary rains. Thus, decision-makers will face dilemmas with few solid answers when the point is reached that storms can be diminished in their fury or their courses changed.

Another sphere of marine activity that will call for

increased effort in the next five years will be that of deep submergence and man-in-the-sea. One should not confuse the present ability to make brief exploratory intrusions into the depths by research submarines and saturation diving with capacity to function effectively and at economically-feasible cost deep under the ocean surface for extended periods of time. The progress made with experimental submersibles, the DSRV project, and ocean-floor laboratories comprise essential steps along the way. But much more has got to be done to master the cold, dark, hostile, pressure-ridden areas of inner space before man-in-the-sea can approximate the attainments of man-in-outer-space. What has been accomplished thus far with limited funding suggests that much more can be done if liberal support can be obtained.

The documents included in this chapter illustrate some of the problems that are now calling for attention in marine affairs--improvement of the means of transportation in the Arctic and implementing the International Decade of Ocean Exploration. Another issue, which we do not touch upon in this chapter but which will occupy the attention of government in the next few years, will be the search for agreement on the law of the sea and the seabeds. The proposals outlined in Chapter Five suggest the ground in which debate will occur on this facet of policy. Beyond these areas the ocean engineer will be concerned with the ongoing aspects of public policy as they relate to many of the less dramatic but nonetheless essential activities of business and industry in the marine field.

Suggested References for Further Reading

Marine Science Affairs, 1969.

Chapter 16, "Looking Ahead."

Marine Science Affairs, 1970.

Chapter 11, "Furthering Marine Science Research and Manpower."
Chapter 14, "International Decade of Ocean Exploration."

Public Policy for the Seas.

Chapter 10, "Political Process and the Future of National Ocean Policy."

The following articles touch on questions of future objectives:

Moore, J. Jamison, "The Ocean - An Economic Perspective." Marine Technology Society Journal, Vol. 4, No. 6, November-December 1970, pp. 33-36.

Stover, L. V., "Forecast of World Ocean Objectives." Ocean Industry, Vol. 5, No. 8, August 1970, pp. 22-26.

LONG-RANGE POLAR TRANSPORTATION REQUIREMENTS

Report of a Conference Sponsored by the U.S. Department of Transportation, March 4-6, 1968[1]

(Excerpts)

Sea Transportation System

Seaborne transport is now, and probably will be for a long time to come, the most economical method of moving large quantities of dry and liquid cargo over long distances. Special circumstances, e.g., interference of ice and lack of adequate deep-water port facilities along the northwest and north coasts of Alaska, add to the cost of sea transport. Even so, it is unlikely that other modes of transportation will prove cheaper when there is a requirement for moving large quantities of cargo from this area to world markets.

Other than a modest seasonal sea lift, there is not now a sufficient requirement for heavy freight movement to and from the area to justify regular shipping schedules. There is every indication, though, that within ten years there could be production of both oil and minerals in arctic Alaska that will require economical high-capacity bulk transportation to Pacific Ocean ports and perhaps across the Arctic Ocean to Europe. While minerals, if necessary, could be stockpiled for seasonal lift, oil requires year-round transportation and the benefits to mineral exploitation from year-round access to the area also would be substantial.

If action were initiated now that would guarantee an adequate sea transportation system a few years hence, beneficial effects should follow in accelerated prospecting and development of resources. Should action toward this end be deferred, either the required transportation system will not be ready in time or investment will be discouraged and the development that could take place within ten years will stretch out indefinitely. Given inexpensive reliable transportation and favorable market conditions it is possible that the copper at Bornite would be on its way to world markets in the not too distant future; encouraged by recent events at Prudhoe Bay oil might be flowing from the north slope within the next few years; and it is not unreasonable to suppose that markets may be found for the billions of tons of bituminous coal stretching eastward from Cape Lisburne north of the Brooks Range. A by-product of shipping access to northwest Alaska, including the Seward Peninsula and Kotzbue Sound areas, would be increased access to the possibly mineral-rich Kuskokwim

region and Bristol Bay area. Exploration of the continental shelf also would be encouraged.

A high priority then is a capability for year-round access by ocean shipping to northwest Alaska and then onward to the north coast. Multiple handling adds to expense, so the objective should be a capability for deep-draft shipping. Thus, port development will be required. The Corps of Engineers is already checking on the feasibility of developing deep-water ports to service northwest Alaska. It is anticipated that the study will be completed in approximately two years.

It is suggested that this development might proceed in two phases. The first and highest-priority phase would be the establishment of a year-round capability for ocean access as far north as Wainwright, situated between Icy Cape and Barrow. Year-round access up to Cape Nome would be relatively easy. The sector from Cape Nome through Bering Strait to Wainwright would be more difficult to develop. Since, however, technical knowledge for design and construction of ships capable of deep penetration in the polar pack exists, certainly there should be no insurmountable difficulty in accomplishing the easier task of establishing an all-year shipping route to Wainwright.

As a part of Phase I, a pipeline could be run from the north slope oil fields, e.g., Prudhoe Bay to Wainwright--about 250 miles. The cost of such a pipeline would be far less than that of a pipeline through the Brooks Range to the Anchorage area.

The second phase would be a longer range effort to open the north Alaskan coast to shipping. A well-known bottleneck caused by the polar pack ice exists at Barrow. From August to mid-October a lane from Point Barrow eastward to Herschel Island (off northwestern Canada) is usually negotiable. However, the heavy polar pack seldom is far off the coast between Point Barrow and Herschel Island and may advance onto the shore at any time. The polar pack ice may close in on the coast after about 10 September and young ice will begin to form. But the barrier that interferes most with access to the eastward is at Barrow.

It has been suggested that a ship canal to circumvent this "plug" be built through the low, level, lake-studded terrain south of Barrow, exiting in Admiralty Bay or, if necessary, going on to Smith Bay, undercutting Cape Simpson. The spoil from canal construction could be used to build a major airfield nearby. Obviously, engineering studies would

be required to determine the feasibility of such a project, and the trade-offs between this method and the more conventional method of forcing a path through the ice north of Barrow would need to be examined. In either case, user costs should be considered to assure an equitable fiscal responsibility.

It should be borne in mind that opening the north slope of Alaska to year-round ocean shipping also opens the Canadian northwest to direct egress to the Pacific. Thus, copper could be brought from the mouth of the Coppermine River and other minerals could be delivered to tidewater through the Mackenzie River system. This leads to bilateral U.S.-Canadian efforts.

Submarine transport has been suggested for the Arctic. It is quite possible that in time transpolar submarine transport may be a reality. It would permit direct routes to European markets and for this reason development of a submarine transport system should be encouraged for the long view. However, the difficulty of under-ice movement in the shallow waters of the route to the Pacific through Bering Strait might limit the utility of submarines as an alternative to surface ships on this route.

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1. U.S. Department of Transportation, Long Range Polar Objectives. Washington: Department of Transportation, April 1, 1968, pp. 1-11.

AN OCEANIC QUEST - THE INTERNATIONAL DECADE OF OCEAN EXPLORATION[1]

PREFACE

(Excerpts)

On March 8, 1968, the President of the United States of America proposed the launching of "an historic and unprecedented adventure--an International Decade of Ocean Exploration for the 1970's." The general concept was described in a report of the National Council on Marine Resources and Engineering Development published in May of 1968. The Council then invited the National Academy of Sciences (NAS) and the National Academy of Engineering (NAE) jointly to provide advice on the scientific and engineering aspects of United States participation in such a Decade of Exploration. The Academies agreed to examine the scientific and engineering goals and priorities among these goals, the capabilities required to achieve them, the program elements of a Decade of Ocean Exploration, and the end products and benefits to be anticipated if the Decade were to be implemented. The subsequent study and the preparation of this report were financed by the National Council on Marine Resources and Engineering Development....

DISTINGUISHING FEATURES OF THE DECADE

The term "International Decade of Ocean Exploration" can be interpreted very broadly. Thus the Steering Committee gave early consideration to the features that could serve to distinguish programs of the Decade from the whole of ocean science and engineering. A broad statement of the basic objectives of the Decade was developed, as follows:

To achieve more comprehensive knowledge of ocean characteristics and their changes and more profound understanding of oceanic processes for the purpose of more effective utilization of the ocean and its resources.

The emphasis on utilization was considered of primary importance. In contrast to the total spectrum of oceanography and ocean engineering, the principal focus of Decade activities would be on exploration effort in support of such objectives as (a) increased net yield from ocean resources, (b) prediction and enhanced control of natural phenomena, and (c) improved quality of the marine environment. Thus Decade investigations should be identifiably relevant to some aspect of ocean utilization....

OBJECTIVES OF NATIONAL PARTICIPATION IN THE DECADE

The objectives of any nation participating in the Decade could be summarized as follows:

1. To benefit directly the growth of the national economy.

2. To obtain information required for management and conservation of resources, for improving the effectiveness of nonextractive uses; for prediction, control, and improvement of the marine environment; and for the making of sound political, legal, and socioeconomic decisions related thereto.

3. To provide the technical basis for the reduction of international conflicts in the ocean.

4. To benefit directly the economies and populations of developing countries.

5. To increase knowledge and understanding of the ocean.

6. To expand the technical resource base (manpower, facilities, and technology) for future ocean research and utilization.

The United States is already extensively engaged in the development of ocean resources, both in local waters and in many other parts of the world ocean. U.S. private interests are investing large sums in exploration and drilling for oil, in capital and labor in the fisheries, in coastal development, in marine transportation, and in other uses of the ocean. The government is also incurring large expenses in connection with utilization of the ocean and its resources. At the same time, significant revenues are accruing as a result of these activities. Over the past 20 years, income to the U.S. Treasury collected as bonuses, rentals, and royalties on offshore oil and gas leases exceeded $3 billion. Royalties alone in 1968 were nearly $200 million. Large amounts were also paid to several coastal states. Investigations such as those proposed for the Decade are necessary for the rationalization, protection, and extension of investment opportunities for capital both off our own coasts and elsewhere.

SUMMARY AND MAJOR RECOMMENDATIONS

Objectives, Goals, and Characteristics

We propose the following basic objective for the Decade:

To achieve more comprehensive knowledge of ocean characteristics and their changes and more profound understanding of oceanic processes for the purpose of more effective utilization of the ocean and its resources.

As a corollary to this objective, the following set of goals should be adopted:

To acquire by 1980 an enhanced capability to

- Exploit, conserve, and manage in a rational, economic manner the major living resources of the ocean, and the major nonliving resources of the continental margin

- Evaluate realistically the economic potential of the nonliving resources of the deep-sea floor and provide the factual basis for rational decisions about their jurisdiction

- Make useful predictions of oceanic conditions on operationally significant time scales

- Control modifications of the marine environment resulting from man's intervention

- Operate effectively at the surface, within, and at the bottom of the ocean

Programs appropriate to the Decade would, for the most part, be *long-term* and *continuing* investigations of *cooperative* nature, directed toward objectives of widespread interest concerned with more effective *utilization* of the ocean and its resources.

The principal emphasis of the Decade is on the use of the ocean and its resources. A noteworthy outcome of the discussions among scientists and engineers was the consensus that more effective utilization is now importantly limited by lack of technical information, understanding, and capability. An exploration effort was considered the appropriate and desirable activity for the large-scale cooperative programs of the Decade. The more local and intensive prospecting and development of exploitation techniques, on the other hand, is a task for the parties directly concerned.

It is possible to identify relatively specific goals in several fields of marine affairs. It is more difficult to specify detailed plans for future research. An inherent characteristic of research is the inability to predict what will be the most fertile lines of attack on identified problems

for several years ahead. Therefore, we have proposed for initial consideration a number of programs, described in more or less detail, that are germane to the Decade objective and goals. These examples are drawn from our present experience and understanding; because of the continual evolution of this understanding, it is probable that other proposals of higher priority will subsequently arise.

Relation between Ocean Uses and Decade Programs

... The following topics have been selected for discussion in the present section: mineral resources, living resources, waste disposal, and ocean transportation....

Mineral Resources

At present, exploitation of marine mineral resources* is essentially confined to the continental shelf. The principal product is petroleum and natural gas. In 1967, the sea floor adjacent to the United States was the source of about $1.7 billion worth of petroleum, natural gas, and sulfur, about four times the production in 1960. U.S. offshore production is about one third of total world offshore production. Other shelf and near-shore resources include sand and gravel, tin, gold and platinum, hematite, magnetite, ilmenite, light heavy minerals such as rutile, zircon and monazite, and diamonds.

In addition to the resources currently being exploited, other potential resources include phosphorite on the shelf and upper slopes, and manganese nodules on the deep-ocean floor. It is also known that petroleum in some regions is present beyond the shelf, although it is not being exploited by present techniques. Information is needed on the abundance, composition, and distribution of deep-sea deposits, for an evaluation of their utility and as a basis for management and jurisdictional decisions.

A variety of scientific and engineering investigations is required to expedite the use of ocean mineral resources. Physiographic mapping and reconnaissance geological-geophysical exploration of the continental margin can provide the basis for subsequent intensive study and prospecting by industry. Delineation of the continental margin and the transition to the deep ocean is required as an element in ultimate establishment of regimes and jurisdiction. Exploration of small

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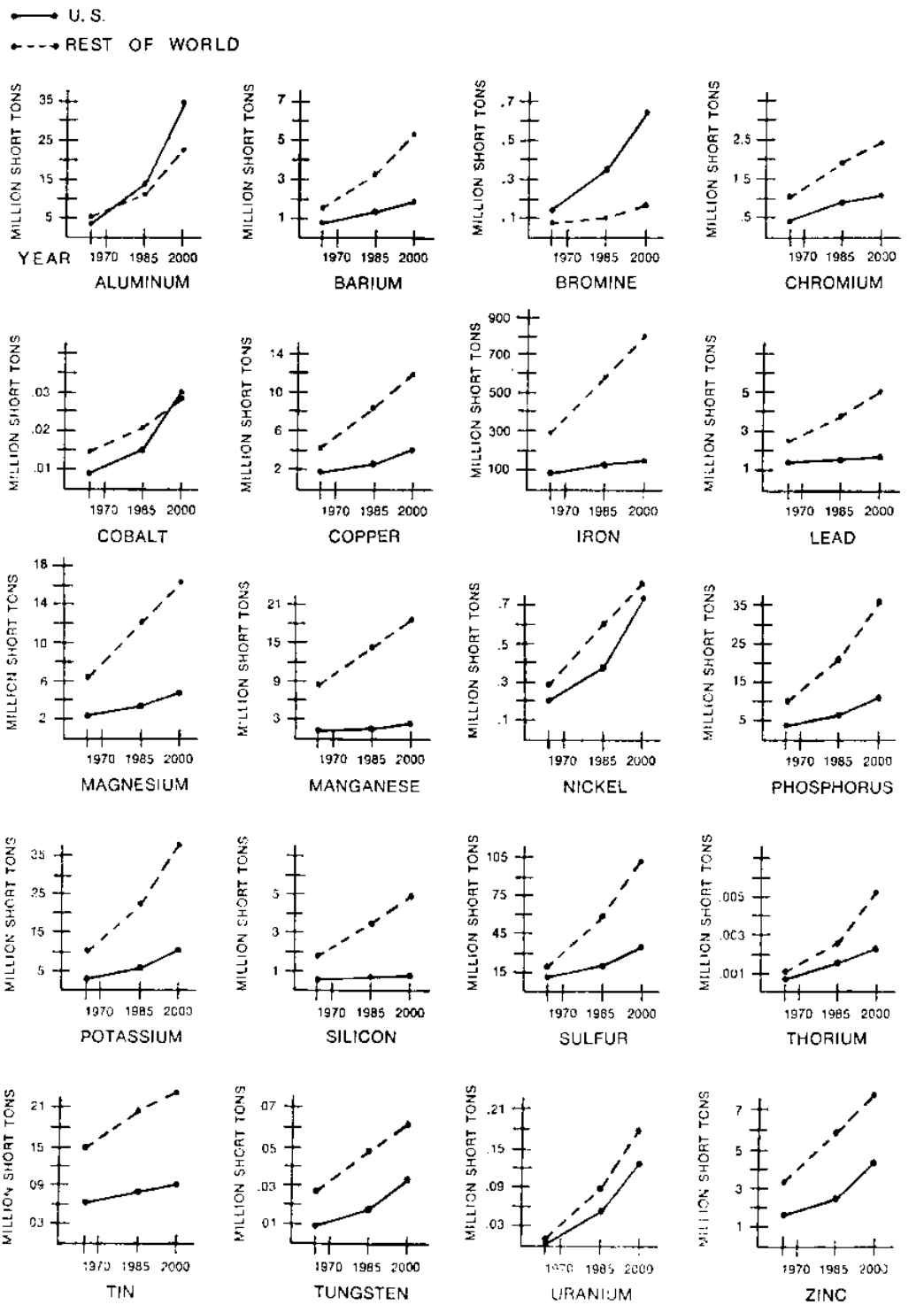
*Including oil and gas.

Projected Demand for Given Minerals to 1985 and 2000



Courtesy U.S. Department of the Interior

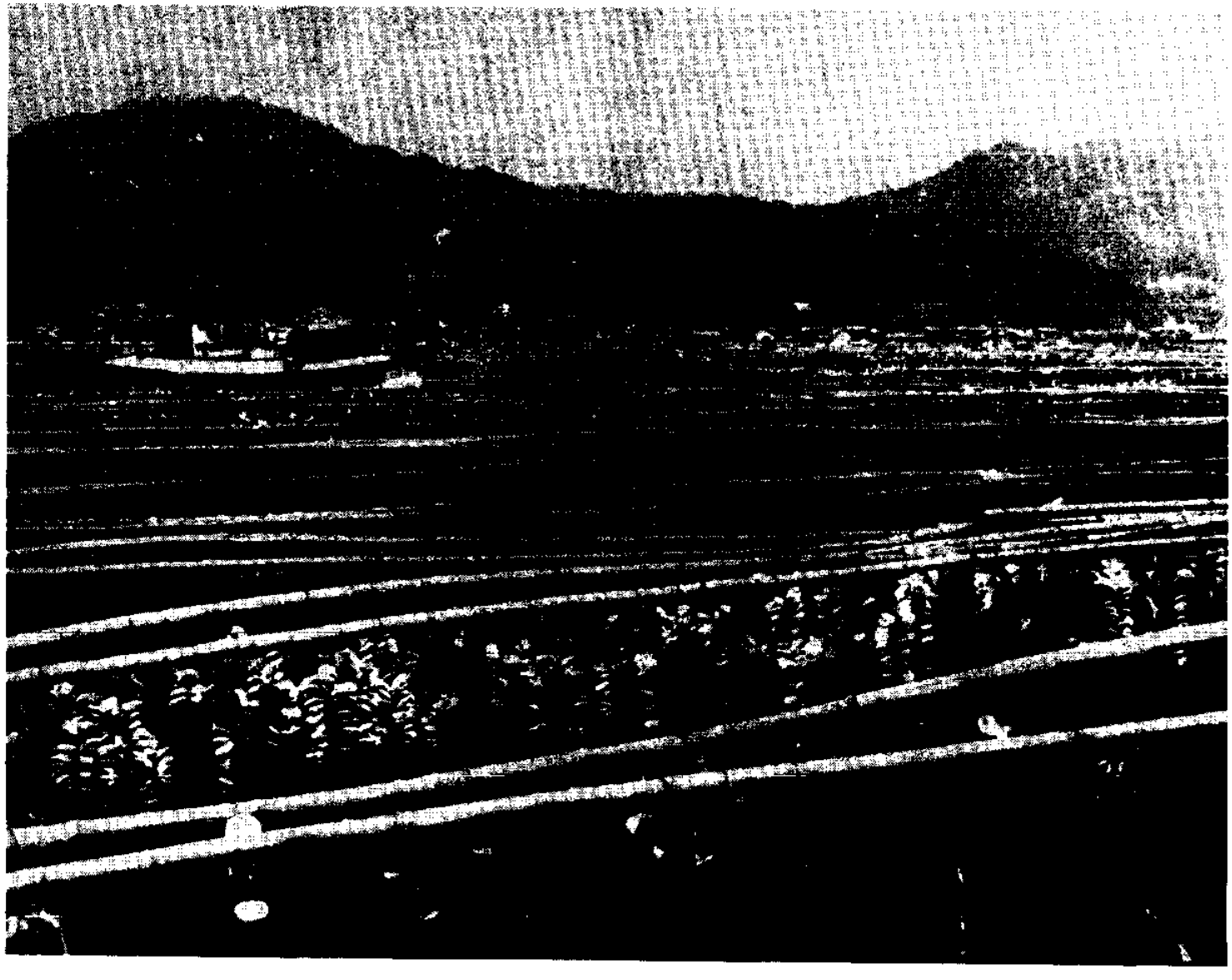
ocean basins and the deep-sea floor can facilitate the evaluation of mineral-resource potential. Fundamental studies of sea-floor structure, sedimentation, and processes affecting these will help in reasoning about little-known areas. The development of mineral-recovery systems will require knowledge and prediction of surface oceanic and atmospheric conditions as well as seabed characteristics. Ecological studies are required for guidance in the control of pollution from mineral-recovery operations.

Living Resources

In 1967, more than 50 million tons of organisms were harvested from the ocean, with a dockside value of about $8 billion. The world catch has been doubling in about ten years. It has been estimated that the sustainable yield of conventional living resources is four to five times the present harvest. This amount is equivalent to the total requirements for animal protein of the 6 billion people expected to be living by the year 2000.

United States landings in 1967 were 2.4 million tons, little different from the catch thirty years ago. At present, about 70-75 percent of the fishery products used in the U.S. are imported; much of the deficit between consumption and production might be made good from under-used resources already known to be present off the coasts of the United States if it were not for a number of institutional constraints.

Apart from the institutional factors that tend to limit the growth of marine fisheries in the United States and elsewhere, there are a number of technical constraints that could be reduced as a result of appropriate investigations. In order to exploit unused resources, maximize the net yield, reduce the cost of production, and conserve and manage the stocks in an effective manner, it is necessary to understand the factors that control the abundance, distribution, and availability of fish populations of commercial interest. Some of the basic studies required are ecological in character and concern the transfer of energy from the sun and atmosphere through the various levels of the food web. The dynamics of exploited populations and their ecological associates must be analyzed. In addition, exploration of the locations, sizes, and changes of fish populations, studies of oceanic processes that lead to usable concentrations of fish, and research on fish behavior, are necessary. The operations of fishing vessels will also benefit from the investigations specified below for ocean transportation.



FISH FARMING FOR INCREASED YIELD

Courtesy Woods Hole Oceanographic institution

Waste Disposal

An important use of the ocean is as a receiver for the waste products of our civilization--sewage, heat, chemical wastes, dredging spoil, and so on. Both deliberate disposal and inadvertent discharge (as of pesticides and oily wastes) are steadily increasing. At the same time, the ancient assumption that the ocean has an infinite capacity to absorb such wastes has already been proved wrong in several instances.

Not all waste discharges are necessarily harmful, but most probably are and thus can be called pollutants. Their deleterious effects include harm to living resources, hazards to human health, hindrance to maritime activities including fishing, and reduction of amenities. It is conceivable that some discharges, such as heat and sewage, could be so introduced as to produce beneficial effects, such as increasing primary production. Pollution-control technology has reached the point where the nature of many effluents discharged to the environment can be controlled, if the cost of this treatment can be met.

If man wishes to control those modifications of the marine environment resulting from his activities and use them to his own advantage, he requires several kinds of oceanographic information. Depending on their physical and chemical nature, introduced substances may be subjected to advection and diffusion, to adsorption on particles, to settling out or exchange at the bottom, and to absorption, concentration, or transfer through the food web. These processes are important in many other aspects of marine research and utilization. Thus their study is pertinent to a variety of Decade goals. In addition to studies of such processes, it is also essential to establish present concentration levels as a baseline from which future changes can be measured.

Ocean Transportation

The ocean is the major coastal and international highway for the transport of heavy and bulky materials. By 1975, it is estimated that the annual world ocean freight bill could be as large as $15 billion, of which the United States will pay about one third. To carry this freight, there were in 1966 a total of 25,620 vessels larger than 300 gross tons (with 1,810 more under construction); the United States operated about 9 percent of these. At any given time, about two thirds of these ships can be expected to be at sea.

Merchant shipping endeavors to deliver cargoes on schedule, as rapidly and cheaply as possible, and with maximum

safety to personnel, vessel, and cargo. Many of the problems in achieving these goals of speed, economy, and safety are of institutional or socioeconomic character; others are indirectly related to oceanographic knowledge (such as the design of ships and its dependence on surface ocean conditions), and some are directly responsive to understanding, prediction, or control of oceanic and atmospheric conditions.

Approximately a third of the ocean freight bill is incurred during the transfer of cargo across the ocean-land interface. The development of new methods for cargo transfer, more efficient maneuvering of large ships in confined waterways, improved charting, the design of better harbors, control of silting, and control of pollution can be assisted by oceanographic studies of bathymetry, of the basic structural nature of the sea floor, and of waves, currents, and associated mixing processes.

Investigations of the sort proposed for the Decade can also contribute to reduction of the sea-borne portion of the ocean shipping bill. The design of more efficent surface ships will be enhanced by more comprehensive knowledge of the statistics of surface waves. Radical designs, including submersible freighters and surface effect vessels, will also benefit from oceanic knowledge. Through better prediction of surface ocean and atmospheric weather, optimal routing of ships will reduce fuel consumption and time at sea, and diminish the danger of storm losses. Stranding and collision losses can be minimized with better coastal navigation and charts....

* * *

SUMMARY OF RECOMMENDATIONS ON IMPLEMENTATION

The final chapter of this report is concerned with ways and means of achieving Decade goals. Details of implementation and logistics must be elaborated by planning and administrative staff, both national and international. The recommendations summarized below are intended to suggest a framework in which realistic Decade programs can be developed.

It should be noted that during the preparation of this report many more programs were proposed than have finally been included. This selection of programs constitutes a first rough priority judgment of those that should initially be supported. With further planning and more extensive consultation among the scientific and engineering communities, other programs worthy of support will emerge.

Funding

Significant additional funds over those now being spent will be required for upgrading present facilities, for developing new capabilities in preparation for Decade programs, for conducting field work, and for analyzing and publishing Decade results. Some elements, such as facilities and specialized manpower, require several years of lead time. If the Decade is to be implemented on a significant scale by the mid-1970's, funds for these purposes will be required in the near future. *If in the United States adequate additional funds are not make available, both laboratories and government agencies will be forced to reprogram to meet Decade obligations, to the probable disadvantage of their essential regular activities.* In this case, it would be undesirable to identify the set of new programs as an International Decade of Ocean Exploration....

Platforms

A long-term interagency plan should be developed for analysis of ship requirements of academic laboratories, and funds should be provided for upgrading the academic fleet. The research and survey vessel building program of government agencies should be continued, and funds should be provided for full operation of available ships. Resident ships, analogous to ELTANIN and ANTON BRUUN, should be operated in certain regions. Funds should be provided to qualified laboratories for charter of commercial vessels, submersibles, and aircraft.

Special Installations

Programs of the National Oceanographic Data Center, the Smithsonian Oceanographic Sorting Center, the National Oceanographic Instrumentation Center, and the Bureau of Standards should be broadened and strengthened as necessary to meet the national needs for the processing, analysis, storage, and retrieval of oceanographic data, and the testing and calibration of instruments and for the provision of standards.

Associated Equipment

Funds should be provided for equipping laboratories, and research vessels, with computers, satellite or other precise navigational systems, autoanalytical equipment, and other expensive tools of modern oceanographic research.

Improved Technology

Significant effort will be required from the beginning of the Decade to achieve the technological advances necessary

for its implementation. New capabilities in fields such as the following will be required for the programs of scientific and engineering exploration and research.

Navigation

An adequate global navigational system is required for the successful implementation of many Decade programs. The most promising system appears to be a combination of very-low-frequency (VLF) and satellite navigation. The present system requires further development and wider availability. In addition, high-precision, short-range navigation will be required for work on the continental shelf; where existing systems are adequate, organizational and financial arrangements are needed to make them more generally available.

Platforms

Platforms with new capabilities will be required for some Decade programs, and support should be provided for their necessary development. The utility of a high-speed, surface-effect research vessel and of instrumented aircraft for work in the South Pacific should be explored. Autonomous instrumentation is required for more effective use of ships of opportunity.

Versatile and reliable moored buoys are required for the successful implementation of various Decade programs, as well as for other national purposes. To achieve this capability, continuing and adequate support should be given to the present national program of research, development, testing, and evaluation of data-buoy systems, which can be of major assistance to many Decade programs.

The development of suitable sensors for measuring oceanographically useful parameters from aircraft and satellites (for example, departure of the sea surface from the geoid, sea-surface roughness, surface temperature even in the presence of cloud cover, and surface chlorophyll) should be expedited. Support should be provided for the design and construction of improved submersibles for a work-and-support mission at moderate depths. Further consideration should be given to the instrumentation of bottom-mounted facilities for studies of air-sea interaction and variability, geophysical measurements, aids to navigation, and for monitoring the ocean and atmosphere. Further development of self-contained instrument capsules and of unmanned, self-propelled probes should be encouraged.

Living Resource Location and Extraction

Improved methods and instruments are required to reduce the unit cost of capture of living resources and to develop the capability for the economic exploitation of presently-unused resources. Improved methods of search and detection will also aid in the exploration and assessment of living resources. Particular attention should be given to the perfection of acoustic systems, to extend their range, resolution, and versatility. The development of optical- and chemical-detection systems should also be pursued. Studies of fish behavior and of the response of fish to various physical stimuli are required for the development of new techniques for aggregation and capture of living resources.

Survey Methods

With improved methods, the hydrographic survey of the continental margins and the deep-sea floor could be made less expensive and time-consuming. Emphasis must be given to the development of improved automated survey systems, which might be coupled through shipboard computer systems to all required navigational and environmental information, so that sea-floor charts can be produced quickly and with minimum intervention from personnel.

Data Management

Effective utilization of the anticipated large volume of Decade data will require modern techniques of data management. A common system of sensing, communication, and analysis should be developed for real-time oceanographic and meteorological data. For archived data, present data-exchange systems, both national and international, must be strengthened, modernized, and automated. The development of versatile methods of analysis and display should be accelerated, particularly with regard to the "live atlas," where immediate access to data banks permits the convenient exploration of existing information. Methods must also be developed for the efficient handling of non-digital information, such as geological and biological samples. Special attention must be given to extracting and making available data and information useful for engineering applications....

National Program Management

Planning

It should be an early task for a central planning staff to relate the concepts and proposals in this report to the ongoing and planned programs of federal, state, and private institutions in order to ensure that Decade-relevant activities

are clearly identified and integrated into an overall program....

Coordination

Coordination of Decade programs funded by the United States Government should be effected through some appropriate interagency group....

International Coordination

...Several intergovernmental organizations with responsibilities related to Decade goals will inevitably be involved in the organization and implementation of the Decade. Of these, the Intergovernmental Oceanographic Commission (IOC) is taking a lead role in coordinating international planning. The capability of IOC to organize and coordinate a program of this magnitude and complexity should be carefully analyzed, and steps should be taken to ensure that it, or possibly another more appropriate body, is given the structure and support required for the task. Regional intergovernmental organizations, such as the International Council for the Exploration of the Sea, will undoubtedly undertake some responsibility for Decade programs of regional character; better machinery than now exists is required for coordination in regions bordered largely by developing countries....

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1. An Appraisal by Committees of the National Academy of Sciences and the National Academy of Engineering. Washington, D.C. (excerpts)