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# REPORT TO THE CONGRESS



BY THE COMPTROLLER GENERAL  
OF THE UNITED STATES



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## The Need For A National Ocean Program And Plan

Marine science activities and oceanic affairs are being conducted by 21 organizations in 6 departments and 5 agencies. Because of the vital role the oceans play in the Nation's welfare, economic self-sufficiency, and national security, a concerted effort should be undertaken to establish a comprehensive national ocean program and plan.

GGD-75-97

OCT. 10. 1975

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COMPTROLLER GENERAL OF THE UNITED STATES  
WASHINGTON, D.C. 20548

B-145099

To the President of the Senate  
and the Speaker of the House of Representatives

This is our report discussing the need for an ocean program and plan for the United States. We made our review pursuant to the Budget and Accounting Act, 1921 (31 U.S.C. 53), and the Accounting Auditing Act of 1950 (31 U.S.C. 67).

This is our second report in response to a request from the Senate Committee on Commerce for information to be used in its National Ocean Policy Study, authorized by the unanimous passage of Senate Resolution 222 on February 19, 1974. Our first report, entitled "Federal Agencies Administering Programs Related to Marine Science Activities and Oceanic Affairs" (GGD-75-61), was issued on February 25, 1975.

We are sending copies of this report to the Director, Office of Management and Budget, and to the heads of the departments and agencies responsible for administering programs related to marine science activities and oceanic affairs.

A handwritten signature in cursive script that reads "James R. Stacks".

Comptroller General  
of the United States

## C o n t e n t s

		<u>Page</u>
DIGEST		i
CHAPTER		
1	INTRODUCTION	1
2	EFFORTS TO DEVELOP A NATIONAL OCEAN PROGRAM	4
	Marine Resources and Engineering	
	Development Act of 1966	4
	National Council on Marine Resources	
	and Engineering Development	5
	Interagency Committee on Marine Science	
	and Engineering	6
	Commission on Marine Science, Engineer-	
	ing and Resources	7
	Establishment of NOAA	8
	National Advisory Committee on Oceans	
	and Atmosphere	10
	National Ocean Policy Study	10
3	CONDUCT OF ACTIVITIES AND OCEANIC AFFAIRS	
	IN SIMILAR AREAS	12
	Annual Reports to the President and	
	the Congress on Federal agencies'	
	participation in the field of marine	
	sciences (1967-73)	12
	Marine research - 1973	14
	GAO report on Federal agencies admin-	
	istering programs related to marine	
	science activities and oceanic af-	
	fairs (GGD-75-61)	17
4	REVIEW AND COORDINATION OF MARINE SCIENCE	
	ACTIVITIES AND OCEANIC AFFAIRS BY SCIEN-	
	TIFIC PANELS, COMMITTEES AND COMMISSIONS	23
	ICMSE	23
	NACOA	25
	Other committees	28
5	AGENCY COMMENTS AND OUR EVALUATION	29
6	CONCLUSIONS	32

## APPENDIX

Page

I	Actual and requested appropriations and amounts allocated to Federal programs related to marine science activities and oceanic affairs for fiscal years 1972 through 1975	34
II	Funds allocated by departments and agencies to marine science activities and oceanic affairs--fiscal years 1972-75	35
III	Interagency committees involved with marine science and ocean affairs	36
IV	Letter dated May 14, 1975, from the Acting Assistant Secretary for Administration, Department of Commerce, transmitting comments pertaining to the Maritime Administration and the National Oceanic and Atmospheric Administration	38
V	Letter dated May 2, 1975, from the Assistant Secretary for Administration, Department of Transportation	45
VI	Letter dated June 4, 1975, from the Director of Defense Research and Engineering, Department of Defense, transmitting comments pertaining to the Department of the Navy	49
VII	Letter dated May 14, 1975, from the Assistant Secretary - Management, Department of the Interior	53
VIII	Letter dated April 28, 1975, from the Assistant Director for National and International Programs, National Science Foundation	59
IX	Letter dated April 25, 1975, from the Acting Deputy Assistant Secretary for Oceans and Fisheries Affairs, Department of State	61
X	Letter dated April 25, 1975, from the Executive Secretary, Federal Council for Science and Technology	63
XI	Letter dated April 23, 1975, from the Executive Secretary, Interagency Committee on Marine Science and Engineering	66

APPENDIX

Page

XII	Letter dated April 23, 1975, from the Chairman, National Advisory Committee on Oceans and Atmosphere	72
XIII	Principal officials of the departments and agencies responsible for administering activities discussed in this report	74

ABBREVIATIONS

AEC	Atomic Energy Commission <u>1/</u>
DARPA	Defense Advanced Research Projects Agency
DMA	Defense Mapping Agency
DOD	Department of Defense
EPA	Environmental Protection Agency
FCST	Federal Council for Science and Technology
FDA	Food and Drug Administration
HEW	Department of Health, Education, and Welfare
ICMSE	Interagency Committee on Marine Science and Engineering
NACOA	National Advisory Committee on Oceans and Atmosphere
NASA	National Aeronautics and Space Administration
NIH	National Institutes of Health
NOAA	National Oceanic and Atmospheric Administration
NSF	National Science Foundation
OE	Office of Education
R&D	research and development
U.N.	United Nations

1/ The Energy Reorganization Act of 1974 (Public Law 93-438) discontinued the AEC and created the Nuclear Regulatory Commission and Energy Research and Development Administration.

## GLOSSARY

- Calibration**                      Checking, adjusting, or systemically standardizing the graduations of a quantitative measuring instrument.
- Coastal zone**                      The coastal waters (including the lands therein and thereunder) and the adjacent shorelands (including the waters therein and thereunder), strongly influenced by each other and in proximity to the shorelines of the several coastal States. Includes transitional and intertidal areas, salt marshes, wetlands, and beaches. The zone extends, in Great Lakes waters, to the international boundary between the United States and Canada and, in other areas, seaward to the outer limit of the U.S. territorial sea. The zone extends inland from the shorelines only to the extent necessary to control shorelands, the uses of which have a direct and significant impact on the coastal waters.
- Ecological**                        Pertaining to the branch of biology that deals with relations between living organisms and their environments.
- Ecosystem**                        A system made up of a community of animals, plants, and bacteria and the physical and chemical environment with which it is interrelated.
- Estuary**                         Areas where freshwater meets saltwater, i.e., bays, mouths of rivers, salt marshes, and lagoons. Estuaries serve as nurseries and spawning and feeding grounds for large groups of marine life and provide shelter and food for birds and wildlife.
- Eutrophication**                    The process whereby a lake becomes overfertilized from too many nutrients. As a result, algae and other plants become overabundant, and the lake may evolve into marshland.

Geoid	Mean sea level (the elevation of a point on land)--one of the basic surfaces upon which geodetic quantities are measured.
Geological	Dealing with the physical nature and history of the Earth, including the structure and development of its crust, the composition of its interior, individual rock types, forms of life found as fossils, etc.
Geophysical	Deals with the physics of the Earth, including weather, winds, tides, earthquakes, volcanoes, magnetism, etc., and their effect on the Earth.
Manganese nodules	Small mineral nodules primarily consisting of copper, nickel, cobalt, and manganese, found on the deep ocean floor.
Oceanography	The study of the environment in the oceans, including the waters, depths, beds, animals, plants, etc.
Sensor	A device designed to detect, measure, or record physical phenomena.
Sonar	A system of determining the distance of an underwater object by measuring the interval of time between transmission of an underwater signal and the return of its echo.
Upper mantle	The layer of the Earth between the crust and the core which lies above a depth of about 1,000 kilometers.

COMPTROLLER GENERAL'S  
REPORT TO THE CONGRESS

THE NEED FOR A NATIONAL  
OCEAN PROGRAM AND PLAN

D I G E S T

The United States has no comprehensive national ocean program. Federal marine science and other oceanic activities are conducted by 21 organizations in 6 departments and 5 agencies. Necessarily, many of the activities of these organizations are closely related.

For example, 2,685 of the 4,020 projects listed in the 1973 Marine Research catalog involved up to 10 Federal departments and agencies in 5 areas of research.

<u>Area of work</u>	<u>Number of projects</u>	<u>Number of departments and agencies</u>
Water motion	270	10
Nonhuman living systems	1,451	9
Public health and safety	519	9
Survey and prediction	226	9
Properties of sea water	219	9

In requesting the agencies involved to comment on this situation, GAO suggested that their many areas of common interest must, axiomatically, lead to ineffectiveness and inefficiencies. A number of agencies argued persuasively that this did not necessarily follow. (See pp. 29 to 31.)

It is doubtful that the resources of the 11 departments and agencies are being applied to best serve national purposes.

Two methods have been used in attempts to achieve coordination:

--The first was to create the Interagency Committee on Marine Science and Engineering, providing a forum for an interagency exchange of

information. The Committee, however, does not have responsibility or authority to (1) determine what programs should be undertaken, (2) establish priorities, or (3) decide the amount of resources.

--The second provides for bilateral and multi-lateral agreements among agencies covering specific areas of mutual interest.

1. The National Advisory Committee on Oceans and Atmosphere is responsible for reporting annually to the President and the Congress on its overall assessment of the status of the Nation's marine and atmospheric activities. However, it has no authority to see that its recommendations are implemented and plays no role in coordinating agency programs or establishing priorities. 100, 011

Experts disagree on the effectiveness of present Federal arrangements and the consequent need for change.

The fact that there is disagreement emphasizes the need for an effective national ocean program and plan and an evaluation of the extent that the agencies consistently and effectively promote what national objectives the Government does have.

## CHAPTER 1

### INTRODUCTION

The importance of the ocean has become increasingly apparent in recent years as the world becomes more crowded and its resources scarcer. The ocean's resources include those that are (1) mineral, such as oil, gas, sulfur, manganese nodules, fresh water, construction materials, and other minerals; (2) living, such as food fish, industrial fish, and botanical resources; and (3) nonextractive, such as national security, energy other than petroleum, recreation, maritime transport, waste disposal, and communication.

Because of congressional concern about the uses of the ocean and its potential contribution to world peace, the quality of life, and the future of mankind, the Senate, on February 19, 1974, unanimously passed Senate Resolution 222, authorizing the Senate Committee on Commerce to undertake a National Ocean Policy Study--a comprehensive analysis of national ocean policy and Federal ocean programs. (See p. 10.)

On February 28, 1974, the Chairman of the Senate Committee on Commerce requested that we obtain information on Federal agencies administering programs related to marine science activities and oceanic affairs. Specifically, we were requested to (1) identify all Federal programs related to marine science activities and oceanic affairs, (2) provide a brief description of each program or mission, (3) provide funding information on these programs for fiscal years 1972-75, (4) identify those programs which have the same or overlapping missions, and (5) discuss the present administration of marine science activities and oceanic affairs and recommend alternatives which would provide for better program administration.

On February 25, 1975, we issued to the Congress our first report pursuant to the Chairman's request, entitled "Federal Agencies Administering Programs Related to Marine Science Activities and Oceanic Affairs" (GSD-75-61). The report discussed programs related to marine science activities and oceanic affairs, including a brief description of the programs or missions and program funding information for fiscal years 1972-75.

In this, our second report, we (1) discuss problems hindering effective Federal management of marine science activities and oceanic affairs, (2) identify marine science programs and activities conducted in similar areas, and (3) discuss the present Federal administration of marine science programs.

The activities discussed in this report were administered by the following Federal departments and agencies:

Department of Commerce:  
Maritime Administration  
National Oceanic and Atmospheric Administration (NOAA)

Department of Transportation:  
Coast Guard  
Office of Pipeline Safety

Department of Defense (DOD):  
Department of the Navy  
Defense Mapping Agency (DMA)  
Defense Advanced Research Projects Agency (DARPA)  
Department of the Army, Corps of Engineers

Department of the Interior:  
Fish and Wildlife Service  
National Park Service  
Geological Survey  
Bureau of Land Management  
Bureau of Mines  
Bureau of Outdoor Recreation  
Office of Saline Water  
Office of Water Resources Research  
Office of Territorial Affairs  
Bureau of Indian Affairs  
Bureau of Reclamation

National Science Foundation (NSF)  
Environmental Protection Agency (EPA)

Department of State

Department of Health, Education, and Welfare (HEW):  
Food and Drug Administration (FDA)  
National Institutes of Health (NIH)  
Office of Education (OE)

Atomic Energy Commission (AEC)  
National Aeronautics and Space Administration (NASA)  
Smithsonian Institution

The following table shows total appropriations and amounts allocated each year by the 11 departments and agencies to programs related to marine science activities and oceanic affairs. The information was furnished to us by the departments and agencies and is based on actual appropriations for fiscal years 1972-74 and appropriations requested for fiscal year 1975.

	Appropriations		
	Total	Allocated	Percent
	(millions)		
Actual (FY):			
1972	\$120,670.4	\$1,635.5	1.4
1973	134,669.7	1,971.9	1.5
1974	<u>140,333.8</u>	<u>1,844.1</u>	1.3
Total	<u>\$395,673.9</u>	<u>\$5,451.5</u>	1.4
Requested:			
FY 1975	\$137,692.1	\$2,064.2	1.5

Appendix I contains a detailed funding breakdown by department and agency. Appendix II shows the yearly percentage increase or decrease of funds allocated by the departments and agencies to marine science activities and oceanic affairs.

Funds allocated by departments and agencies increased \$428.7 million in fiscal year 1975 over fiscal year 1972. The Department of Labor's Consumer Price Index averaged 123.3 and 152.1 for fiscal year 1972 and for the first 6 months of fiscal year 1975, respectively. Applying the change in the index, the purchasing power of the \$2,064.2 million allocated in fiscal year 1975 was \$36.7 million more than that allocated in fiscal year 1972.

About 90 percent of the \$428.7 million increase was for programs in the Departments of Transportation, Commerce, and the Interior. The agencies used these increases as follows:

1. Department of Transportation--increased funding for Coast Guard's search and rescue, aids to navigation, and general support programs.
2. Department of Commerce--increased ship construction subsidies by Maritime and began funding for coastal zone management and increased funding the sea grant program, marine resources monitoring, and marine ecosystem research by NOAA.
3. Department of the Interior--increased funding for work to be performed by the Bureau of Land Management and Geological Survey in connection with offshore drilling for oil and gas.

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CHAPTER 2  
EFFORTS TO DEVELOP A  
NATIONAL OCEAN PROGRAM

Between the late 1950s and mid-1960s, several Government and non-Government groups reviewed the status of the Nation's marine activities, identified national needs, and developed suggestions and recommendations for a national program. However, no Government organization was specifically authorized to adopt and implement these suggestions and recommendations. By 1965 Federal marine activities were widely dispersed throughout the Government. Agencies' programs had been developed or expanded in response to specific problems rather than according to an overall plan. A discussion of events subsequent to 1965 follows.

MARINE RESOURCES AND ENGINEERING  
DEVELOPMENT ACT OF 1966

The concern expressed by the Congress and others on the ability of the Government to respond to national marine needs resulted in passage of the Marine Resources and Engineering Development Act of 1966 (33 U.S.C. 1101) on June 17, 1966.

The act declared that it was U.S. policy to:

" \* \* \* develop, encourage, and maintain a coordinated, comprehensive, and long-range national program in marine science for the benefit of mankind to assist in the protection of health and property, enhancement of commerce, transportation, and national security, rehabilitation of our commercial fisheries, and increased utilization of these and other resources."

More specifically, the act stated that the marine science activities of the United States should contribute to the following objectives.

- Accelerated development of the resources of the marine environment.
- Increased knowledge of the marine environment.
- Encouragement of private investment enterprise in exploration, technological development, marine commerce, and economic use of the resources of the marine environment.

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- Preservation of the role of the United States as a leader in marine science and resource development.
- Advance of education and training in marine science.
- Development and improvement of the capabilities, performance, use, and efficiency of vehicles, equipment, and instruments for use in exploration, research, surveys, recovery of resources, and transmission of energy in the marine environment.
- Effective use of the Nation's scientific and engineering resources, with close cooperation among all interested agencies, public and private, in order to avoid waste and duplication of effort, facilities, and equipment.
- Cooperation by the United States with other nations and international organizations in marine science activities when such cooperation is in the national interest.

To help the President develop a coordinated, comprehensive, and long-range national program in marine science, the act established the National Council on Marine Resources and Engineering Development and authorized the President to establish an advisory Commission on Marine Science, Engineering, and Resources.

NATIONAL COUNCIL ON MARINE RESOURCES  
AND ENGINEERING DEVELOPMENT

The Council, established in the Executive Office of the President, was composed of the Vice President, who served as Chairman, and the Secretaries of Commerce, the Interior, Transportation, HEW, Navy, and State; the Chairman of AEC; and the Director of NSF.

The Council was to aid the President in planning and coordinating the Nation's marine science activities. Its specific responsibilities were to:

- Survey all significant marine science activities, including the policies, plans, programs, and accomplishments of Federal departments and agencies engaged in such activities.
- Develop a comprehensive program of marine science activities, including, but not limited to, exploration, description, and prediction of the marine environment; exploitation and conservation of the resources of the marine environment; marine engineering;

studies of air-sea interaction, transmission of energy, and communications; and designate responsibility for the conduct of these activities.

- Insure cooperation and resolve differences between departments and agencies with respect to marine science activities.
- Undertake a comprehensive study of the legal problems arising out of the management, use, development, recovery, and control of the resources of the marine environment.
- Establish long-range studies of the potential benefits to the U.S. economy, security, health, and welfare to be gained from marine resources, engineering, and science, and the costs involved in obtaining such benefits.
- Review the marine science activities conducted by departments and agencies in light of the policies, plans, programs, and priorities developed pursuant to the act.

The Council provided some guidance for the Nation's marine science activities through (1) identifying national needs, (2) establishing goals and designating their priority, and (3) assigning responsibilities to clarify agency roles. The Marine Resources and Engineering Development Act of 1966 limited the life of the Council and it discontinued operations in April 1971.

INTERAGENCY COMMITTEE ON  
MARINE SCIENCE AND ENGINEERING

Recognizing the need for a continuing interagency mechanism for coordinating activities previously carried out by the Council, the Federal Council for Science and Technology (FCST)<sup>1</sup> established the Interagency Committee on Marine Science and Engineering (ICMSE) in April 1971. ICMSE provides an interagency forum for consideration of marine affairs issues at the policy level. (See p. 23.)

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<sup>1</sup>/FCST was established to promote closer cooperation among Federal agencies, facilitate resolution of common problems, improve planning and management in science and technology, and advise and assist the President regarding Federal programs affecting more than one agency.

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COMMISSION ON MARINE SCIENCE,  
ENGINEERING AND RESOURCES

The Commission (referred to as the Stratton Commission), established by the President in January 1967, was charged with making a comprehensive investigation of all aspects of marine science in order to recommend an overall plan for a national oceanographic program that would meet present and future needs. The Commission was asked to:

- Examine the Nation's stake in the development, utilization, and preservation of the marine environment.
- Review all current and contemplated marine activities and assess their ability to achieve the national goals set forth in the Marine Resources and Engineering Development Act of 1966.
- Formulate, on the basis of its studies and assessment, a comprehensive, long-term national program for marine affairs designed to meet present and future national needs in the most effective way.
- Recommend a plan of Government organization best adapted to support the program and indicate expected costs.

The Commission comprised 4 representatives from Federal and State governments and 11 representatives from the private sector, including educational institutions, industry, and foundations.

To handle its task, the Commission divided itself into seven panels, each concerned with a particular area of marine activity; i.e., basic science; marine engineering and technology; marine resources; environmental monitoring and management and development of the coastal zone; industry and private investment; international issues; and manpower, education, and training.

The Commission's report, entitled "Our Nation and the Sea," was issued to the President and the Congress in January 1969. The report contained 122 recommendations in the area of

- marine science,
- marine technology,
- manpower development,
- scientific and technical information,
- coastal management,
- coastal development,
- pollution control,
- living resources,

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- mineral resources,
- Government-industry relations,
- research and exploration,
- global monitoring and prediction,
- environmental modification,
- international agreements,
- technical and operating services, and
- organization for the national ocean program.

In its report, the Commission stated that

"A plan for national action must be based on national policy established by the President and the Congress and implemented by the exercise of Federal leadership and support. The very existence of the Commission is an expression of the intent of the Congress and the President to develop a national ocean program worthy of a great sea nation."

The Commission concluded that marine activities had expanded over the years, largely without plan, to meet specific situations and problems and were scattered among the Federal agencies. The Commission also concluded that (1) within the Federal agencies, strong elements existed for carrying out marine activities, (2) some of the agencies should maintain their identities and be strengthened further as essential contributors to the national marine effort, and (3) others should be combined with weaker elements to provide a new central focus of strength.

Accordingly, the Commission recommended

" \* \* \* the creation of a major new civilian agency, which might be called the National Oceanic and Atmospheric Agency, to be the principal instrumentality within the Federal Government for administration of the Nation's civil marine and atmospheric programs."

The primary mission of the new agency would be to insure the full and wise use of the marine environment in the best interests of the United States.

#### ESTABLISHMENT OF NOAA

On July 9, 1970, the President transmitted to the Congress Reorganization Plan No. 4, providing for the establishment of a new civilian ocean agency--NOAA. The major differences between the Commission's recommendation for a new agency and the President's Reorganization Plan were that the Commission would have established NOAA as an

independent agency and would have included all of the Coast Guard.

The President rejected inclusion of the Coast Guard in NOAA, with the exception of the National Data Buoy Program, because the Coast Guard's basic functions were transportation related. With respect to NOAA being an independent agency, the President concluded that it would be preferable to place it in an existing agency because of his objection in principle to creation of new agencies. Commerce was selected because (1) the Environmental Science Services Administration, already in Commerce, would constitute about 70 percent of the dollars and 80 percent of the personnel of NOAA and (2) NOAA programs would be related to Commerce's economic support service programs.

After its establishment on October 3, 1970, the following organizations were transferred to NOAA:

- Environmental Science Services Administration (Commerce).
- Bureau of Commercial Fisheries, Marine Game Fish Research Program, and Marine Minerals Technology Center (Interior).
- National Oceanographic Data Center and National Oceanographic Instrumentation Center (Navy).
- National Data Buoy Program (Coast Guard).
- National Sea Grant Program (NSF).
- Elements of the U.S. Lake Survey (Corps of Engineers).

The mission of NOAA is to:

- Explore, map, and chart the global ocean and its living resources.
- Manage, use, and conserve those resources.
- Describe, monitor, and predict conditions in the atmosphere, ocean, sun, and space environment.
- Issue warnings against impending destructive natural events.
- Develop beneficial methods of environmental modification.
- Assess the consequences of inadvertent environmental modification over a period of time.

NATIONAL ADVISORY COMMITTEE  
ON OCEANS AND ATMOSPHERE

The Congress established the National Advisory Committee on Oceans and Atmosphere (NACOA) by Public Law 92-125, dated August 16, 1971.

NACOA's responsibilities include undertaking a continuing review of the progress of U.S. marine and atmospheric science and service programs and advising the Secretary of Commerce with respect to carrying out the purposes of NOAA. NACOA is required to submit an annual report to the President and the Congress assessing the status of the Nation's marine and atmospheric activities and such other reports as may be requested by the President. (See p. 25.)

NATIONAL OCEAN POLICY STUDY

On February 19, 1974, Senate Resolution 222, passed by unanimous vote, authorized the Senate Committee on Commerce to make a National Ocean Policy Study. The report of this committee accompanying the resolution stated that the resolution recognized the importance of an adequate and coordinated national ocean policy and an effective program to implement such a policy. The resolution stated that, although the Marine Resources and Engineering Development Act of 1966 was enacted to develop a comprehensive, long-range national ocean policy, the act had been neither fully implemented nor completely successful in achieving that goal.

The Senate Committee on Commerce, under provisions of the resolution, was authorized to make a complete investigation of national ocean policy for the purpose of

- "(1) determining current and prospective national capabilities in the oceans, including marine sciences and their application, oceanic research, advancement of oceanic enterprise and marine technology, interdisciplinary education, policy planning, professional career and employment needs, and overall requirements of the United States consistent with the attainment of long-range national goals;
- (2) determining the adequacy of current Federal programs relating to the oceans and recommending improvements in agency structure and effectiveness to meet national needs and achieve oceans capabilities, and assessing existing policies and laws affecting the oceans for the purpose of determining what changes might be necessary to assure a strong and internationally competitive ocean policy and program for the United States;

- (3) establishing policies to achieve the goal of full utilization and conservation of living resources of the oceans and recommending solutions to problems in marine fisheries and their management, rehabilitation of United States fisheries, current and future international negotiations on fisheries, as well as aquaculture and the extraction of drugs from the sea;
- (4) assessing the needs for new policies for the development and utilization of the nonliving resources of the oceans, including the mineral resources of the Outer Continental Shelf and the deep seabed so that the national mineral needs can be met in an economically and environmentally sound manner;
- (5) encouraging implementation of coastal zone management through the Coastal Zone Management Act of 1972 by assessing national growth policy needs, regional and interstate problems, State functions and powers in coastal zone management, information sources, recreation needs, pollution problems, population trends, and future pressures in the coastal zone;
- (6) establishing comprehensive national policy for the purpose of understanding and protecting the global ocean environment through education, exploration, research, and international cooperation; and
- (7) making an assessment of proposals for, and current negotiations with respect to, achieving adequate national and international jurisdiction over the oceans, developing an understanding of the relationship of the oceans to world order, and examining United States policy with respect thereto."

### CHAPTER 3

#### CONDUCT OF ACTIVITIES AND

#### OCEANIC AFFAIRS IN SIMILAR AREAS

Marine science activities and oceanic affairs are being conducted by 11 departments and agencies. In many instances, work is performed in similar areas, perhaps to a greater extent than noted by the Congress in 1966. The following information documents our findings.

#### ANNUAL REPORTS TO THE PRESIDENT AND THE CONGRESS ON FEDERAL AGENCIES' PARTICIPATION IN THE FIELD OF MARINE SCIENCES (1967-73)

Beginning with the first report, dated March 9, 1967, and continuing through 1973, annual reports have been made, originally by the National Council on Marine Resources and Engineering Development and subsequently by the Office of Science and Technology, to the President and the Congress on Federal agencies' participation in the field of marine sciences. Each report groups the departments' and agencies' marine-related programs and/or activities by major-purpose categories, indicating that some activities had been or would be conducted in similar areas.

The April 1973 report projected that for fiscal year 1974 more than 1 department or agency would be conducting programs or otherwise be engaged in 11 of the 12 major-purpose categories, as shown in the following table.

	COMMERCE	TRANSPORTATION	DEFENSE	INTERIOR	NSF	EPA	STATE	HEW	AEC	NASA	SMITHSONIAN	TOTAL
INTERNATIONAL COOPERATION AND COLLABORATION					X		X					2
NATIONAL SECURITY			X									1
LIVING RESOURCES	X	X						X				3
TRANSPORTATION	X	X	X									3
DEVELOPMENT AND CONSERVATION OF THE COASTAL ZONE	X	X	X	X	X	X					X	7
NONLIVING RESOURCES	X		X	X								3
OCEANOGRAPHIC RESEARCH	X	X	X		X				X		X	6
EDUCATION	X	X	X		X			X				5
ENVIRONMENTAL OBSERVATION AND PREDICTION	X	X	X						X			4
OCEAN EXPLORATION, MAPPING, CHARTING, AND GEODESY	X		X									2
GENERAL-PURPOSE OCEAN ENGINEERING	X		X						X	X	X	5
NATIONAL CENTERS AND FACILITIES	X	X									X	3

As shown above, 7 departments or agencies would be involved in the development and conservation of the coastal zone, 6 in performing oceanographic research, 5 in education, and 5 in general-purpose ocean engineering.

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### MARINE RESEARCH--1973

In June 1974, NOAA issued a catalog of unclassified marine research activities sponsored by Federal and non-Federal organizations. The projects included were those that were either continuing or had been completed in 1973. The project resumes were grouped by category and subcategory.

The catalog included resumes of 4,020 research projects sponsored by 10 of the 11 Federal departments and agencies discussed in our February report. The Department of State was not included in the catalog because it did not directly sponsor marine research. The following table shows the number of marine research projects, grouped by research areas, that were either continuing or had been completed in 1973.

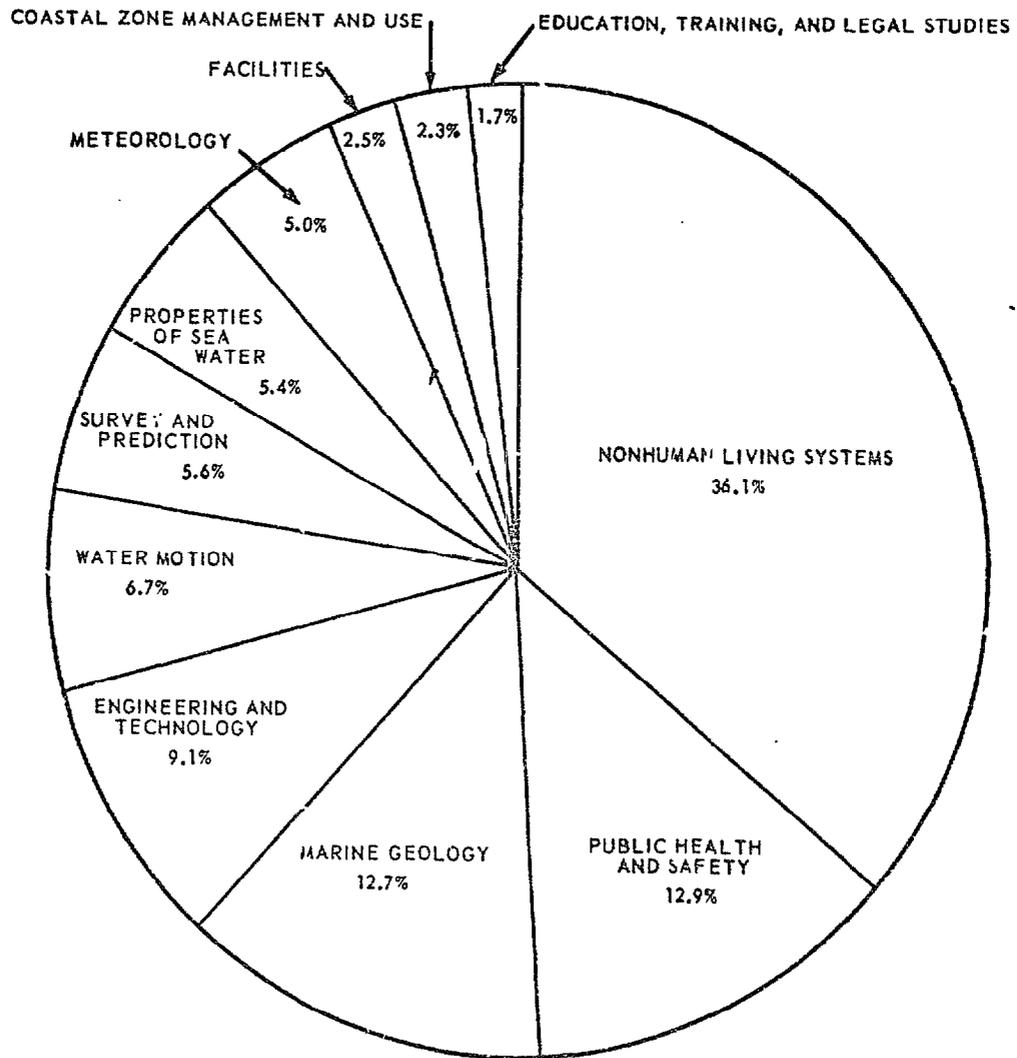


Remote sensing-space oceanography	28	.	5	4	.	4	.	.	27	1	69	6
Model studies	21	.	26	6	3	3	.	1	1	.	61	7
Economic analysis	25	.	.	.	.	.	.	.	.	.	25	1
Surveys-cruises	.	9	.	1	7	.	.	.	.	.	17	3
Navigation	7	3	4	.	2	.	.	.	.	.	16	4
Mapping, charting and geodesy	7	.	1	.	2	.	.	.	.	.	10	3
Data networks	7	.	.	3	.	.	.	.	.	.	10	2
Data processing and analysis	7	.	1	.	1	.	.	.	.	.	9	3
Environmental prediction	9	.	.	.	.	.	.	.	.	.	9	1
Properties of sea water:	<u>47</u>	<u>3</u>	<u>64</u>	<u>22</u>	<u>57</u>	<u>8</u>	<u>1</u>	<u>16</u>	<u>1</u>	<u>.</u>	<u>219</u>	<u>9</u>
Chemical properties	24	.	8	20	38	7	.	11	.	.	108	6
Acoustical properties	8	.	35	.	1	.	1	.	.	.	45	4
Thermal properties	5	3	11	2	2	1	.	5	1	.	30	8
General and miscellaneous properties	8	.	4	.	9	.	.	.	.	.	21	3
Optical properties	1	.	2	.	4	.	.	.	.	.	7	3
Pressure-density	.	.	3	.	3	.	.	.	.	.	6	2
Electrical properties	1	.	1	.	.	.	.	.	.	.	2	2
Meteorology:	<u>57</u>	<u>6</u>	<u>33</u>	<u>4</u>	<u>92</u>	<u>1</u>	<u>.</u>	<u>5</u>	<u>3</u>	<u>.</u>	<u>201</u>	<u>8</u>
Air-sea interaction	8	1	12	2	35	.	.	2	.	.	60	6
Gen. Meteorology-climatology	15	.	4	.	32	1	.	3	.	.	55	5
Sea ice-glaciology	10	5	12	2	17	.	.	.	3	.	49	6
Hurricanes	17	.	3	.	8	.	.	.	.	.	28	3
Weather modification	7	.	2	.	.	.	.	.	.	.	9	2
Facilities	<u>8</u>	<u>.</u>	<u>1</u>	<u>3</u>	<u>86</u>	<u>.</u>	<u>.</u>	<u>1</u>	<u>.</u>	<u>1</u>	<u>100</u>	<u>6</u>
Coastal zone management and use	<u>53</u>	<u>.</u>	<u>6</u>	<u>12</u>	<u>15</u>	<u>3</u>	<u>.</u>	<u>.</u>	<u>3</u>	<u>1</u>	<u>93</u>	<u>7</u>
Educating and training	<u>25</u>	<u>.</u>	<u>2</u>	<u>.</u>	<u>21</u>	<u>.</u>	<u>1</u>	<u>.</u>	<u>.</u>	<u>2</u>	<u>51</u>	<u>5</u>
Legal studies	<u>10</u>	<u>.</u>	<u>.</u>	<u>.</u>	<u>5</u>	<u>.</u>	<u>.</u>	<u>.</u>	<u>.</u>	<u>.</u>	<u>15</u>	<u>2</u>
Total	<u>1,406</u>	<u>32</u>	<u>425</u>	<u>266</u>	<u>1,176</u>	<u>320</u>	<u>112</u>	<u>131</u>	<u>40</u>	<u>112</u>	<u>4,020</u>	<u>10</u>

Source: MARINE RESEARCH - 1973 (State was not included because it did not directly sponsor marine research.)

As shown in the above table, 9 departments and agencies sponsored 1,451 research projects in nonhuman living systems; 10 sponsored 270 projects concerning water motion; and 9 sponsored 519, 226, and 219 projects in public health and safety, survey and prediction, and properties of sea water, respectively.

The following chart shows the percentages of the 4,020 research projects by category.



GAO REPORT ON FEDERAL AGENCIES ADMINISTERING  
PROGRAMS RELATED TO MARINE SCIENCE  
ACTIVITIES AND OCEANIC AFFAIRS (GGD-75-61)

An analysis of the data in the above report showed that, in 114 of the 180 programs, more than 1 department or agency was performing work in similar areas.

Since it is generally difficult to convincingly demonstrate duplicative research efforts, we did not attempt to identify specific cases of duplication. However, we did select the following four areas to illustrate where departments and agencies were performing work in similar areas.

Studying the geological structure  
and composition of the ocean floor

Seven departments and agencies administer 15 programs relating to the study of the geological structure and composition of the ocean floor.

- AEC studies sediments because a large portion of the radioactivity in the ocean becomes attached to particles and moves with the sediment. Another AEC program concerned use of neutron activation of ocean sediments to determine the composition of the sediments.
- EPA collects samples of sediments from Great Lakes harbors scheduled for dredging by the Corps of Engineers and analyzes the samples for pollution-related purposes.
- The Corps of Engineers conducts research and development (R&D) on sedimentation to determine the effects of construction in coastal areas on coastal ecology. Navy studies the structure and properties of the sea floor, oceanic crust, and upper mantle to improve geological and geophysical surveying capabilities, ocean bottom engineering and magnetic anomaly detection, inertial navigation, and charting; and collects environmental data on the composition of the ocean floor and its sub-bottom in relation to performance of operational sonar and surveillance systems.
- NOAA (1) investigates selected estuaries to describe circulation, sedimentation, and mixing cycles in order to understand pollutant effects on the ocean's water quality; (2) studies the dynamics of sediment movements and their effect on the transportation of pollutants in the coastal zone and Outer Continental Shelf and margin; (3) provides charts depicting ocean bottom

features; (4) analyzes the history and structure of ocean basins; and (5) describes the character of ocean sediments and mineral deposits.

--NSF supports, through grants, research involving (1) studies of continental margins, deep seabeds, and mid-oceanic ridges to identify new areas of natural resources, particularly petroleum and hard mineral; (2) studies of the historical development and makeup of the ocean floor, including analysis of crustal structures, minerals and fossil remains, and chemical processes and transformation occurring between sediments and marine organisms; (3) collection and analysis of sediment cores to develop knowledge on the constitution and history of the deep ocean basins; and (4) studies of the Antarctic Ocean area to determine the amount of potentially exploitable resources, including petroleum deposits and manganese nodules, and to increase knowledge of sea floor spreading.

--Geological Survey determines and assesses geologic conditions and mineral resource potentials of the coastal zone and offshore areas.

--The Smithsonian Institution classifies and identifies marine geological specimens collected from the ocean floor.

#### Investigating the biological aspects of marine organisms

Six departments and agencies investigate the biological aspects of marine organisms under 14 programs. The agencies and descriptions of their programs follow.

--NSF supports research on the (1) nature and distribution of life in oceanic and marine ecosystems, including studies of ocean organisms and their distribution, abundance, behavior, interaction, nutrition, genetics, and population dynamics; (2) Antarctic ecosystem, for a better understanding of the biological cycle and distribution of marine organisms and the possible effects of pollution and other stresses on the food web of the Antarctic ecosystem; and (3) the coastal upwelling ecosystem in order to improve understanding of the processes and relationships that exist between the biological aspects of marine organisms and the chemical, physical, and geological environment in which they live.

--NOAA (1) performs ecological investigations to understand the impact of natural or man-induced changes in the marine environment on commercial fish stocks and their food chains, including analysis of the stomach contents of fish, identifying and developing conceptual models of food-chain interactions, and determining the effects of petroleum products, contaminants, and environmental stress on marine organisms; (2) conducts biological investigations on fish and shellfish of commercial and recreational importance in order to understand their basic life requirements and to provide information in support of proper allocation and management, including determining production and abundance of fish populations, age and growth, distribution, location of spawning areas, and migratory paths; (3) reviews the status of marine mammal species classified as endangered and determines the potential for listing new candidates, including critical aspects of their life cycle or habitat requirements, and establishes programs for their protection and rehabilitation; (4) conducts surveys to monitor, assess, and predict the abundance and distribution of marine resources to provide information on the status of exploitable stocks of fishery resources for international and domestic fishery management; and (5) conducts the Sea Grant program supporting studies relating to the population dynamics, distribution, life history, diseases, and sustainable yield of plant and animal stocks.

--Navy investigates the nature of marine organisms-- their physiology, seasonal and geographic distribution, sound scattering properties, and the means to predict, prevent, or minimize their adverse effects on Navy operations, such as masking target submarine echoes by their sound scatterings, hindering underwater swimmers, and fouling and deteriorating equipment.

--Bureau of Indian Affairs gathers and analyzes biological fish data essential in legal proceedings to protect Indian off-reservation treaty fishing rights and surveys river systems to assess size and productivity of spawning areas.

--NIH researches marine organisms to study, for example, cell structure and anticancer agents, development of a bonding agent for oral restoration and orthopedic repair, nerve functions, and anatomy and physiology of vital human organs.

--Smithsonian performs a systematic biological analysis of the marine organism being studied. Adjuncts of the systematic work include, for example, research aimed at determining relationships between organisms and their environment and short- to long-time monitoring of areas, populations, or biotas (plant and animal life of a region).

#### Developing, testing, and evaluating oceanographic instruments

Five departments and agencies develop, test, and evaluate oceanographic instruments. Work is being done under at least 13 programs.

--NOAA, under several of its programs, is developing (1) current meters which can accurately measure in areas where speeds approach 12 knots as opposed to available meters with a 3.5 knot current speed limitation, (2) shipboard sensors interfaced with available data recording and processing systems, (3) remote instrumentation such as bottom-anchored current meters with telemetric capability, and (4) in conjunction with the Navy, over-the-horizon high frequency radar which will be capable of providing sea state and current information at ranges from 500 to 2,000 nautical miles. In addition, NOAA is investigating the use of microwave and laser techniques for measuring sea surface roughness and light detection techniques for providing data on chemical compounds in the top several meters of the ocean.

Under its Data Buoy Program, NOAA is attempting to advance buoy system technology in order to acquire reliable ocean data at the least cost. NOAA's National Oceanographic Instrumentation Center is the national focal point for disseminating technology relating to testing, evaluating, and calibrating ocean sensing systems.

--Navy and DARPA, in pursuit of their national security missions, also develop oceanographic instruments. Navy is developing instruments to measure and assess (1) various oceanographic parameters, such as currents, waves, temperatures, and densities and (2) the structure and properties of the sea floor, oceanic crust, and upper mantle as well as variations in the Earth's gravitational and magnetic fields. Navy is also involved in increasing the sensitivity and aerial coverage of optical, magnetic, and acoustic sensors.

DARPA has been developing (1) techniques to provide stereo-photographs and sequential infrared maps of the sea ice canopy from aircraft, (2) a sea ice penetrometer to determine sea ice thickness, (3) an unmanned Arctic research submersible now being used by the Navy, (4) a precision navigation system for deep-diving submersibles which permits return to the same spot in the ocean to an accuracy of 5 meters, and (5) an automatic work package which can perform tasks while unattended, such as taking core samples.

--AEC developed marine instruments which used radioactive isotopes for making measurements.

--NASA's programs deal primarily with the feasibility of using remote sensor instrumentation and techniques on spacecrafts for obtaining useful information about oceanographic parameters, processes, and phenomena such as sea ice, sea surface wave geometry, sea roughness, and the geoid of the ocean surface. In addition, NASA is cooperating with NOAA and the Coast Guard to demonstrate the operational utility of using an airborne radar system to acquire imagery of ice coverage on the Great Lakes.

#### Studying the effects of pollutants on marine ecosystems

Five departments and agencies conduct at least nine programs which study the effects of pollutants on marine ecosystems.

--NSF supports research that studies (1) tolerances and responses of marine ecosystems and their components to thermal stresses and toxic substances; (2) sources of pollutants, the rate at which they enter the environment, and the effect of pollutants on marine organisms and communities; (3) pollutant and trace compound concentrations; (4) environmental problems and man-induced radioactive substances; and (5) possible effects of pollution and other stresses on the food web of the Antarctic ecosystem;

--NOAA's programs involve (1) determining the effects of petroleum products, contaminants, and environmental stress on marine organisms and how contaminants are cycled in an estuary and (2) studying the source, fate, and effects of oil spills, pesticides, thermal and radioactive pollutants, and metals in the marine environment;

- EPA's programs include developing (1) information to assess damage to estuarine, coastal zone, Great Lakes, and marine ecosystems from acute and chronic exposure to pollutants and (2) criteria for pollutant disposal attributed to outfalls and dumping--in the Great Lakes this includes eutrophication, thermal pollutant, hazardous materials research, and dredging spills disposal;
- AEC's efforts involved researching the biological uptake, concentration, distribution, and effects of radioactive elements to understand the movement of radionuclides in man's food chains to assure the protection of man and the marine ecosystem; and
- Fish and Wildlife Service conducts programs to protect, preserve, and enhance natural ecosystems associated with fish and wildlife, including determination of potential effects of development activities on fish and wildlife resources.

CHAPTER 4  
REVIEW AND COORDINATION OF  
MARINE SCIENCE ACTIVITIES AND OCEANIC AFFAIRS  
BY SCIENTIFIC PANELS, COMMITTEES, AND COMMISSIONS

Since 1966, when the Congress enacted the Marine Resources and Engineering Development Act of 1966, several scientific panels, committees, and commissions have reviewed, evaluated, and reported on Government programs related to marine science activities and oceanic affairs. The principal groups were the Panel On Oceanography - President's Science Advisory Committee (1966); the Commission on Marine Science, Engineering and Resources (1969); the National Academy of Engineering (1972); ICMSE; and NACOA. In almost all of their reports, the panels, committees, and commissions, except for ICMSE, cited the need for a national program with suggested or recommended organizational changes. The reports also discussed problems in coordinating multiagency activities and the lack of progress due to scattered and inadequately funded research programs.

The activities of ICMSE and NACOA, the only two major committees concerned with oceanic matters, are discussed below.

ICMSE

Because 11 departments and agencies conduct marine science activities and oceanic affairs, there must be effective coordination to insure effective and efficient use of Federal resources. Recognizing the need for a continuing interagency mechanism for the coordinating marine sciences and engineering, the Federal Council for Science and Technology established ICMSE.

ICMSE is composed of officials from the 11 Federal departments and agencies involved in marine science activities and oceanic affairs. The Administrator of NOAA has served as Chairman since ICMSE's inception in April 1971. Representatives from Federal organizations having an interest in but not actually conducting marine science and engineering programs and nongovernmental groups, such as the National Academy of Sciences Ocean Affairs Board and the National Academy of Engineering Marine Board, may attend ICMSE meetings as observers.

ICMSE's charter provides that it will (1) insure planning and coordination of Federal activities in marine sciences and engineering and related matters; (2) identify the need for and foster appropriate studies or investigations; and (3) annually review the Federal marine science and engineering program and budget. ICMSE is an advisory body and does not have directive authorities.

Within this framework, ICMSE has had some success. For example, it has provided a forum for member departments and agencies to exchange information and has focused attention on problems in the areas of marine science activities and oceanic affairs. However, the framework within which it operates limits ICMSE's ability to insure that Federal resources are used effectively and efficiently.

ICMSE does not have the authority to determine which programs should be undertaken, what priorities should be established, which agencies should be involved, or the amount of resources which should be used. Although there are efforts to achieve voluntary coordination, participating agencies must be responsive to their assigned missions and, therefore, there is no guarantee that resources are effectively and efficiently used. A comprehensive national ocean program with established goals and priorities would improve ICMSE's effectiveness.

Generally, specific areas have been studied by ICMSE's permanently established subcommittees or by ad hoc groups created for particular purposes. We found that, for the most part, the studies did not result in specific recommendations to the agencies. When recommendations were made they were of a general nature calling for either continuous monitoring of the areas by ICMSE or for consideration or action by the Federal Council for Science and Technology or the Office of Management and Budget.

For example, ICMSE has had marine environmental quality and ships' costs, lay-ups, and construction plans under continuous review since September 1971. Because there is no national program with established goals and priorities, ICMSE only has been able to point out to the Federal Council that (1) there were problems in these areas, (2) the areas were being studied, and (3) the agencies' programs and budgets in these areas should continue to be supported.

Also, based on its review of NOAA's Data Buoy Program, ICMSE wrote to the Chairman of the Federal Council in August 1973 that the program warranted discussion within the Federal Council and possible communication by the Chairman with appropriate officials of the Office of Management and Budget

to insure that this important national program, along with its concomitant support requirements, was adequately funded.

ICMSE pointed out that several projects and programs had placed increased demands on the data buoy systems for oceanic and atmospheric environmental monitoring data. The demands for data buoy systems were further amplified by the need to compensate for the oceanic and atmospheric data lost through the discontinuance of the Coast Guard's Ocean Station Vessel Program. Apparently, ICMSE was informing the Federal Council that the Data Buoy Program needed increased funding which is all that ICMSE could do since it has no authority to establish program policies and priorities.

#### NACOA

NACOA is an advisory committee to the President and the Congress on national marine and atmospheric affairs and to the Secretary of Commerce regarding the operation of NOAA. NACOA recognized that to review and evaluate every marine and atmospheric program and issue would be to treat none of them thoroughly. Accordingly, it focused on those areas which it believed required priority attention.

Through fiscal year 1974, NACOA had issued three annual reports to the President and the Congress. In its first report NACOA emphasized the need for developing long-range international approaches to oceanic and atmospheric affairs because it felt that no nation could preserve merely its own piece of the ocean or atmosphere. NACOA found it necessary to distinguish between what could be accomplished on a national basis and what could be done only by developing international understanding. The theme of NACOA's second report was the need for improving Federal management of oceanic affairs as part of the comprehensive management of all of the Nation's natural resources, many of which have marine as well as land-based components.

In its third report, NACOA was concerned that natural resources, such as food, energy, fresh water, minerals, protein from the oceans, and the regenerative capacity of forests and plains would not meet future demands. It felt that consumption and use of vital resources, such as energy and food, were generating new stresses both at home and abroad and that the Nation must respond to unprecedented demands on its ability to manage natural resources.

About 10 marine and atmospheric programs and issues were discussed in NACOA's first 3 annual reports. The principal areas concerned fisheries, coastal zone management,

Law of the Sea Conference, and need for governmental reorganization in marine and atmospheric affairs. These areas are discussed below.

### Fisheries

In its first two annual reports, NACOA urged that a comprehensive plan be generated for developing and managing U.S. fishery efforts. NACOA felt that, because of technological improvements and overcapitalization in the fishing industry, some fish might become extinct. To deal with this problem, agreements were needed to manage the ocean's living resources, including harvest limitations, which could lead to the rehabilitation of the declining industry.

NOAA, through its National Marine Fisheries Service, undertook development of a national fisheries plan which was scheduled for completion by July 1975.

### Coastal zone management

In its June 1972 report NACOA pointed out that the coastal zone was exceedingly complex naturally, socially, and economically, and that every aspect of planning, negotiation, understanding, agreement, and implementation involved Federal, State, and local governments. NACOA also pointed out that prompt action on coastal zone management problems was urgently needed and expressed concern over the lack of progress since the January 1969 report by the Commission on Marine Science, Engineering and Resources.

In its second annual report, NACOA discussed the consequences of delaying action in the coastal zone management area, which it judged to be costly. In its June 1974 report, NACOA acknowledged and was encouraged by the increase in coastal zone management activity. Because of a heavy increase in offshore activities engendered by the energy crisis and the absence of an organized method for providing research, development, and advisory services on issues raised at the State level, NACOA recommended (1) broadening coastal zone management legislation, (2) increased Federal funding, and (3) extending the duration of the estuarine sanctuaries program.

### Law of the Sea Conference

NACOA recognized that it would be impossible to reach the oceanic goals set by the Congress or proposed by earlier commissions and councils until an updated and accepted set of international rules were developed for international oceanic operations. In its first report, NACOA dealt

primarily with the issues of free passage, fisheries, and open research as affected by the oceanic activities of other nations. Its principal recommendation was that the United States engage other countries, particularly developing nations, to partake in as many different joint projects with the United States as possible.

NACOA's 1974 report was issued before the Law of the Sea Conference in Caracas, Venezuela, in late summer 1974. In the report, NACOA emphasized the need for international understandings and agreements. It reiterated the position taken in its first annual report that economic and other pressures could develop to such an extent that individual nations, including the United States, would act unilaterally, especially with respect to resource exploitation, if an international agreement on the Law of the Sea wasn't obtained within a short time. NACOA advocated patience, especially in the matter of fishing rights and jurisdictions, but not beyond 1975 if no international agreement was reached by then.

#### Need for governmental reorganization

NACOA, in its second report (June 29, 1973), stated that:

"There are too many actors, too many separate chains of command, too many crosscutting policies, too many separate budgets, appropriations, and programs. In this confusion, national priorities have no perspective and neither the Executive Branch nor the Congress is in a position to lead effectively, much less enforce accountability for results."

NACOA stated further that, although coordinating committees such as ICMSE had been established to deal with proliferation, coordination was never enough because it usually meant the exchange of information which rarely involved the "table-pounding" establishment of priorities, guidelines, and new policies. It recommended that responsibility for managing oceanic and atmospheric resources, along with other natural resources, be placed in a single Federal agency at the departmental level. In this connection, it generally supported the administration's concept for establishing a new Department of Natural Resources.

In its third report (June 28, 1974), NACOA again advocated establishment of a single agency. It was more concerned, however, about the need to act quickly in establishing the agency than its exact makeup. Nevertheless, it did suggest that the agency be responsible for the following functions:

- Marine resource development and conservation.
- Marine, atmospheric, and coastal zone affairs coordination, regulation, and enforcement.
- Environmental science, engineering, and technical support services.

NACOA felt that reorganization was needed because, although pressures had diminished for establishing a Department of Energy and Natural Resources, the national need for ocean management had not diminished.

#### OTHER COMMITTEES

About 50 special-purpose and multipurpose Federal interagency committees, in addition to ICMSE, have been established to consider various aspects of marine science activities and oceanic affairs. Some of the committees report to one department or agency or the White House and the others to two or more departments and agencies. A list of the committees sponsored by NOAA and other Government agencies is presented in appendix III.

## CHAPTER 5

### AGENCY COMMENTS AND OUR EVALUATION

We presented our draft report to Commerce, Transportation, Interior, DOD, and NSF--the agencies with the greatest involvement in marine science activities and oceanic affairs--for review and comment. A copy was furnished to State, which had requested that it be allowed to comment. (See apps. IV-IX.) The draft report was also presented to the Federal Council for Science and Technology (FCST), ICMSE, and NACOA--organizations responsible for coordinating and reviewing marine science activities and oceanic affairs. (See apps. X-XII.)

DOD and Transportation generally agreed that there is a need for a national ocean policy and program. FCST and NSF expressed some reservations. Commerce, Interior, State, ICMSE, and NACOA did not comment on our suggestion.

FCST stated that while it is both possible and desirable to formulate comprehensive policies and goals for effective use of the ocean--the Congress did so in the Marine Resources and Engineering Development Act of 1966 and the Senate is conducting a National Ocean Policy Study with a similar objective--it does not necessarily follow that there should be a single, comprehensive ocean program to implement the policies, especially not a single program under the authority of a single agency. FCST stated further that ocean programs should be the responsibility of that agency whose missions include oceanic activities and that no agency can accept responsibility for a mission if it does not control the activities essential to that mission. FCST agreed, however, that many ocean activities of different agencies are similar, do require use of similar facilities and collection and analysis of similar data bases, and should be carried out in a cooperative and well-coordinated fashion.

NSF believes that the Marine Resources and Engineering Development Act of 1966 established a comprehensive national ocean program and plan and that its goals are still in effect.

We recognize that the Marine Resources and Engineering Development Act did provide some beneficial results. However, as pointed out in the report of the Senate Committee on Commerce accompanying Senate Resolution 222, which authorized the National Ocean Policy Study, the act had been neither fully implemented nor completely successful in developing a comprehensive, long-range national ocean policy. This is

evidenced by the fact that marine science activities and oceanic affairs are being conducted in similar areas by many agencies, perhaps to a greater extent than noted by the Congress in 1966.

The process of establishing a national ocean program and plan will provide an opportunity to define and assess the multitude of problems affecting the marine environment and to effectively deal with these problems.

NOAA, NSF, and ICMSE objected to our use of the categories presented in chapter 3 as indicators of the similarity of activities undertaken by the agencies. We do not believe that our use of these categories was misleading. The categories we used were included in annual reports prepared by ICMSE and were also in the NOAA catalog publication of unclassified marine research activities sponsored by Federal and non-Federal organizations. We believe that, since these categories were used in reports available to the public and accepted by the agencies concerned with marine science activities and oceanic affairs, they were appropriate for us to use. We did not examine the multitude of individual oceanic projects to determine actual work undertaken. However, we believe that the tables on pages 13 and 15 and the chart on page 16 clearly show or at least raise questions on work performed in similar areas in the categories used in annual and periodic reports.

NOAA and ICMSE said that, generally, our analysis must penetrate actual efforts undertaken by the agencies before conclusions could be drawn regarding similar activities. NSF stated that (1) our presentation of the similarity of agencies' activities weakens rather than strengthens the judgment about the diminished effectiveness of the national program, (2) the report is ambivalent on what similarity of effort means but concludes that duplication is generally not indicative of management weakness, and (3) the report asserts, but does not demonstrate, that similarity of effort is not conducive to effective and efficient utilization of resources. We believe that, because the 11 departments and agencies conducting programs related to marine science activities and oceanic affairs do so in response to their missions, their efforts are prone to overlap and be similar. Although ICMSE has tried to achieve voluntary coordination among the agencies, it is not authorized, as a collective body, to determine which programs should be undertaken, what priorities should be given, which agencies should be involved, and the amount of resources which should be used.

NOAA, Transportation, and Interior felt that the report should consider existing and planned coordination arrangements, other than ICMSE, such as bilateral coordination between agencies. We recognize that some interagency coordination does exist and might be effective; however, we emphasized ICMSE's coordination activities because it is the primary vehicle within the Federal establishment for effecting interagency coordination. We felt it was not necessary to examine and report in detail on the other committees referred to on page 28 because they were concerned with specific areas of interest.

Maritime questioned our inclusion of its appropriations for ship construction and ship operating-differential subsidies while excluding the Navy's shipbuilding program. Maritime believed that only a small portion of its appropriations for R&D, operations, and training should be considered as allocated to marine science and oceanic affairs. ICMSE commented that about 38 percent of the \$2,064.2 million in requested appropriations for fiscal year 1975, or \$788.4 million, was related to marine science and engineering activities. The funding information presented in our report was developed in accordance to guidelines prescribed by the Senate Subcommittee on the Oceans and Atmosphere staff specifically concerned with the National Ocean Policy Study. In accordance with the guidelines, we did not include as part of navy's oceanographic program its fleet resources and programs employed in day-to-day naval operations.

A substantial portion of the agencies' comments expressed concern that not enough exposure was given to their involvement in marine science activities and oceanic affairs. For example, Interior believed that the report should acknowledge the interdependence of certain of its land- and marine-related programs. State was concerned that the report did not recognize in more detail the international aspects of the national ocean program or State's role in this regard.

Agencies' involvement in the ocean was presented in some detail in our February 1975 report (GGD-75-61). The programs and activities mentioned in this report were used to illustrate the need for a national ocean program and plan and were not intended to describe all of the agencies' programs and activities in the marine science and oceanic affairs area.

## CHAPTER 6

### CONCLUSIONS

The need for a national ocean program was recognized by the Congress in 1966 with the passage of the Marine Resources and Engineering Development Act of 1966 and in February 1974 with the passage of Senate Resolution 222, authorizing the Senate Committee on Commerce to undertake a National Ocean Policy Study.

Although efforts have been made to establish a national ocean program as envisioned in the 1966 act, marine science activities are as scattered today as they were in 1966. We agree with the panels, commissions, and committees, referred to in chapter 4, which expressed a need for a national program. Under such a national program the Nation's marine science activities and oceanic affairs might still be conducted by several departments and agencies, but with more effective and efficient use of resources.

Although NOAA's mission is to insure full and wise use of the marine environment, it was not authorized to direct the marine activities of other Federal departments or agencies.

ICMSE was established to consider policy level issues in the field of marine affairs. Its primary role has been to provide a forum for member departments and agencies to exchange information on their marine science and oceanic affairs programs.

ICMSE has had some success within its limited framework. However, because (1) it lacks specific authority to establish policies and priorities, (2) there is no comprehensive national program, and (3) its members are committed to working for the mission of their own departments and agencies, ICMSE, as a collective body, has been unable to determine whether Federal resources have been used effectively and efficiently in the marine science activities and oceanic affairs area.

NACOA, in its role as an advisory committee to the President and the Congress on national marine and atmospheric affairs and to the Secretary of Commerce, regarding the operation of NOAA, has reviewed, evaluated, and reported on areas which it believed required priority attention. In two of its three reports, it strongly recommended that a single Federal agency at the departmental level be made responsible for managing oceanic and atmospheric resources, along with other natural resources. As an advisory body, NACOA has no authority to

see that its recommendations are implemented and plays no role in coordinating agency programs or establishing priorities.

Because of the vital role the oceans play in the Nation's welfare, economic self-sufficiency, and national security, a concerted effort should be undertaken to establish a national ocean program and plan. Such a program should (1) identify the Nation's marine-related needs and establish specific national objectives, (2) establish priorities to accomplish the objectives, (3) evaluate program results, including relevance to national needs, (4) periodically update needs, objectives and priorities, and (5) provide for adequate funds to effectively carry out the program and plan. The Senate Committee on Commerce, through its National Ocean Policy Study, has taken the first major step in this direction.

As reported by the various panels, commissions, and committees which examined the conduct of marine activities and oceanic affairs, the present Government organizational framework has not been particularly conducive to effective administration of these activities. However, it is necessary to develop a comprehensive national ocean program and plan before organizational changes are made. After such a program is developed, a determination can be made as to the organizational structure which would best accomplish the goals and objectives of the national ocean program and plan.

As discussed in this report, experts disagree as to the effectiveness of the present arrangements and the consequent need for change. The information we have gathered does not provide us with a sufficient basis to take a position on either side of the argument. However, the fact that there is disagreement emphasizes the need for a national ocean policy and program and an evaluation of how well the existing practices of the agencies involved are consistent with and effectively promote achievement of national objectives.

APPENDIX I

ACTUAL AND REQUESTED APPROPRIATIONS  
 ALLOCATED TO FEDERAL PROGRAMS RELATIVE TO  
 ACTIVITIES AND OCEANIC AFFAIRS FOR FISCAL YEAR 1972

	Fiscal Year 1972			Actual	
	Total	Allocated	Percent	Total	Fiscal
					Actual
					(mil)
Commerce:	\$ 1,515.4	\$ 652.9	43.1	\$ 1,824.8	\$
Maritime	524.9	524.9	100.0	750.5	
NOAA	330.0	128.0	38.8	370.4	
Transportation:	2,087.8	562.0	26.9	2,343.1	
Coast Guard	727.2	562.0	77.3	820.1	
Defense:	76,654.2	253.7	(e)	79,840.0	
Navy	20,983.9	211.7	1.0	22,724.3	
DMA	(a)	(a)	(a)	154.4	
DARPA	209.8	18.6	8.9	199.7	
COE (note f)	1,589.0	23.4	1.5	1,952.0	
Interior:	2,484.8	54.8	2.2	2,630.9	
Fish and Wildlife Service	150.9	18.8	12.5	158.6	
National Park Service	200.2	13.1	6.5	232.7	
Geological Survey	131.0	14.2	10.8	150.5	
Bureau of Land Management	118.9	.7	(e)	134.0	
Bureau of Mines	82.5	1.5	1.8	92.8	
Bureau of Outdoor Recreation	365.4	2.5	(e)	304.2	
Office of Saline Water	27.0	2.1	7.8	27.0	
Office of Water Resources Research	14.3	.6	4.2	14.3	
Office of Territorial Affairs	125.9	.5	(e)	104.0	
Bureau of Indian Affairs	455.5	.4	(e)	560.9	
Bureau of Reclamation	404.1	.4	(e)	523.7	
NSF	622.0	67.9	10.9	645.7	
EPA	2,448.4	14.2	(e)	7,427.1	
STATE	2,229.0	10.1	(e)	2,251.5	
HEW:	26,967.6	7.2	(e)	31,589.0	
PDA	101.3	3.1	3.1	158.0	
NIH	2,193.1	4.1	(e)	2,698.1	
OE	5,194.5	-	-	6,186.9	
AEC	2,294.4	6.9	(e)	2,633.4	
NASA	3,310.0	3.2	(e)	3,408.0	
SMITHSONIAN	56.8	2.6	4.6	76.2	
	<u>\$120,670.4</u>	<u>\$1,635.5</u>	1.4	<u>\$134,669.7</u>	\$

a/DMA did not become operational until July 1, 1972.  
 b/Bureau of Outdoor Recreation was unable to furnish the amount.  
 c/Less than \$50,000.  
 d/Total appropriations for Commerce, Transportation, Interior and HEW also include amounts for these constituent organizations not concerned with marine science activities and oceanic affairs but exclude trust funds.  
 e/Less than 1 percent.  
 f/Corps of Engineers.

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APPENDIX I

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Fiscal year 1974			Total Fiscal years 1972-74			Requested Fiscal year 1975		
Total	Allocated	Percent	Total	Allocated	Percent	Total	Allocated	Percent
(millions)								
\$ 1,553.7	\$717.2	46.2	\$ 4,893.9	\$2,278.4	46.6	\$ 1,759.1	\$771.0	43.8
575.3	575.3	100.0	1,050.7	1,850.7	100.0	586.2	586.2	100.0
383.4	141.9	37.0	1,083.8	427.7	39.5	459.7	184.8	40.2
5,520.5	659.4	11.9	9,951.4	1,863.5	18.7	2,195.7	761.7	34.7
802.5	659.4	82.2	2,349.8	1,863.5	79.3	913.2	761.7	83.4
83,072.0	253.5	(e)	239,566.2	753.3	(e)	83,801.5	250.2	(e)
23,136.2	188.8	(e)	66,844.4	574.4	(e)	26,496.7	185.8	(e)
176.2	23.2	13.2	330.6	44.1	13.3	193.1	27.0	14.0
194.3	13.1	6.8	603.8	49.5	8.2	202.3	10.6	5.2
1,770.0	28.2	1.6	5,311.0	85.3	1.6	1,706.0	35.0	2.1
2,554.9	89.8	3.5	7,670.6	206.1	2.7	3,453.9	118.3	3.4
180.6	28.6	15.8	490.1	68.3	13.9	207.5	22.0	10.6
286.7	28.9	10.1	719.6	58.9	8.2	332.4	29.8	9.0
170.9	23.5	13.8	452.4	54.7	12.1	230.9	42.5	18.4
162.6	3.5	2.2	415.5	5.7	1.4	206.3	18.6	9.0
105.6	1.8	1.7	280.9	4.8	1.7	212.6	1.8	(e)
80.6	1.5	1.9	750.2	4.4	(e)	305.2	(b)	-
10.7	-	-	64.7	3.2	4.9	4.9	-	-
13.7	1.0	7.3	42.3	2.5	5.9	12.7	.7	5.5
96.0	.6	(e)	325.9	1.7	(e)	102.0	.9	(e)
572.5	.4	(e)	1,588.9	1.2	(e)	643.1	2.0	(e)
423.6	(c)	(e)	1,351.4	.7	(e)	460.7	-	-
577.4	64.1	11.1	1,845.1	193.3	10.5	788.2	65.4	8.3
4,628.6	23.5	(e)	14,504.1	56.3	(e)	881.2	35.3	3.8
2,241.5	13.4	(e)	6,722.0	34.9	(e)	3,262.0	14.7	(e)
34,672.2	7.7	(e)	93,228.8	22.7	(e)	35,146.6	7.1	(e)
165.6	4.7	2.8	424.9	12.3	2.9	201.3	5.0	2.5
1,859.8	2.9	(e)	6,751.0	10.3	(e)	1,834.8	2.1	(e)
5,988.4	.1	(e)	17,369.8	.1	(e)	5,962.2	-	-
2,389.0	7.5	(e)	7,316.8	21.7	(e)	3,057.6	15.7	(e)
3,040.0	5.3	(e)	9,758.0	13.3	(e)	3,247.0	15.5	(e)
84.2	2.7	3.2	217.2	8.0	3.7	98.3	3.3	3.4
\$140,234.0	\$1,844.1	1.3	\$395,674.1	\$5,451.5	1.4	\$137,692.0	\$2,064.2	1.5

BEST DOCUMENT AVAILABLE

FUNDS ALLOCATED BY DEPARTMENTS AND AGENCIES  
TO MARINE SCIENCE ACTIVITIES AND OCEANIC AFFAIRS

FISCAL YEARS 1972-75

	<u>1972</u>		<u>1973</u>		<u>1974</u>		<u>1975</u>	
	<u>Amount</u>	<u>Amount</u>	<u>Percent of increase or decrease (-) from prior year</u>	<u>Amount</u>	<u>Percent of increase or decrease (-) from prior year</u>	<u>Amount</u>	<u>Percent of increase or decrease (-) from prior year</u>	<u>1972</u>
	(millions)			(millions)			(millions)	
35 Commerce	\$ 652.9	\$ 908.3	39.1	\$ 717.2	-21.0	\$ 771.0	7.5	18.1
Trans- portation	562.0	642.1	14.3	659.4	2.7	761.7	15.5	35.5
DOD	253.7	246.1	-3.1	253.5	3.0	258.2	1.9	1.8
Interior	54.8	61.5	12.2	89.8	46.0	118.3	31.7	115.9
NSF	67.9	61.3	-9.7	64.1	4.6	65.4	2.0	-3.7
EPA	14.2	18.6	31.0	23.5	26.3	33.3	41.7	134.5
State	10.1	11.4	12.9	13.4	17.5	14.7	9.7	45.5
HEW	7.2	7.8	9.2	7.7	-1.3	7.3	-7.8	-1.4
AEC	6.9	7.3	5.8	7.5	2.7	15.7	109.3	127.5
NASA	3.2	4.8	50.0	5.3	10.4	15.5	192.5	384.4
Smithsonian	2.6	2.7	3.8	2.7	-	3.3	22.2	26.9
Total	<u>\$1,635.5</u>	<u>\$1,971.9</u>	20.6	<u>\$1,844.1</u>	-6.5	<u>\$2,064.2</u>	11.9	26.2

INTERAGENCY COMMITTEES INVOLVED WITH  
MARINE SCIENCE AND OCEANIC AFFAIRS

## SPONSORED BY NOAA:

Federal Committee for Meteorological Services and Supporting Research	Interagency Committee for World Weather Program
Federal Geodetic Control Committee	Interdepartmental Board for the Cooperation of the NOAA with the DOD
Interagency Committee for Applied Meteorological Research	Meteorological Satellite Program Review Board
Interagency Committee for Marine Environmental Prediction	National Oceanographic Data Center Interagency Committee
Interagency Committee for Meteorological Services	National Oceanographic Instrumentation Center Interagency Committee

## SPONSORED BY OTHER GOVERNMENT AGENCIES:

Ad Hoc Committee for the Study of Environmental Quality Information Programs	Federal Advisory Committee on Water Data
Ad Hoc Committee on Boundaries/Law of the Sea	Federal Field Coordinating Committee
Ad Hoc Committee on Environmental Quality Research and Development	Geodetic Satellite Policy Board
Advisory Committee on Undersea Features	Interagency Air Cartographic Committee
Advisory Panel on Meteorological and Geostrophysical Abstracts	Interagency Arctic Coordinating Group
Advisory Subcommittee on Water Resources Scientific Information Center	Interagency Committee on Antarctica
Anadromous Fisheries Coordination Committee	Interagency Committee on Fields of Science
Chesapeake Bay Subcommittee of Federal Council for Science and Technology Committee on Marine Science and Engineering	Interagency Committee on Radiological Assistance
Committee on International Ocean Affairs	Interagency Coordination Committee Earth Resources Survey Program
Committee on Water Resources Research	Interagency Decade Planning Group
Coordinating Committee for Mississippi Basin Study	Interagency Map Procurement Committee
Environmental Resources Committee	Interagency Scientific Products Evaluation Committee
	Interdepartmental Committee for Atmospheric Sciences
	Meteorological Working Group, Inter-Range Instrumental Group, Range Commanders Council

APPENDIX III

APPENDIX III

SPONSORED BY OTHER GOVERNMENT AGENCIES:

National Multiagency Oil and Hazardous Materials Pollution Contingency Plan/National Interagency Committee

Panel on International Programs and International Cooperation in Ocean Affairs

Recreation Subcommittee

Research and Technology Information Exchange Working Group

Subcommittee on Coastal Zone Research and Engineering

Task Force on Earthquake Hazard Reduction

US FAO Interagency Committee-- Working Group Fisheries

Water Resource Council Council of Members

Water Resources Subcommittee Council of Members

Water Resources Subcommittee State Programs Committee

Water Resource Council Federal-State Programs Committee

Water Resource Council Organization for Economic Cooperation and Development and Economic Commission for Europe

Water Resource Council Policy Development Committee

Winter Navigation Board (Great Lakes-St. Lawrence Seaway Navigation Season Extension Demonstration Program)

Working Committee of the Winter Navigation Board (Great Lakes-St. Lawrence Seaway Navigation Season Extension Demonstration Program)



UNITED STATES DEPARTMENT OF COMMERCE  
The Assistant Secretary for Administration  
Washington, D.C. 20230

May 14, 1975

Mr. Victor L. Lowe  
Director  
General Government Division  
U.S. General Accounting Office  
Washington, D. C. 20548

Dear Mr. Lowe:

This is in reply to your letter of April 14, 1975, requesting comments on the draft report entitled "Observations On The Need For A National Ocean Program And Plan."

We have reviewed the attached comments of the NOAA Administrator and Assistant Secretary for Maritime Affairs and believe they are responsive to the matters discussed in the report.

Sincerely yours,

A handwritten signature in dark ink, appearing to read "Guy W. Chamberlin, Jr.", written over a horizontal line.

Guy W. Chamberlin, Jr.  
Acting Assistant Secretary  
for Administration

Attachment

- GAO note 1. The deleted material relates to matters omitted from this final report.
2. Page number references in the appendixes may not correspond to pages of this report.

APPENDIX IV

APPENDIX IV



**UNITED STATES DEPARTMENT OF COMMERCE**  
**The Assistant Secretary for Maritime Affairs**  
Washington, D.C. 20230

MAY 1 1975

Mr. Victor L. Lowe  
Director, General Government Division  
United States General Accounting Office  
Washington, D.C. 20548

Dear Mr. Lowe:

As requested in your letter of April 11, 1975, the following are our comments on the draft report entitled "Observations on the Need for a National Ocean Program and Plan."

The report makes specific references to the programs of the Maritime Administration on page 4a, which refers to increased ship construction subsidies, and on page 45, Appendix I, which lists the FY 1972-75 appropriations. The total amounts listed for the Maritime Administration for Fiscal Years 1972 and 1975 should be revised to read \$525.0 million and \$584.9 million, respectively. All other dollar amounts shown for Maritime are correct as listed.

However, we question the use of the above figures, within the context of the report. While the title of the report ostensibly covers all marine related activities, its substance relates more to marine science, environment, and resources. These areas are not within the principal purview of the Maritime Administration. Yet, Appendix I of the report lists the Maritime Administration as the only Federal agency which devotes 100% of its funds to marine science and oceanic affairs. Included as supporting these activities are Maritime Administration's subsidy appropriations which we do not believe are within the purview of the report.

More specifically, Appendix I lists the Navy Department as devoting less than 1% of its total funds for marine science and oceanic affairs. Maritime funds are listed as 100% devoted to these activities. Apparently, Navy's shipbuilding program has been omitted but Maritime's subsidy funds for ship construction and ship operation have been included. These two approaches appear inconsistent. Realistically, we believe that only a small portion of Maritime's appropriations for Research and Development and Operations and Training should be considered as allocated to marine science and oceanic affairs. Thus, within the scope of the report as we understand it, the Maritime Administration has an active but limited role in these areas.

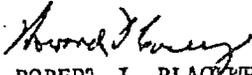
APPENDIX IV

APPENDIX IV

My staff will be happy to work with you to identify the actual activities and funds involved. Please contact Mr. Anthony Ossi on 967-2562 to clarify this matter.

I appreciate the opportunity to comment on the draft report.

Sincerely,

*for*   
ROBERT J. BLACKWELL  
Assistant Secretary  
for Maritime Affairs



UNITED STATES DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
Rockville, Md. 20852

APR 24 1975

Mr. Victor L. Lowe  
Director, General Government Division  
United States General Accounting Office  
Washington, D.C. 20548

Dear Mr. Lowe:

We have reviewed the draft report of the General Accounting Office, Observations on the Need for a National Ocean Program and Plan. The undertaking is of impressive magnitude and its objectives are important. Our comments respond to your requests to the Secretary of Commerce, and to the Administrator, National Oceanic and Atmospheric Administration. You will receive separate comments from the Assistant Secretary for Maritime Affairs.

The preparation of a national ocean program and plan cannot be a one-time affair. We have had occasions when such plans have been prepared with remarkable effect. The most comprehensive document providing for such a plan for the national ocean activities was the Report of the Commission on Marine Science Engineering and Resources, "Our Nation and the Sea," issued in 1969. Many of the findings and recommendations of that Report have since been put into effect. The proposals of that Commission for stronger action in coastal zone management, marine resources, protection of the environment, environmental monitoring systems, have in part or in whole been adopted. Organizational proposals of that Commission have also in part been brought into being. We believe that there is a continuing need for reviewing our national goals and objectives in the oceans and indeed this is done, not only by the Executive Branch, but by the Congress, as witness the large number of ocean-related legislation which has been successfully passed since 1970. All such legislation represents a view of the Government on policies and programs to be followed in carrying out the national ocean activities. We believe that progress has been good over these few years. Further, the plans and programs of the Federal agencies in ocean and atmospheric affairs are reviewed annually by the National Advisory Committee on Oceans and Atmosphere which the Congress has charged with carrying out this function.

We welcome, therefore, reassessments of the ocean efforts of the various Federal agencies to ensure that the work being carried out does indeed meet current and projected national ocean needs and concerns. The GAO report will be useful in these continuing evaluations.

The increasing recognition by the Nation of its need to use and safeguard the marine environment, to develop and conserve its ocean resources is evident in many national and international actions. The negotiations now taking place at the Law of the Sea Conference in Geneva are typical. Domestically there have been a number of significant Administration and Congressional ocean initiatives during the past few years which clearly state the concerns and aspirations of our Nation and set forth priorities for action. Among these are Project Independence, a major maritime policy, and the several laws directed at the conservation of resources and protection of the environment. Among the important new legislated responsibilities entrusted to the National Oceanic and Atmospheric Administration, for example, are the Coastal Zone Management Act, the Marine Mammal Protection Act, the Endangered Species Act, and the Marine Protection, Research, and Sanctuaries Act. The foundation remains today, as it has since 1966, the farsighted ocean policy enunciated by the Congress in the Marine Resources and Engineering Development Act.

In setting forth national priorities through the legislative process, Congress has also recognized and provided significant coordination precepts. In some instances, coordination is built into the action process by providing all the funding for the required actions through a single lead agency. For example, the overall management of the Federal effort to provide an environmental baseline assessment of the Outer Continental Shelf (OCS) in anticipation of leasing for oil and gas exploitation has been given to the Bureau of Land Management within the Department of Interior. NOAA has been requested to assume project management for the assessment effort off Alaska. NOAA's program plans are reviewed within BLM and through an interagency advisory committee established by BLM for these OCS activities. The funds to support NOAA's activities will be provided by BLM.

Significant resources to support OCS baseline assessment activities were provided to NOAA by the Special Energy Research and Development Appropriation Act which provided funds for re-activation and operation of three major vessels. Coordination was also directed by the Congress in the Conference Report which accompanied the legislation. Following a discussion of the reactivation and use of these three vessels, the Conference Report states: "... all government agencies shall give preference to the use of government-owned and operated vessels in contracting for work in connection with offshore energy activities."

Similarly, Federal Project Independence research activities concerning the environmental effects of offshore energy developments are being coordinated by EPA; NOAA's contributing programs are reviewed and funded by that agency.

Other measures to enhance coordination in the accomplishment of closely allied activities have been developed among the agencies. For example, in view of the inter-relationships of responsibilities set forth in the Marine Protection, Research, and Sanctuaries Act, NOAA and EPA have formalized an Interagency Agreement setting forth the complementary and supportive roles by each with regard to ocean dumping research and regulation. Also, in consideration of the 200-mile extended zone of fisheries jurisdiction which is expected to emerge from the Law of the Sea Conference, NOAA and the Coast Guard have expanded their Inter-agency Agreement on Fisheries Enforcement Surveillance to insure close collaboration in the development of alternative plans for the management of the increased resources which will accrue the nation and for the enforcement and surveillance which is critical to effective management. Finally, NOAA coordination with the Navy is accomplished through the establishment of the position of Naval Deputy to the Administrator, a post held by the Oceanographer of the Navy.

We believe that it is important to note these and other mechanisms of coordination in the GAO report. The effectiveness of ICMSE coordination should be viewed in light of the numerous channels of coordination which have been developed. ICMSE provides the forum for multi-lateral coordination. Where only two agencies are involved, effective coordination can be most effectively accomplished by bilateral arrangement. While we do not wish to infer that coordination is adequate in all areas of marine activity, we do feel that the general approach taken by ICMSE is effective within its terms of reference.

There is a major problem we have with the GAO analysis - the use of Major Purpose Categories and Marine Research catalogue areas of activity as indicators of similarity - if not duplication - of agencies' efforts. It is our view that such use of these indicators is misleading. The report notes, for example, that five agencies are engaged in General Purpose Ocean Engineering. If the programs are examined, however, one finds data buoy development in NOAA, well-coordinated satellite remote sensing activity by NASA and NOAA, deep ocean technology conducted by the Navy, offshore power plant siting studies by ERDA and manned undersea technology efforts by NOAA and the Smithsonian Institution. Similarly, under the category Living Resources where three agencies are conducting programs, one finds fisheries resource assessment, management and development, and marine mammals and endangered species research for NOAA; enforcement of fisheries treaties for the Coast Guard; and marine bio-medical research for the Department of Health, Education, and Welfare. Similar comments can be made for the assembly of activities using the research areas of the Marine Resource Catalogue. It is our view that the analysis must penetrate the actual efforts undertaken by the agencies more than appears in the report before conclusions can be drawn with respect to similar activities.

APPENDIX IV

APPENDIX IV

Finally, we wish to acknowledge the difficulty of the task undertaken by the GAO and to note the fine work that has been done in assimilating, organizing and assembling a vast array of information. Our comments herein are intended to assist the GAO in fulfilling its charge by the National Ocean Policy Study.

Sincerely,

A handwritten signature in cursive script that reads "Robert M. White". The signature is written in dark ink and is positioned above the typed name.

Robert M. White  
Administrator

APPENDIX V

APPENDIX V



OFFICE OF THE SECRETARY OF TRANSPORTATION  
WASHINGTON, D.C. 20590

ASSISTANT SECRETARY  
FOR ADMINISTRATION

May 2, 1975

Mr. Henry Eschwege  
Director  
Resources and Economic Development  
Division  
U. S. General Accounting Office  
Washington, D. C. 20548

Dear Mr. Eschwege:

This is in response to your letter of April 11, 1975, requesting the Department's comments on the General Accounting Office's (GAO) report on the need for a national ocean program and plan. The GAO concluded that the present Government organizational framework is not particularly conducive to effective administration of marine science activities and ocean affairs. Because of the vital role the oceans play in the Nation's welfare, economic self-sufficiency, and national security, GAO believes a concerted effort should be undertaken to establish a comprehensive national ocean program and plan.

The Department agrees with GAO that it is essential that a national ocean policy be adopted and a national ocean program and plan to implement the policy be established prior to any reorganization attempt. Ocean policy must be considered over the full range of ocean activities, not merely marine science and engineering. Such a consideration will reveal the often nonhomogenous nature of marine activities.

I have enclosed two copies of the Department's reply to the GAO report.

Sincerely,

Handwritten signature of William S. Heffelfinger in cursive script.

William S. Heffelfinger

Enclosure  
(two copies)

DEPARTMENT OF TRANSPORTATION REPLYTOGAO DRAFT REPORT (UNDATED)OBSERVATIONS ON THE NEED FOR A NATIONAL OCEAN PROGRAM AND PLANMULTIAGENCYSUMMARY OF GAO FINDINGS AND RECOMMENDATIONS

The present Government organizational framework is not particularly conducive to effective administration of marine science activities and oceanic affairs. GAO believes a concerted effort should be undertaken to establish a comprehensive national ocean program and plan. After the program and plan are developed, a determination can then be made as to the best organizational structure which should be established to accomplish the goals and objectives of the program and plan.

SUMMARY OF THE DEPARTMENT OF TRANSPORTATION POSITION

The Department of Transportation concurs with the GAO that it is essential that a national ocean policy be adopted and a national ocean program and plan to implement the policy be established prior to any reorganization attempt. With or without reorganization, it is essential to develop a more effective and authoritative coordinating mechanism within the federal establishment. Ocean policy must be considered over the full range of ocean activities, not essentially marine science and engineering oriented, and finally, emphasis is made on the need to clearly define the milieu of both "marine science" and "oceanic affairs".

POSITION STATEMENT

I concur with, and strongly support, the recommendation included in this draft report that only "After the national ocean policy has been adopted and a national ocean program and plan to implement the policy have been established, the Congress may wish to consider, at that time, enacting legislation to establish the Government organizational structure best suited to accomplish the goals and objectives of the national ocean program and plan". It may develop that such a program and plan would reveal that re-organization is not the answer. Even this preliminary draft report concludes that duplication of research efforts is a rarity and if found is not indicative of management weakness. The significant thing is getting the job done. Thus, the GAO might report to the Congress on the on-going and planned interagency field efforts which provide for "effective coordination between agencies to avoid fragmentation and overlap for more effective use of resources".

The draft report speaks of "marine science" and "oceanic affairs" as two entities, yet, in support material given with these statements, it appears that only marine science data are used, seemingly to be representative of both. In reality, "marine science activities" are a specialized branch of "oceanic affairs". Both of these terms need to be clearly defined in the glossary.

This need to define these terms clearly, becomes even more real when attempting to read the charts and tables in this study. Because of the categorization of marine activities for budget, programming and reporting purposes, it is essential that all parties have a clear understanding of the terms of reference. Without these common terms of reference, the credibility of the study is greatly compromised. Certainly, the definitions are required prior to the development of national ocean policy, programs and plans.

The significance of the matrix on page 20., is not clear. There is no indication that "duplication" of research has been identified, yet, it appears to have one of two purposes: (1) To indicate that authorized agencies are in fact making an effort to achieve their goals through logical research projects, or, (2) To imply that there is considerable overlap and lack of coordination of federal ocean activities. To conclude the latter is not fully supported, especially when, on page 23., it is stated, "Since as a general rule, duplication of research efforts is a rarity and, if found, is generally not indicative of any management weakness, we did not attempt to identify specific cases of duplication". The projects reported are marine science projects, but they are never related to the budget figures for "marine science and oceanic affairs".

It is noted that Appendix III, a list of interagency committees, is a NOAA report, but nowhere is it indicated that NOAA prepared the list.

It is incongruous that while Appendix II lists the U.S. Coast Guard as the second largest source of funds for Marine Science Activities and Oceanic Affairs, the only mention of the Coast Guard in the report is a brief reference on page 31, which states that "NASA is cooperating with NOAA and the Coast Guard to demonstrate the operational utility of using an airborne radar system to acquire imagery of ice coverage on the Great Lakes".

In discussing International Arrangements, it is again noted that the Coast Guard is not mentioned. While it is true that the Coast Guard has no activities which are reported in the Federal Ocean Program Report (FOP) under that category, this FOP does not include all that would be described as "oceanic affairs." Coast Guard participation in international arrangements, for example, with respect to the 1973 Marine Pollution Convention developed under the aegis of the International Maritime Consultative Organization (IMCO), is well known to those involved in related activities.

In conclusion, several points should be emphasized:

- It is essential that the ocean program and plan be developed prior to any attempt at reorganization,

- With or without reorganization, it is essential to develop a more effective and authoritative coordinating body or mechanism within the federal bureaucracy,

- Ocean policy must be considered over the full range of ocean activities, not merely marine science and engineering. Such a consideration will reveal the often non-homogenous nature of marine activities.

Finally, it is emphasized that there is a need to clearly define the milieu of both "marine science" and "oceanic affairs". It is my opinion that there is sufficient evidence, through man's present and past activities in the oceans, to develop a clear definition of each. Once done, policy, programs and plans will be aided in their development.



---

O. W. SILER  
Admiral, U. S. Coast Guard  
Commandant

APPENDIX VI

APPENDIX VI



DIRECTOR OF DEFENSE RESEARCH AND ENGINEERING  
WASHINGTON, D. C. 20301

4 JUN 1975

Victor L. Lowe  
Director  
General Government Division  
U. S. General Accounting Office  
Washington, D. C. 20548

Dear Mr. Lowe:

We have reviewed the GAO draft report dated 11 April 1975, entitled "Observations on the Need for a National Ocean Program and Plan". The Department of Defense (DoD) concurs in the major recommendation to give first priority to the development of a comprehensive national ocean program and plan, leaving for future resolution the determination of the best organizational structure to accomplish the goals and objectives.

Inasmuch as the U. S. Navy has the largest effort within the DoD in the broad area covered by the GAO Draft Report, we are enclosing specific Navy comments for your consideration prior to publishing the final report.

Sincerely,

A handwritten signature in dark ink, appearing to read "Malcolm E. Currie".

Malcolm E. Currie

Attachment  
Navy Comments



## Department of the Navy Comments

on

GAO Report GGD-75- (Draft) of 11 April 1975

on

Observations on the Need for a National Ocean Program and Plan

(OSD Case No 4031-A)

The report gives an accurate and detailed history of the various organizations, boards, and committees which have been organized in the past in an attempt to develop a comprehensive ocean policy and ocean program. The constraints and failures of each are also described. The report reviews areas of overlap in investigations of the various departments and agencies but recognizes that such overlaps are not necessarily bad, depending upon the specific missions of the agencies concerned. It does decry, however, the lack of an overall ocean policy and the fragmented nature of most of the program. In the report GAO favors the establishment of a comprehensive national ocean program and plan prior to the consideration of an organizational structure to accomplish the goals and objectives of the program and plan.

The Navy agrees in general with the findings of the GAO and supports the recommendation that development of a national ocean program and plan should precede changes in organizational structure. Navy is concerned, however, that the limitations of the data bases utilized in developing the report are not adequately expressed.

1. GAO Finding

The GAO has chosen to conduct this study in accordance with major purpose categories as laid out in the annual reports of the Federal Council of Science and Technology (FCST) on the Federal Ocean Program. Whereas recent findings of the FCST with regard to agency funding levels are in general agreement with GAO findings for most agencies, the GAO figures for the DOC and DOT are respectively about 3 and 10 times larger than those of the FCST report.

Navy Statement

The charge of the Chairman of the Senate Committee on Commerce to GAO to ". . . identify all Federal programs related to marine science activities and oceanic affairs" differs from the objectives of the FCST annual report through the addition of "Ocean Affairs" a term not defined

in this or the companion GAO report (GGD-75-61). If this term is to be generalized to the degree that it encompasses the total ship construction program of MARAD, Navigation system management of DOT, etc., then the entire mission and the total budget of the Navy would be relevant. This was perhaps recognized by the GAO on page 65 of GGD-75-61 which included the following statement:

"Not included as part of Navy's oceanographic program are fleet resources and programs employed in day-to-day naval operations."

In order to insure Congressional understanding that the Navy resources described in this draft include only marine science programs, it is suggested that a statement, as above, be added to the introduction and as a footnote to the tables on page 45 and 46. The other alternative is to limit the report to marine science related resources as discussed in the Federal Ocean Program for all agencies.

#### 2. GAO Finding (page 4)/Navy Statement

It is recommended that the following more accurate definition of GEOID be substituted:

Geoid - The equipotential surface in the gravity field of the earth which coincides with the undisturbed mean sea level extended continuously through the continents.

#### 3. GAO Finding (page 18)/Navy Statement

GAO presents a synopsis of multi-department and/or agency involvement in marine science programs based upon a funding information matrix presented in the FY 74 FCST, Federal Ocean Program Report. It should be pointed out that the matrix is actually more complex than the major purpose category funding by agency implies. The matrix actually covers only the major players in each category since funds were reported in accordance with the major mission of each department or agency thereby omitting related areas (e. g., the Navy participates in significant international cooperative efforts which are generally reported under National Security).

#### 4. GAO Finding (pages 19-21)/Navy Statement

In order to identify areas of unclassified research sponsored by more than one department or agency, GAO used as a data base a recently issued NOAA catalog covering marine research projects of the various departments and agencies during 1973. The Navy conducted unclassified research in a number of areas not indicated on the summary table, page 20. Although

APPENDIX VI

APPENDIX VI

the catalog does illustrate the overlapping interests of the various departments and agencies, it is by no means complete. The GAO should recognize these shortcomings in the presentation of their findings.

[See GAO note 1, p. 55.]

7. GAO Finding (page 23-32)/Navy Statement

The report acknowledges mission related reasons for some oceanographic R&D by different agencies. The report should however give emphasis to the different purposes of the oceanographic programs of the various departments and agencies. In particular, greater emphasis should be given to the broad, encompassing requirements of the Navy in fulfilling its role in National Security.

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## United States Department of the Interior

OFFICE OF THE SECRETARY  
WASHINGTON, D.C. 20240

MAY 14 1975

Mr. Henry Eschwege  
Director, Resources and  
Economic Division  
U. S. General Accounting Office  
Washington, D. C. 20548

Dear Mr. Eschwege:

The Department of the Interior has reviewed the draft report of the General Accounting Office entitled Observations on the Need for a National Ocean Program and Plan. Marine-related activities are integral to the program objectives of many components of the Department of the Interior. The comments provided herein suggest clarifications with respect to the role of the Department of the Interior in marine affairs. We begin with some perspectives on resource policy considerations that may be useful in interpreting the information compiled in the draft report and its companion, Federal Agencies Administering Programs Related to Marine Science Activities and Oceanic Affairs.

### General Comments

#### 1. The need for a national ocean program and plan.

Our nation is fortunate in having abundant access to the ocean and to a variety of ocean resources. The way in which we utilize the oceans will become part of the national heritage. Clearly, there is need for rational and coordinated management of ocean uses that will require careful planning within the Federal government. But activities in the ocean -- particularly those aimed at developing non-living resources -- are not carried out in isolation from land-based activities. To consider marine mineral resources as divorced from those obtained on land, in either a technical or national policy sense, would be extremely short-sighted and illogical. The significance of marine minerals can only be assessed in relation to the total minerals availability, economics, national requirements, and policy.

Given these considerations an overall ocean program and plan ought not be devised in isolation from other policy areas.



Ocean utilization will affect not only broad sectors of domestic industry and commerce -- including transportation, recreation, energy and raw materials, and food -- but the continued health of our land and water environments. There is a danger that the end result of separate program planning and policy formulation for marine activities could mean less effective coordination in the Federal government's overall resource management responsibilities. Fragmentation of resource policy formulation by geographic area could increase the workload without improving our ability to carry out responsibilities. If the recommendation for matters to be considered by the Congress contained in the draft GAO report that "a comprehensive national ocean program and plan should be developed" is intended to support separate consideration of plans to develop ocean resources and other ocean-related activities, we suggest that the effort would be counter-productive.

On the other hand, the pace of marine-related activities is expected to accelerate in the coming years. Preservation of the marine environment and protection and cultivation of living resources in the face of multiplying ocean uses presents unique problems. Competing marine activities could strain the management capability of the Federal government unless there is adequate planning to ensure government ability to meet marine resource management requirements. In this context, a national ocean program and plan could be useful. There is a need to analyze the growth that can be predicted in marine activities and to further define the role of government in relationship to them. Following that, steps should be taken to insure that there will be within government, in the appropriate places, the necessary expertise for executing various government responsibilities. But, most importantly, the government role in marine affairs should be solidly linked to overall government policies and programs. GAO has an excellent opportunity to recommend to the Congress that it carefully consider the government's ability to preserve the marine environment and to manage appropriate development of marine resources in a fashion that is responsive to the nation's resource needs. We suggest that the necessity to maintain control over national resource development be highlighted in the final recommendations to the Congress. Our critical resource needs should be a touchstone for Congressional consideration of ocean programs and plans.

## 2. Description of Work in Similar Areas.

Without additional information, the significance of examples chosen "to illustrate where departments and agencies were performing work in similar areas" is not particularly enlightening. For example, the first category cited is marine geology. The draft refers

to seven departments and agencies which administer 15 programs relating to the study of the geological structure and composition of the ocean bottom. As presented, this example combines two broad subjects -- the study of geologic structures and the study of sediments -- and mixes without differentiation major in-house programs with smaller support programs. For instance, the USGS program that is only briefly discussed encompasses approximately the same effort as that of the four specific NOAA programs described in greater detail. In this area four organizations have major general and applied roles; they can be roughly distinguished as follows: NOAA - oceans; USGS - resources of the solid earth -- seafloor and land; Navy - National security; and COE - shoreline protection. Two (NSF and NOAA) have support and subsidy roles and two (AEC and EPA) have specific applied roles with most activities conducted through support of work by others.

This section of the paper could be improved with the inclusion of greater detail concerning the program activities cited. Furthermore, for purposes of Congressional consideration, the mere listing of statistics like those appearing at page (iii) are misleading and appear to conflict with the body of the report that describes work in similar areas. In that section the draft report notes that "duplication of research efforts is a rarity and, if found, is generally not indicative of any management weakness". This comment should be supported with greater detail. Relevant to this would be the following information:

- (a) purpose or objective of the program;
- (b) description of work actually performed;
- (c) program relevance to agency mission or responsibility;
- (d) indication of coordinating efforts with other agencies.

### 3. Evaluation of effectiveness of Federal programs.

In apparent contrast to the above quoted statements that GAO did not identify major duplication of Federal efforts in marine activities, the draft report concludes that "The present Government organizational framework is not particularly conducive to effective administration of marine science activities and oceanic affairs". In support of this conclusion the draft report notes that marine science and oceanic activities are conducted by 11 departments and agencies in similar areas and that interagency coordination has not resulted in significantly reducing the number of programs being performed in similar areas.

[See GAO note 1, p. 55.]

The apparent solution would be the creation of a unified organizational structure to carry out an overall ocean program and plan. We have commented above on the utility of such a plan within broader policy considerations. With respect to the organizational question, we suggest that the Congress should be informed of the specifics of the government's failure to carry out its marine responsibilities.

In cases where such failure is identified, particular contributing problems might be cited such as: lack of proper coordination, poor management, insufficient legislative authority, organizational weakness, and so forth.

#### 4. Interagency Committees.

The listing of interagency committees dealing with marine affairs serves no useful purpose without (a) identification of sponsoring and participating agencies; (b) terms of reference for committee work; (c) evaluation of committee performance. This information should be supplied for all committees.

#### Comments on Specific Interior Programs

1. Among others, the Department of the Interior has given increasing attention to oceanic affairs and in the past few years has initiated a number of marine-related activities in support of its responsibilities. The addition of the activities undoubtedly contributes to the impression of increasing program proliferation. From our viewpoint, however, we feel that this impression may actually be more illusory than real. Added activities within Interior represent growth of programs, of which all but one (Ecologic Services in FWS) were in existence in 1966 and fulfill traditional responsibilities relating to management of Federal lands and to the appraisal, development, and use of the Nation's mineral and water resources, gamefish and wildlife, and recreational opportunities. By giving greater recognition to the marine aspects of some programs, such as those of the Bureau of Indian Affairs and Office of Territories, it might appear that the Department made other additions, whereas in reality these aspects are components of some of our oldest programs. In fact, with consolidation of effort devoted to water desalination and support of water resources research, Interior now has the same number of marine-related programs as in 1966. Interior also has lost programs and portions of programs through the creation of NOAA, EPA, and ERDA. Consequent treatment of the transferred and remaining portions as separate programs may add to the impression of an increasing number of "new" programs.

2. We are pleased that you cite Interior's Bureau of Indian Affairs and its support of Indian fisheries, but wonder about omission of much more pertinent efforts of the Department's Fish and Wildlife Service. FWS and the National Marine Fisheries Service of NOAA conduct many of the activities supported by BIA. More importantly, FWS has direct responsibilities for studies of certain marine mammals, coastal marine organisms, and anadromous fish.

Furthermore, FWS has lead responsibility for Great Lakes fisheries research, which does not involve marine organisms technically but has been included within the Federal Ocean Program.

3. The discussion of the Federal Ocean Program fails to note that some agencies have reported funds by functional area and others by subject area. Interior has chosen the former approach because of difficulties in allocating the broad range of management activities among the subject categories. For example, the marine-related budget of our Fish and Wildlife Service is consigned in its entirety to the general subject heading "Development and Conservation of the Coastal Zone," and to the subheading "Conservation of marine locales, gamefish and wildlife," which obviously involves living resources and would be expected to include efforts in other subject areas.

4. Within the framework of the report -- particularly in the listing of programs in the Federal Ocean Program -- major Department of the Interior activities are not reflected. For instance, the Department is not identified as having any programs in mineral sampling, extraction, and processing and yet the Bureau of Mines carries major Federal responsibilities for metallurgical research. Although the physical and chemical characteristics of ocean nodules impose some specific restraints, the techniques of processing and refining are independent of the source of the mineral and are not driven by whether the raw material was obtained from the land or undersea.

The continuing work of the Bureau of Mines runs across the entire spectrum of mining research and currently is budgeted at approximately \$95 million for FY 76. Much of this current work is directly applicable to the basic technologic problems affecting ocean mining. An important element in this work is the development of the basic engineering and physical property data which is required for design and development of alternative mining, materials handling and waste disposal systems.

5. We have noted above that the marine geology programs of the Geological Survey are given inadequate treatment in the narrative section of the report. In addition, no mention is made of the USGS/NOAA/BLM Interagency Committee which operates at a policy level and has had considerable success in coordinating program objectives and planning for joint programs.

6. Many examples of activities that span the shoreline were provided in the material supplied by Interior for your report, such as those related to operation of the National Park and Wildlife Refuge Systems, to support of recreational development by the Bureau of Outdoor Recreation, and to exploration and development of mineral resources by the USGS and Bureau of Mines. We also note the report omits reference to Bureau of Land Management support of certain marine programs.

Sincerely,

  
Assistant Secretary - Management

APPENDIX VIII

APPENDIX VIII

NATIONAL SCIENCE FOUNDATION  
WASHINGTON D C 20550

April 28, 1975



OFFICE OF THE  
ASSISTANT DIRECTOR  
FOR NATIONAL AND  
INTERNATIONAL PROGRAMS

Mr. Victor L. Lowe, Director  
General Government Division  
United States General Accounting Office  
Washington, D.C. 20548

Dear Mr. Lowe:

Thank you for the opportunity to comment on the GAO Draft Report, "Observations on the Need for a National Ocean Program and Plan." Although it is possible to quibble with specific points in a report that covers as much ground as this one does, the National Science Foundation staff concurs in general with the diagnosis that deficiencies exist in the conduct of the nation's ocean program.

Unfortunately, the emphasis on the fact that similar agencies support research in similar problem areas weakens rather than strengthens the judgment about the diminished effectiveness of the national program. First, as indicated by the report itself, there is a lot more to oceanic affairs than research. The report depends too much on the 1973 catalogue of Marine Research. Second, the report is ambivalent on what this similarity of effort means, but concludes that "duplication is generally not indicative of any management weakness . . ." Finally, it is merely asserted, not demonstrated, that this situation is "not conducive to effective and efficient utilization of resources."

It is not clear why the report singles out the National Advisory Committee on Oceans and Atmosphere (NACOA) and the Interagency Committee on Marine Science and Engineering (ICMSE) for such extensive consideration. Both are advisory groups without authority to implement their recommendations. Hence, both must be judged according to how they perform as advisors and informal coordinators, not with respect to carrying out their recommendations. I'm sure these points will be elaborated by Mr. Steven Anastasion, the Executive Secretary of ICMSE.

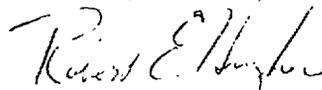
Finally, on the more specific point of the report's recommendations to the Congress, we have the discomforting sense of *deja vu*, the feeling that we have traveled this route before, and are hearing many of the same themes

contained in previous recommendations. The report does a fine job summarizing these recommendations; from the Stratton Commission, on through NACOA. The questions then become: What can be learned from these earlier efforts and how can they best be taken into account in considering the present interests of the National Ocean Policy Study?

Unfortunately, the report offers little guidance on these points. It is hard to disagree with the recommendation that Congress consider establishment of a comprehensive national ocean program and plan, and once these are developed, design the most appropriate organization for achieving the objectives of the plan. But didn't the 1966 Marine Resources and Engineering Development Act do this and aren't these goals still in effect? The goals outlined in your report are logical and desirable, but are so broadly drawn that they do not offer much guidance to the Congress. Our suggestion would be to retain this basic structure for addressing a national ocean policy plan but provide within this context more specific guidance such as a critical review of past efforts and recommendations like those from the Stratton Commission; an assessment of needs and opportunities in all areas of ocean use; identification of needs common to each in order to provide the basis for a general ocean policy; recommendation of priorities; and evaluation of alternative organizations for carrying out the plan.

On behalf of the Foundation staff, I wish to express our appreciation for the opportunity to review this draft. Should you feel that any further detail or elaboration would be useful, please contact me.

Sincerely,



Robert E. Hughes  
Assistant Director for National  
and International Programs



## DEPARTMENT OF STATE

Washington, D.C. 20520

BUREAU OF OCEANS AND INTERNATIONAL  
ENVIRONMENTAL AND SCIENTIFIC AFFAIRS

April 25, 1975

Mr. Jacob P. Glick  
Supervisory Auditor  
General Accounting Office  
Washington Science Center #1  
Room 214  
6001 Executive Boulevard  
Rockville, Maryland 20852

Dear Mr. Glick:

The following comments are made pursuant to our telephone conversation with regard to the draft second report of the GAO entitled "Observations on the Need for a National Ocean Program and Plan", made pursuant to the request by the Chairman of the Senate Committee on Commerce to assist the Committee in its National Ocean Policy Study.

The Department considers the draft report to be deficient in that it does not appear to recognize the very major international aspects of a very large part of the national ocean program. Nor does it recognize the lead role of the Department of State in dealing with these international aspects of the national ocean program. We would envisage that the international aspects and the role of the Department of State would be intensified in the interplay of economic, legal, political, social and scientific issues which will shape the national ocean program in the future. This will include the major responsibility of the Department for integrating this nation's ocean policy with the new international order developing for the oceans as a result of the United Nations Law of the Sea Conference.

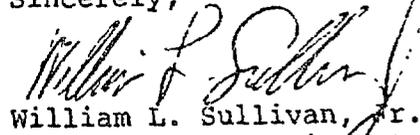
[Sec GAO note 1, p. 55.]

APPENDIX IX

APPENDIX IX

[See GAO note 1, p. 55.]

Sincerely,



William L. Sullivan, Jr.  
Acting Deputy Assistant Secretary  
for Oceans and Fisheries Affairs

APPENDIX X

APPENDIX X

FEDERAL COUNCIL FOR SCIENCE AND TECHNOLOGY

WASHINGTON, D.C. 20550

April 25, 1975

Mr. Victor L. Lowe  
Director, General Government Division  
United States General Accounting Office  
Washington, D. C. , 20548

Dear Mr. Lowe:

Dr. H. Guyford Stever has asked me to convey to you his thanks for the opportunity to review and comment upon your proposed draft report to the Congress titled Observations on the Need for a National Ocean Program and Plan, and his view in his capacity as Chairman of the Federal Council for Science and Technology. He is pleased to have this opportunity, even though the FCST, and a fortiori its committees, including the Interagency Committee on Marine Science and Engineering, are not among "... those having management responsibilities concerning the matters discussed." The FCST, like the National Advisory Committee on Oceans and Atmosphere, is strictly an advisory body, primarily to the President and the heads of Federal Agencies, as specifically spelled out in Executive Order 10807 of 13 March 1959, which established the FCST. Nevertheless he feels that it is appropriate for him to comment upon your draft report insofar as it relates to the coordination of the scientific and technologic aspects of the various agency ocean-related programs, in particular through ICMSE.

[See GAO note 1, p. 55.]

First, ICMSE, as already noted, is purely an advisory body whose function is to serve as a medium of information exchange, to identify the need for and foster studies, to promote voluntary coordination and cooperation among the Agencies, and to make recommendations to Agency Heads and to the Executive Office of the President (including the Office of Management and Budget). Its scope is limited by its charter to "... Federal [not national] scientific and engineering initiatives and programs relating to the marine environment." (Analogous provisions are contained in the charters of other FCST committees). There have been many instances where FCST committee recommendations have been effectively -- if at times somewhat informally -- transmitted to the staff of the OMB, through the staff that supports Dr. Stever, both as Chairman, FCST, and as Science Adviser. These instances include NOAA's Data Buoy Program, mentioned on page 35 of the draft report. It is Dr. Stever's opinion that ICMSE has carried out its assigned functions in an effective manner, and that any perceived lack of effectiveness may in large measure result from debatable premises upon which such a conclusion is based.

One of the major premises appears to be that there can and should be a single comprehensive and coherent national ocean program. While it is both possible and desirable to formulate a comprehensive set of policies and goals for the effective use of the ocean and its resources -- the Congress did so in the Marine Resources and Engineering Development Act of 1966, and the Senate is currently conducting a National Ocean Policy Study with a similar end in view -- it does not necessarily follow that there should be a single, comprehensive ocean program to implement the set of policies, especially not a single program under the authority of a single agency. One might just as logically argue that all programs should be organized according to the geographic area where they occur, and that there should be a comprehensive solid earth program for all activities that occur on or in the solid earth as for activities on or in the ocean.

Our set of ocean policies and goals should be implemented by a corresponding set of ocean programs. Insofar as feasible, each of the set of ocean programs should be the responsibility of that agency whose overall missions include oceanic activities as a subset. As has been noted in the draft report, some eleven agencies have missions which include activities in the ocean, some major and some minor. No agency can accept responsibility for a mission if it does not have control of the activities essential

to that mission. To be sure, many of these ocean activities of different agencies are similar in nature, do require the use of similar facilities and the collection and analysis of similar data bases, and should be carried out in a cooperative and well coordinated fashion in order to make the most effective use of limited resources. Many examples could be cited of just such cooperative efforts, from the sharing of available ship time to the common storage of data bases at the National Oceanographic Data Center. Some of this coordination is carried out through the medium of ICMSE and its subcommittees, some through other interagency committees not under FCST sponsorship (such as the Interagency Committee for Marine Environmental Prediction), and some through the establishment of a lead agency. The lead agency concept has proven to be a very fruitful one, not only in marine affairs, but in many others as well. The concept is a flexible one, adaptable to the circumstances. A lead agency for a particular program can be established by voluntary agreement among agency heads on the recommendation of the FCST or one of its committees, or it can be established by the Executive Office of the President.

[See GAO note 1, p. 55.]

Again let me express our thanks for this opportunity to comment upon your draft report. We believe that the ocean is indeed a very important part of our globe and are gratified that the Congress attaches such importance to the wise use and conservation of the ocean and its resources. Its magnitude is great, and the problem of developing appropriate policies and programs is a complex one. We trust that our comments will prove useful in the current study.

Sincerely yours,

  
John V. Granger  
Executive Secretary

FEDERAL COUNCIL FOR SCIENCE AND TECHNOLOGY  
Interagency Committee of Marine Science and Engineering  
U.S. DEPARTMENT OF COMMERCE  
6010 Executive Boulevard  
Rockville, Maryland 20852

April 23, 1975

Mr. Victor L. Lowe  
Director  
United States General Accounting  
Office  
Washington, D.C. 20548

Dear Mr. Lowe:

I have reviewed the draft report of the General Accounting Office entitled Observations on the Need for a National Ocean Program and Plan. The scope of the effort undertaken is impressive and its objectives important. My comments, requested by your letter of April 11, 1975, are provided herein to aid the objectives by offering some points of clarification and a few suggestions where some amplification in the report would be useful.

INTERAGENCY COMMITTEE ON MARINE SCIENCE AND ENGINEERING (ICMSE)

ICMSE is one of the committees established by the Federal Council for Science and Technology (FCST).

[See GAO note 1, p. 55.]

Interagency Committee on Oceanography which was established about 1960 as a committee of the FCST and which was terminated in 1967 after the National Council came into being.

The Report is correct in stating that, unlike the National Council, ICMSE does not have specific authority to establish policies and priorities. It is not a statutory body with directive authority nor appropriated funds to undertake marine science studies or activities. Its funded coordination activities, some of which will be cited later, are sponsored by individual member agencies or by the member agencies collectively. The framework of ICMSE activity lies in policy and program guidance from the President, in the basic statutory responsibilities of the agencies, and in the specific policies and priorities enunciated by the Congress in various ocean laws enacted over the past years. This framework, in its totality, provides the Federal community engaged in marine activities with an ever-changing, dynamic plan of action addressing the most critical concerns of the National involvement with the oceans as perceived by the President and the Congress. Among the

more recent of these are, for example, Project Independence; the Deep Water Ports Act; the Ports and Waterways Safety Act; the Coastal Zone Management Act; the Endangered Species Act; the Marine Protection, Research, and Sanctuaries Act; the Marine Mammal Protection Act; and the Federal Water Pollution Control Act Amendments. I believe that the Report would be strengthened by an examination of the role of these and other items of legislation and policy pronouncements within the context of the National Plan and Program recommended in the Report.

#### ICMSE ACTIVITIES

[See GAO note 1, p. 55.]

As for the ICMSE members (attachment 1), they are indeed representatives of the Federal agencies involved in marine activities. Each is a senior official responsible for the planning and conduct of the marine science and engineering programs of his agency. And, each brings to ICMSE a clear understanding of the need for consultation, coordination, and information exchange in order to maximize the benefits from the Nation's oceanic activities from the resources available to each. Within the admittedly limited authority available to ICMSE, the members have undertaken a number of useful efforts to this end. Some of these efforts are cited in the following paragraphs.

In 1972, ICMSE became concerned with the decreasing use of manned undersea submersibles and habitats and the resulting deterioration of the sizeable assets which had been developed by industry during the 1960s. A study of Federal agency use and potential requirements was conducted. On the basis of the study, ICMSE designated the Manned Undersea Science and Technology Office of NOAA to provide a continuing assessment of the Federal civilian agency needs for submersibles and habitats, and to coordinate the utilization of available commercial and Navy assets by the civilian Federal agencies. Progress toward the basic objective has been slow but positive.

With respect to the magnitude and diversity of oceanographic data being collected by the several agencies, ICMSE determined that there was a need for a systematic procedure to assure that this valuable national resource be properly indexed, documented, catalogued, and archived for ready accessibility to all users -- government, academic, industrial, public, and international. An Interagency Policy for Marine Data and Information Management was developed, endorsed, and

promulgated, urging member agencies to work actively with NOAA's Environmental Data Service and with the Smithsonian Institution to establish bilateral agreements on data and specimens to accomplish the objectives cited above.

ICMSE has been concerned for some time with the adequacy of the Federal and Federally-funded academic fleet to support the requirements of the agencies and the scientific community. Recently, it has undertaken a major study on the state of capital assets supporting ocean activities. The study was prompted by the concerns expressed by the National Advisory Committee on Ocean and Atmosphere and subsequently initiated by a request from the Secretary of Commerce. This study, The Ocean Science and Technology Resources Study, whose main emphasis is on the Nation's ocean research fleet, is now nearing completion.

With respect to Great Lakes research programs, ICMSE has initiated measures to enhance coordination among the agencies. It has conducted two Great Lakes conferences bringing together agency representatives from the Great Lakes region as well as program managers from the headquarters levels. The first conference was sponsored by the Environmental Protection Agency. The second, completed this past March, was sponsored by the Energy Research and Development Agency. Proceedings for each conference are published and distributed. In addition, ICMSE now has under preparation, a Directory of U.S. and Canadian agencies and activities -- local, Federal, and International -- with responsibilities for Great Lakes activities.

In support of the Senate's National Ocean Policy Study (NOPS), the ICMSE Select Committee on the Ocean Policy Study has provided, at the request of Senator Hollings, two information documents. The first, Ocean Data Resources, was published by the Committee on Commerce in March, 1975. The second, on Ocean Instrumentation, was submitted a few months ago. At present, ICMSE is preparing for NOPS a survey of Federal agency research programs in the Great Lakes.

The nature and scope of ICMSE efforts, based on the examples above, are clearly not in the nature of broad policy and priority setting envisioned by the GAO Report. ICMSE has, however, had some degree of effectiveness in working within its terms of reference through the mechanism of a forum for exchange of information and through several specific actions and publications -- all to enhance coordination among agencies.

#### CATEGORIZATION OF MARINE SCIENCE AND ENGINEERING ACTIVITIES

The Report uses two sets of categorization in examining the programs of the Federal agencies. The first set consists of the Major Purpose Categories by which agency program budgets are presented in the President's report to the Congress, the Federal Ocean Program. These categories were developed to provide a useful correlation between Federal ocean activities and major national ocean concerns. Thus,

there are such categories as Non-Living Resources, Living Resources, Development and Conservation of the Coastal Zone, General Purpose Ocean Engineering, and the like.

The second set appears in the Catalog of Marine Research assembled for ICMSE by the National Oceanic and Atmospheric Administration. In this catalog, scientific areas of research were used to provide correlation among projects within broad disciplines of research and to facilitate the use of the catalog as a reference document.

The categorizations are used in the Report as indicators of the similarity of activity undertaken by the Federal agencies and are a major basis for an assessment of diffusion and fragmentation. It is true that there are many Federal agencies contributing to the totality of the Nation's ocean enterprise. Although the Report states that, as a general rule, duplication of efforts is a rarity, as now written it may be somewhat misleading in its simplification of a very difficult consolidation effort by its use of these categorizations. For example, the Report lists three agencies engaged in Living Resources activities. An examination of these efforts shows that (1) the National Oceanic and Atmospheric Administration is carrying out programs related to the assessment, management, and conservation of ocean fisheries; marine mammals research; and endangered species research, (2) the Coast Guard effort involves enforcement and surveillance activities which are critical to fisheries management programs, and (3) the Department of Health, Education and Welfare conducts programs in shellfish sanitation and in the use of ocean organisms to study the diseases of man.

Thus, the activities cited within the Major Purpose Categories and research areas used in the Marine Research Catalog need to be carefully examined in light of the actual work undertaken and with due consideration to the driving force of mission responsibility which motivates the work of the agencies. While some of this can be derived from the first GAO Report, Federal Agencies Administering Programs Related to Marine Science Activities and Ocean Affairs, the program descriptions and relationships are incomplete. This second Report should examine these aspects of similarity in program activity. The resulting clarification would be most useful in assessing the degree of like activity among the agencies.

#### MARINE SCIENCE ACTIVITIES AND OCEANIC AFFAIRS

One final area of clarification should be made in the Report with respect to ICMSE. The total Federal program as indicated by the report in its budget tables amounts to \$2,064.2 million in Fiscal Year 1975. Federal activities in marine science and engineering amounted to \$788.4M, about 38 percent of the activities summarized in the report.

APPENDIX XI

APPENDIX XI

The opportunity to comment on this important GAO undertaking is appreciated. I trust that the foregoing will be useful in assisting the GAO in its response to the National Ocean Policy Study.

Yours truly,

A handwritten signature in black ink, appearing to read "Steven N. Anastasion". The signature is written in a cursive style with a prominent, sweeping flourish at the end.

Steven N. Anastasion  
Executive Secretary  
ICMSE

Enclosure

INTERAGENCY COMMITTEE ON MARINE SCIENCE AND ENGINEERING  
OF THE FEDERAL COUNCIL FOR SCIENCE AND TECHNOLOGY

CHAIRMAN: Robert M. White, Administrator, National Oceanic and  
Atmospheric Administration

MEMBERS : DEPARTMENT OF COMMERCE:  
David H. Wallace, Associate Administrator for  
Marine Resources, NOAA

ARMY CORPS OF ENGINEERS:  
Maj. Gen. J. W. Morris, Director of Civil Works

DEPARTMENT OF THE NAVY:  
H. Tyler Marcy, Assistant Secretary of the Navy  
for Research and Development

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE:  
Ian Burgess, Director, Facilities and Planning Staff

DEPARTMENT OF THE INTERIOR:  
V.E. McKelvey, Director, Geological Survey

DEPARTMENT OF STATE:  
Thomas A. Clingan, Jr., Deputy Assistant Secretary for Oceans  
and International Environmental and Scientific Affairs

DEPARTMENT OF TRANSPORTATION:  
Adm. Owen W. Siler, Commandant, Coast Guard

ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION:  
James L. Liverman, Assistant General Manager for Biomedical  
and Environmental Research and Safety Programs

ENVIRONMENTAL PROTECTION AGENCY:  
Herbert L. Wiser, Deputy Assistant Administrator for  
Environmental Sciences

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION:  
Leonard Jaffe, Deputy Associate Administrator for Applications

NATIONAL SCIENCE FOUNDATION:  
Robert E. Hughes, Assistant Director for National and  
International Programs

SMITHSONIAN INSTITUTION:  
David Challinor, Assistant Secretary (Science)

EXECUTIVE SECRETARY: Steven N. Anastasion



NATIONAL ADVISORY COMMISSION  
ON  
OCEANS AND ATMOSPHERE  
Washington, D.C. 20230

April 23, 1975

Mr. Victor L. Lowe  
Director, General Government Division  
United States General Accounting Office  
Washington, D.C. 20548

Dear Mr. Lowe:

Thank you for your letter of April 11, 1975, and for the opportunity to review and comment on behalf of NACOA on your draft report to the Congress on the need for a national ocean program and plan.

I do have a number of editorial suggestions for the portions of the report that refer to NACOA. These apply to page v of the Digest section and to pages 36-40 of the body of the report draft. I am attaching a Xerox copy of these pages with the suggestions entered directly as the simplest way of communicating them to you, recognizing that you may not agree with all of them.

Perhaps a few words of explanation for these suggestions would help. On page v, it seems to me your draft omits three items of significant information about NACOA which have contributed to its effectiveness. First, it is a continuing body with a statutory basis set up by Congress in response to one of the two major organizational recommendations of the Stratton Commission, the other being NOAA. Second, its annual reports have received full and thoughtful attention from the Executive Branch in part because the statute requires the Secretary of Commerce to forward with each report his comments on behalf of the Administration. Third, it has been asked by both branches of government to undertake a number of special analyses, two major ones appearing in the form of formal reports whose subjects we suggest be mentioned. Two other special reports of a major character are in preparation now in response to formal requests from the Secretary of Commerce and the Director of the National Science Foundation.

The other suggested insert on page v merely adds two important topics to the four out of ten from the annual reports which you list.

Most of the suggestions for pages 36-40 follow up these points. You will note we have drafted short descriptions of the subjects treated in the two special reports for insertion on page 40 should you care to include mention of these as we suggest.

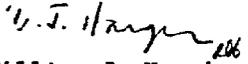
APPENDIX XII

APPENDIX XII

The editorial suggestion at the bottom of page 36 merely restores the meaning intended by NACOA which is garbled in the draft statement as it stands.

If you have any questions or comments, I suggest you direct them to Dr. Douglas L. Brooks, Executive Director of NACOA, who is ready to help you further in any way.

Sincerely,

  
William J. Hargis, Jr.  
Chairman

Enclosures

PRINCIPAL OFFICIALS OF THE DEPARTMENTS  
AND AGENCIES RESPONSIBLE FOR ADMINISTERING  
ACTIVITIES DISCUSSED IN THIS REPORT

	<u>Tenure of office</u>	
	<u>From</u>	<u>To</u>
<b>CHAIRMAN OF THE ATOMIC ENERGY COMMISSION: (note a)</b>		
Dixy Lee Ray	Feb. 1973	Jan. 1975
James R. Schlesinger	Aug. 1971	Feb. 1973
Glenn T. Seaborg	Mar. 1961	Aug. 1971
<b>SECRETARY OF COMMERCE:</b>		
Rogers C. B. Morton	May 1975	Present
John K. Tabor (acting)	Mar. 1975	May 1975
Frederick B. Dent	Feb. 1973	Mar. 1975
Peter G. Peterson	Feb. 1972	Feb. 1973
Maurice H. Stans	Jan. 1969	Feb. 1972
<b>SECRETARY OF DEFENSE:</b>		
James R. Schlesinger	July 1973	Present
William P. Clements, Jr. (acting)	Apr. 1973	July 1973
Elliot L. Richardson	Jan. 1973	Apr. 1973
Melvin R. Laird	Jan. 1969	Jan. 1973
<b>SECRETARY OF HEALTH, EDUCATION, AND WELFARE:</b>		
Caspar W. Weinberger	Feb. 1973	Present
Frank C. Carlucci (acting)	Jan. 1973	Feb. 1973
Elliot L. Richardson	June 1970	Jan. 1973
<b>SECRETARY OF THE INTERIOR:</b>		
Stanley K. Hathaway	June 1975	Present
Kent Frizzell (acting)	May 1975	June 1975
Rogers C. B. Morton	Jan. 1971	May 1975
<b>SECRETARY OF STATE:</b>		
Henry A. Kissinger	Sept. 1973	Present
William P. Rogers	Jan. 1969	Sept. 1973
<b>SECRETARY OF TRANSPORTATION:</b>		
William T. Coleman, Jr.	Mar. 1975	Present
John W. Barnum (acting)	Feb. 1975	Mar. 1975
Claude S. Brinegar	Feb. 1973	Feb. 1975
John A. Volpe	Jan. 1969	Feb. 1973

## APPENDIX XIII

## APPENDIX XIII

	<u>Tenure of office</u>	
	<u>From</u>	<u>To</u>
ADMINISTRATOR OF THE ENVIRONMENTAL PROTECTION AGENCY:		
Russell L. Train	Sept. 1973	Present
John R. Quarles, Jr. (acting)	Aug. 1973	Sept. 1973
Robert W. Fri (acting)	Apr. 1973	Aug. 1973
William D. Ruckelshaus	Dec. 1970	Apr. 1973
ADMINISTRATOR OF THE NATIONAL AERONAUTICS AND SPACE ADMINISTRATION:		
James C. Fletcher	Apr. 1971	Present
DIRECTOR OF THE NATIONAL SCIENCE FOUNDATION:		
H. Guyford Stever	Feb. 1972	Present
Raymond L. Bisplinghoff (acting)	Jan. 1972	Feb. 1972
William D. McElroy	July 1969	Jan. 1972
THE SECRETARY OF THE SMITHSONIAN INSTITUTION:		
S. Dillon Ripley	Feb. 1964	Present

a/ The Energy Reorganization Act of 1974 (Public Law 93-438) discontinued AEC and created the Nuclear Regulatory Commission and the Energy Research and Development Administration, effective January 19, 1975. Robert C. Seamans, Jr., was appointed Administrator of the Energy Research and Development Administration, which will be responsible for the marine-related activities formerly conducted by AEC.