

Feb. 2026

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Liza Talbot
Archivist

Interagency
1968
Marine

Sciences

for
1968

**Marine
Sciences**

1968

Don

MINUTES

Marine Sciences Meeting

November 8

1. Improve Effectiveness of the War on Hunger by Food from the Sea.

(a) (b) Extend AID fish protein concentrate, and program of Interior Bureau of Commercial Fisheries. Califano asks for 5-year program to emphasize this. Hornig and Wenk agree it is feasible. Wenk sees need to expand marketing studies. Gaud - Start with a few countries and commercial firms. (c) White House Conference: negative.

2. Expand Sea Grant Program. No comment. Not a White House project.

3. Oceanographic Data. Should be done, but not through White House.

4. Preserve Quality of the Coastal Zone. Discussion of regional estuarine commissions, like river commissions. Perhaps use the Chesapeake as a model. Further work to be done on this by Transportation, and Interior. Three States have set up offices for marine science activities -- Florida, California, and Washington.

5. Mapping. No discussion.

6a. Ocean Observation from Space: two problems -- getting something out of present activity, and looking for new uses for space. A question of security, which may make public announcement difficult.

6b. World Wide Buy Network. Coast Guard is the program manager.

7. Accelerate Deep Ocean technology. Navy reports this is highly classified.

8. Accelerate Subpolar ocean research: need the ship which Congress refused last year. Should study the Arctic region.

9a. International Decade of Exploration. This is now in Goldberg's hands, although room for Presidential initiative later. State Department wants U. N. initiative. JAC will talk to Rostow and Goldberg.

9b. Regional International Cooperation. Not discussed.

10. Safety at Sea. Larry Levinson will supervise these "consumer" items.

11. Basic research. Not discussed.

12. Harbor Redevelopment. Transportation, HUD, Army study.

In general, Califano is interested in the FPC program; the safety-oriented items (6a, 6b, 10 -- weather, safety, navigation); the international decade, and the harbor problem.

cc: Don LeGates

August 17, 1967

EYES ONLY

MEMORANDUM FOR Dr. Edward Wentk, Jr.
and
Mr. William D. Carey

It would be very helpful if you would submit to us by October 18, 1967, a detailed outline of the proposed 1968 program in marine resources and engineering development. (Attached are a series of proposals which you may want to consider in developing the program). The outline should contain your recommendations for legislative, administrative and budgetary action.

The outline should contain the following information:

1. A short statement of the legislative or administrative proposal.
2. A detailed statement of the problem giving rise to the proposal.
3. A statement of related on-going programs, including costs, the people whom the programs reach, and the inadequacies of the present programs.
4. A discussion of the proposal, with emphasis upon the pros and cons and the costs and benefits of implementation. (Of great importance here is a detailed statement of the arguments and factual material which can be advanced in support of the proposal.)
5. A statement of the alternative proposals which were considered and the reasons for rejection thereof.

In addition, it would be helpful if you would prepare a summary of the report (not exceeding 10 pages) which contains the following information for each major administrative or legislative proposal:

- Salient features of the proposal.
- Brief statement of benefits of implementation.
- Brief statement of costs of implementation.

Ten copies of the report should be submitted to me and five copies to the Director of the Budget.

Joseph A. Collings, Jr.
Special Assistant to the President

STANDARD

**BUREAU OF THE BUDGET RESPONSE TO PROPOSED
1968 PROGRAM IN MARINE RESOURCES AND ENGINEERING DEVELOPMENT**

1. Improve the Effectiveness of the War on Hunger by Food-from-the-Sea.

This proposal consists of three elements: (a) an extension of the Agency for International Development's program in fish protein concentrate (FPC) and food-from-the-sea; (b) a major expansion of the program of the Bureau of Commercial Fisheries; and (c) the convening of a White House Conference on Food-from-the-Sea. This initiative is designed to serve two major objectives: alleviation of world hunger, especially protein deficiency, through the increased use of fish and fish protein concentrate in the less developed countries, and revitalization of the domestic U. S. fishing industry.

The AID program has taken steps to determine three countries in which improvement of the indigenous fishing industry appears promising, to study the problems associated with the marketing of FPC on a commercially viable basis, and to actually fortify some foods with FPC. We support the AID program in general. However, we think it is especially important that the AID program be oriented toward solution of the difficult marketing problems. Furthermore, while FPC is important as a partial solution to the world food problem, at present there is no clear quantitative picture of the contribution which fish and FPC can make to the solution of the problem. This information is required before rapid expansion of the program is warranted.

The proposed program of the Bureau of Commercial Fisheries is oriented both toward alleviation of world hunger and revitalization of the U.S. fishing industry. The additional \$20 million requested for the FY 1969 budget (above Interior's ceiling) would be allocated between these two objectives; however, the proposed program involves a simultaneous start on all of the possible approaches to a solution, e.g. research, marketing, and equipment development. As such the program foregoes all the possible benefits of a sequenced time-phased approach which, for example, might use the feedback on research or marketing to influence the character of the equipment developed.

Also, the fish protein concentrate program does not have the benefit of either the first production facility or of needed market analysis to guide further program expansion. The revitalization of the U.S. fishing industry is an objective we support, but the proposed program shows little evidence that this problem has been clearly addressed. And it is simply too early to engage in a rapid expansion of aquatic husbandry (aquaculture).

In summary, we doubt that this massive assault would give us, at this time, results (per dollar expended) worth the greatly increased costs. We also doubt that results are needed this soon--particularly since Interior's Bureau of Commercial Fish is expected to initiate operation of a FPC plant within the next 12-14 months, and the program level is expected to increase to \$2.0M in FY 1969 (from \$1.5M in FY 1968). We favor continuation of this approach.

The idea of a White House Conference on Food-from-the-Sea has not been widely examined within the Government, has many disadvantages, and is certainly premature. A conference of this sort is ill-suited to do the necessary work of defining the problems inherent in revitalizing the U. S. fishing industry. Until much more preliminary work has been done, such a conference can only be regarded as a misallocation of time, man, and dollars.

2. Expand the Sea Grant Program.

This proposal would extend the Sea Grant legislation (a new initiative last year) and expand it from a funding level of \$4 million for FY 1968 to \$15 million for FY 1969. Legislation to extend the program two years has already been cleared by the Bureau. The National Science Foundation is just now beginning to make grants under the program. Therefore, experience is not available on which to evaluate the program. Much of the expressed interest in the program can be attributed to a "bandwagon" effect, and any rapid expansion carries the likelihood of inefficient utilization of resources. We are opposed to the contemplated rapid expansion, both on its merits, and on the relative priority this program ought to have with other programs of the National Science Foundation.

3. Strengthen Oceanographic Data Management.

The required investment of Federal resources in an oceanographic data system will be clarified by the Council contract with Systems Development Corporation. In the meantime, certain interim steps can be taken to upgrade and enhance the quality of the National Oceanographic Data Center. The NODC Advisory Board, composed of representatives of the funding agencies, approved a budget of \$1,735,000 for FY 1969 in March 1967. Subsequent to the arrival of a new Director, they are now considering an additional \$630,000, which would mean a budget of \$2,365,000, or an amount of \$819,200 above the FY 1968 base. Depending on the agencies' ability to absorb this amount, we support the upgrading at the NODC.

4. Preserve the Quality of the Coastal Zone.

This proposal consists primarily of on-going agency programs. This is true of the Federal Water Pollution Control Administration's estuary study, the Chesapeake Bay research program of the Corps of Engineers, and the Coast Guard research on oil pollution. In general we support these programs and are reviewing them within the normal context of agency budget reviews.

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The amount of \$7,250,000 exceeds by \$200,000 the earlier figures supplied us by the Council. The \$800,000 proposed for a planning staff for the Department of Interior is above ceiling. The purpose of such a planning staff is not clear and we recommend against it.

As serious as our estuarine problems may be, general legislation is probably less desirable at this time than specific legislation directed to the particular problems of a given geographical area. Furthermore, we do not support the creation of another Federal grant-in-aid program and a new set of regional commissions before other alternatives have been fully explored. One possible alternative would be the addition of estuarine problems to the scope of existing regional mechanisms. Consequently, we recommend against such legislation and against the allocation of funds for regional commissions.

5. Intensify Mapping of the Continental Shelf for Oil, Gas, and Minerals.

This proposal would compress the time frame for mapping the Continental Shelf from one of 25 to 30 years at the present scale of effort to one of 5 years duration. We are, in general, sympathetic to the thrust of this objective but regard the proposed program as too ambitious. The recommendation is for \$3,700,000 above the FY 1968 base, only \$1,900,000 of which is within agency budget targets. We believe that a more efficient utilization of existing resources could result from some resolution of the jurisdictional quarrel between the Geological Survey of Interior and the Coast and Geodetic Survey of Commerce.

6a. Initiate a Program of Ocean Observations from Space.

Experiments to establish the feasibility of high altitude observation of the oceans are still in the feasibility stage. Aircraft have been used to date, and experiments on satellites are just about to begin.

In the future, a substantial investment will be made for the equipment and instrumentation required to study the oceans. This investment will include a "mix" of ships, manned buoys, unmanned buoys, aircraft, and satellites.

All agency programs directed toward the use of satellites for oceanographic purposes are being carefully reviewed. A large investment of funds in this area, which is conceivable in future years, is unattractive now.

We do not believe that any emphasis of spacecraft oceanography ought to be made while major scientific and technical issues remain unresolved.

4.

6b. Initiate a Demonstration Phase of a World-Wide Buoy Network.

Unmanned buoy networks for purposes of studying the oceans appear feasible. Two factors caution against the rapid acquisition of a major buoy network. First, we do not yet know how a buoy system should be integrated into a comprehensive oceanographic data acquisition system, and it is not likely that we will know this for some months to come. Second, potential users of oceanographic data acquired from buoys are seldom able to project their data requirements more than five years into the future, thus suggesting that technological investment ought to proceed in an evolutionary fashion comparable to the development of requirements.

On this basis, we support the Coast Guard program for the development of buoy components and sub-systems as a prudent investment decision with respect to the future. We are now considering the level of \$6 million proposed for this program for FY 1969 by the Coastguard.

7. Accelerate Capability for Search and Recovery of Objects in the Deep Ocean.

This proposal refers to a specific line item in the Navy budget-- Deep Ocean Technology. The Navy submission for FY 1969 for this program is \$8 million, which is within ceiling. Due to severe budgetary constraints within the Department of Defense, it is doubtful that this program will be funded at any higher level. While more work might be desirable, it is not critical in FY 1969.

8. Accelerate Subpolar Arctic Research.

The question of relative balance between research in the Arctic and Antarctic is important. The relatively large research effort in the Antarctic results in part from the need to maintain a U. S. presence and competition with other nations (USSR). It may be possible to funnel more NSF funds into the Arctic within its 1969 target. By using NSF in lieu of the Navy, we leave open an option to make the program an international cooperative venture.

The House-Senate Conference Committee did not approve FY 1968 funds for the Coast Guard vessel for the International Ice Patrol. The inclusion of this vessel in the FY 1969 budget request is now under review.

9a. Inaugurate an International Decade of Exploration.

The introduction into the United Nations' General Assembly by the Government of Malta of a resolution to internationalize the ocean bottom has given great impetus to this proposal. The major thrust of the efforts of the U. S. delegation, however, is to seek establishment of a "Committee on the Oceans" to which the Maltese proposal and similar proposals could be referred. Only if it is thought absolutely necessary will the delegation discuss an International Decade of Exploration.

There is at present a difference of opinion over the scope of such a decade. Some argue that it should be restricted to the mineral resources of the ocean bottom. Others argue that it should concern the entire resources, living and non-living, of the oceans. The immediate political response to the Maltese proposal focuses attention more narrowly on the ocean bottom, so the question of scope is constrained for the moment by this fact.

There is yet no clear idea of the U. S. commitment such a decade would entail. A clearer idea of the required resources will be available about March 1968. We recommend that no public announcement of an International Decade be made before the potential resource implications are understood. Further, we recommend that the Department of Commerce assume initial planning costs for this program.

9b. International Cooperation on a Regional Basis.

This proposal sets forth various possible marine science projects which would be responsive to the Latin American summit meeting at Punta del Este this past spring. These projects will be considered within the context of the Regional Scientific and Technological Development Program. The figure of \$5 million proposed for marine science is grossly out of proportion to the overall amount being considered for the scientific and technological program.

10. Improve Safety of Life and Property at Sea.

(a) Improve world-wide navigation capabilities. This consists of an on-going study jointly conducted by the Coast Guard and the Federal Aviation Agency. We support this effort.

(b) Continental Shelf safety. Authorizing legislation is required for this initiative. We recommend the introduction of such legislation in the next session of Congress, but that a request for funds be deferred until FY 1970.

(c) Safety of life and property within the sea. Authorizing legislation is required for this initiative. We recommend the introduction of such legislation in the next session of Congress, but that a request for funds be deferred until FY 1970.

(d) Hazardous cargoes. This consists of an on-going Interior/Transportation study which grew out of the Torrey Canyon incident. We support this effort.

11. Stabilize the Support for Basic Research.

We support the maintenance and enhancement of the Nation's basic research capability in oceanography. Priorities in oceanographic research, however, must be weighed in the context of the overall agency allocations for scientific research. The FY 1969 budgets for the Office of Naval Research and the National Science Foundation include approximately \$5 million that is within ceilings.

12. Begin Redevelopment of the Nation's Harbors.

Harbor development in the United States has been characterized by a reasonably clear division of responsibility: the Federal Government has been heavily involved in the dredging of harbors, while local port authorities have had almost exclusive jurisdiction over the development of terminal facilities. Proposals which would modify this arrangement require careful and thoughtful attention.

This particular proposal has two parts. We support the Maritime Administration's study of port facilities of the future, and believe that there should be close coordination between MARAD and the Department of Transportation on port development requirements because of the impact of such requirements on other modes of transportation. We support the development by the Corps of Engineers of a detailed proposal for a multi-year study of regional ports on which the Administration could determine the need for legislation.

13. Systematize Ocean Engineering with Non-military Applications.

(a) Establish a national instrumentation facility. This proposal actually suggests a study to be conducted in FY 1969. There is no agency identified as the sponsor of this study, and we recommend deferral until FY 1970.

(b) Long-endurance submersible and non-military undersea technology. Technical opinion is divided on the need for a non-nuclear submersible, and on the need for a long-endurance submersible. One school of informed opinion thinks that emphasis on non-nuclear power sources is the appropriate course to take. There is at present no agency identified as the sponsor of this program. Given the division of technical opinion, the lack of an agency sponsor, and the high costs of this project, we recommend that this be rejected.

(c) Frequency allocation for ocean communications. We recommend that any study of this problem be limited strictly to consideration of the problem of acoustic frequencies.

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14. Several of the proposals in the list originally supplied by Mr. Califano on August 17 were not considered by the Council. Our comments on this set of proposals follow:

(a) Negotiate treaty on the use of the seas paralleling those on the use of outer space. This is a vague proposal to which we are unable to respond in its present form. The Department of State is giving extensive consideration to the legal problems involved in treaties needed and desirable within the next few years.

(b) Establish a program of government incentives to encourage the development of ocean-oriented industries. The Council currently has a contract which addresses this general problem. Presumably, the results of this study will lead to specific proposals to which we can respond at some later date.

(c) Establish an administrative procedure to facilitate contributory funding for marine science projects. We see little merit for such procedure apart from a specific project which can be justified on its merits.

(d) Establish a cooperative program for international sharing of ocean technology. This proposal was quite vague as originally stated. Further, the substance has been picked up in more explicit form in proposals discussed above. Therefore, this proposal, as such, should be dropped.

(e) Establish a centralized underwater biomedical research and development center. The Navy has a unique capability of long-standing in this area, initially responsive to the POLARIS program and now responsive to the saturation diving associated with the Man-in-the-Sea program. Prudent development of this capability is all that is warranted at the present time.

(f) Provide the International Atomic Energy Agency with funds for desalination research. The total IAEA budget is \$10-12 million. The AEC, by contrast, has \$3-4 million in desalination research in addition to its major West Coast project. Funds to IAEA would only be of marginal value. Moreover, if the non-proliferation treaty is signed within the next year, it will be necessary for the IAEA to marshal its resources to deal with increased responsibilities in inspection.

(g) Encourage greater participation by the states in the development of marine resources. This proposal is entirely too vague in its present form to permit response at this time.

TF Report



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**EXECUTIVE OFFICE OF THE PRESIDENT
NATIONAL COUNCIL ON MARINE RESOURCES
AND ENGINEERING DEVELOPMENT**

WASHINGTON 20500

EXECUTIVE SECRETARY

October 18, 1967

MEMORANDUM

FOR: Mr. Joseph Califano
FROM: Edward Wenk, Jr.
SUBJECT: 1968 Program in Marine Sciences

This memorandum is an interim response to your August 17 request for analysis of a list of possible new initiatives in marine sciences for calendar year 1968.

These have been slightly recast into thirteen major topics. The first nine have been correlated with new initiatives that the President outlined last year for which significant changes in existing program content, funding levels or management may be warranted. Four require entirely new legislation or program development.

The merits of these possible initiatives have been reviewed by seven panels of consultants that included 40 leaders from oil, fishing and shipping industries, scientists, economists, engineers, lawyers, and educators. All panel recommendations were evaluated by a "Master Panel" that included:

Dr. Howard A. Wilcox (Chairman)
912 Moreno Road
Santa Barbara, California

Dr. F. Gilman Blake
Senior Research Scientist
Chevron Research Company
La Habra, California

Dr. Douglas Brooks
President
Travelers Research Center
Hartford, Connecticut

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Dr. Harvey Brooks
Dean, Division of Engineering and Applied Physics
Harvard University
Cambridge, Massachusetts

Dr. W. M. Chapman
Director, Division of Resources
Van Camp Sea Food Division
Ralston Purina Company
San Diego, California

Dr. James Crutchfield
Professor of Resource Economics
University of Washington
Seattle, Washington

Dr. Robert G. Fleagle
Chairman, Department of Atmospheric Sciences
University of Washington
Seattle, Washington

Dr. Harry Hess
Chairman, Department of Geology
Princeton University
Princeton, New Jersey

Dr. Alfred Keil
Head, Department of Naval Architecture and Marine Engineering
Massachusetts Institute of Technology
Cambridge, Massachusetts

Dr. H. Burr Steinbach
Chairman, Department of Zoology
University of Chicago
Chicago, Illinois

The consultant panels were unanimous in supporting these programs.
All have in common:

1. Clear contributions to a major national goal, not a marine goal;
2. Early benefits of relatively modest cost by mobilizing existing capabilities, on the shelf technological state-of-the-art, and present management structures.

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These propositions are now being studied by Council members themselves and their judgment will become known about November 15 when they evaluate the projected Government-wide marine science program for FY 1969. A final report reflecting further refinement of these initiatives and their budgetary status will be transmitted to you immediately thereafter.

Attachments

1. Summary of initiatives
2. Discussion of each initiative

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SUMMARY OF INITIATIVES

<u>Title of Initiative</u>	<u>Benefits</u>	<u>FY 69 Increment</u>
1. Improve Effectiveness of the War on Hunger by Food-from-the-Sea	Contributes to alleviation of famine and provides opportunity for U.S. leadership to assist developing nations.	\$ 10 - 20 Million
2. Expand Sea Grant Program	Strengthen applied research, training and information dissemination pertinent to exploitation of ocean resources; would provide more productive and larger numbers of personnel.	\$ 11 Million
3. Strengthen Oceanographic Data Management	Speed the flow of information to Federal, State, industrial, and academic users of marine data.	\$.8 Million
4. Preserve Quality of the Coastal Zone	The rational utilization of the coastal zone will contribute significantly to our material well-being because of the large amount of economic activity conducted in this area. Also the quality of living for the rapidly increasing population who live along our coasts and for the millions who rely on the coastal zone for recreation will be improved.	\$ 7.25 Million

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<u>Title of Initiative</u>	<u>Benefits</u>	<u>FY 69 Increment</u>
5. Intensify Mapping of the Continental Shelf for Oil, Gas, and Minerals	This mapping will contribute to recovery of petroleum and mineral resources, and also intensified fishing, marine transportation, and recreational boating.	\$ 3.7 Million
6a. Initiate Program of Ocean Observations from Space	Ocean observation from space can cover regions not easily accessible by other sensors. Ultimately, this could assist in increasing fish harvests because of improved location (not only of fish but of the upwelling nutrient areas). Improved ship routing and greater protection of life and property will be facilitated.	\$ 1.4 Million
6b. Initiate Demonstration Phase of World Wide Buoy Network	Such a buoy program would contribute to better understanding of the oceans, and its products, measure ocean surface and sub-surface parameters, and could also be connected to a meteorological chain. It is probably the most cost effective system for such detailed observations.	\$ 7.45 Million

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<u>Title of Initiative</u>	<u>Benefits</u>	<u>FY 69 Increment</u>
7. Accelerate Capability for Search and Recovery of Objects in Deep Ocean	Primarily to assist our national security efforts by recovery of such things as lost ordnance, but will provide a valuable spin off to the economy by the introduction of a new capability to work in the deep ocean.	\$ 21.6 Million
8. Accelerate Subpolar Ocean Research	A modernized ship to work on the International Ice Patrol and the ability to contribute considerably to oceanographic research.	\$ 12 Million (However it is hoped that the Congress will fund this ship in fiscal year 1968)
9a. Inaugurate International Decade Exploration	Economic development through identification and development of new resources and the ability to assess the value of those resources. In addition many political benefits would flow from the cooperation with other countries and provide a sounder basis for developing legal arrangements governing resource development.	\$.2 Million

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<u>Title of Initiative</u>	<u>Benefits</u>	<u>FY 69 Increment</u>
9b. International Cooperation on a • Regional Basis	Cooperative programs such as those stemming from Punte del Este can encourage regional stability, combat hunger, and strengthen ties with U.S.	\$ 5.0 Million
10. Improve Safety of Life and Property at Sea	Improved navigation to promote commerce and transportation; safety programs for prevention of costly accidents involving lives, multimillion dollar ships, and offshore oil and coastal installations; the safety of non-military activities such as rescue of personnel and insurance of safety of submersibles; prevention or mitigation of the damage done by hazardous cargoes on ships offshore.	\$.7 Million
11. Stabilized Support for Basic Research	Continued leadership in science to open new options and increase professional talent in the marine field.	\$ 7 Million (above FY 69 budget plans)

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Title of Initiative

Benefits

FY 69 Increment

12. Begin Redevelopment of the Nation's Harbors

Greater efficiency in transport systems and the upgrading of the quality of living in port cities.

\$.7 Million

13. Systematize Ocean Engineering with Nonmilitary Applications

Provision of standardization and calibrating facility for the increasing national need; and cost reduction; facilitate general purpose technology, exploration and research, and development of resources by development of a non-nuclear submersible of long endurance; facilitate oceanographic research and exploration and safety of operations by frequency allocation and standardization for ocean communications.

\$ 8.0 Million

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1. Improve Effectiveness of War on Hunger By Food from the Sea

Premise: The growing disparity between world population and the supply of food, and the consequent threats of hunger and political instability are increasing. U.S. leadership could make a significant contribution to moderating these threats by accelerated a) development of inexpensive fish protein concentrate together with strengthened fish finding, fish catching, fish processing technologies and b) further development of world fisheries to meet some of the protein needs promptly, economically, and within the context of existing institutions. The strength and credibility of a U.S. effort depends in turn on rehabilitation of the domestic fishing industry. Such intensification would contribute to our national interests more broadly -- in terms of national security, increased communication with the less developed nations; maintenance of world leadership as a maritime power; backing as a party to world fisheries conventions; further implementation of our commitment to the war on hunger; domestic economic growth by assuring the U.S. fisheries a fair share of the world resources; economic benefits through reduction in imports; foster domestic political tranquility in meeting problems of other nations fishing off our shores.

Questions: What is the Federal role? What investments are required over the next five years and for what purpose? What is the minimum required the first year in order to have an impact in this area? What new programs or reprogramming is warranted in the Bureau of Commercial Fisheries? In AID? What other legislative or economic measures are necessary to advance the industry and can these be met?

Proposal: a) Continue and intensify activities of AID in implementing the FY 68 Food-from-the-Sea initiative in cooperation with Interior, State and HEW. The short term goals of the AID program include, but are not limited to, an effort to

- improve the fish catching, landing, and processing capabilities of three protein-deficient countries;
- develop markets for FPC in at least one protein-deficient country;
- establish a viable commercial FPC system in at least one protein-deficient country; and
- encourage other nations and private interests to establish commercial fishing industries wherever feasible.

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b) Strengthen domestic fisheries by four simultaneous technical phases together with efforts to remove undesirable legal and institutional constraints:

- Accelerated development of FPC;**
- Technical development of ships and gear;**
- Use of ocean science and technology to gain broad knowledge of living resources;**
- Aquatic husbandry and environmental control.**

- I. Accelerated Development of Fish Protein Concentrate (FPC) and Other Products**
 - A. Refinement of Present Solvent Extraction FPC Process**
 - B. Research and Development for Biological Process, Physical Process, or Combinations of the three FPC Processes**
 - C. Develop Unique and Specialized Processes and Products from Fishery Resources**
 - D. Market Development and Feasibility Studies for Products of (A) and (B)**
- II. Automation and Mechanization of Vessels and Gear**
 - A. Locating and Harvesting Techniques**
 - B. Fishing Vessel Design and Development**
 - C. Modern Fish Handling Aboard Vessels**
 - D. Fish Processing and Preservation Techniques**
 - E. Economics, Marketing, Storage and Transportation Practices**
- III. Develop More Knowledge About the Resource Through Ocean Science and Technology**
- IV. Aquatic Husbandry**
 - A. Development of Techniques for Control and Enhancement of Environment**
 - B. Management Through Release of Hatchery-Reared Stocks**
 - C. Pond Fish Culture for Marketable Products**

c) Convene a White House Conference on Food From the Sea to begin elimination of restrictive state fisheries legislation and to encourage U.S. food industry to move into this area and develop an industrial base.

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Past Efforts: No single solution to the world food problem is available. At present levels of effort none of the steps even taken in combination has been effective enough to solve the problem.

Although the Bureau of Commercial Fisheries has for many years been concerned with the development of the fishing industry, efforts to strengthen fishing technologies have been very limited to date. A significant step was taken last year with the acceleration of the FPC program.

This initiative has generated interest throughout the world and AID is currently conducting surveys of potential recipient countries. Discussions have been held with other countries with an FPC capability and the U.S. has undertaken the initiative to establish international standards for FPC.

Contribution to National Goals: The War on Hunger represents a major commitment of the U.S. to assist in making protein available to undernourished populations.

Cost: \$10-20 million additional in FY 1969; mostly in Department of Interior.

Benefits: This program provides opportunities for the U.S. to assume world leadership in an area of vital concern to half the world's population. The unused protein potential of the sea can contribute to alleviating famine and despair.

The program recognizes that fisheries can be developed as a source of needed animal protein rapidly, that fisheries are particularly important to many developing countries where protein starvation is critical, that fishery development will bolster the U.S. economy significantly, and that fisheries are important to national and foreign policy. The development of new fish catching technologies, scientific methods for investigating and culturing fish, and new processing techniques could raise the fishing industry from its present low ebb. It is consistent with this Nation's efforts to remain in the forefront as a maritime nation and could have a worthwhile impact on economic opportunities for U.S. industry.

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2. Expand Sea Grant Program

Premise: Accomplishments toward broad marine science goals depend upon a growing base of manpower, especially engineers and technicians, applied research capabilities and mechanisms for information transfer. The Sea Grant Program was enacted with that purpose.

Questions: Does this subvention continue to offer the best promise to meet the objective? At what rate should it grow in relation to needs and at what level should it plateau? What continuing policy guidance should the Council provide in carrying out its legislative responsibility?

Proposal: a) Amend the National Sea Grant College and Program Act of 1966 which expires at the end of Fiscal Year 1968.

b) Expand the program by selecting seven deserving centers of excellence to be designated as "Sea Grant Colleges" - with grants large enough to be effective rather than spread evenly over all applicants.

Past Efforts: NSF has established a new office, a set of procedures, and a review panel for the program. Initial proposal submissions from about 30 institutions have been received and are now being evaluated.

Contribution to National Goals: There is every reason to believe that the program as prosecuted will meet the needs clearly expressed in the Act. Good proposals from competent schools are being received. It was clearly the intent of the Act that a continuing program be carried forward vigorously, with opportunities for congressional review as authorization expires.

Costs: FY1969: \$15M (\$11M increase over FY1968)
Five year cost: \$100M, approximately.

Analysis: Response in terms of interest expressed by institutions and industry indicates genuine opportunity to strengthen research, training and information dissemination pertinent to exploitation of ocean resources. The long term benefits would accrue from the productivity of additional personnel trained through this program in carrying out the opportunities for more effective use of the seas. The alternative, to abandon the program before it has had an adequate test, might limit our future capacity in marine science and technology.

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3. Strengthen Oceanographic Data Management

Premise: Effectiveness of the entire marine science enterprise depends on flow of information that includes steps of acquisition, evaluation for accuracy, storage and retrieval. The present contract study under the Council secretariat should result in recommendations to upgrade the technology of data handling, and improve service to a variety of users.

Questions: What immediate steps are warranted in the interim to improve capabilities of the National Oceanographic Data Center so as to gain greater benefit from data already collected?

Proposal: a) Upgrade the National Oceanographic Data Center to strengthen governmental handling of marine sciences data to respond to requests for data promptly from all users - public and private. The proposed NODC program for FY1969 consists of five essential elements:

Development of in-house computer facilities

Liaison activities to improve quality and speed data flow to NODC

Study of the useful contribution which NODC data banks can make to on-going or projected programs, and selective reduction of backlog as found desirable by such study

Establishing new data categories

b) Require a clause in research contracts that investigators must release data one year after collection to data bank.

Past Efforts: The capabilities of the National Oceanographic Data Center, developed by multi-agency funding, have not advanced as rapidly as the data needs of the marine sciences community. Much data already collected is not centrally filed and thus not available to other users. The rate of growth of the funding for NODC has been significantly lower than for the National marine sciences program. In the face of lagging growth, the PSAC Panel on Oceanography noted in 1966: "services of NODC need upgrading very badly, and this will require a substantial increase in funding."

The data systems study (a FY1968 Initiative) is in progress and major advances in the handling of oceanographic data seem

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clearly achievable. Some improvements, particularly in NODC, are well defined now, and can be undertaken without waiting for the full scope of recommendations to be developed.

Contribution to National Goals: Strengthening NODC would speed the flow of information from producers to users of marine data, and thus enable more effective response to the needs of Federal, State, Industrial, and academic interests related to the marine environment.

Costs: An increment of \$840,000 in FY1969 over FY1968. Costs for FY1970 and beyond are indeterminate pending completion of the contract study by System Development Corporation.

Analysis: Greater accessibility of marine data through NODC would encourage greater utilization of existing data before new data collection programs were initiated.

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4. Preserve Quality of the Coastal Zone

Premise: In the coastal zone, where people and the oceans meet, many competing and conflicting demands on its use are arising as between shipping, fishing, recreation, waste disposal, minerals recovery, urban development. Some activities inadvertently degrade quality and the demand may lead to price inflation that will inhibit options as to future land use.

Questions: How will quality be preserved? Is information available to guide land-water use and other policy decisions? If not, what should be collected and by whom? What immediate steps should be taken to develop pilot studies of local regions or to confirm tentative research findings? Who has key responsibility for multi-use planning? Are mechanisms adequate now for inter-agency cooperation, for long-range planning, for cooperation with state and local authorities?

Proposal: Measures needed in order to use coastal zones effectively may be grouped broadly as information and analysis, action, and program management. Collection of basic information about the coastal zone, including the Estuary Study, should yield the beginning of a management information system to provide facts needed to make rational decisions about coastal zone activities. The collection of this basic information must be accompanied by analysis in light of sophisticated understanding of technological and social trends.

1) A long-term multi-agency plan of research on the Chesapeake Bay is proposed, broadening the FY1968 initiative centered on the Corps of Engineers hydraulic model of the Chesapeake. A comprehensive research facilities plan will be developed, concurrently with the design and beginning of construction of the physical model.

2) Action to protect the coastal zone is centered primarily in the Corps of Engineers authority to deny shoreline building permits and other use-permits if the construction or use would adversely affect the public interest. The Department of the Interior is called on to advise as to ecological and other effects of a proposed use, in advance of CoE action. This new function requires staff investigations both in the Department of the Interior and in the Corps of Engineers. For assistance to program management decisions, it is proposed that the Department of the Interior establish a small Program Analysis and Evaluation staff. In addition, the Committee on Multiple Use of the Coastal Zone should exercise a continuing function of recommendation and review.

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3) New legislation is proposed, modeled on River Basin Commissions, to establish regional authorities to deal with local estuarine problems, on a Federal grant-in-aid basis. This would provide explicit mechanism for Federal/State collaboration and head off every state going in a separate direction.

Past Efforts: In the information and analysis area, the Clean Water Restoration Act of 1966 authorized a comprehensive study by the Federal Water Pollution Control Administration of the effects of pollution in estuaries, including recommendations for a national program for their use, by November 1969.

Contribution to National Needs: The rational utilization of the coastal zone is significant to our material well-being, for large amounts of our economic activity are conducted in this area. It is probably even more crucial to our human development: to the quality of living, for the rapidly increasing population resident along our coasts and for the millions who rely on the coastal zone for recreation.

Costs: The cost of FY1969 activities to preserve quality of the coastal zone is \$7.25 million. The regional commission would require about \$1M.

Analysis: The Coastal Zones of the U. S., traditionally important as centers of industry, commerce, and foreign and domestic trade, and as a main line of our continental defense, are now the focus of increased demands for living space and recreation. These activities can be the source of great wealth and esthetic satisfaction. Activities undertaken in the coastal zones and adjacent water may so alter the quality of the environment as to make it inhospitable to other concurrent or future uses (without the expenditures of substantial funds and/or time). Moreover, claimants have often used coastal lands or waters without any consideration of future needs or opportunities. There has been little attempt to relate different developments to one another, or to consider adequately the long-term effects on the environment.

The new thrust of scientific attention to the coastal zone includes the National Estuarine Study and the Chesapeake Bay Model (together comprising over half the dollar amounts allocated to research in this area), both previously authorized in recognition of specific urgent problems. The new activities are designed to broaden and coordinate Federal fact-finding and research and relate it to present action responsibilities in the coastal zone. The resultant better understanding of coastal

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zone phenomena, and management-oriented analysis, should strengthen markedly the capacity of the Federal Government to develop with local interests effective mechanisms for using the space of the coastal zone in the most productive way. The cost of not moving forward in this way is likely to be the proliferation of slums or at best ugly and unproductive development along our shores and the pollution of waters destroying valuable shellfish production and irreplaceable recreational opportunities.

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**5. Intensify Mapping of the Continental Shelf
for Oil, Gas and Minerals**

Premise: Intensified world demand for fossil fuel and strategic minerals will accelerate the trend to exploit non-living resources on the continental shelf. Yet geological information as to distribution and density of these resources is limited. The technology for exploitation is evolving.

Questions: What is the Federal role toward accelerating development of these resources? What information is needed to guide policies on leasing of public lands? Are reconnaissance surveys of the bottom being accomplished at a reasonable pace, with adequate quality? If not, what additional steps are necessary over the next five years and what is minimum investment warranted this next year? By whom?

Proposal: Establish a Federal program with the involvement of industry, universities, and Federal agencies to complete a reconnaissance of the U. S. Continental shelves by 1973 with four major goals:

Production of bathymetric maps on a scale of
1:250,000 as a basis for all shelf engineering activity.

Completion of a geological and geophysical reconnaissance of the shelf and slopes,
primarily using charter ships.

Delineation of the seaward extension of state and
national boundaries.

Reduction of time and cost of shelf surveys through
automation.

Past Efforts: For many years the U. S. Coast and Geodetic Survey has been engaged in Continental Shelf mapping activities related principally to the preparation of nautical charts, until recently without the benefit of accurate navigational control. Emphasis has been placed on charting of shallow areas constituting possible hazards to safe navigation, rather than the outer continental shelf and slope. The Geological Survey, since 1963, has been conducting a geological and geophysical reconnaissance of the Atlantic continental shelf and this study is essentially complete.

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Similar studies of the Gulf, Pacific and Alaskan shelves and slopes are proceeding at a sub-optimum pace. At current levels mapping and geological/geophysical reconnaissance surveys of the U. S. and Alaskan shelves would not be completed for 30 years. Intensified surveys of the unexplored shelves are needed for location of the mineral resources of the shelves. Precise bathymetric mapping, geodetic benchmarks for jurisdictional boundaries and leases, and three-dimensional environmental analyses are required to guide industry in exploration and exploitation and to insure wise Federal management and conservation of these resources.

Contribution to National Goals: The continental shelf is becoming the arena of greater national activity: intensified fishing; recovery of petroleum and mineral resources; marine transportation; and recreational boating. Such activities can be enhanced by a more complete description of the continental shelf environment, such as the geological knowledge of foundation conditions and hazards for industrial installations and the identification of major target areas for mineral resources.

Costs: FY1969: \$3.7 million increase over 1968
Five Year: \$50 million.

Analysis: A successful approach to quantification of benefits prospectively to be derived from exploratory activity has not been found. Nonetheless, it is reasonable to assume that \$12 billion in annual economic activity on the Continental Shelf could increase by 10 percent, with a resultant favorable benefit return on the investment.

The long lead-time required for industry planning requires that this intensified mapping program be initiated now. A 20-30 year time span for completion at the current level of effort is clearly inconsistent with a national goal of more effective use of the sea.

Support: The petroleum industry is now getting behind this program.

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6a. Initiate Program of Ocean Observations from Space

Premise: A clear potential is emerging for spacecraft technology to contribute to our capabilities for study of the ocean in relation to a wide variety of uses -- through space sensors, photography and communication satellites. However, no systematic program has been developed to employ satellites already programmed for this purpose or to develop a specialized capability toward this end.

Questions: What long term steps could be taken to utilize our capabilities in space technology and to advance various marine science activities? How will observations from space be coordinated with measurements made from other platforms; i. e., ships and buoys? Are ground data reduction systems adequate? Are plans and the planning mechanisms adequate? What investments are warranted over the next five years, and what this year?

Proposal: 1) Utilize existing capabilities systematically with identification of new initiative:

The Environmental Services Administration should modify such spacecraft as the TIROS M and in conjunction with the NASA, the NIMBUS, etc., to permit installation of various sensors for measurement of ocean surface temperature, and, later on, other phenomena such as wave motion and sea state.

2) Establish planning group in NASA to assess applications for which ocean observation may be economically competitive will be conducted, based on the state-of-the-art, technical cost data, evaluation of experimental observations, together with results from a current contract study and with cost and performance data on other systems of observation.

3) Establish group to select out unclassified data from classified projects having oceanographic application.

4) Coordinate space based observations with those from buoys, ships, bottom sensors, etc.

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Contribution to National Goals: A well integrated space observation program, closely related with other marine measurement activities will utilize the U. S. orbital space capabilities to give oceanographers and meteorologists a powerful tool for assessing the behavior of the oceans and their interactions with the atmosphere on a global and continuous basis. It is expected that practical benefits will be achieved for geophysicists, marine activities near the shore and fishermen and conservationists who will have a much broader picture than heretofore possible of the phenomena that they are interested in--whether these be fresh and saline water mixing, fish schools or upwelling, etc.

Costs:

FY1969:

NASA \$900,000

Commerce 500,000

Navy (Support by classified projects)

Five Year Program: \$50M (estimated).

Analysis of Benefits: Space ocean observations on a broad synoptic and global basis in regions that are not easily accessible by other sensor platforms are the objective. Furthermore, spacecraft observations can supplement measurements taken with buoys, ships, aircraft and other platforms even in regions where there is already extensive coverage.

In order to observe global ocean and air/sea interaction relationships, large fleets of expensive aircraft, buoys and other sensor platforms would be needed whose initial cost and maintenance would considerably exceed the cost of instrumenting those satellites which are currently, under any circumstances, on the NASA launch schedule.

Such broad space observations, complemented by surface observations can yield further tangible benefits, as follows, by:

Increasing fish harvests, because of
improved location of fish
schools and nutrient areas;

Improving ship transportation by permitting
more rational routing and
by improving navigation and
charting; and

Yielding greater protection of life and property
on the high seas and the con-
tinental shelf and shore regions.

These benefits will accrue through a progressive space observation

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development program, which will result, by the early 70's, in instrumented manned and unmanned spacecraft, capable of observing, at once, several ocean and ocean-related phenomena; the further development of the TIROS M, NIMBUS, ATS and APOLLO APPLICATIONS satellites and concomitant sensors during the next 3 years will achieve this goal.

**6b. Initiate Demonstration Phase of
World-Wide Buoy Network**

Premise: The state-of-the-art for unmanned buoys is sufficiently advanced to consider a world-wide network by which time-series of data may be collected to serve a wide variety of requirements for environmental observations. Costs are high, however, in what might be a step toward "big science" in the oceans.

Questions: What initial steps are warranted to confirm the technical feasibility and the scientific merit through a demonstration? What is the minimum cost to advance this program? Who should have responsibility? How will this be coordinated with plans for a World Weather Watch System? With other marine data systems? What management structure is needed to service operational phase of a future network?

Proposal: a. Continue R&D of buoy instrumentation and of buoy configurations with a view to defining a limited number of buoy systems capable of serving wide user needs, based on technical and economic feasibility.

b. Study, design, and implementation of a program for a national management structure for an oceanographic buoy network with some lead agency establishment, including assignments for program formulation, operation, and logistic support.

c. Develop a cost-effective data handling and transmission and interrogation capability, via land-based stations and satellite links.

d. Establish pilot operation of test arrays of buoys on predetermined grids with, say, 100 mile spacing and instrumented to observe a number of parameters related to the ambient atmosphere and to the oceans. Pilot tests would be designed to test critically the performance

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and costs of buoy observation, as a basis for decisions on feasibility and design of full scale program.

Past Efforts: Almost every agency in the U. S. Government which has even a remote connection with ocean activities has planned at various times some sort of buoy program. A few research buoys have been built, such as the Monster buoy (and others) and the ESSA has a small program underway. Various oceanographers have used buoys for discrete small scale experiments.

A preliminary technical feasibility study has just been completed under Coast Guard auspices, acting on behalf of many Federal agencies. The study results indicate direction for next step.

Contribution to National Goals: There is general agreement by the oceanographic community that a surer understanding of the oceans is required both for research scientists and users of ocean products. Buoy arrays offer promise of effectively providing the ocean observations to yield such understanding. Such buoys may be the only measurement platforms that could measure ocean surface and sub-surface phenomena on a regular and detailed basis, within a practical cost.

This would be the first demonstration of feasibility of a world-wide network to be fostered in relation to World Weather Watch.

<u>Costs:</u>	FY1969:
	DOT \$6.0M
	Navy 1.3M
	Commerce .15M
	Five Year Cost: \$50M (estimated)
	Ten Year Costs may be \$500M.

The FY1968 period will be used to study and analyze those areas of engineering, user requirements, economics and management that will serve as a rational basis for a FY1969 program. About \$250,000 derived from the interested and participating agencies will be spent in order to develop this basis.

Analysis: A well-planned array of instrumented buoys is probably the only practical way of obtaining time series synoptic observations of oceanic parameters. Achievement of the long term objective of forecasting the ocean environment is dependent upon availability of such data.

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7. Accelerate Capability for Search and Recovery of Objects in Deep Ocean

Premise: National security requirements continue at high priority for search and recovery of objectives from the deep ocean. Our present capabilities are not presently adequate to meet these needs. The long search for the lost R. L. STEVENSON with several thousand tons of explosives again demonstrated the need for a more effective search technique and stand-by operational capability.

Questions: Are plans adequate? What research is needed: What is the cost of a minimum capability? What is the time frame of its development? What pay-off will such developments have for civilian applications?

Proposal:

1) Develop a broad spectrum of technologies, including studies, exploratory research and advanced development of prototypes, to provide the basis for evaluating technical feasibility and determining requirements for future undersea warfare systems. A one atmosphere sea floor test site and a deep submersible would be used as focal projects to develop and evaluate subsystems and technologies.

2) Develop an energy standby capability.

Contribution to National Goals: While these systems are directly related to national security, many of the technologies developed will support the economy by the introduction of a new capability to recover minerals from the deep ocean, will support studies of food in the sea and other major national objectives.

Costs:

<u>FY 67 and</u> <u>Prior</u>	<u>FY 68</u>	<u>FY 69</u>	<u>FY 70</u>
0	3.95	21.6	70.9

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8. Accelerate Subpolar Ocean Research

Premise: The significance of the Arctic to this Nation's long-range interest--military or economic--remains largely unstudied. Priorities have not been adequately examined vis-a-vis Antarctica. Research planning is meager.

Questions: What research is needed to enhance our understanding of that region? It is being conducted? Who should be responsible for this area of interest?

Proposal:

- 1) Expand capability to research. Last year the Council adopted the following initiative:

"A replacement Coast Guard ship, previously authorized for the International Ice Patrol, will be especially designed and constructed so that it can expand oceanographic research in high latitudes. Construction of the ship will begin in fiscal year 1968 at a cost of \$12 million."

It is presently uncertain whether Congress will appropriate the necessary funds for implementation of this initiative in FY 1968.

- 2) If not, consideration should be given to this program in FY 1969. The Navy should urgently study the military importance of the Arctic region plus its related technological and operational program.

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9. Inaugurate International Decade of Exploration

Premise: The international character of the world oceans, their size, their interest to many nations, and their present status free of national sovereignty suggest that any concerted effort to increase understanding of the sea be strongly developed by international cooperation. Such studies should be especially focused on gaining knowledge relevant to exploitation of ocean resources so as to achieve joint goals of accelerating exploitation while minimizing conflicts. U.S. leadership in this area is called for by PL 89-545, and reflected to a degree in our present initiatives.

Questions: What additional initiatives are warranted in view of increasing national and international concern about ownership of ocean resources, the Malta proposal before the U.N.? Could otherwise disparate expeditions, studies, and regional activities be cast more effectively in the framework of "Decade of Exploration?" Should this interest be extended beyond science of the oceans to embrace technology, resource exploration? If so, under what planning body should this be conducted -- domestic and internationally? What are the expected costs? What should the U.S. do immediately, and at what cost? Would the geo-political qualities of the ocean suggest studies mobilized on a regional basis and what foreign policy considerations guide these choices?

Issue: Our limited knowledge of the distribution and extent of ocean resources inhibits their development and use. Some of these unused resources would probably become commercially attractive with a better understanding of their distribution. Also, increasing costs of land sources of certain resources will probably increase the attractiveness of ocean sources. Our lack of knowledge of ocean resources also inhibits sound policy decisions, domestically and internationally, affecting our military, commercial, scientific, and political interests.

Proposal: The U. S. should propose the initiation of a UN Decade of Ocean Exploration, encouraging all nations to (a) participate, (b) coordinate national and multinational exploration activities within the framework of a decade, and (c) make results widely available. Also the U.S. should establish a planning staff in FY 1969 to develop a sound program for U.S. participation in the Decade. Program plans for U.S. participation would be formulated within the context of the

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international interest in the proposal. While relevant on-going agency programs would be folded into the Decade, additional programs would also be initiated to assist in accomplishing specific objectives of the Decade.

U. S. participation would be of three kinds:

- 1) direct involvement of U.S. ships and scientists;
- 2) making available data from U. S. space and buoy program
- 3) granting aid to assist other nations by turning over older ships and by assisting to develop regional laboratories.

The Decade might include the following types of objectives in the exploration of living resources:

- delineation of the migration and movement patterns of major commercial fish stocks;
- assessment of fish stock size in selected marine areas;
- gross fishery exploration of currently unexploited areas;
- acquisition of adequate near coastal data relating fish distribution to environmental factors to provide the basis for providing fish abundance prediction services.

With regard to non-living resources objectives might include:

- preparation and interpretation of small-scale geologic, magnetic, and gravity maps (1:1,000,000) of the Continental Shelf and Slope to identify broad areas favorable for locating mineral deposits;
- preparation and interpretation of more detailed maps (1:250,000 and 1:62,500) of selected target areas of potential mineral deposits;
- preparation of topographic maps of selected areas of the deep ocean floor;
- gross coring and drilling surveys of the continental margin and deep ocean floor in selected areas; and
- delineation and evaluation, to the degree necessary to motivate industry, of marine mineral resources.

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Past Efforts: The National Academy of Sciences recommended a program of ocean-wide surveys as early as 1959, and many agencies have conducted limited programs contributing to ocean survey goals. A number of limited international surveys are also in progress and several more will soon be initiated.

. Contribution to National Goals: A successful Decade resulting from U. S. initiatives could contribute to the following goals:

- accelerated development of marine resources;
- expansion of human knowledge of the marine environment;
- encouragement of private investment in ocean activities;
- enhancement of the role of the U. S. as a leader in marine resource development;
- improvement of capabilities to recover marine resources;
- coordinated utilization of the Nation's scientific and engineering resources to avoid duplication or waste; and
- increased international cooperation.

Costs: The U. S. contribution to a successful Decade during the 1970's could amount to several hundred million dollars and could involve development of a variety of new technologies. The actual U. S. commitment would depend upon the contributions of other nations and international organizations, U. S. priorities during the 1970s, and our changing estimates of the economic and political benefits to be derived from a Decade as the program evolves. A \$200,000 investment in a planning staff during FY 1969 would ensure that firm U. S. commitments for participation in a Decade would be commensurate with the anticipated benefits and would be programmed in the most efficient manner. Total U. S. expenditures from FY 1969 through FY 1973, which would be devoted largely to planning and limited initial surveys, could amount to \$50 million.

Benefits: Direct economic benefits could result from identification and development of new resources, and a successful Decade would greatly enhance the capability of the U. S. Government and industry to assess the economic payoff to be derived from additional investments in marine research and development. The political benefits from the new opportunities for international cooperation within the framework of a Decade would be substantial. Also, the resource assessments would provide a sound basis for the development of legal arrangements governing resource development.

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9b. International Cooperation on a Regional Basis

Issue: Marine science and technology offer many opportunities which are not being exploited for promoting regional cooperation which can strengthen scientific and economic capabilities and promote regional solidarity. The economies of many countries are closely linked with coastal development to support activities such as maritime trade, offshore oil exploitation, and fishing. However, in many regions the underdeveloped state of coastal facilities and the lack of capabilities to exploit marine resources have significantly impeded economic progress. With regard to developed areas, marine science and technology offer cooperative areas of mutual benefit at a time when sensitivities over the technological gap are causing problems.

Proposal: The U.S. should intensify its efforts to encourage and support regional cooperation in marine science and technology. The program should include a more deliberate effort to use many bilateral and multilateral channels for cooperation with the areas of interest including oceanographic research, fisheries, navigation, education, training, hydrographic surveys, harbor and port development, and environmental prediction. The initial thrust could be primarily directed to Latin American although regional programs would also be encouraged in Europe, Africa, and the Far East. Among the specific proposals for Latin America are:

- 1) OAS supported marine science symposium
- 2) Regional marine advisory groups
- 3) Development of the Platte River Basin
- 4) Marine science centers of excellence
- 5) U.S. support of research, education, and libraries
- 6) Cooperative Caribbean research activities

Past Efforts: Several agencies have supported regional marine programs for a number of years, primarily through multilateral assistance organizations. Additionally, U.N. agencies, NATO, several inter-American organizations, and several fishery commissions have been involved in sponsoring regional cooperative programs.

Contribution to National Goals: Successful cooperative programs can serve a variety of political and economic purposes contributing to U.S. foreign policy objectives such as encouragement of regional stability, combatting hunger, and strengthening ties between the regions and the U. S.

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Costs: Costs can be determined only as the programs develop internationally; however, it is reasonable to expect that the new financial requirements will be on the order of five million dollars in FY 1969, with the funds provided primarily by AID and NSF and by international organizations to which the U.S. contributes. In the case of Latin America, it is likely that funds for marine sciences will often be part of a larger package for regional programs aimed at broader areas of science and technology.

Benefits: The seas have served as bonds of commerce and culture and inherently offer a commonality of interests for regional cooperation. The benefits will be largely political, but there should also be tangible economic and scientific benefits as other nations strengthen their capabilities and become more active participants in marine science and technology developments.

Support: The President expressed at Punte del Este our preparedness to support regional marine science and technology programs in Latin America. The Committee on International Policy in Marine Sciences has developed specific programs to carry out the President's declaration. The Committee is now considering opportunities for regional cooperation in Europe.

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10. Improve Safety of Life and Property at Sea

Premise: With the increased interest, activity and investment in the oceans, problems are increasing of safety to life and property. Many of these problems are unprecedented as we move toward more super tankers, research submersibles, proliferation of offshore platforms, etc.

Questions: What preventative measures should be taken in advance of possible catastrophes? Should we develop a worldwide plan for navigation aids? What is its technical feasibility and what would it cost?

Should we attempt to regulate activities off our domestic shores, on and over the continental shelf, both with regard to zoning of hazardous activities and with regard to the standards for engineering structures? What first steps of research and development are warranted? Who should be responsible for research? For regulation?

Are developments in civilian use of submergence and other underwater systems now in need of regulation for licensing of operators, adequacy of engineering, operating procedures, etc.?

How should the hazards from ship cargo such as from a TORREY CANYON incident be reduced? Should emergency plans and capabilities be developed to cope with such disasters when they occur? What research and development is necessary to prepare the U.S. for preventing or dealing with such disasters? Who should be responsible? What will be needed to implement recommendations of the Transportation - Interior study?

10a. Improve World-wide Navigation Capabilities

Proposal: Develop a world-wide plan for navigation aids for civilian ships, including use of satellite and shore-based systems with efforts to make available to civilian interests military achievements expanded whenever possible.

Past Efforts: The Coast Guard and F.A.A. set up a task group soon after the Department of Transportation was formed. The Council at its July meeting directed the Department of Transportation to prepare such a plan. The criteria and methodology for plan generation should be well established in calendar 1967

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and implementation should then follow review. Well established liaison between DOD and Coast Guard/F.A.A. exists to facilitate flow of defense technology into civilian use.

Contribution to National Goals: This initiative will contribute to promoting commerce and transportation.

Cost: \$200,000 in FY 1969

Benefits: While advanced navigation will inevitably work its way into more general use, a long-range plan will insure that the progress is more expeditious and orderly. Also potential users of new systems will be able to plan for the future.

10b. Continental Shelf Safety

Issue: Technological advances are such that increased, extensive and varied activities will be conducted on the Continental Shelf in the next few years. These include mineral mining, fishing, transportation of commodities, recreational boating and scientific and industrial exploration. These various activities will generate conflicts in the use of the maritime environment with resultant hazard to life and property and loss of potential economic benefits. Many of the activities are beyond the purview of or are only indifferently covered by existing safety legislation.

Proposal: Initiation of a long-range and continuing program to minimize risks from shelf activities, commencing with new legislation. The objectives would include:

1. Establish safety and engineering standards on continental shelf structures and devices to promote reduction of loss of life and injury to personnel and property;
2. Preclude physical conflicts in use of the continental shelf maritime environment as it relates to such matters as cargo carriage by vessels and pipelines, fishing activities, recreational activities, fixed and mobile structures and devices, in both the surface and subsurface mode, to achieve maximum safety of life and property;

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3. Reduce or eliminate wrecks, debris, pollutants and litter on the continental shelf which constitutes a hazard to human life, other life forms, and property;

4. Promote the continuance of the leading position of the United States in the world community in matters relating to the continental shelf.

Past Efforts: While the Coast Guard, Corps of Engineers, and Interior have been concerned with the safety aspects of some shelf activities, there has not been a comprehensive safety program. The Outer Continental Shelf Lands Act is not, except incidentally, safety legislation, and by its terms is limited to artificial islands and fixed structures erected for the exploration, development, removal, and transportation of resources from the subsoil and seabed of the continental shelf.

Contribution to National Goals: This proposal will contribute to protection of life and property, and will be a strong, beneficial influence to economic growth of existing and new industry.

Cost: Cost for the first year (FY 1969) should amount to approximately \$200,000 and in subsequent years may be on the order to \$500,000 per year. These costs are very rough estimates. They are not included in the FY 69 budget of the Department of Transportation because statutory authorization is required.

Cost Benefits: Without this program, the hazard of a costly accident involving lives, multi-million dollar ships, offshore oil installations and coastal installations will grow each year. An effective program will reduce accident loss and insurance rates in amounts many times over the cost of administration.

10c. Safety of Life and Property Within the Sea

Issue: To insure that the growing non-military activities under the ocean are conducted safely, now and in the future, there is need for the development of an integrated system of regulation of activities within the seas, including inspection of vessels, licensing of operators, and development of the capability to rescue personnel and submersibles in distress.

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Proposal: A program to extend existing maritime safety programs to rapidly expanding activities under the surface. The program would include:

1. Technical Aspects

- a. Technical review and approval of designs of submersibles and fixed-submerged habitats
- b. Inspection during construction
- c. Qualification standards, certification and operator licensing

2. Casualty Investigation

3. Search and rescue for submersibles

4. Control of submersible operations where conditions warrant

5. International coordination of submerged activity. New legislation is required. A proposed bill has been submitted to the Bureau of the Budget.

Past Efforts: The Coast Guard has responsibility for maritime safety in the United States and by statute is charged with certification of vessels. Existing laws establish the size and type of operation where certification is required in the public interest. A "certificate" indicates the adequacy of the vessel, the waters for which operation is authorized, the minimum manning requirements, the major life-saving equipment to be carried, and the maximum number of passengers and the maximum number of persons which may be carried.

The U.S. Navy has recognized the need for control of design, construction and outfitting of civil submersibles used by Naval personnel or under contract to the Navy. Certification by the Coast Guard would assist U.S. Navy programs.

Contribution to National Goals: The proposal will serve the broad purposes of protecting life and property and facilitating exploitation of ocean resources at great depths.

Costs:

Five-year expenditures are estimated as follows:

1969	\$254,000
1970	\$254,000
1971	\$311,000
1972	\$357,000
1973	\$414,000

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Benefits: This proposal will ensure that the safety features of our ocean programs keep pace with the rapid advancement of underwater technology. It will thus contribute to our capability to operate in a new environment as we intensify our use of the sea and its resources.

10d. Hazardous Cargoes

Issue: The U.S. coast is becoming increasingly vulnerable to damage from incidents involving hazardous ship cargoes as maritime traffic increases and the sizes of cargoes increase. The TORREY CANYON incident emphasized the necessity to reevaluate policies, procedures, and programs, nationally and internationally, to prevent disasters involving oil and other potentially damaging cargoes and to mitigate damages should a disaster occur.

Proposal: A national effort directed toward hazardous cargoes would include:

- a. R and D programs to develop technologies which will assist in preventing accidents and mitigating damage in the event of accidents;
- b. Clear-cut agency responsibilities and legal authorities to enforce regulations designed to prevent accidents and react to emergencies;
- c. Disaster plans;
- d. Navigational requirements for ships operating near our coast;
- e. Vessel design criteria and operating procedures to prevent incidents;
- f. International agreements establishing ground rules beyond territorial waters and, in some instances within territorial waters.

Past Efforts: Several Government agencies have for some years directed attention to this problem, and the Intergovernmental

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Maritime Consultative Organization has accelerated its interest in hazardous cargoes during the past few months. The Interior-Transportation study identifies many problem areas and should provide the basis for new programs. Nevertheless, as cargoes become larger and as traffic increases, a thorough re-evaluation followed by an action program is in order.

Contribution to National Goals: The program would contribute to protection of health and property and would enhance commerce and transportation.

Cost: The Interior-Transportation study will recommend funding levels.

Benefits: The benefits from avoidance of destruction of property and marine life are difficult to quantify. The liability suits following the TORREY CANYON disaster total almost \$10 million, while 450 people were killed at Texas City after the explosion of a hazardous ship cargo. The benefits to business interests would be reflected in insurance rates and reduction of losses due to accidents or delays.

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11. Stabilize Support for Basic Research

Premise: A growing core of basic research and education is essential to the health and vigor of the entire marine sciences field. Yet funding is leveling off and may prevent effective use of new research ships and new techniques for study.

Questions: Is support for this activity adequate to meet growing needs? Should additional Federal agencies such as Interior and Commerce support such academically-related research? What steps could be taken to improve the stability of Federal funding and especially to streamline mechanisms for support of ship operations that are now so fragmented so as to facilitate effective use of facilities at minimum cost?

Issue: Healthy growth of the basic research base is necessary to ensure the continued viability of a rapidly expanding marine science program. Many significant investigations are currently being delayed due to inadequate funding levels for the past several years. Increased costs of ship operations are inhibiting expansion of research.

Proposal: Increase in support of academic research should be planned for FY 1969 with special means to support expensive ships and laboratories and aid university interdisciplinary programs. Funding through ONR and NSF should increase, and programs within Interior and Commerce to support basic research at academic institutions should be strengthened.

Past Efforts: ONR and NSF have supported most of the basic research program but the rate of growth has not kept pace with the growing cost of the operations. It has not been possible to bring newly developed technology to bear upon significant problems that could now be attacked. The activities of Interior and Commerce have been minimal.

Contribution to National Goals: Continued U.S. leadership in ocean science is essential if the oceans are to serve the broad national purposes set forth in P. L. 89-454.

Cost: FY 1969 cost would be \$7 M above budget plans.

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Benefits: New options for effective use of the sea will continue to appear only as fundamental knowledge increases. Proposed funding would permit re-establishment of the momentum that characterized U.S. oceanography in past years. An additional pay-off would be the increase in competent professional talent for employment in all phases of the marine science program.

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12. Begin Redevelopment of the Nation's Harbors

Premise: Current port facilities are becoming rapidly obsolete both because of their age and because of radical changes foreseen in transport technology through containerization and deep draft tankers. The economic efficiency of transport, linkage with other modes, and competitiveness of U.S. export industries depend in part on port problems especially since so high a fraction of cost is in cargo handling at the dock. Also, the waterfront is often the worst part of the city, the origin of slums, etc.

Questions: What steps should be taken for redevelopment of ports and related facilities? What marine sciences and technology data are necessary? Is planning now underway adequate and timely? Is there a need for a systems analysis on a regional or national basis in addition to planning studies? Of individual parts? What more should be done this year? Who should be responsible?

Proposal: A national policy and plan for cargo ports will be imperative within five years. The Corps of Engineers seeks Congressional authorization for a multi-year Regional Ports Study, directed to a policy for ports for the future. The study will include detailed analyses of trends in commodity movements and fleet composition; identification of implications, by region, of projected traffic movement and vessel size; analyses of facilities required to handle prospective traffic effectively; evaluation of alternative technological means for accommodating future fleets; and evaluation and recommendations for appropriate financial participation by non-Federal entities, including States, political subdivisions thereof, and other local interests.

The Maritime Administration should focus on the structure of ports of the future, including the alternative technologies and performance characteristics of feasible subsystems. Contract or in-house R&D will be directed to: Automated General Cargo Terminals, Container Terminals, Integrated Terminals, Terminals for Future Ship Designs; Integration of Barges, Ships, and Terminals; Systems Analysis of Inland Load Centers; Port Vehicular/Rail Traffic; Port Supervisory Development; Port Personnel Training; Mobile Emergency Port Facilities.

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Past Efforts: The Corps of Engineers has completed the initial work plan for a Study of Port Needs which will focus on the implications for regional port requirements. It will involve a number of other Departments, and part of the work will be carried out by contract.

The Maritime Administration has an ongoing program of research and development in containerized port facilities and related land transport systems. That program has now opened opportunities for specific systems improvements toward integrated origin-to-destination transportation.

Contribution to National Goals: Greater efficiency in our transport system is of critical importance to the entire economy and in particular to the foreign trade and to U.S. flag carrier participation in carrying our foreign commerce, with significant balance of payments effects. The indirect effects can be very important in contributing to upgrading the quality of living in our port cities.

Cost: FY 1969: Commerce \$1.7 million, in the budget (\$475,000 in FY 1969);

Corps of Engineers \$0.2 million, pending Congressional authorization, not included in Army budget. (No separately identified FY 1968 funds.)

Five year cost is estimated at \$25 million.

Analysis: The long-term economic cost of failure to adopt a far-reaching and innovative port system policy, with the resultant use of ad hoc decisions to undertake major developments of obsolete ports, would be extremely high. Excessive capital investments would be involved, in addition to continuing operational costs higher than those necessary under an optimal system. One of the results of the first year's work under this proposal will be an estimate of the amount of money that can be saved in capital investments in ports by a systems plan.

If a broad systems analysis is not carried out, decisions will continue to be made on single ports and in response to civic pride appeals. This would mean very heavy national over-investment in ports.

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13. Systematize Ocean Engineering with Non-military Applications

13a. Establish a National Instrumentation Facility

Premise: Increasing interchange of data between different individual scientists, between agencies, and between different countries requires greater instrument standardization and confirmation of accuracy. In addition, needs of individual users may often not warrant development of improved instruments whereas the collective needs, if known, would facilitate such advances.

Questions: Should a national instrumentation facility be established? With what functions? At what cost? And under whose management?

Issue: Instrumentation development is proceeding piecemeal by industry, the Government, and institutions. Modern technology needs the focus of a truly national facility for setting standards and setting the pace in instrument development, standardization, and usage.

Proposal: A comprehensive study of national needs for instrumentation services would be the first step towards a facility which will permit a coherent program of technology review and application for a variety of users.

Past Efforts: The Navy's National Instrumentation Center has provided, and is continuing to provide, useful service in response to various needs in instrument calibration. However, other agencies and groups and institutions and industry itself are doing bits and pieces of instrument programs.

Contribution to National Goals: The objective is to meet the increasing national need for an updated ocean instrument base.

Costs: \$250,000 for a contract study in FY 1969.

Benefits: It is envisaged that the entire national instrumentation effort would be upgraded in scope and quality, and costs would be reduced for a given instrument development. The infusion of new technology and the closer participation of all agencies should yield increased versatility for measurement purposes. The entire program of industrial development should be stimulated with a further recycling gain in productivity and versatility.

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13b. Long-Endurance Submersible and non-military
Undersea Technology

Premise: Requirements for underwater research, services and operations are developing individually, that collectively warrant development of new technologies aimed at civilian uses. Included in requirements is a new submarine for research and ocean development.

Questions: Is such a vehicle required with limited underwater endurance and at lower cost than the nuclear-powered NR-1? What would its cost be? On what time frame should this be developed and by which agency?

Issue: The needs for long-endurance, underwater research missions are rapidly increasing. However, the high costs of nuclear powered submersibles and restrictions on custody of nuclear materials make them unavailable to most legitimate users, particularly for non-military missions. In addition, some military missions could be accomplished more cheaply if longer endurance, non-nuclear submersibles were available.

Proposal: A four-year program to develop a successor to NR-1 -- a second, long-endurance, exploratory submersible -- powered by a non-nuclear plant. This could be a relatively shallow boat (say 2000 feet) so that attention could be focused on such special features as:

1. long-power endurance (20 days submerged at 2-3 kts.);
2. high reliability of components;
3. high visibility; and
4. improved payload.

Past Efforts: Long-endurance submersible development to date has been confined to nuclear-powered craft. The NR-1 is the first non-combatant, small submarine to be constructed. It will go to sea in FY 1969.

Contribution to National Goals: Development of this submersible will provide a focus for the important general purpose technology concerned with non-nuclear power and high reliability components. Thus, it will contribute to the national needs of security, exploration, sub-surface development of resources, recreation, search and recovery.

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Cost: First year costs are estimated at \$7.6 M to initiate development of powerplant and total costs are estimated at \$43M, of which \$7M is for ship construction.

Benefits: Successful completion of the program will make available for general use a reliable, inexpensive, yet long-endurance powerplant which will fill the power gap between batteries and nuclear power. In addition, development of this submersible will offer the opportunity to develop reliable underwater pumps, electrical connection boxes, switches, hydraulic connections, etc. Except for the strictly mission-oriented NR-1, there is now no significant program which will improve the reliability of such underwater components.

Alternatives: Non-nuclear power plants and components of high reliability could be developed without building a prototype submersible. This would reduce the cost of the program in the early years but would extend the time required to achieve the final objectives and would result in a higher total cost. Satisfactory power plans and components must be designed in the context of their environment and must also be tested in that environment.

A major problem arises because there is no "home" for these civilian programs. Study Commission should develop recommendations toward this end.

Benefits: The construction of such a prototype submersible is akin to the building of the X-15, the USS ALBACORE and the USS NAUTILUS. Each of these prototypes served as a focus for developing an essential element of technology and conserved both time and total cost of the follow-on products by introducing synthesized environmental factors early. In a similar manner, the proposed prototype non-nuclear submersible will focus development on user problems, will disclose weaknesses in the development cycle of complex systems, and thus permit reliable copies to be produced for general non-military use with minimum cost and time.

13c. Frequency Allocation for Ocean Communications

Premise: Increasing use of the oceans is accompanied by sharply increased communications. Such traffic requires both capacity and regulation of radio and underwater acoustic circuits, with standards to facilitate international compatibility while minimizing interference.

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Questions: What immediate steps are required for research and for regulation? Who should be responsible?

Issue: Standardized underwater communications procedures, including frequency allocations, both domestically and internationally, is required to minimize incompatibilities between underwater acoustical communications equipment and will avoid potential communications interference. International allocation of HF and VHF frequencies for transmission of oceanographic data is necessary to conduct exploration, research and to operate large scale buoy systems.

Proposal: Develop standardized underwater communication procedures, including operating frequencies, for U.S. underwater activities with eventual extension to international activities. Assuming that HF frequencies are set aside by the International Telecommunications Union this fall, develop plans for setting aside VHF frequencies for satellite acquisition of ocean data.

It is proposed that the Coast Guard develop a program which would have the following phases:

- a. Monitor the existing efforts to obtain world-wide HF and VHF frequency allocations for oceanographic data transmission;
- b. Obtain the necessary authorization to establish specific bands of acoustic frequencies for long and short range performance;
- c. Establish the necessary regulations to enforce this discipline on U.S.-registered, non-military submarines in the same manner as frequency control for surface ships is exercised;
- d. Explore the possibility of extending these control measures to the international arena.

Past Efforts: Efforts to set aside HF frequencies and VHF frequencies have been underway for several years in the international arena. These frequencies would be used for communications with buoys and satellites, as well as oceanographic research ships. Standardization of underwater acoustic frequencies has not been attempted in any comprehensive way in the past.

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Contribution to National Goals: The proposed action would facilitate oceanographic research and exploration. It will also provide increased safety of life and property and facilitate economic growth of undersea industries.

Costs: \$200,000 for studies of acoustic systems and development of specific recommendations for frequency bands during FY 1969. Costs for subsequent years would be minimal and would be absorbed as a part of the total regulation activities of the Coast Guard.

Benefits: The program would avoid wastes which would result if manufacturers proceed to develop equipment independently of any considered overall plan. It would also improve the effectiveness of safety measures, search and rescue operations, and the missions being performed by small submersibles.

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UNITED STATES
DEPARTMENT OF THE INTERIOR
OFFICE OF THE SECRETARY
WASHINGTON, D.C. 20240

DEC 16 1967

Dear Mr. Califano:

In response to your request of December 7, 1967, we are enclosing 10 copies of a report on fishery inspection. A proposed mandatory inspection system at three alternative levels of coverage is included in Section II of the report. The points raised in your letter are also discussed in this document.

Five copies of the report have been sent to the Director of the Bureau of the Budget. We would be pleased to develop the outline further should you require more detailed information.

Sincerely yours,

A handwritten signature in dark ink, appearing to be "H. T. ...", is written over a horizontal line.

Secretary of the Interior

Hon. Joseph A. Califano, Jr.
Special Assistant to the President
The White House
Washington, D. C. 20500

Enclosure

INSPECTION OF FISHERY PRODUCTS

Fish and shellfish have frequently been reported to be the cause of outbreaks of food borne illness and disease. In some instances these reports have been true, but for the most part the claims have been unwarranted. One of the major problems affecting consumers of fish and shellfish has been the variable and sometimes low quality of products available at the retail level. Surveys have been carried out to assess the level of quality of fishery products in the market place and data have been gathered on the incidents of illness and disease associated with seafoods. A summary of this information is found in Appendix A.

The most noted recent outbreak of illness associated with seafoods occurred in 1963 when 23 people were affected with botulism poisoning and 9 died. Several types of illnesses, in addition to botulism, have also been attributed to seafoods. These include gastric disturbances such as salmonellosis and shigellosis as well as other infections such as hepatitis.

It is logical to assume that as our population increases and the overall consumption of fishery products grows, the incidence of low quality products and disease associated with seafoods will also increase unless adequate steps are taken to provide improved fishery inspection. New bacteriological risks will also be

presented to the public as fish processing techniques become more sophisticated and mixed prepared seafood dishes such as creoles and pot pies enter the market place.

Imports may present special problems because as they increase to meet the U.S. demand, hazards will result because of the lack of adequate control in many producing countries, particularly in the less developed areas.

Fortunately, many diseases native to warm blooded animals are not found to naturally infect fish. Therefore, some of the disease hazards associated with meat products, such as pork and beef, are not present in seafoods.

I. PRESENT INSPECTION SYSTEMS

Voluntary Inspection-USDI

The Bureau of Commercial Fisheries of the U.S. Department of the Interior presently makes available a voluntary official inspection service for all types of processed fishery products. Inspection of any fishery product is available to any applicant who has a financial interest in the product. The service is voluntary, offered on a fee-for-service basis. Under this program, inspectors examine the product and issue a certificate stating its quality,

quantity, and condition or other pertinent findings which affect the marketability of the product. Certification may be based on the official USDI Grade Standards which are available for 15 fishery products, on Federal and State specifications, or on specifications written by the buyer or seller. In fiscal year 1967, industry contributed \$750,000 to support 60 inspectors located in 40 processing plants and 10 lot inspection centers throughout the nation.

Essentially, there are three different types of services available; continuous inspection, lot inspection, and unofficial sample inspection. These are described below:

Continuous Inspection

This service is made available only if the plant meets rigid sanitary requirements for facilities, equipment, and raw materials. Under continuous inspection, one or more inspectors are assigned to a processing plant at all times when it is operating to examine and grade products and to ensure that they are processed and packed under hygienic conditions.

Only fishery products packed in plants operating under continuous inspection and in compliance with USDI inspection regulations may be labeled with the official USDI Grade Shield or inspection marks.

During fiscal year 1967, approximately 200 million pounds of fishery products were produced under USDI continuous inspection.

Lot Inspection

Inspection may be requested on specific lots of fishery products in which the applicant has a financial interest. The lots can be of any size and located in processing plants, warehouses, cold storage plants, or terminal markets.

The inspector checks the condition of the containers, draws a prescribed number of representative samples from the lot, depending on the size, and examines the product. Results of the inspection are reported on an official certificate. USDI grade shields or marks are not allowed to be used on labels of products that have been lot inspected.

In fiscal year 1967, approximately 60 million pounds of fishery products were lot inspected.

Sample Inspection

This type of service allows the applicant to select his own samples and submit them to the nearest inspection office for examination. However, inspection certificates issued of this type of examination show only the quality or condition of the submitted samples and do not refer to the quality of the lot from

which the samples were taken. Very little inspection of unofficial samples is performed.

Weakness of USDI Program

The basic weakness of the present USDI voluntary inspection program can be reduced to two factors - lack of product coverage and lack of product condemnation authority. The overall inspectional coverage of products, plants, and vessels is small. Of over 4,000 fishery shore establishments engaged in handling and processing seafoods in the U. S., only 40 avail themselves of the Department's voluntary continuous inspection service.

The volume of all products inspected by the Department of the Interior for fiscal year 1967 was 260 million pounds, which represented only 11 percent of the edible fishery products consumed in the U. S. Approximately 1.4 billion pounds or 54 percent of the U. S. supply of edible fishery products for 1966 were imported from 116 countries. Very little of this product was inspected.

The present USDI voluntary inspection service is used primarily by firms engaged in the frozen food industry, minimally by the canning industry, and not at all by the smoked or cured fish industry. Of over 79,000 vessels (all classes) engaged in commercial fishing activities; few, if any, are inspected for hygienic conditions of fish storage and handling facilities as well as vessel clean-up.

The limited use of the USDI inspection program is attributed to its voluntary nature, the cost of inspection (\$5.50 to \$7.80 per hour), the capital investment needed to refurbish processing establishments to comply with continuous inspection requirements, and economic competition in marketing which makes it difficult for industry to receive a higher price for a higher quality product.

A second weakness is that the USDI voluntary inspection service lacks authority to condemn or restrict movement of seafoods that are of low quality or are unsuitable for use as human food. Under the present system, products that do not meet inspection requirements are denied use of the Government shield and are not necessarily destroyed or removed from trade but may reach the consumer.

FDA Mandatory Inspection

Domestically produced fishery products marketed in interstate commerce and imported fishery products must comply with the requirements of the Food, Drug, and Cosmetic Act administered by the Federal Food and Drug Administration. Products produced and marketed within individual States do not come within the scope of the FDA inspection program.

Under the FDA program, factory inspection and laboratory analysis of samples form the basis for ensuring the safety and integrity of the products covered. Factory inspection of domestic fish processing establishments are conducted on a periodic basis with frequency determined by the firm's past record. Fishery products imported are spot sampled on a lot basis at ports of entry and examined for compliance.

Weakness of FDA Program

The principal weakness of the FDA program is its limited coverage and lack of a foreign inspection capability. FDA reported that in 1966, of over 4,000 fishery shore establishments, approximately 2,200 fish processing plants in the U. S. were subject to FDA inspection visits. The remaining 1,800 establishments were considered to be marketing their products intrastate and therefore beyond coverage by FDA. During that year, FDA conducted about 1,765 factory inspections of fish processing firms. In numerous instances plants were inspected several times, while other plants received no inspections. Few, if any, commercial fishery vessels landing fish for human use were inspected. FDA factory inspections of domestic plants for the years 1962 - 1966, indicated that 7 to 10 percent of the inspections revealed violations. Approximately 50 percent of these violations were for hygienic conditions.

FDA does not perform any factory inspections of plants in foreign countries producing fishery products that are marketed in the U. S. Instead, FDA relies primarily on end-product examination of products consumed in the U. S., imported from 116 countries. FDA inspections of selected lots of imported fish and shellfish products for the period 1962 - 1966 indicated that 14 to 16 percent of the inspected lots were violative. The bulk of imported fishery products receive no inspection but go directly to the U. S. consumer.

Public Health Service Voluntary Shellfish Inspection

The U. S. Public Health Service assists State and local Governments to develop, conduct, and maintain effective programs for the prevention and control of diseases which may be transmitted through shellfish. Shellfish are defined as fresh and frozen clams, oysters and mussels, shucked or in the shell.

Shellfish sanitation activities of PHS are carried out through a voluntary cooperative PHS/State/industry shellfish certification program. PHS has published a Sanitation Manual for Shellfish control which it uses to evaluate State shellfish sanitation programs to determine compliance with agreed-upon standards. States participating in the program exercise regulatory control of sanitation in growing, harvesting, handling and processing of shellfish. Two foreign countries, Japan and Canada, also participate in the

program and exercise regulatory control of their respective shellfish industries and products exported to the U. S.

Shellfish in interstate commerce and imported shellfish are covered by the FDA mandatory program. FDA also conducts periodic factory inspections of shellfish processing plants.

Weakness of PHS Voluntary Shellfish Program

The voluntary nature of the shellfish sanitation program results in less than full coverage of shellfish processing establishments in the U. S. Further, operation of inspection programs by participating States results in a lack of uniformity of enforcement. In 1964, for example, only 12 State programs out of 23 States operating shellfish inspection programs were evaluated by PHS as satisfactory. In 1964, fresh and frozen shellfish were imported from eight countries but only two of these countries participate in the PHS cooperative shellfish sanitation program.. Imported shellfish receive spot sampling of some lots by FDA to determine compliance with the FDA Act.

State Inspection Programs

Inspection of fishery products by States is often incidental to inspection of other food products covered by State food inspection agencies. Notable exceptions are the States of Maine and California which have specific programs of fish inspection. The State of Maine inspects all sardine cannery operations as well as the entire sardine pack. California conducts a fish cannery inspection program to assure that all canned fishery products have been processed adequately to ensure commercial sterility of the product.

Weakness of State Programs

The variability and frequent lack of inspection of fishery products is the primary weakness of State inspection programs. Further, State programs frequently devote little attention to fishing vessels and primary processing operations.

II. PROPOSED ALTERNATIVE MANDATORY INSPECTION PROGRAMS

A mandatory inspection program designed to ensure that fish and shellfish reaching the consumer are pure and wholesome must take into account the many complexities of harvesting, handling, processing, and storage of fishery products. Fish and shellfish, comprising a wide variety of species, are inherently highly perishable and spoil at a much faster rate than most other animal protein products. In harvesting fish, the catch rate cannot be controlled to coincide with the rate at which the products can be processed because harvesting takes place at sea and processing is usually a shore-based operation. As a result, the lapse between the death of the fish and the time it is processed ranges from 2 to as much as 14 days. This contrasts with only a few hours holding in the case of most meat products. During this holding period, fish undergo enzymatic changes and an opportunity is presented for bacterial contamination. These problems are further aggravated by the conditions aboard fishing vessels which are not as carefully controlled as the conditions under which meat holding and processing take place.

Over half of the fishery products available to the U. S. consumers originate in foreign countries. One of the major suppliers is Canada. In 1965, 50 countries in Africa and Asia exported about

100 million pounds of fishery products to the U. S. Many of these countries have inadequate laws, regulations, and enforcement programs applicable to fish and food processing.

In view of this, three types of inspection programs are outlined which are designed to provide three different levels of inspection coverage. Plan A is designed to provide inspection coverage for fish comparable to that now provided for meat products. Plan B will provide lesser inspection coverage in terms of the volume and variety of product, completeness of inspection, and geographical areas. Plan C is designed to provide what is considered to be minimal inspection coverage but is substantially above the level of coverage currently being provided.

Plan A - Maximum Coverage

Domestic Industry

Maximum hygienic inspection of the domestic industry would include fish and shellfish products produced in the U. S. for use as human food and animal feed. Coverage of fishery products for animal feed is included because some fish meal has been found to be a vector for human salmonellosis. All domestic fish production would be covered both in intrastate and interstate commerce. All commercial fishing vessels, landing facilities, transporting equipment for raw fresh

fish, processing establishments, and the first level of storage facilities of finished products would be inspected. The inspection would be designed to ensure that the product is a safe, clean, wholesome article of at least minimal quality, and further to determine that the product is prepared, packed, and held under sanitary conditions. It is not proposed under this plan to extend inspectional coverage to distribution carriers or retail outlets. In the case of fishery byproducts destined for animal consumption, the inspectional coverage would be that necessary to ensure that the product is Salmonella free.

Imports

All fish and fishery products produced in foreign countries and destined for use as human food in the U.S. would be produced in plants operating under conditions similar to those set forth in the requirements for the domestic industry. A foreign fish inspection and surveillance program would be established with authority to recognize those inspection systems in exporting countries that meet the U. S. requirements. Foreign plants would be visited occasionally by U. S. inspectors to evaluate the effectiveness of the foreign program. In substance, this activity would parallel that being presently used by the USDA in its meat inspection program. In the case of fishery products destined for use as animal feeds, the inspection coverage would be that necessary to ensure that the product is free from

Salmonella. Imported products would be inspected for compliance upon arrival in the U. S..

Costs

The annual operating cost of an inspection program with the coverage as outlined above is estimated at about \$25 million. Federal funding would decrease to the extent that States might participate on a matching cost basis.

Implementation

Implementation of a maximum mandatory inspection program should be carried out in two stages. The first stage would be a three year preparatory period for both the industry and the administering agencies. This preparation period would provide time for a survey of industry facilities and handling practices, development of regulations in cooperation with industry, construction of laboratory support facilities, and the establishment of administrative procedures for Federal-State cooperation with State operated programs.

The mandatory requirements of the inspection program would go into effect at the beginning of the fourth year after funding is provided, and at that time inspection of plants, vessels, facilities, and products would commence. Inspection of plants and processing facilities would be essentially continuous.

Plan B - Moderate Coverage

Domestic Industry

Moderate inspection of the domestic industry would include all plants producing fish and shellfish products for human consumption.

Fishery products would be covered both in intrastate and interstate commerce. Fishery vessels (5 net tons and over) would be inspected.

Fishing vessels under 5 net tons, landing facilities, storage facilities, and fish meal processing plants would not be covered under this plan.

Imports

Coverage of imports would be identical to Plan A.

Costs

The annual operating cost of an inspection program of moderate coverage as outlined above is estimated at \$15 million. Again, as in Plan A, the Federal funding could be reduced as State participation in the program increases.

Implementation

Implementation of a moderate inspection program would be carried out in two stages. The first stage would be a 3-year preparatory period for both the industry and the administering agencies. During the preparatory period, regulations would be developed, laboratory

support facilities would be constructed, and administrative procedures for Federal-State cooperation in connection with State operated phases of the program would be developed.

The mandatory requirements of inspection legislation would go into effect at the beginning of the fourth year following enactment when actual inspection of plants, vessels, and products would commence. Inspection applied at processing plants and other facilities would be essentially continuous and would involve sanitation as well as product wholesomeness and purity.

Plan C - Minimal Coverage

Domestic Industry

This plan is identical to the inspection plan proposed in Senate Bill S. 1472 introduced in the 90th Congress by Senator Philip A. Hart. (Appendix B) The basic program is designed for inspection of fishery products and fish processing facilities in the United States. Most seafood products destined for human consumption would be subject to the provisions of the plan. Certain fishermen and vendors selling fish directly to the consumer would be exempt. Ongoing State fishery product inspection and certification programs meeting Federal standards would be recognized in lieu of the Federal program.

Imports

Plan C would encourage foreign governments exporting fish and fishery products to this country to adopt a system of inspection and certification offering equal consumer protection to this plan. Once such a country establishes such a system, the Federal administering agency could authorize the importers to display an official U. S. inspection mark on the product. Examination of the imported products displaying the official mark would be through spot sampling at the port of entry for chemical, microbiological, and organoleptic evaluations. A minimal surveillance of the effectiveness of foreign inspection procedures would be carried out.

Costs

The annual operating cost of the minimal coverage program is estimated to be \$6 million. State matching funds are not contemplated in this program.

Implementation

The minimal plan provides for an initial 3-year period to study and survey the commercial fishing industry and its processing practices and to develop sanitary standards and regulations for processing establishments and vessels as well as for imported fish and fishery products. After the regulations are issued, the industry would have the opportunity to gear up to meet the regulations and standards.

Three years after the effective date of the regulations, which would be a total of six years after passage of the bill, each processing establishment would be required to possess a certificate of registration to show compliance with the act. Inspection for this type of program would be of a patrol surveillance nature with a minimum of one inspection per week at each plant. Thus, it differs substantially from the aforementioned continuous inspection plans due to the reduced level of inspection effort.

III. ALTERNATIVE METHODS OF ADMINISTERING A MANDATORY FISHERY PRODUCTS INSPECTION PROGRAM

Alternate Federal Management Agencies

Management and coordination of a consumer protection and inspection program for fishery products could be effectively handled by any one of several Federal agencies. These include the U. S. Department of Agriculture, U. S. Department of the Interior, U. S. Public Health Service, and the Food and Drug Administration. The distribution of responsibility between the Federal agency and the States would vary to about the same degree regardless of which of these Federal agencies were to take over the primary program responsibilities. The advantages and disadvantages of management by each of the above agencies are discussed below.

U. S. Department of Agriculture

Although the U. S. Department of Agriculture has only limited background experience in fish inspection, fish could be integrated into the meat inspection program provided sufficient expertise is made available for the training and education of inspectors and supervisory personnel. USDA is backed up by many years of experience in inspecting and grading meat, vegetables, and fruit products. Under the proposed Wholesome Meat Act, which will be administered by USDA in cooperation with State agencies, the States will be establishing new meat inspection programs which could be broadened to include fishery products.

USDA has established a system for the inspection and certification of imported meat products. Well over half the fishery products consumed in the United States are imported, so the establishment of an effective foreign inspection program for fishery products is important in assuring wholesomeness. It may be possible to pattern a foreign inspection program for fishery products after the meat program and administer it through the same channels building upon existing regulations, facilities, and staff.

Several disadvantages can be cited in establishing a fishery products inspection program under USDA. For the most part, these are related to the lack of experience that agency has had in the unique problems of handling and inspecting fish. The problems become especially acute in the area of fishing vessel inspection since very little such experience exists except that which has been built up by the Bureau of Commercial Fisheries of the USDI. It is likely, therefore, that USDA would have to rely on the Department of the Interior for the development of standards and establishing tests and operating procedures during the initiation period for a USDA based program.

U. S. Department of the Interior

The Department of the Interior's Bureau of Commercial Fisheries has considerable experience which would be vital to the administration of a compulsory fishery products inspection program. This capability

has been built up during the last 40 years through research on the handling, processing, and preservation of fishery products. Since 1957, the Bureau has administered a voluntary inspection program for fishery products which is now being carried out in all parts of the United States. As a result, a strong cadre of experienced inspectors exists to serve as the core of a mandatory inspection program.

The Bureau has considerable experience in handling fishery products aboard vessels which has been built up through close association with fishermen as well as through operating a considerable number of fishery research vessels. This experience places the Bureau in an excellent position for managing many aspects of a fishery inspection program, particularly those that deal with vessels.

A disadvantage of USDI management of a mandatory fishery products inspection program is that the BCF has no experience in foreign inspection procedures. In establishing a foreign inspection system, the Bureau would have to lean heavily on the experience and advice of USDA. Another disadvantage is that the Bureau's voluntary program of inspection does not include authority to condemn or dispose of unwholesome fishery products. As a result, no legal or practical experience exists within the Bureau in enforcing regulations dealing with foods or in public health or consumer protection matters in general.

U. S. Public Health Service

The U. S. Public Health Service administers a cooperative State-Federal shellfish sanitation program which could be used as a base on which to build a mandatory fishery products inspection program. The USPHS cooperative shellfish sanitation program is carried out largely by States with the Federal role being principally one of coordination. The regulatory responsibility in this program lies at the State level. The program includes agreements with two foreign countries in which inspection of shellfish growing areas and plant sanitation are supervised by USPHS. The experience gained in administering this program and the overall public health mission of that agency offers several advantages in managing a mandatory inspection program.

The principal weakness of establishing fishery products inspection under USPHS is that the agency has had essentially no direct experience in in-plant inspection or with the unique problems associated with fishery products other than shellfish. Furthermore, since the regulatory responsibility of its present program lies in the States, USPHS has no direct experience in administering a food regulatory program.

Food and Drug Administration

The Food and Drug Administration has had long experience in application of consumer protection regulations for a wide variety of food and drug products. This has included fishery products and, indeed, some years ago the FDA administered a small voluntary inspection program for canned shrimp in the Gulf States. This experience would be beneficial to FDA in administering a compulsory fishery products inspection program.

A principal disadvantage of FDA management of the program is its historic reliance on end-product and spot in-plant inspection to determine compliance with established regulations. A continuous inspection program, which can best serve the need for consumer protection, is based on somewhat different principles in which advisory services to the industry play a large role in maintaining proper sanitation and consumer protection.

FDA has had little or no experience in managing foreign inspection programs and would, therefore, have to rely on USDA advice to carry out work in the area. They have had, however, considerable experience in end-product inspection of imports at the port of entry. Such inspection would play a key role in the inspection coverage level for Plan C, which has been described above. Under this plan, FDA could offer considerable background experience.

A final disadvantage faced by FDA in administering a mandatory fish inspection is its very wide area of responsibility. At the present time the agency ranges across the entire area of food, additives, feed, drugs, cosmetics, and devices in its regulatory responsibility. To place inspection of a single class of foods, such as fish, under the management of FDA could seriously hamper its flexibility by requiring it to concentrate on a relatively small problem area.

Alternative Federal-State Relationships

Alternative methods for administering fishery inspection programs range from maximum Federal responsibility to maximum State responsibility. The degree of Federal or State participation may also vary depending upon the level of inspection coverage selected. Inspection plans which stress inspection of foreign plants and imports, for example, should include a strong Federal element since relationships with foreign nations are best handled at the Federal level. Plans stressing inspection of small local processing plants, on the other hand, might be effectively administered at the State level, with interstate coordination provided Federally.

Any of the three alternative levels of inspection coverage as described in Section II could be handled on a Federal-State basis. Generally, Federal responsibilities under such program would include:

1. Development of Federal regulations regarding requirements for facilities, sanitation, vessels, and products.
2. Responsibility for inspection of all products to be imported.
This would include establishment of standards for foreign inspection programs, evaluating efficacy of such programs, carrying out necessary foreign inspection and conducting port of entry inspection of imported products.
3. Standardization of requirements for State programs in the area of personnel requirements, facilities, inspection procedures, product requirements, sanitation, and vessel requirements.
4. Operation of central laboratories for chemical, microbiological, and organoleptic tests and product examinations.
5. Operation of inspection program in areas not covered by States.
6. Review and evaluation of adequacy of State programs.

State Responsibility

1. Development and promulgation of State regulations consistent with Federal regulations.
2. Inspection of plants, vessels, and facilities within the State.
3. Operation of local laboratories for routine testing and evaluation of products.

IV. APPENDICES

Appendix A - Data on quality surveys and incidents of illness and disease associated with seafoods

Appendix B - Copy of S.1472 (Hart Bill)

Appendix A

SUMMARY OF FISHERY PRODUCT SURVEYS 1961-1965

<u>Agency</u>	<u>Year</u>	<u>Product</u>	<u>Percent Substandard or Grade Not Certified</u>
Consumer Union	1961	Fried Fish Sticks	75%
"	1961	Breaded Shrimp	63%
"	1963	Frozen Fish Fillets	46%
"	1965	Raw Fish Portions	50%
"	1966	Canned Salmon	85%
"	1966	Salmon Steaks	98%
BCF	1963	Fish Fillets	58%
"	1964	Fish Fillets	32%
"	1964	Breaded Shrimp	40%
"	1965	Precooked fish Portions	55%
"	1965	Halibut Steaks	26%

Consumer Union Surveys

Consumer's Union conducted its first survey on fishery products--fried fish sticks--in 1961. This report did not help to inspire consumer confidence in the product. Since that time, Consumer's Union has conducted surveys on shrimp, fillets, breaded portions and canned salmon.

A. Frozen Fried Fish Sticks - February 1961

1. 312 samples evaluated from 26 brands.

2. Results

- (a) Only 7% of brands met U. S. Grade A.
- (b) 38% of brands failed to meet Grade A because of poor storage and handling defects.
- (c) 26% of brands failed to meet Grade A because of processing and/or handling defects.
- (d) 11% of brands were substandard for miscellaneous reasons.

B. Frozen Raw Breaded Shrimp - 1961

1. 288 samples evaluated from 40 brands.

2. Results

- (a) In 32 brands one or more samples contained poor quality shrimp.
- (b) In 31 brands some samples showed signs of quality loss from poor storage or handling after processing.

- (c) 98 samples of 120 samples tested contained coagulase positive staphylococci.

C. Frozen Fish Fillets - January 1963

1. 120 samples evaluated from 10 brands, cod, haddock and ocean perch.
2. Results
 - (a) 55 samples (46%) were judged substandard quality.
 - (b) Haddock fillets were the worst.

D. Frozen Breaded Fish Portions - May 1963

1. 384 samples evaluated from 32 brands.
2. Results
 - (a) 50% of brands judged substandard quality.
 - (b) 80% of brands were downgraded because of rancidity.
 - (c) 15% of samples contained pieces of skin.

E. Canned Salmon - July 1966

1. 646 cans evaluated from 51 canned salmon products.
2. Results
 - (a) 85% showed a tendency toward mushiness or discoloration, or slightly scorched or bitter flavor (believed to be caused by overcooking).

F. Frozen Salmon Steaks - July 1966

1. 18 samples evaluated from 3 brands

2. Results

(a) 17 samples out of 18 were so rancid that CU couldn't conceive of any cooking method to disguise the bad flavor.

(b) All three brands rated "not acceptable".

Bureau of Commercial Fisheries Surveys

A. Frozen Fillets of Cod, Haddock, and Ocean Perch - 1963

1. 348 samples of cod, haddock, and ocean perch fillets evaluated
2. Results—see table below

<u>Grade</u>	<u>Cod</u>		<u>Haddock</u>		<u>Ocean Perch</u>		<u>Totals</u>	
	<u>No.</u> <u>Samples</u>	<u>%</u>	<u>No.</u> <u>Samples</u>	<u>%</u>	<u>No.</u> <u>Samples</u>	<u>%</u>	<u>No.</u> <u>Samples</u>	<u>%</u>
A	13	10.7	25	21.6	5	4.5	43	12.4
B	45	36.9	39	33.6	29	26.4	113	32.5
S/Std.	64	52.4	40	34.5	73	66.3	177	50.8
G.N.C.	0	0	12	10.3	3	2.7	15	4.3
Total	122		116		110		348	

B. Frozen Fillets of Haddock and Flounder or Sole Fillets - 1964-A

1. 600 samples of haddock and flounder or sole were evaluated
2. Results--see table below

<u>Grade</u>	<u>Haddock</u>		<u>Flounder or Sole</u>		<u>Totals</u>	
	<u>No. Samples</u>	<u>%</u>	<u>No. Samples</u>	<u>%</u>	<u>No. Samples</u>	<u>%</u>
A	50	18.3	89	27.2	139	23.2
B	132	48.4	132	40.4	264	44.0
S/Std.	80	29.3	101	30.9	181	30.2
G.N.C.	11	4.0	5	1.5	15	2.6
Total	273		327		600	

C. Frozen Fillets of Haddock and Frozen Raw Breaded Shrimp - 1964-B

1. 309 samples of haddock fillets and 347 samples of breaded shrimp were evaluated
2. Results--see table below

<u>Grade</u>	<u>Haddock</u>		<u>Shrimp</u>		<u>Totals</u>	
	<u>No.</u> <u>Samples</u>	<u>%</u>	<u>No.</u> <u>Samples</u>	<u>%</u>	<u>No.</u> <u>Samples</u>	<u>%</u>
A	78	25.24	161	46.40	239	36.43
B	99	32.04	55	15.85	154	23.48
S/Std.	82	26.54	40	11.53	122	18.60
G.N.C.	50	16.18	91	26.22	141	21.49
Total	309		347		656	

D. Frozen Breaded and Precooked Fish Portions and Frozen Halibut Steaks - 1965

1. 312 samples of fish portions and 206 samples of halibut , steaks were evaluated
2. Results—see table below

<u>Grade</u>	<u>Portions</u>		<u>Halibut</u>	
	<u>No. Samples</u>	<u>Σ</u>	<u>No. Samples</u>	<u>Σ</u>
A	21	6.7	52	25.3
B	118	37.8	100	48.5
S/Std.	25	8.0	45	21.8
G.N.C.	148	47.5	9	4.4
Total	312		206	

**Known Incidence of Public Health Cases in the United States
Attributed to Fish and Shellfish**

- Table 1 - Salmonella Outbreaks Caused by Fish**
- Table 2 - Shigellosis Outbreaks Caused by Seafoods**
- Table 3 - Data in Ten Epidemics of Foodborne Infectious Hepatitis
Attributed to Contaminated Shellfish**
- Table 4 - Outbreaks of Botulism Due to Seafoods In United States
1899-1964**
- Table 5 - Fish and Seafoods Involved in Botulism Outbreaks 1899-
1964**
- Table 6 - Confirmed Botulism Outbreaks from Canned Fish**
- Table 7 - Other**

TABLE 1**Salmonella Outbreaks Caused by Fish**

Year	State	No. of Outbreaks	No. of Cases	Deaths	Vehicle	Reference
1934	New York	1	34	1	Smoked whitefish	Kleeman, <u>et al.</u> ^{1/}
1940	New York	2	64	2	Smoked whitefish, butterfish, carp	Kleeman, <u>et al.</u>
1966	New Jersey, New York, Penn.	13	300 ⁺	--	Smoked fish	CDC ^{2/}

TABLE 2**Shigellosis Outbreaks Caused by Seafoods**

1966	Buffalo, New York	1	250 ⁺	--	Shrimp (imported)	CDC ^{3/}
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1/ Kleeman, I, Frunt, S., Abrahamson, A. E., American Journal of Public Health, 32: 151-153, 1942.

2/ Communicable Disease Center, Salmonella Surveillance Report, No. 53, Oct. 17, 1966.

3/ Communicable Disease Center, Shigella Surveillance, Report No. 9, Feb. 24, 1966.

TABLE 3

TABLE 3
DATA IN TEN EPIDEMICS OF FOODBORNE INFECTIOUS HEPATITIS
ATTRIBUTED TO CONTAMINATED SHELLFISH

Location of Epidemic	Year	Type of Population	Population Exposed to Suspected Vehicle	Attributed to Vehicle		Interval Between Onset of First and Last Case	Source Case Recognized	Comments
				Total Cases	Attack Rate (Percent)			
U.S.A. (59)	1953	Community	Unknown	30	—	7 months	No	Oysters from coastal Oregon suspected
Sweden (60,61)	1955	Community	Not given	629	>50.0*	38 days	Yes	Oysters
U.S.A. (62)	1961	Community	Unknown	84	—	57 days	No	Oysters from Pascagoula, Miss.
U.S.A. (63)	1961	Community	Unknown	459	—	5-6 months	No	Clams from Raritan Bay, N. J.
U.S.A. (64)	1961	Community	Not given	15	—	15 weeks	No	Clams from Greenwich, Conn.
U.S.A. (65)	1964	Community	Unknown	103	—	5-6 months	No	Clams from Atlantic County, N. J.
U.S.A. (65)	1964	Community	Unknown	119	—	5-6 months	No	Clams from Narragansett Bay, R. I.
Canada (66)	1964	Family	2	2	100.0	2 days	Yes	Oysters from British Columbia
U.S.A. (67)	1964	Neighborhood picnic	25	3	12.0	7 days	No	Oysters from Wrightsville Beach, N. C.
U.S.A. (68)	1966	Organization picnic	55	4	7.3	18 days	No	Clams from coastal New England. (Clams implicated in gastroenteritis in same population.)

* Based on data concerning a limited group of cases.

TABLE A

**Outbreaks of Botulism due to Seafoods
in United States 1899-1964**

	Outbreaks		Cases		Deaths	
	<u>No.</u>	<u>%</u>	<u>No.</u>	<u>%</u>	<u>No.</u>	<u>%</u>
All foods	651	--	1670	--	1008	--
Seafoods	74*	11.36		11.01		9.52

* Of the 74 outbreaks, 52 were due to home canned products; 22 were due to commercially canned products.

TABLE 2**Fish and Seafoods Involved in Botulism Outbreaks 1899-1964***

Seafood	Outbreaks	Preparation	Cases	Deaths
Beluga flippers	5	Home processed	13	5
Clam juice	3	Commercially canned	7	5
Clams	2	1 commercially canned	5	5
Crab	1	Commercially canned	1	0
Fish egg cheese	1	Home prepared	2	2
Fish eggs	2	Home prepared	7	2
Fish, Pickled	2	Home canned	2	1
Grey whale fluke	1	Home processed	7	1
Herring (including pickled)	2	Home canned	3	1
Salmon (including smoked)	9	2 commercially canned	22	10
Salmon egg cheese	2	Home prepared	5	3
Salmon eggs	5	Home prepared	19	12
Sardines (including sardines with tomato sauce)	4	3 commercially canned	7	6
Seal flippers	5	Home prepared	18	11
Seal liver	1	Home prepared	1	1
Seal meat (including fermented and dried)	7	Home prepared	10	4
Smoked ciscoes (whitefish chubs) in vacuum bags	8	3 commercially packed	22	9
Sprats	1	Commercially canned	3	1
Trout	1	Home prepared	1	1
Tuna	9	3 commercially canned	29	16

* From: "Sixty-five years of human botulism in the United States and Canada. Epidemiology and tabulations of reported cases, 1899 through 1964," E. F. Meyer, M.D., and George Williams Kaper Foundation, University of California, San Francisco Medical Center, June 1965.

TABLE 6**Confirmed Botulism Outbreaks From Canned Fish**

Year	Food	Outbreaks	Cases	Deaths	Types
1912	Clam Juice ^{2/}	1	2	1	-
1913	Clam Juice ^{2/}	1	3	2,	-
1914	Clam Juice ^{2/}	1	2	2	-
1925	Sardines	1	2	2	-
	Sardines	1	2	2	A
1931	Sardines	1	2	1	-
1933	Crab ^{2/}	1	1	0	-
1934 ^{1/}	Sprats	1	3	1	E
1936 ^{1/}	Clams	1	4	4	B
1938	Tuna (suspect)	1	2	2	-
1963	Tuna	<u>1</u>	<u>23</u>	<u>2</u>	E
Total		11	26	19	

^{1/} Imported Products

^{2/} Listed as commercial products but may not have been commercially canned

Other Public Health Cases

in Which Fish or Shellfish Have Been Implicated

I. Scombroid fish poisoning in California

7 people ill from mackerel

Caused by growth of bacteria Proteus morganii and P. vulgaris which produce an orally effective histamine-like substance.

II. Nitrite poisoning - Smoked fish, 1959

Resulted in 4 deaths.

90TH CONGRESS
1st Session

S. 1472

IN THE SENATE OF THE UNITED STATES

APRIL 10 (legislative day, April 6), 1967

Mr. HART introduced the following bill; which was read twice and referred to the Committee on Commerce

A BILL

To protect the Nation's consumers and to assist the commercial fishing industry through the inspection of establishments processing fish and fishery products in commerce.

1 *Be it enacted by the Senate and House of Representa-*
2 *tives of the United States of America in Congress assembled,*
3 *That this Act may be cited as the "Fishery Products Protec-*
4 *tion Act of 1967".*

5 SEC. 2. For the purpose of this Act—

6 (a) The term "commerce" means travel, trade, traffic,
7 transportation, or communication in any State and a point
8 outside thereof, or between points in the same State but
9 through a point outside thereof;

10 (b) The term "State" includes the States of the United

1 States, its territories and possessions, the District of Columbia,
2 and the Commonwealth of Puerto Rico;

3 (c) The term "Secretary" means the Secretary of the
4 Interior;

5 (d) The term "person" means any individual, partner-
6 ship, corporation, or association;

7 (e) The term "fish" means any aquatic animal or part
8 thereof intended for human food;

9 (f) The term "fishery products" means any edible part
10 of fish that is processed separately or in combination with
11 other ingredients for human food;

12 (g) The terms "process" or "processed" or "processing"
13 mean the handling, storing, preparation, production, manu-
14 facture, preserving, packing, transporting, or holding of any
15 fish or fishery products;

16 (h) The term "wholesome" means sound, healthful,
17 clean, and otherwise suitable for use as human food;

18 (i) The term "unwholesome" means—

19 (1) unsound, injurious to health, or otherwise ren-
20 dered unsuitable for use as human food; or

21 (2) consisting in whole or in part of any filthy,
22 putrid, or decomposed substance; or

23 (3) presence of bacteria of public health signifi-
24 cance; or

25 (4) processed under unsanitary conditions whereby

1 fish or any fishery products may have become contami-
2 nated with filth, or whereby any fishery products may
3 have been rendered injurious to health; or

4 (5) packaged in a container composed of any
5 poisonous or deleterious substance which may render
6 the contents injurious to health;

7 (j) The term "inspection service" means the agency
8 or agencies designated by the Secretary as having the respon-
9 sibility to carry out the provisions of this Act;

10 (k) The term "inspector" means any person authorized
11 by the Secretary to inspect fish and fishery products;

12 (l) The term "official inspection mark" means any sym-
13 bol prescribed by the Secretary;

14 (m) The term "official establishment" means any estab-
15 lishment that has been issued a certificate of registration by
16 the Secretary;

17 (n) The term "establishment" means the premises,
18 buildings, structures, facilities, and equipment used in the
19 processing of fish and fishery products;

20 (o) The term "vessel of the United States" means any
21 vessel of five net tons and upward that is enrolled, licensed,
22 or documented under the laws of the United States and en-
23 titled to the privileges of vessels employed in the fisheries;

24 (p) The terms "container" or "package" include, but

1 are not limited to, any box, can, tin, cloth, plastic, or any
2 other receptacle, wrapper, or cover;

3 (q) The term "label" means any written, printed, or
4 graphic material upon the shipping container, if any, or upon
5 the immediate container of the fishery product or accompany-
6 ing such product, including, but not limited to, the individual
7 consumer package;

8 (r) The term "shipping container" means any con-
9 tainer used or intended for use in packaging the product
10 packed in an immediate container;

11 (s) The term "immediate container" includes any con-
12 sumer package, or any other container in which fish or fish-
13 ery products, not consumer packaged, are packed.

14 SEC. 3. Congress declares that wholesome fish and fishery
15 products are an important source of the Nation's food supply;
16 and that unwholesome and adulterated fish or fishery products
17 moving in the channels of commerce or directly affecting
18 commerce are injurious to the consumers, adversely affect the
19 marketing of wholesome fish and fishery products, result in
20 losses to producers and fishermen, and limit markets for such
21 products. It is the purpose of this Act to prevent such
22 adverse effects.

23 SEC. 4. (a) In furtherance of the purpose of this Act,
24 the Secretary shall conduct, directly or by contract, a survey
25 of the methods, practices, and sanitary conditions of the

1 establishments in the United States and vessels of the United
2 States processing fish or fishery products. The Secretary
3 shall then develop and promulgate, by regulation, adequate
4 sanitary standards and practices for establishments processing
5 fish or fishery products in any State for movement in com-
6 merce and for establishments the operations of which directly
7 affect the movement of fish and fishery products in commerce
8 and for vessels of the United States.

9 (b) The Secretary shall, based on studies, surveys, and
10 other information, also issue adequate and effective regula-
11 tions to assure (1) that imported fish or fishery products are
12 safe, healthful, wholesome, unadulterated, and suitable for
13 human food, and (2) that the containers of such products
14 are safe and comply with such sanitary standards as he may
15 prescribe.

16 (c) Such regulations shall be promulgated within three
17 years after the effective date of this Act.

18 SEC. 5. Effective three years after the effective date of
19 the regulations promulgated under section 4 of this Act:

20 (a) No person shall process any fish or fishery prod-
21 ucts in any establishment for movement in commerce or in
22 any establishment the operations of which directly affect
23 the movement of fish and fishery products in commerce
24 unless such establishment has been issued a certificate of
25 registration by the Secretary, or unless the Secretary de-

1 termines, in accordance with the provisions of section 8 of
2 this Act, that the State wherein such establishment is
3 located provides an adequate and enforceable system of
4 regulation, certification, and inspection of such establishment
5 and the fish and fishery products processed therein.

6 (b) No fish or fishery products shall be imported into
7 the United States unless they comply, as determined by
8 the Secretary, with the regulations issued under section 4
9 of this Act for imported fish and fishery products. All
10 imported fish and fishery products, after entry into any
11 State in compliance with such regulations, shall be treated
12 as domestic fish and fishery products within the meaning
13 of, and subject to, the provisions of this Act.

14 (c) The Secretary of State, in consultation with the
15 Secretary, shall encourage foreign countries importing fish
16 and fishery products into any State to establish enforceable
17 sanitary standards and practices for establishments and ves-
18 sels of those countries processing fish and fishery products
19 for such importation and a system of certification and inspec-
20 tion of such establishments and vessels. Such standards and
21 practices must be consistent with those promulgated by the
22 Secretary under this Act. The Secretary may authorize
23 such countries to use an official inspection mark on each
24 immediate container and shipping container of imported
25 wholesome and unadulterated fishery products. No country

1 shall use such a mark on containers of imported fishery
2 products unless authorized by the Secretary. Containers
3 with unauthorized marks shall not be allowed to enter into
4 any State.

5 SEC. 6. (a) Any person who is required by section 5
6 of this Act to have a certificate of registration, and who is
7 denied a certificate of registration shall upon request be
8 given a hearing by the Secretary whose determination shall
9 be final.

10 (b) The certificate of registration of any official estab-
11 lishment that fails to comply with the provisions of this Act
12 and the regulations issued thereunder may be suspended
13 upon notice by the Secretary. The holder of the suspended
14 certificate may at any time apply for reinstatement of the
15 certificate, and the Secretary shall immediately reinstate it
16 if, after an opportunity for a hearing, he finds that adequate
17 measures have been taken to comply with the requirements
18 of the Act and regulations.

19 (c) Any inspector shall have access to any official estab-
20 lishment for the purpose of ascertaining whether the condi-
21 tions of the certificate are being complied with. Denial of
22 access for such inspection shall be ground for suspension of
23 the certificate.

24 SEC. 7. In order to provide technical assistance to the
25 commercial fishing industry in meeting the requirements of

1 this Act and the regulations issued thereunder, the Secretary
2 shall utilize to the greatest extent feasible the provisions of
3 the Fish and Wildlife Act of 1956, as amended.

4 SEC. 8. The Secretary shall encourage each State to
5 provide an adequate system of regulation, certification, and
6 inspection of establishments located in the State that process
7 fish and fishery products for movement in commerce and
8 establishments the operations of which directly affect the
9 movement of fish and fishery products in commerce, and the
10 fish and fishery products processed therein, including, but
11 not limited to, the promulgation and enforcement of sanitary
12 standards and practices that are consistent with those promul-
13 gated by the Secretary. Whenever the Secretary determines
14 that State has provided such system, he shall publish in the
15 Federal Register a notice to that effect and thereafter estab-
16 lishments and persons in that State shall be subject to the
17 requirements of said system in lieu of the requirements of
18 this Act, except that nothing in this section shall preclude
19 the Secretary from rescinding such notice and reasserting
20 Federal jurisdiction over such establishments and persons
21 under this Act if he determines that such action is in the
22 public interest.

23 SEC. 9. For the purpose of this Act, fish and fishery
24 products shall be deemed to be adulterated—

25 (a) If they bear or contain any poisonous or deleterious

1 substance which may render them injurious to health, but, if
2 the substance is not an added substance such fish and fishery
3 products shall not be considered adulterated under this para-
4 graph if the quantity of such substance in such fish and fishery
5 products does not ordinarily render them injurious to health;
6 or

7 (b) If they bear or contain any added poisonous or
8 added deleterious substance, unless such substance is per-
9 mitted in their production or is unavoidable under good man-
10 ufacturing practices, as may be determined by the Secretary
11 or under other provisions of Federal law limiting or tolerating
12 the quantity of such added substance: *Provided*, That any
13 quantity of such added substances exceeding the limits so
14 fixed shall also be deemed to constitute adulteration; or

15 (c) If any substance has been substituted, wholly or in
16 part therefor; or

17 (d) If damage or inferiority has been concealed in any
18 manner; or

19 (e) If any substance has been added thereto or mixed
20 or packed therewith so as to increase its bulk or weight, or
21 reduce its quality, or make it appear better or of greater
22 value than it is.

23 SEC. 10. Every vessel of the United States harvesting or
24 processing fish or fishery products for movement in com-

1 merce shall be constructed, equipped, operated, and main-
2 tained, to meet such sanitary standards and practices as the
3 Secretary may prescribe.

4 SEC. 11. All fish and fishery products processed in an
5 official establishment for movement in commerce or in an
6 official establishment the operations of which directly affect
7 the movement of fish and fishery products in commerce or on
8 vessels of the United States and the containers of such prod-
9 ucts shall be subject to inspection and reinspection by sam-
10 pling or other methods by the Secretary at any time when
11 processed for introduction into commerce.

12 SEC. 12. (a) Each immediate container and shipping
13 container of wholesome and unadulterated fishery products
14 may bear in distinctly legible form at the time such products
15 leave the official establishment an official inspection mark.
16 Such container shall bear in distinctly legible form the name
17 of the products, a statement of ingredients, if fabricated from
18 two or more ingredients, including a declaration as to artifi-
19 cial flavors, colors, or preservations, if any, the net weight or
20 other appropriate measure of the contents of such container,
21 and the name of the processor or the name and address of the
22 distributor. The Secretary may permit reasonable variations
23 and grant exemptions from the foregoing requirements when,
24 in his judgment, such variations and exemptions would
25 effectuate the purpose of this Act.

1 (b) The use of any written, printed, or graphic matter
2 on or accompanying any fishery products or the immediate
3 container or shipping container thereof leaving an official
4 establishment which is false or misleading in any manner is
5 prohibited.

6 (c) No fishery products leaving an official establish-
7 ment may be sold or offered for sale by any person under
8 any false or deceptive name. Established trade names which
9 are usual to such products and which are not false and
10 deceptive are permitted.

11 (d) If the Secretary determines that any label used or
12 prepared for use by any person is false or misleading in any
13 particular, he may order such person to discontinue the use
14 of such label except as modified in the manner prescribed by
15 the Secretary. Such person may request a hearing, but the
16 use of the label shall, if the Secretary so directs, be withheld
17 pending a hearing and final determination by the Secretary.
18 Such final determination shall be conclusive unless within
19 thirty days after receipt of notice of such determination such
20 person appeals to the United States court of appeals for the
21 circuit in which such person has his principal place of busi-
22 ness or to the United States Court of Appeals for the Dis-
23 trict of Columbia. An appeal may be taken by filing with
24 the clerk of such court a written petition praying that the
25 Secretary's order be set aside or modified in the manner

1 stated in the petition, together with a bond in such sum as
2 the court may determine to cover the costs of the proceed-
3 ings, if the court so directs. The provisions of section
4 204 (b) through (h) of the Act of August 15, 1921, as
5 amended (7 U.S.C. 194), shall be applicable to appeals
6 taken under this section.

7 SEC. 13. No person shall—

8 (a) Process, sell, offer for sale, transport, or deliver any
9 fish or fishery products from any establishment for move-
10 ment in commerce or the operations of which directly affect
11 the movement of fish and fishery products in commerce
12 or from a vessel of the United States which is unwholesome,
13 adulterated, or otherwise unsuitable for use as human food;

14 (b) Sell or otherwise dispose of for human food any
15 fish or fishery products which have been inspected and
16 declared to be unwholesome or adulterated or otherwise
17 unsuitable for use as human food under this Act;

18 (c) Deliver, receive, transport, sell, or offer for sale or
19 transport for human food any fish or part thereof separately
20 or in combination with other ingredients, other than fishery
21 products, from an official establishment or vessel of the
22 United States except in accordance with the provisions of
23 this Act;

24 (d) Deliver, receive, transport, sell, or offer for sale or
25 transport for human food fish or fishery products from an

1 establishment whose certificate of registration has been
2 suspended;

3 (e) Use or reuse any immediate or shipping container
4 bearing an official inspection mark except for fishery prod-
5 ucts from an official establishment unless the mark is re-
6 moved, obliterated, or otherwise destroyed;

7 (f) Falsely make or issue, alter, forge, simulate, coun-
8 terfeit, use, or possess any official inspection certificate,
9 memorandum, mark, or other identification, or device for
10 making such mark or identification authorized by this Act,
11 or cause, procure, aid, assist in, or be a party to, such false
12 marking, issuing, altering, forging, simulating, counterfeit-
13 ing, use or possession contrary to the provisions of this Act.

14 SEC. 14. For the purpose of enforcing the provisions of
15 this Act, any person engaged in the business of processing,
16 transporting, shipping, or receiving fish or fishery products
17 for movement in commerce or conducting operations which
18 directly affect the movement of fish or fishery products in
19 commerce shall maintain records showing, to the extent that
20 such person is concerned therewith, the receipt, delivery,
21 sale, movement, or disposition of fish or fishery products and
22 shall, upon request, permit the Secretary at reasonable times
23 to inspect such records. Such records shall be maintained
24 for a reasonable period to be determined by the Secretary.

25 SEC. 15. The provisions of this Act shall not apply to

1 any wholesale establishment where the only processing in-
2 volved is the cutting up of fish or fishery products for sale
3 to retail outlets of any kind or description; or to any retail
4 establishments primarily engaged in selling fish and fishery
5 products and other items directly to retail consumers; or to
6 any fisherman selling fish harvested by him directly to retail
7 consumers.

8 SEC. 16. The cost of inspecting fish or fishery products,
9 establishments, vessels, containers, labels, or other matters
10 in accordance with this Act and the regulations issued there-
11 under shall be borne by the United States, except that the
12 cost of overtime and holiday work performed in official estab-
13 lishments or vessels of the United States shall be borne by
14 the owner or person in charge of such establishments or
15 vessels at such rates as the Secretary may determine. Any
16 amount received by the Secretary in reimbursement for sums
17 paid by him for such work shall be credited to the appropria-
18 tion from which payments for such work were made.

19 SEC. 17. The district courts of the United States shall
20 have jurisdiction for good cause shown to restrain any viola-
21 tion of this Act or the regulations issued thereunder.

22 SEC. 18. All fish and fishery products determined to be
23 unwholesome or adulterated pursuant to any inspection or
24 reinspection conducted pursuant to section 11 of this Act
25 shall be condemned. Any person whose fish and fishery

1 products are condemned may appeal to the Secretary from
2 such initial inspection and the condemned fish and fishery
3 products shall be marked and segregated pending such ap-
4 peal. The determination of the Secretary on appeal shall be
5 final and if he sustains the initial determination the fish and
6 fishery products shall be destroyed: *Provided*, That any fish
7 and fishery products that may be made wholesome and un-
8 adulterated by reprocessing shall not be condemned and
9 destroyed if reprocessed under the supervision of an in-
10 spector and found by him to be wholesome and unadulterated.

11 SEC. 19. There are authorized to be appropriated such
12 sums as may be necessary to carry out the provisions of this
13 Act. The Secretary may utilize the services, equipment, and
14 facilities of any Federal agency with or without reimburse-
15 ment in carrying out the provisions of this Act and may
16 designate any Federal agency as an inspection agency.

17 SEC. 20. If any provision of this Act or the application
18 thereof to any person or circumstances is held invalid, the
19 validity of the remainder of the Act and the application of
20 such provision to other persons and circumstances shall not
21 be affected thereby.

A BILL

To protect the Nation's consumers and to assist the commercial fishing industry through the inspection of establishments processing fish and fishery products in commerce.

By Mr. HART

APRIL 10 (legislative day, April 8), 1967

Read twice and referred to the Committee on Commerce

Don

November 15, 1967

EYES ONLY

MEMORANDUM TO

Dr. Edward Wenk, Jr.
Executive Secretary
National Council on Marine Resources
and Engineering Development

In accordance with our discussions concerning the Marine Sciences program for 1968, we would appreciate by December 1 a report from you summarizing all the recommended Federal initiatives relating to safety at sea.

This report should be undertaken with the Secretaries of the Interior, Transportation, Navy, and other interested departments and agencies, and the Director of the Bureau of the Budget.

Joseph A. Califano, Jr.
Special Assistant to the President



EXECUTIVE OFFICE OF THE PRESIDENT
NATIONAL COUNCIL ON MARINE RESOURCES
AND ENGINEERING DEVELOPMENT

WASHINGTON 20500

EXECUTIVE SECRETARY

December 1, 1967

EYES ONLY

MEMORANDUM

TO: Mr. Joseph A. Califano, Jr.
FROM: Edward Wenk, Jr. *[Signature]*
SUBJECT: Marine Science Initiative - Marine Safety

In accordance with your November 15 request, my office has prepared the attached report concerned with Marine Safety. Four new programs are proposed:

- 1) An integrated navigation system for civilian shipping;
- 2) Development of engineering standards and safety regulations for offshore structures on the Continental Shelf;
- 3) Development of engineering standards and regulations for civilian activities under the sea, particularly non-military submersibles;
- 4) Measures for transportation of hazardous cargoes-- to begin implementation of the Udall/Boyd report.

Implementation of items 1, 2 and 3 would involve initially modest studies by the Department of Transportation. New legislation is proposed regarding items 2 and 3.

Initial implementation of item 4 would involve release of the Udall/Boyd report, introduction of new legislation and sponsorship of R&D immediately necessary to implement the recommendations.

These proposals have been discussed with the Bureau of the Budget and the Departments of Transportation and Interior. An attempt has been made to resolve the interdepartmental jurisdictional dispute over hazardous cargoes by the division of responsibility outlined in this paper. The departments, however, have not concurred, and the resolution of this conflict may require intervention at the White House level.

MARINE SAFETY

- A. Navigation.
- B. Continental Shelf Safety.
- C. Safety of Life and Property Under the Sea.
- D. Safety Measures for Transportation of Hazardous Cargoes.

Marine Safety has traditionally been a concern of the Federal Government. Long before safety regulations for highways, air and railroad traffic, the Government recognized its responsibility to insure the public safety of persons and goods on the high seas.

The problem arises today because we are using the seas, coastal margins, seabed and estuaries in increasing intensity and in new ways. In fact, the Marine Resources and Engineering Development Act of 1966 declared as a national policy "the accelerated development of the resources of the marine environment," with explicit language concerning protection of health and property. Advances in technology, the expanding oceanographic research, new kinds of commercial activities and the ability of our people to get to and use the sea for recreation require urgent review of Marine Safety. Recent contamination of the British and French coasts by oil from the TORREY CANYON was a highly publicized example of major pollution. Not so well known are the dozen or so instances of major, inadvertent contamination of our own streams and coasts with chemical and petroleum products. We should not repeat past mistakes of waiting for a major disaster to force us to recognize significant risks and act to prevent or mitigate them.

We must therefore anticipate, forestall and mitigate the effects of

disaster evolving from our intensified utilization of the seas. We should

- . examine new activities and identify hazards;
- . employ advanced technology to reduce accidents and to minimize damage,
- . develop reasonable procedures and controls to promote safe practices, after appropriate consultation with industry.

PROPOSAL IN BRIEF:

The initiative has four parts:

A. **NAVIGATION.** An integrated navigation system should be developed for use of civilian shipping and aviation. U. S. registered vessels in all parts of the world and foreign vessels in U. S. waters suffered more than 2400 collisions and other serious casualties in 1966. Improved navigation systems would reduce the hazards of collisions and shipwrecks, the risks of loss of hazardous cargoes and the costs of routine shipping. It could eliminate redundant systems originally created for only one mode of transportation. New systems could assist scientists and industry in carrying out ocean bed surveys and other technical tasks that require precise location. Equipment and systems developed for military purposes could be merged into the national plan where appropriate. Traffic advisory services in and near harbors and systems could be added.

Initial costs for Department of Transportation study to develop the plan in FY 69 are \$200,000.

B. CONTINENTAL SHELF SAFETY. Safety standards and regulation of offshore structures should be initiated to minimize the hazards to life and property resulting from the intensified offshore activities on the Continental Shelf. One measure of this increased activity is the rapidly growing number of new oil wells drilled each year -- in 1961, 500 new wells - in 1967, more than 1100. Consideration should be given to (1) effect on safety of multiple, possibly conflicting uses of the marine environment for shipping, pipelines, fishing, recreational boating, and the erection of fixed and mobile structures for oil, gas, sulphur extraction, and mining; (2) hazards created by wrecks, debris, pollutants and other litter; (3) requirements for engineering standards for surface or submerged structures and pipelines to minimize storm damage, personnel injury, collision hazards and the possibility of contamination; (4) means for enforcement.

Initial costs for Department of Transportation study in FY 69 are \$200,000.

C. SAFETY OF LIFE AND PROPERTY UNDER THE SEA. An integrated system is required to regulate construction and operation of non-military submersibles, analogous to regulations for surface ships.

A search and rescue capability in the Coast Guard for submersibles and other submerged structures will ultimately be required to supplement the present surface system. Health and safety regulations are also required for increasing numbers of "men in the sea" using aqualungs both for commercial purposes and sport.

Initial cost for Department of Transportation study in FY 69 are \$254,000.

D. SAFETY MEASURES FOR TRANSPORTATION OF HAZARDOUS CARGOES.

Research and development, contingency planning and eventual international agreements are required concerning vessel design, navigational aids and shipping control to prevent or mitigate the danger from accidents involving large quantities of oil, chemicals, explosives and other hazardous cargoes. Such measures as early warning of casualty and clean-up procedures are also required. The Department of Transportation/Department of the Interior Oil Pollution Study recently submitted to the President provides a sound basis for planning and research. The report recommends a funding level of \$10M per year for five years for Research and Development, and establishment of a \$20M revolving fund. No progress has yet been made toward an implementation plan because of an intense jurisdictional argument between the two agencies concerned. Marine Council staff propose an interim division of authority as detailed subsequently, with approximately \$1.5M of FY 69 funds in each agency.

STATUTORY AUTHORITY:

Item 1 on navigation systems requires no new legislation. The responsibility for safety of life and property within the maritime environment, including casualty assistance; safety features of ship construction, equipment, loading, operation and manning; navigational assistance and ship control; maritime law enforcement; port safety and security; search and rescue of vessels and aircraft; as well as investigation of marine casualties falls within the competence and principal province of the Coast Guard, by law or custom. Under the Outer Continental Shelf Lands Act 43 USC 1331-1343, the Secretary of the Interior is charged with adminis-

tering resource extraction and eliminating pollution. The Coast Guard is responsible for matters relating to safety of life and property on artificial islands and fixed structures, and the Corps of Engineers has authority to prevent obstruction to navigation.

The proposed items 2 and 3, however, on Continental Shelf and undersea safety are not adequately covered by existing legislation and the Department of Transportation is drafting new legislation to be submitted to the Bureau of the Budget.

As to item 4 on hazardous cargo -- existing legislation, including the Oil Pollution Acts of 1924 and 1961, the Refuse Act of 1899, the Federal Water Pollution Control Act and the Outer Continental Shelf Lands Act, assign responsibilities for regulating and controlling pollution to the Department of Interior, the Coast Guard and to a lesser extent, the Corps of Engineers. Some improvement in both prevention and control is possible under this existing authority and with existing resources. However, full protection and assignments of any responsibilities may require additional legal authority, including international conventions.

RELATIONSHIP TO NON-FEDERAL INTERESTS

All of these programs should be undertaken in consultation with various industry interests, local and state authorities, as appropriate.

**PROPOSED AREAS OF RESPONSIBILITY FOR RESEARCH
AND DEVELOPMENT RELATED TO HAZARDOUS CARGO**

DEPARTMENT OF THE INTERIOR

1. Improved prevention, detection, tracking, control, treatment and recovery of pollutants along the shore, in bays, estuaries and harbors.
2. Protection, rescue and rehabilitation of wildlife and all living resources, and environmental prediction related to dispersal.
3. Cleaning of beaches and shore structures, as needed, and enforcement of liability for costs thereof.
4. Insurance to cover damages from pollution casualties (does not include loss or damage to vessels).
5. Determination of acceptable water quality standards.

DEPARTMENT OF TRANSPORTATION

1. Ship traffic control at sea and in port, including navigation and guidance systems.
2. Improved prevention, detection, tracking, containment, control, treatment and recovery of pollutants at sea.
3. Planned casualty response including public warning and vessel, aircraft, and equipment deployment to handle pollutant spills anywhere in the maritime environment.

4. Monitoring discharges from all vessels and enforcing maritime regulations concerned with oil, hazardous materials, debris and litter pollution.
5. Techniques, technical requirements and regulation for safety of life and property for offshore structures, piping, terminals and storage.

MARAD

1. Features of construction and design of vessels which concern pollution.

ACTION PROPOSED RELATED TO INITIATIVE DEALING WITH HAZARDOUS CARGO

1. The President release the joint DOT/DOI report, "Oil Pollution," for information of interested parties with an appropriate statement of action being taken.
2. With the assistance of the Departments involved and BuBud, staff of the Marine Sciences Council develop long-term program recommendations, priorities, responsibilities, schedule of progress toward identified goals, and funding plan for the actions recommended in report "Oil Pollution," for submission to the President via Marine Sciences Council by March 1968.
3. DOT and DOI prepare cost/benefit study in areas of responsibility which will provide background for recommended program of item 2.

4. Legislation to implement this initiative should be drafted by agencies concerned, coordinated by Marine Sciences Council staff, reviewed by the Bureau of the Budget, and submitted by the President as a package early in 1968.
5. In order to initiate priority, long lead time R&D programs immediately, \$1M should be added to each of the current FY 1969 budget submissions of the Department of Transportation and the Department of the Interior. This funding is essential to demonstrate positive action to the Nation and the world as to public responsibility in the wake of the TORREY CANYON and related disasters. Neither DOT nor DOI are prepared to commit such funds within present budget ceilings, or pending resolution of the jurisdictional interface.

DEPARTMENT CONCURRENCE

This memo has been discussed with the Bureau of the Budget, the Department of Transportation and the Department of the Interior, but none have yet given concurrence. Resolution of agency responsibilities for the Hazardous Cargo initiative remains a principal issue and requires intervention at the White House level.

November 10, 1967

FILE ONLY

MEMORANDUM FOR

Dr. Edward Wenk, Jr.
Executive Secretary
National Council on Marine Resources
and Engineering Development

In accordance with our discussions concerning the Marine Sciences Program we would appreciate a report by November 20 on a proposal to establish regional authorities, modeled on the River Basin Commissions, to deal with estuarine problems.

Your study should be undertaken with the Secretaries of the Interior, Transportation, Navy, and the Director of the Bureau of the Budget.

Joseph A. Califano, Jr.
Special Assistant to the President



EXECUTIVE OFFICE OF THE PRESIDENT
NATIONAL COUNCIL ON MARINE RESOURCES
AND ENGINEERING DEVELOPMENT

WASHINGTON 20500

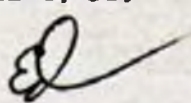
EXECUTIVE SECRETARY

November 27, 1967

EYES ONLY

MEMORANDUM

TO: Mr. Joseph A. Califano, Jr.

FROM: Edward Wenk, Jr. 

SUBJECT: Marine Sciences Initiative- Coastal Zone Conflicts

In accordance with your November 10 request, my office has prepared the attached report concerned with "Resolution of Conflicts in Use of the Coastal Zone -- Federal Assistance to Regional and Local Authorities." Nine action items are proposed.

The major thrust is:

- 1) To strengthen existing mechanisms for Federal-State-Regional cooperation;
- 2) To propose new legislation for comprehensive study of coastal zones; and
- 3) To harmonize inter-disciplinary and inter-institutional activities directed to multi-compatible uses.

The program outlined herein has been reviewed and has general concurrence of the Departments of Defense (CoE), Interior and Transportation. The Department of Interior would prefer to support H. R. 25 along lines it has already negotiated with Congressman Dingell, rather than broaden the scope indicated in this memorandum. They would also prefer to broaden PL 89-753 concerning estuarine studies.

BuBud has not concurred in this initiative.

Attachment
a/s

EYES ONLY

PRIVILEGED

RESOLUTION OF CONFLICTS IN USE OF THE COASTAL ZONE -- FEDERAL ASSISTANCE TO REGIONAL AND LOCAL AUTHORITIES

The Problem -

The coastal margin where sea and land meet has been historically valuable as a buffer against military action. It is now growing in economic importance for urban waterfront development, for transport, for fishing, for extracting oil and other resources. This margin is also that portion of the sea most prized for sport, for aesthetic and naturalist enjoyment, and for science. Yet as a people, we are faced with shrinking opportunities for effective use of the Coastal Zone. The rapidly growing population along our coasts and Great Lakes is accompanied by accelerated development which often thoughtlessly intensifies pollution so as to degrade the quality of the environment. Conflicts among some uses are increasing--or are increasingly apparent--and random choices render the environment inhospitable to other concurrent or future uses. Indeed, severe damage to the environment can result, precluding its return to the previous natural state once the use is terminated, or at great time and cost for restoration of the quality needed for other uses.

In many--perhaps most--cases, uses have evolved with little advance planning, consideration of conflicts or examination of consequences, and hence without adequate consideration of long-term effects on the environment.

The general public interest requires improved management of the irreplaceable resources of the coastal zone. For obvious reasons, steps toward this end require a partnership of Federal and regional authorities--both to meet each local situation with whatever special remedies are required and to engender

effective political action. Each geographical unit must undertake relevant research and development to define the ecological norm, interactions of the marine environment so as to describe and hopefully predict consequences of various uses.

Proposal in Brief -

This initiative concerns 1) strengthening mechanisms for Federal-State-Regional cooperation focused on problems of the coastal zone (including the Great Lakes); and 2) integrating scientific, technological, economic and political factors if the coastal zones are to be devoted to their highest human uses.

Policy decisions or choices in use can then be made more rationally. This means in individual instances that we could dispose of wastes so as not to interfere with swimming; to enjoy boating without reducing shellfish production; and to use large vessels or conduct dredging or offshore drilling without destroying ecological values. Activities proposed herein extend to the bays and inlets and along the entire coast, and are complementary to a separate initiative for revitalization of port cities.

Major steps have been taken within recent years which provide potential tools for the management of the Nation's coastline resources. These include the Water Quality Act of 1965, the Clean Water Restoration Act of 1966, the Water Resources Planning Act of 1965, and the Marine Resources and Engineering Developing Act of 1966. New institutions have been created--River Basin Commissions, and the Marine Council's Committee on Multiple Use of the Coastal Zone, for example. But all of these efforts were created to serve such broad purposes or are so new that their full potential has not been concentrated on coastal zone problems.

To energize these present instruments of public administration and to add new elements as needed, we propose:

- . to focus new emphasis with existing statutory powers and instruments on the multiple use of estuarine and other coastal resources --for example in the planning and operations of River Basin Commissions and Federal-Interstate Compacts, the CoE permit authority and water quality standards;
- . to support new legislation such as H. R. 25 and S. 1262 that would inventory shoreline resources and identify some priorities for their protection;
- . to extend the research and fact-finding needed to understand and assess the magnitude and diversity of the problems of conflicting uses of the coastal zone;
- . to conduct a pilot program designed to test techniques for data collection, technological innovation in relation to decision-making and social control of waterfront use.

The Federal Government would increase cooperative activities with the local authorities--to stimulate effective use of the coastal zones many of which cross state boundaries, to sponsor research and development, establish standards, and identify specific national priorities. As the new institutions mentioned become effective, administrative and legislative adaptations will be needed to harmonize the separate programs.

The program outlined herein is designed to secure integrated benefits from

the coastal zone by first identifying alternative uses, and possibilities for multiple use for compatible purposes, and then by providing for aids to democratic choices among incompatible uses--in the light of adequate understanding of the social costs and benefits, at all levels of each use. The program therefore encompasses:

- . research and development
- . setting standards
- . coordinating the multiple activities impinging (actually and potentially) on the coastal zone
- . Federal-State planning with public information and participation (Federal responsibility for identifying and assessing national level and regional level benefits and costs, as for conservation of unique micro-ecologies).

Most important, the public will be alerted to the critical decisions to be made during the next decade on land and water use in the coastal zone only by Presidential leadership.

Present Activities and Powers -

Work is being done in estuaries now. The Clean Water Restoration Act of 1966 provided for a study of the effects of pollution in estuarine zones. The Secretary of the Interior is to submit to Congress, by November 1969, a report on the importance and uses of estuaries, based on the requested study, including recommendations for a national program.

The Water Quality Act provides for the establishment of water quality standards for interstate waters, including estuaries and estuarine systems. The States have initial opportunity and responsibility for enforcement of the standards, but with back-up Federal powers also available. Under the Water Resources Planning Act, experience in the preparation of comprehensive plans for the

development, utilization and conservation of the water and related land resources of the Nation's river basins has revealed a high degree of interrelationship and interdependence between the estuaries and the rivers which create them. Separation of the upper and lower portions of river basins for planning purposes could reduce optimum development and use of the water and related land resources of entire river basins. The experience of the River Basin Commissions to date is very limited; the four present Commissions were all established during 1967, and the prime focus of attention has been in the fresh or brackish reaches of the rivers concerned.

At regional, state and local levels, there is increasing activity concerned with the quality and use of estuaries or other areas of coastline. For the most part, the work undertaken is directed either at the important but relatively limited question of water pollution, or navigation in river and coastal waters.

New legislation concerning the coastal zone has been proposed, such as a nation-wide inventory of shorelines from the standpoint of erosion (S. 1262, introduced by Senator Tydings). H. R. 25, now under consideration by the House Merchant Marine and Fisheries Committee, would provide for a study (by Interior) to inventory the nation's estuaries, to recommend designation of estuarine areas which should be preserved in a national system, and establish certain regulations governing their use. Bills to establish "marine sanctuaries" in areas of unique ecologic values, some of which would almost certainly be estuarine and some farther offshore, have been introduced in the 90th Congress.

Program for Human Use of Coastal Zone -

To deal with the emerging problems of the coastal zone, a coherent package of planning activity is needed. These involve limited but important new programs

and powers, emphasis on coastal zone aspects in the implementation of existing programs and powers by Federal agencies and new Federal-State agencies, and strengthening the interrelationships among programs for their mutual support.

Specifically, it is proposed that the Administration:

1) Advocate new legislation for a comprehensive study of all the Nation's coastal zones, considerably broadening the inventory and study of estuaries contemplated by the Dingell Bill, H. R. 25. The study of estuaries and coastal reaches should go beyond pollution and the fish and wildlife problems to cover all aspects of the conservation and utilization of the coastal zone. Balanced consideration should thus be given to potential for commercial, industrial, recreational and urban development, and to other factors such as aesthetic values which affect the contribution of these areas to the national welfare. This calls for a multi-disciplinary and multi-agency study by all Federal agencies in cooperation with the States. The inventory and study authorized by H. R. 25 should incorporate the "national estuarine study" now under way under the Clean Water Restoration Act. Moreover, broad participation by other agencies, somewhat along the model of the cooperative and unified approach for river basins under the authority of the Water Resources Planning Act, should be adopted, involving the Departments of Agriculture, Commerce, Health Education and Welfare, Housing and Urban Development, Transportation, as well as the Army and Department of Interior.

2) Include in such legislation provisions of S. 1262 to authorize an appraisal, investigation and general study of the coastline, with case studies in depth to identify significant risks of erosion which threaten effective desirable

utilization of the coastal zone, remedial measures to control shoreline erosion, costs and priorities.

3) Propose additional legislation to authorize a pilot program, in partnership with the States, to deal with urgent problems along coastal reaches on the continental shelf beyond estuaries, between estuaries, and in estuaries where progress toward establishment of River Basin Commissions under the Water Resources Planning Act is deferred, if the particular State(s) concerned at the coastline request a Federal-State compact. Authorization would be for a limited term - perhaps four years - by which time the coverage of River Basin Commissions should be clear, and judgment can then be exercised regarding need for any additional permanent authority.

4) Direct the Water Resources Council and the River Basin Commissions to give appropriate emphasis to estuarine land and water use in River Basin planning and in recommendations for implementing each River Basin plan.

5) Suggest modifications to the proposed Susquehanna and Potomac River Basin Compacts, to provide explicitly for such Federal-State Commissions to deal with problems of conflicts among uses in the estuaries as an important integral part of their responsibilities, with specific advisory committees to highlight estuarine problems as may be needed. In these instances, the geographical extent of estuarine interactions should be examined as a guide to the definition of the area of jurisdiction, to provide unity throughout the Chesapeake Bay.

6) Direct the Commissioner appointed by the President to the Delaware River Basin Compact to support continuation of the emphasis by that Commission on effective attention to problems of conflict among land and water uses within

Delaware Bay, as an integral part of the program of the Compact.

7) Assign to the Marine Sciences Council the responsibility for critical appraisal and monitoring of the adequacy and effectiveness of present Federal action programs in dealing with the conflicts among uses of the coastal zone, utilizing the Council's Committee on Multiple Use of the Coastal Zone for exchange of information, coordinating and harmonizing an integrated program.

8) Designate the Executive Director, Water Resources Council, as Observer to the National Council on Marine Resources and Engineering Development, and Designate the Executive Secretary, National Council on Marine Resources and Engineering Development as Observer to the Water Resources Council.

9) Designate the National Council on Marine Resources and Engineering Development to maintain liaison between activities under this "Initiative" and those under the collateral initiative on Port Development and Redevelopment.

Costs -

The cost for new authorization studies proposed by items 1, 2, 3 might reasonably amount to \$10 million, of which start-up funds in FY 1969 might amount to an additional \$2 million. Most funds could be through a supplemental appropriation.

The other work of reorientation and coordination in items 4 through 9 will require no specific funding, although professional staff attention is heavily involved.

Milestones for Action Steps -

1. Comprehensive study of coastal zones -

- | | |
|--|---------------|
| a. Completion of draft report on "National Estuarine Study" (P. L. 89-753) | Summer 1969 |
| b. Submission of report on above (statutory date) | November 1969 |
| c. Plan of work for comprehensive 5-year project (H.R. 25), with specific activity schedule, based on preliminary findings of (a) (Assuming enactment of H.R. 25 during FY 68 and initial funding for FY 69) | August 1969 |

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| 2. Completion of plan of work and survey of one coast of U.S. under coastline appraisal investigation (Assuming enactment of S. 1262 during FY 68 and funding for FY 69) | June 1969 |
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| 3. Federal-State agreement on a compact for pilot project in resolving conflicts among users of a particular coastal reach not within a functioning River Basin Commission or similar entity | by June 1969 |
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Operations of such a compact, to provide working model experience, such as operational tests of plausible procedures, and reporting of such experience to River Basin Commissions and Federal-Interstate Compacts	July 1970 et seq
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| 4. Executive Order(s) or Presidential memoranda to Water Resources Council and River Basin Commissions emphasizing considerations of coastal zone land and water use in planning functions and implementation recommendations . | February 1968 |
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| 5. Additional administrative steps to accomplish actions 5-9 inclusive | Spring 1968 |
|--|-------------|

H. R. 25 Revision as Submitted by Department of
Interior, April 26, 1967

A BILL To authorize the Secretary of the Interior, in cooperation with the States, to carry out a national program of protecting and conserving the Nation's estuaries and their natural resources, and for other purposes

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That Congress finds and declares that the estuaries in the United States are rich in a variety of natural, commercial, and other resources, including environmental natural beauty, of immediate and potential value to the present and future generations of Americans, and that any modification of these resource rich estuaries directly and indirectly affects commerce. It is therefore the purpose of this Act to protect, conserve, and restore these estuaries and control their uses in a manner that adequate and reasonably maintains a balance between the national need for such protection in the interest of conserving the natural resources of the Nation and the need to develop these estuaries to further the growth and development of the Nation.

SEC. 2. For the purposes of this Act—

- (a) The term "Secretary" means the Secretary of the Interior;
- (b) The term "person" means any individual, partnership, corporation, or association;
- (c) The terms "estuary" or "estuaries" mean all or part of the tidal portion of the navigable waters in the United States which have an unimpaired natural connection with the open sea, including, but not limited to, any bay, sound, or channel, and the lands underlying such waters, and any area which is subject to tidal action either continuously or occasionally;
- (d) The term "national estuarine area" means an environmental system composed of estuaries and adjacent lands which together constitute a manageable unit and which have national significance; and
- (e) The term "natural resources" includes, but is not limited to, sport and commercial fisheries and other aquatic life, wildlife, and recreational values.

SEC. 3. (a) The Secretary, in consultation and in cooperation with the States and other Federal agencies, shall conduct directly or by contract, an inventory of the Nation's estuaries that are (1) unspoiled or undisturbed by the technological advances of man, including, but not limited to, pollutants, or (2) partially spoiled or disturbed by such advances but should be protected from further adverse effects. For the purpose of this inventory, the Secretary shall consider, among other matters, the resource value of these areas, including, but not limited to, the economic and recreational potential, their ecology, their value for navigation, food, hurricane, and erosion control, the effects of exploration for subsurface minerals, their value to the marine fisheries and shell fisheries, the present and future urban and industrial effects upon such areas, their esthetic value, and

the most effective means for reserving and developing properly those which should be developed. The Secretary shall also take cognizance of the results of the study authorized by section 5(g) of the Federal Water Pollution Control Act, as amended, the nationwide recreation plan, plans developed pursuant to the Water Resources Planning Act and river basin planning, and statewide plans prepared pursuant to the Land and Water Conservation Fund Act of 1965.

(b) The Secretary shall give particular attention to whether any estuary should be acquired or administered by the Secretary, because of its national significance, or by a State or local subdivision thereof, or whether estuaries may be protected adequately through local laws or other methods without Federal land acquisition or administration.

(c) The Secretary shall submit annually to the Congress through the President a report of the inventory conducted pursuant to this section, including recommendations with respect to the designation of any estuary as a national estuarine area to be acquired by him. Each recommendation of the Secretary for such designation shall become effective only if so provided by subsequent Act of Congress. Recommendations made by the Secretary shall be developed in consultation with the States, municipalities, and other interested Federal agencies. Each such recommendation shall be accompanied by (1) expressions of any views which the States, municipalities, and other Federal agencies may submit within ninety days after having been notified of the proposed recommendation, (2) a statement setting forth the probable effect of the recommended action on any comprehensive river basin plan that may have been adopted by Congress or that is serving as a guide for coordinating Federal programs in the basin wherein each estuary is located, (3) in the absence of such a plan, a statement indicating the probable effect of the recommended action on alternative beneficial users of the resources of the proposed national estuarine area, and (4) a discussion of the major economic, social, and ecological trends occurring in such area.

(d) There is authorized to be appropriated not to exceed \$500,000 for the first year beginning after enactment of this Act and for four succeeding fiscal years not to exceed \$1,000,000 annually to carry out the provisions of this section.

SEC. 4. (a) The Secretary may acquire lands and waters or interests therein within any national estuarine area approved by Congress or established pursuant to section 5 of this Act by purchase with appropriated or donated funds, donation, or exchange. He shall not acquire any lands or waters or interests therein which are owned by a State or by any political subdivision thereof and which are adequately protected and preserved by a State or political subdivision thereof in accordance with any State plan approved by the Secretary pursuant to section 9 of this Act. In the exercise of his exchange authority, the Secretary may accept title to any non-Federal property and in exchange therefor the Secretary may convey to the grantor of such property any federally owned property under his jurisdiction which he classifies as suitable for exchange or other disposal. The values of the properties so exchanged either shall be approximately equal, or if they are not approximately equal, the values shall be equalized by the payment of cash to the grantor or to the Secretary as the circumstances require.

(b) Any land or interests therein within such national estuarine area which are acquired by the Secretary shall be administered, managed, and developed for the purposes of this Act and for such other purposes as the Secretary determines are compatible with the purposes of this Act.

(c) Any Federal land located within any national estuarine area may, with the consent of the head of the agency having jurisdiction thereof, be transferred to the Secretary for administration as part of said area.

SEC. 5. (a) The Secretary may enter into an agreement, containing such terms and conditions as he deems desirable, with any State or political subdivision or agency thereof for the permanent management, development, and administration by him of any land or interests therein within an estuary and adjacent lands which are owned or thereafter acquired by a State or by any political subdivision thereof. Such agreement shall, among other things, provide that the State or a political subdivision or agency thereof and the Secretary shall share equally in the cost of managing, administering, and developing such area. State hunting and fishing laws and regulations shall be applicable to such area.

(b) Any area covered by an agreement entered into pursuant to this section shall be deemed a national estuarine area for the purposes of this Act.

(c) In furtherance of the effective administration of any area covered by an agreement entered into under this section, the Secretary may acquire in accord-

ance with the provisions of section 4(a) of this Act not to exceed 1,000 acres within the boundaries of said area and such acquired land shall be subject to said agreement.

SEC. 6. (a) Notwithstanding any other provision of this Act, the Secretary shall not acquire by condemnation any improved property or interests therein within any national estuarine area. The Secretary may exclude from the improved property any beach or waters, together with so much of the land adjoining such beach or waters for public access thereto, as he deems necessary to carry out the purposes of this Act.

(b) As used in this section, the term "improved property" means any private property that is owned and used chiefly for hunting before an area is recommended by the Secretary in said report, and that continues in such use, unless the Secretary determines that such use is incompatible with the purpose for which such area is established.

SEC. 7. In order to carry out the purposes of this Act, the Secretary may—

(a) Construct, operate, install, and maintain buildings, devices, structures, recreational facilities, access roads, and other improvements on property acquired by him or covered by an agreement entered into pursuant to this Act, and

(b) Enter into agreements with any person or public or private agency or organization through negotiation for the provision of public accommodations.

SEC. 8. (a) The Secretary shall permit by regulation hunting and fishing on land and waters within any national estuarine area approved by Congress in accordance with the applicable State laws, except that the Secretary may designate zones where, and establish periods when, no hunting or fishing, except shellfishing, shall be permitted for reasons of public safety, administration, fish or wildlife management, or public use and enjoyment. Except in emergencies, any regulations of the Secretary under this section shall be effective only after consultation with the State agency responsible for hunting and fishing activities. Nothing in this Act shall limit or interfere with the authority of the States to manage, control, permit, or regulate shellfishing in any waters within a national estuarine area. Nothing in this Act shall affect the authority of the Secretary under other provisions of law to regulate migratory birds.

(b) No person shall knowingly violate any regulation of the Secretary relating to the public use of any national estuarine area, or injure, remove, or destroy any property or improvement of the United States therein, unless such activities are permitted by regulations prescribed by him or by express provision of this Act.

(c) Any person authorized by the Secretary to enforce the provisions of this section may, without a warrant, arrest any person violating this section in his presence or view, and may execute any warrant or other process issued by an officer or court of competent jurisdiction to enforce the provisions of this section, and may, with a search warrant, search for and seize any property taken, used, or possessed in violation of this section. Any property seized, with or without a search warrant, shall be held by such person or by the United States marshal pending disposition thereof by the court.

(d) Any person who violates the provisions of this section or any regulation issued thereunder shall be fined not more than \$500 or be imprisoned not more than six months, or both.

SEC. 9. (a) Except as provided in section 10 of this Act, before any person conducts any dredging, filling, or excavation work within any estuary such person shall file with the Secretary prior to initiating such work a notice of intention to conduct such work together with such plans, specifications, and other information relative to such work as the Secretary may require by regulation. No such work shall be commenced until authorized by the Secretary. After receipt of such notice the Secretary shall, within a reasonable time, authorize such person to commence the work in accordance with such terms and conditions as the Secretary deems desirable, unless he determines, in his discretion, (1) that such work will unreasonably impair the natural resources of the estuary, or (2) that such work will reduce the quality of the waters of the estuary below applicable water quality standards, except that, notwithstanding the adverse effect such work will have on natural resources, the Secretary shall permit such work whenever he determines that it is in the public interest to do so. The Secretary shall not authorize such work if the States or States wherein the estuary is located will not permit the work to be commenced. The Secretary

may at the request of any Federal, State, or local agency or any interested person or on his own motion hold public hearings relative to whether such work should be commenced.

(b) In carrying out the provisions of this section, the Secretary is authorized to conduct directly or by contract such studies and investigations as he deems desirable in accordance with the applicable provisions of the Fish and Wildlife Act of 1950, as amended, and to accept and use for this purpose funds made available by anyone, including persons seeking to conduct such work in an estuary.

(c) If the Secretary believes that any person is violating or is about to violate, with or without knowledge, the provisions of this section, or any regulations issued thereunder or any condition in any notice issued thereunder, he may request the Attorney General to seek appropriate relief in the United States district court where such person resides or is doing business to abate such actual or threatened violation.

(d) Any person who knowingly violates any provision of this section or any regulations issued thereunder or any condition in any notice issued thereunder shall be guilty of a misdemeanor, and upon conviction thereof shall be fined not more than \$2,500, or imprisoned for not more than one year, or both.

(e) In accordance with the policy established by Congress in the Act of August 31, 1951 (63 Stat. 290), the Secretary shall, to the greatest extent practicable, recover from persons seeking to conduct any dredging, filling, or excavation work in any estuary all reasonable costs incurred by him in administering this section, and all sums received to cover such costs shall be credited to the appropriation from which payments for the administration of this section were made.

(f) Nothing in this section shall be construed as affecting the authority of the Secretary of the Army to issue permits for dredging, filling, or excavation work in any estuary under any other provisions of law. The Secretary of the Interior and the Secretary of the Army shall, prior to the effective date of this section, enter into such agreements as may be appropriate to avoid duplication of effort and to insure the expeditious handling of requests for dredging, filling, and excavation work.

(g) The Secretary shall provide, by regulation, that the provisions of this section shall not apply in the case of any work to be initiated by the owner of a single-family residence if such work relates solely to the use and enjoyment of said residence by such owner or his tenant.

(h) The provisions of this section shall be effective one hundred and eighty days after the enactment of this section.

SEC. 10. (a) Section 9 of this Act shall not apply in any State which the Secretary determines has a system of protection and conservation of estuaries located therein in a manner that will adequately and effectively carry out the purposes of this Act. For the purpose of making this determination, the Governor of such State shall submit to the Secretary, within ninety days after the effective date of this Act or at the beginning of any fiscal year thereafter, for his approval a State plan for the protection and conservation of such estuaries. The State plan shall—

(1) Provide for the administration or supervision of the plan by the State department, commission, or agency exercising primary administration over the natural resources therein;

(2) Identify all the estuaries located in whole or in part in such State;

(3) Set forth the criteria and standards to be followed in determining whether dredging, filling, or excavation work will be permitted in any estuary located in whole or in part in the State;

(4) Set forth the plans, policies, and methods to be followed in carrying out the State plan;

(5) Provide an enforceable regulatory system for prohibiting or conditioning such work and for ascertaining the views and recommendations of interested persons and public agencies; and

(6) Provide that such department, commission, or agency shall make reports in such form and containing such information as the Secretary may from time to time reasonably require to carry out his functions under this Act.

(b) Whenever the Secretary, after notice and an opportunity for a hearing, determines (1) that the approved State plan or amendments thereto have been so changed that they no longer comply with the requirements of subsection (a) of this section, or (2) that, in administering said plan, there is a failure to

comply substantially with such requirements, he shall notify the Governor of the State that section 9 shall apply to the estuaries located therein until he is satisfied that such deficiencies have been corrected.

SEC. 11. Any dredging, filling, or excavation work proposed by any person to be commenced in the Great Lakes and connecting waterways and adjacent marshes affected by such waters shall be conducted in accordance with the provisions of section 9 of this Act, except that the provisions of that section shall not apply if a State plan is submitted and approved in accordance with section 10 of this Act.

SEC. 12. In planning for the use or development of water and related land resources, a Federal agency shall give consideration to estuaries and their natural resources, and all project plans and reports submitted to the Congress shall contain a discussion by the Secretary of the Interior of such areas and such resources and the effects of the project on them and his recommendations thereon.

SEC. 13. The Secretary shall encourage States and local subdivisions thereof to consider, in their comprehensive planning and proposals for financial assistance under the Federal Aid in Wildlife Restoration Act (50 Stat. 917), as amended (16 U.S.C. 609 *et seq.*), the Federal Aid in Fish Restoration Act (64 Stat. 430), as amended (16 U.S.C. 777 *et seq.*), the Land and Water Conservation Fund Act of 1965 (78 Stat. 807), the Commercial Fisheries Research and Development Act of 1961 (78 Stat. 197), and the Anadromous Fish Conservation Act of October 30, 1965 (79 Stat. 1125), the needs and opportunities for protecting and restoring estuaries in accordance with the purposes of this Act. In approving grants made pursuant to said laws for the acquisition of all or part of an estuary by a State, the Secretary shall establish such terms and conditions as he deems desirable to insure the permanent protection of such areas, including a provision that the lands or interests therein shall not be disposed of by sale, lease, donation, or exchange without the prior approval of the Secretary.

SEC. 14. (a) The Secretary shall issue within one hundred and eighty days after the effective date of this Act reasonable regulations to govern the dumping of dredgings, earth, garbage, or other refuse materials of every kind or description, except refuse materials flowing from streets or sewers in a liquid state, or oil as defined in the Oil Pollution Act, 1924, as amended, into any estuary or into the Great Lakes and connecting waterways or into waters beyond the territorial sea of the United States by any person. Such regulations shall be designed to conserve and protect the natural resources therein and to prevent the pollution of such waters.

(b) Any person who knowingly violates the regulations issued under this section shall be guilty of a misdemeanor, and upon conviction thereof shall be fined not more than \$2,500, or by imprisonment of not more than one year, or both. If the Secretary believes that any person is violating or threatens to violate, with or without knowledge, such regulations, he may request the Attorney General to seek appropriate relief to abate such violation.

(c) For the purposes of this section, the term "person" means any individual, partnership, corporation, association, or municipality.

SEC. 15. Nothing in this Act shall restrict or extend such jurisdiction as the States now have with respect to State water laws, nor be construed as an express or implied claim or denial on the part of the United States as to exemption from State water laws.

SEC. 16. Nothing in this Act shall be construed to affect the authority of the Secretary of the Army or the Chief of Engineers to carry out any Federal project heretofore or hereafter authorized, except that, in the case of any national estuarine area authorized by Congress or established by agreement with a State pursuant to this Act the authority of the Secretary of the Army or the Chief of Engineers to undertake or contribute to shore erosion control, dredging, filling, or beach protection measures within the boundaries of such area shall be exercised in accordance with a plan that is mutually acceptable to the Secretary of the Army and the Secretary of the Interior and that is consistent with the purposes of this Act.

STATEMENT OF DIFFERENCES AND SIMILARITIES BETWEEN H.R. 25 AS INTRODUCED AND PROPOSED REVISION THEREOF

1. Unlike H.R. 25, the proposed revision requires the Secretary of the Interior to recognize that the need to conserve and preserve estuaries must be balanced with the need to develop these estuaries to further the Nation's growth and development. Thus, the revised bill is not designed to stop all dredging, filling, or excavation work in estuaries. On the contrary, it recognizes the national need for such work.

2. The revised bill improves the definition of estuaries.

3. Both H.R. 25 and the revised bill direct the Secretary of the Interior to conduct a nationwide study or inventory of our estuaries. Both bills authorize \$4.5 million for the study.

4. Both bills prohibit the Secretary from acquiring any national estuarine area until such acquisition is approved by Congress.

5. Both bills authorize the Secretary to enter into agreements with the States to administer publicly-owned, but not federally-owned, estuarine areas without further Congressional approval. Both bills authorize him to acquire up to 1,000 acres in such areas to round out boundaries, etc.

6. Both bills prohibit the Secretary from acquiring publicly-owned lands or waters in any estuarine area. The revised bill also prohibits the Secretary from acquiring any non-federal land or waters that is adequately protected and preserved by a State or political subdivision thereof under a State plan.

7. The revised bill deletes the provisions relative to zoning.

8. The revised bill and H.R. 25 prohibit the Secretary from acquiring by condemnation hunting clubs, unless such use is incompatible with the national estuarine area.

9. Both bills leave the control, etc. of shellfishing to the States.

10. The revised bill specifically provides that it will not be construed to affect the authority of the Secretary of the Army under authorized projects.

11. The revised bill gives the States an opportunity to control dredging, etc., themselves. The States must prepare and adopt a Statewide plan which the Secretary must approve. The plan must identify the estuaries located therein, provide for the administration of the plan by an agency exercising primary administration over the State's natural resources, set forth criteria and standards in determining whether dredging, etc., should be permitted and provide an enforceable regulatory system. The State must periodically report to the Secretary relative to how the plan is being carried out. If the plan is not followed, the Secretary notifies the Governor and the Secretary controls dredging, etc., in the estuary until the deficiencies are corrected.

12. The revised bill provides that if a State does not prepare a plan that is approved by the Secretary, then a person seeking to dredge, etc., must notify the Secretary and the Secretary shall authorize the work unless it will unreasonably impair the natural resources of the estuary or it will reduce the quality of the water below applicable water quality standards.

Even if the work impairs the natural resources, the Secretary could still authorize it if there were a higher public benefit to be served, such as the economic development of an expanding community.

The Secretary would not authorize the work if it adversely affects navigation or if a State objects.

The Secretary may hold public hearings on his own motion or on the request of an interested party.

The Secretary will charge fees, etc. to recover, to the greatest extent practicable, administrative costs.

Owners of single-family residences need not notify the Secretary, if the work relates solely to their use and enjoyment or that of their tenants.

13. Both bills direct the Secretary to issue regulations governing the dumping of garbage and other refuse material into an estuary.

IN THE SENATE OF THE UNITED STATES

MARCH 13, 1967

Mr. TYDINGS (for himself, Mr. RANDOLPH, Mr. BAYH, Mr. BREWSTER, Mr. CLARK, Mr. EASTLAND, Mr. FONG, Mr. HART, Mr. HATFIELD, Mr. HOLLINGS, Mr. INOUYE, Mr. JACKSON, Mr. JAVITS, Mr. MAGNUSON, Mr. MCCARTHY, Mr. MONDALE, Mr. MOISE, Mr. MOSS, Mr. MURPHY, Mr. MURKIE, Mr. NELSON, Mr. PELL, Mr. RIBICOFF, Mr. SCOTT, Mr. TALMADGE, Mr. THURMOND, and Mr. WILLIAMS of New Jersey) introduced the following bill; which was read twice and referred to the Committee on Public Works

A BILL

To authorize the Army Corps of Engineers to initiate a three-year appraisal report of our national tidal and Great Lakes shoreline.

- 1 *Be it enacted by the Senate and House of Representa-*
2 *tives of the United States of America in Congress assembled,*
3 That the Chief of Engineers, Department of the Army, under
4 the direction of the Secretary of the Army, shall make an
5 appraisal investigation and study, including a review of any
6 previous relevant studies and reports, of the Atlantic, Gulf,
7 and Pacific coasts of the United States, the coasts of Puerto

1 Rico and the Virgin Islands, and the shorelines of the Great
2 Lakes, including estuaries and bays thereof, for the purpose
3 of (1) determining areas along such coasts and shorelines
4 where significant erosion occurs; (2) identifying those areas
5 where erosion presents a serious problem because the rate of
6 erosion, considered in conjunction with economic, industrial,
7 recreational, agricultural, navigational, demographic, and
8 other relevant factors, indicates that action to halt such ero-
9 sion may be justified; (3) describing generally the most
10 suitable type of remedial action for those areas that have a
11 serious erosion problem; (4) providing preliminary cost
12 estimates for such remedial action; (5) recommending pri-
13 orities among the serious problem areas for action to stop
14 erosion; and (6) providing State and local authorities with
15 information and recommendations to assist the creation and
16 implementation of State and local coast and shoreline erosion
17 programs. The Chief of Engineers shall submit to the Presi-
18 dent, the Congress, and the States, as soon as practicable,
19 but not later than three years after the date of enactment of
20 this Act, the results of such appraisal investigation and study,
21 together with his recommendations.

22 SEC. 2. There are authorized to be appropriated such
23 amounts, not to exceed \$1,000,000, as may be necessary to
24 carry out the provisions of this Act.

90TH CONGRESS
1ST SESSION

S. 1262

A BILL

To authorize the Army Corps of Engineers to initiate a three-year appraisal report of our national tidal and Great Lakes shoreline.

By Mr. TYDINGS, Mr. RANDOLPH, Mr. BAYH,
Mr. BREWSTER, Mr. CLARK, Mr. EASTLAND,
Mr. FONG, Mr. HART, Mr. HATFIELD, Mr.
HOLLINGS, Mr. INOUE, Mr. JACKSON, Mr.
JAVITS, Mr. MAGNUSON, Mr. MCCARTHY, Mr.
MONDALE, Mr. MORSE, Mr. MOSS, Mr.
MURPHY, Mr. MUSKIE, Mr. NELSON, Mr.
PELL, Mr. RIBICOFF, Mr. SCOTT, Mr. TAL-
MADGE, Mr. THURMOND, and Mr. WILLIAMS
of New Jersey

MARCH 12, 1967

Read twice and referred to the Committee on Public
Works

November 13, 1967

EYES ONLY

MEMORANDUM FOR

Honorable Alan S. Boyd
Secretary of Transportation

In accordance with our discussions concerning the Marine Sciences Program, we would appreciate a report by November 24 on a proposal that a program of port development be undertaken to restore harbor areas of our cities.

Your study should be undertaken with the Secretaries of the Interior, Housing and Urban Development, and the Army, and the Director of the Bureau of the Budget.

Joseph A. Callmano, Jr.
Special Assistant to the President



THE SECRETARY OF TRANSPORTATION
WASHINGTON, D.C. 20590

November 22, 1967

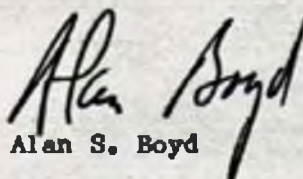
MEMORANDUM FOR

Honorable Joseph A. Califano, Jr.
Special Assistant to the President

Subject: Port Redevelopment Program

The attached paper, "Port Redevelopment - The Restoration of the Harbor Areas of America's Cities," responds to the request in your memo of November 13 for a report on this subject.

The report was prepared in coordination with the Secretaries of Interior, Commerce, Housing and Urban Development, and the Army, the Executive Director of the National Council on Marine Resources and Engineering Development, and the Director of the Bureau of the Budget.


Alan S. Boyd

Attachment

NOV 22 1967

RECEIVED

22 NOV 1967

Port Redevelopment - The
Restoration of the Harbor
Areas of America's Cities

Emerging as a problem -- and an opportunity -- for the future, is the restoration of the harbor areas of our cities. Through a systematic approach and an integrated set of plans and programs, the several Federal agencies involved -- closely cooperating with local government and regional planning groups -- can change decaying waterfronts to showplaces where new housing, parks, recreation facilities and modern transportation become balanced segments of a productive complex of living space, industry and trade.

Many American cities were established on the waterfront, for the waterfront or harbor was the economic key to the development of the cities and the related interior lands. When the cities were young, these waterfronts were living, dynamic areas which provided employment and recreation, marketplaces and parks, warehouses and consumer outlets, and contact with nature at the water's edge. Today many of these waterfronts are neither living nor dynamic, and nature has been crowded out or poisoned. They are often run-down, congested areas -- areas to be avoided.

From the transportation viewpoint, ports and waterfront areas are becoming rapidly obsolete due to their age and to the rapid changes foreseen in transportation technology. Efficient cargo handling and larger, more productive ships will require replacement of the present technically inadequate facilities that serve the older systems. Abandoned piers, warehouses and hulks cluttering many of our waterfronts contribute to making the harbor areas a focus for the spread of decay and unsightliness.

The problem is highly complex:

- It transcends the ports themselves and includes the systematic consideration of the inland transportation networks they serve — plus the recognition that the pattern of needs for seaports may be quite different in the future than it was in the past.
- It includes consideration of the need for urban renewal, a key process in the revitalization of deteriorating areas of cities, and the need for adequate housing.
- It includes recognition of the likelihood that in the future an expanding population of urban Americans will have more time for leisure and recreation while having less open space for recreational use — in particular, attractive waterfront and water area space.
- It includes determination of the means and extent of the need for water pollution control in the harbor areas and tributary streams.
- It includes consideration of individual ports and harbors as sub-parts of larger estuaries.^{1/}

The opportunity is clear:

- Waterfront and harbor area land is usually valuable, or potentially valuable, and will support the development of almost any possible and desirable usage.
- New, more productive transportation technologies will permit more efficient and selective use of waterfront space — a greater and expanding flow of trade and transportation movement can take place using much less waterfront and harbor area space than in the past, thus releasing land for housing or recreational uses.
- New industrial techniques can be applied to reduce the polluting of harbors and estuaries, allowing nature to re-establish the ecological balance.

But solution of the problems will require a high degree of cooperation between local governments, regional planning groups and the several Federal Departments involved. Systematic investigations and analyses of the costs and the benefits — including social costs and benefits — will be needed.

1/

The estuarine problem is being separately developed.

Forecasts of port needs, identification of urban renewal opportunities and desirable recreational areas, delineation of pollution problems, determination of means of financing, will all need to be studied.

The Federal Departments most closely involved are Defense (Army), Interior, Commerce, Housing and Urban Development, and Transportation, plus the Executive Office of the President through the National Council on Marine Resources and Engineering Development. These Departments have already established certain coordinative mechanisms and study teams to deal with harbor and waterfront problems, and a considerable degree of coordination with local authorities already exists.

Relationships with Broader Federal Programs

There is a broad and thorough interrelationship between harbor and waterfront redevelopment programs and other federal program areas such as:

- The Civil Works program of the Army Corps of Engineers.
- The Water Pollution and Fish and Wildlife programs of the Department of Interior.
- The Urban Renewal, Open Space, Urban Beautification, Historic Preservation, Water and Sewers grants, Public Facility loans and Public Works planning programs of the Department of Housing and Urban Development.
- The Economic Development, Trade Promotion, technical assistance business loan and Port Planning programs of the Department of Commerce.
- The Transportation Systems, Transportation Facilitation, Urban Freeway and Coast Guard Port and Maritime programs of the Department of Transportation.
- The Surplus Facilities disposal programs of the General Services Administration and of the Defense Department.

Specific, detailed relationships will be shown where relevant in the material that follows.

Elements of a Program for Port, Harbor and Waterfront Redevelopment and Renewal

A program for port and urban waterfront development and redevelopment should involve all of the above Federal Departments and would embrace a range of activities from creation of entirely new port or waterfront complexes to rehabilitation and conversion of existing port and waterfront lands and facilities. The program would entail three major and closely interrelated components -- (1) comprehensive surveys of port-transportation requirements, interfacing with community needs studies on urban renewal, recreation and pollution; (2) developments of action plans for port, harbor and waterfront area renovation; and (3) integration of port and waterfront planning with programs for conservation of estuarine resources. The Army Corps of Engineers has already begun work related to the first two components, with the cooperation of the Departments of Transportation, HUD, and Interior in areas of mutual interest. The third component is to be covered in a separate report from the Marine Sciences Council.

These interrelated components are described in more detail below, and the projects already in progress are identified.

Comprehensive Studies of Port-Waterfront Needs

Comprehensive surveys need to be conducted to determine the optimum number and spacing of ports, with particular emphasis on requirements to accommodate changing vessel and cargo handling technology. Such comprehensive surveys cannot be confined to port development alone. They must involve

undertaking detailed analyses of trends in industrial growth and location, commodity movements, and fleet composition; identification of implications, by regions, of projected economic activity, traffic movement and vessel size; analysis of port cargo handling and associated facilities, including all foreseeable technology required to accommodate prospective traffic; plus evaluation and recommendations for financial participation by states, local political entities and commercial and industrial interests. These studies, as they develop, must be correlated and allowed to interact with Federal, local and regional studies on urban renewal and housing needs, park and recreation area needs, pollution and ecological conditions.

The Department of the Army, Corps of Engineers, having the most detailed capability for conducting the regional surveys and the primary responsibility for physical port development and maintenance would take the leadership in conducting the regional surveys of port requirements, fully collaborating with the Departments of Transportation, HUD, Interior and Commerce. The following work, either in preparation for such regional surveys, or relevant thereto, is already under way:

- The Corps of Engineers has begun preparation of a report, in collaboration with the Department of Transportation, to identify the major physical and economic problems associated with future improvement of deepwater ports. The report could serve as appropriate background for a request for regional study authority and will be available early in calendar year 1968.
- The Corps of Engineers has developed a general methodology for accomplishing regional harbor surveys, and has proposed initial testing of the concepts through use of FY 1969 research funds.
- The Corps of Engineers has been requested by the Congress to undertake a comprehensive survey of the San Francisco regional harbor complex. Such studies can be done in other locations as part of a wider program.

Development of Action Plans

Development of action plans for harbor and waterfront revitalization must be a joint activity with local, state and regional groups.

Plans could be developed for renewal and rehabilitation of land areas adjacent to the harbor -- and as feasible, consolidation or relocation of cargo handling and industrial facilities.

Because waterfronts are assuming new cultural and recreational significance, it is important to encourage the widespread application of new techniques of waterfront renewal that open them to the full enjoyment of the public.

Where the principal waterfront use is for port facilities, the drama of the docking and loading and unloading of ships has a special fascination for tourists and visitors. Such operations could be made readily accessible to the public from observation galleries which could include dockside restaurants, and educational exhibits. The Coast Guard permits public access to its installations, and this activity could be expanded and made more sophisticated.

Whatever use is made of waterfronts is enhanced if access is easy and attractive. Where waterfronts are devoted to transportation, the street or rail arteries could avoid the water's edge, or be designed with tunnels, decks, depressed grades, or other techniques that can contribute to ease of public access to the area. Commercial access can be designed to maximize the efficiency of this activity while minimizing the amount of waterfront space devoted to truck and rail facilities.

- The Department of Housing and Urban Development and the Corps of Engineers have conducted a preliminary survey of areas engaged in or interested in harbor or urban waterfront renewal. Waterfront renewal activities to be planned for would involve eliminating sources of drift and debris including removal of dilapidated or

obsolete structures, clearing of lands for housing, open space or recreation purposes, substitution of small boat or marina facilities for abandoned commercial areas, and removal of sludge and other solid pollutants from urban watercourses or harbor areas.

- In an effort to determine what new Federal initiatives or authorities might be required to insure effective execution of waterfront renewal plans, the Corps of Engineers is presently engaged in pilot studies in the New York and Boston areas. The studies will identify the many legal, financial and associated problems involved in harbor area renovation, stemming from abandonment of private facilities and sunken or derelict vessels, and make recommendations regarding needed changes in statutory authorities to insure optimum use and effective redevelopment of the harbor area resources.
- The Department of Transportation is developing a Port and Harbor Access program, based on planning methods for determining optimum sets of urban roads, terminal points and intercity roads and rail lines to serve the needs of the port area.
- About fifty cities are now engaged in programs to renew waterfronts and return them to use as desirable community features, for example:
 - At least two cities — Baltimore the major, New Bedford the minor — are using already available Federal tools for land planning, preparation and development in their harbor resurrection programs. A \$22,302,000 urban renewal grant has been set aside for the Federal share of renewing the Baltimore Inner Harbor Project, an area of 109 acres, for commercial use. New Bedford is already engaged in its South Terminal redevelopment for commercial, industrial, public and housing purposes with the aid of a \$12,243,000 urban renewal grant. HUD has also reserved \$6,334,000 for its North Terminal Project which is presently being planned; the two Terminal areas will eventually redevelop almost 270 acres of the former world whaling center. These projects are being initiated, planned, and carried out locally with Federal assistance in the form of loans and grants.
 - Waterfront improvement projects in a number of cities are being undertaken with urban beautification program assistance. Pittsburgh, New Haven, and Berkeley are using program grants to enhance their long-neglected waterfronts.
 - In Portsmouth, Va., the community is completing the redevelopment of a waterfront abandoned by a railroad company. The improvements will include a 150 slip marina, a motel, high-rise apartments, an office building, and a waterfront drive.

The following programs and expertise for waterfront renewal planning are now generally available:

- HUD planning loans or fund advances: HUD advances funds to cities for planning in designated project areas. Urban renewal planning is the detailed study of the area in terms of appropriate land uses, real estate values, and the economic and social factors present and bearing on the area. The objective of this planning is the realization of a plan of action for revitalization and redevelopment of the area. Depending on the size, complexity, and/or exigency of the situation, renewal planning can be completed in a year to twenty-four months.
- HUD land preparation activities: The carrying out of urban renewal activities involves the purchase of substandard, obsolete or inappropriate property, demolishing the old structures, and installing streets, sewers, water and other utilities, parking and parks which serve the area, and other items of utility and beautification. These activities are financed by a two-thirds or three-quarter (in the case of small cities) Federal grant. Relocation assistance in the form of finding new accommodations and the payment of moving expenses, property loss, adjustment to higher rents, and business displacement payments, are available to everyone displaced by these governmental actions at 100 percent cost to the Federal Government.
- HUD redevelopment assistance: After land preparation comes the construction of commercial, industrial, residential and/or public facilities in accordance with the urban renewal plan. This construction takes place after the land has been sold to a redeveloper.

In addition, HUD financial assistance is available for rehabilitation loans at three percent for refurbishing of commercial-industrial facilities as well as housing, two-thirds grants for neighborhood facilities carrying out programs of health, recreation and social activities, urban beautification grants of fifty percent for the development of publicly owned land for recreation, conservation, scenic or historic preservation purposes, and fifty percent grants for the development of urban parks.

Again, depending on size and complexity, the renewal preparation and development phase will take from eighteen months to five years for tangible results to appear.

Although HUD urban renewal funds are available for the revitalization and redevelopment of waterfront-harbor areas, there are policy constraints that limit the use of renewal funds to those projects

which conserve and expand low and moderate income housing, develop new employment opportunities for the jobless and underemployed, and to the renewal of areas of critical and urgent need. This does not necessarily conflict with waterfront-harbor renewal, but sets limits on the kinds of revitalization that can be supported with funds.

- Department of Interior water pollution control assistance is available in these areas:

- Cooperation with state and local authorities to establish water quality standards.
- Construction grants for municipal and industrial sewage treatment plants.
- Demonstration of water pollution control techniques and systems.
- Research and development in water pollution control.
- Cooperation with local officials in enforcement activities.
- Control of water pollution from ships and boats in harbors and marinas.
- Control of water pollution from Federal installations.
- Support of education and training in water pollution control.

- Department of Interior outdoor recreation - waterfront parks assistance is available in these areas:

- Grants for parks and outdoor recreation areas through the land and water conservation fund.
- Site planning grants - (land and water conservation fund).
- Technical assistance in planning and design.
- Technical information clearance and service.

- Additional Interior Department assistance is available in these areas:

- Fish and wildlife research and management.
- Geological and hydrological services.

-- Advice on mineral-related industries.

- The Corps of Engineers can provide planning assistance in harbor development and water-oriented projects if provided continuing general study authority.
- The Maritime Administration, Department of Commerce, can provide assistance and consulting services in port design, port administration and cargo handling methods to Federal, local or private groups.

Integration with Estuarine Programs

The third major aspect of a port development program must involve the comprehensive study and inventory of coastal zone resources (including estuaries), and identification and evaluation of the ways in which these resources might either be (a) enhanced through port development or modification, or (b) adversely affected by either continuation of present operations or development of new facilities. A separate report on coastal zone resources is being prepared by the National Council on Marine Resources and Engineering Development.

November 17, 1957

EYES ONLY

MEMORANDUM FOR

Honorable Nicholas deB. Katzenbach
Under Secretary of State

In accordance with our discussions concerning the Marine Sciences Program, we would appreciate a report by November 24 on a proposal that the United States initiate, through the United Nations, a Decade of Exploration of the Seas.

Your study should be undertaken with the Secretary of the Interior, the Directors of the Bureau of the Budget and the Office of Science and Technology, and Dr. Edward Weik of the National Council on Marine Resources.

Joseph A. Califano, Jr.
Special Assistant to the President

→ Don Legatos

DEPARTMENT OF STATE
WASHINGTON

November 30, 1967

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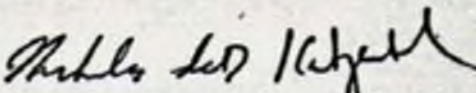
PERSONAL NOTE FOR MR. JOSEPH A. CALIFANO, JR.
THE WHITE HOUSE

I am attaching a lengthy memorandum on the subject of a "UN Decade of Exploration of the Oceans" which has the concurrence of Secretary Udall, Dr. Hornig, Mr. Schultze and Dr. Wenk. I wish to highlight here a few of my personal conclusions.

(1) I think the identification of the President with the proposal for a major international cooperative program for the exploration of the oceans would have both domestic and international political advantages.

(2) It would be a mistake for the President to make any statement on this subject until the current round of debate at the UN General Assembly is completed, hopefully sometime during December.

(3) While it would be possible for the President's statement to take place any time after January 1, 1968, it would be preferable if the Executive Branch had a clearer picture of the scope and content of the exploration program and a firmer view of what the dollar cost would be. It would be possible to give the President's statement more punch and to make it more precise and meaningful to both the domestic and international maritime community if the statement were to be made after this information is in hand, i.e., the end of February 1968.


Nicholas deB. Katzenbach

Attachment:

Memorandum on Decade.

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DEPARTMENT OF STATE

Washington, D.C. 20520

November 30, 1967

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MEMORANDUM FOR MR. JOSEPH A. CALIFANO, JR.
THE WHITE HOUSE

Subject: Proposal that the United States
Initiate, through the United Nations,
a Decade of Exploration of the Oceans

I refer to your memorandum of November 10 on
this subject.

The concept -- its origin, purpose and scope

A proposal for an "International Decade of Exploration of the Ocean Floors" was developed initially by the Department of State and other interested agencies in anticipation of the present debate on marine matters in the UN General Assembly. It was one of several proposals designed: (1) to avoid premature action by the General Assembly on proposals concerning the exploration, control and use of the ocean floor which were presented by Malta; (2) to bring the General Assembly to recognize the need for greater knowledge and experience concerning the ocean floor and its resources; and (3) to promote the acquisition of this knowledge through a program of expanded international cooperation. It was thus intended essentially as a response to a political problem.

The proposal suggested a UN-sponsored program during the 1970s under which all States in a position to do so would (1) make a special effort to acquire and apply scientific knowledge of the seabed and its subsoil, (2) coordinate their research efforts, (3) share their studies, and (4) assist other nations to develop capabilities in marine science and technology.

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- 2 -

As prepared for use during the General Assembly, this concept was specifically limited to the ocean floor -- including both the seabed of the deep ocean and the continental shelf -- because such a proposal would respond directly to the principal point of debate in the UN (the resources of the deep ocean floor) while, at the same time, avoiding the overexpectations as to the measure of our technological or financial support which might be stimulated, if we were to make a broader proposal. It offered a prospect of near-term economic return to the less developed countries through exploration of the resources of the continental shelf, and did not appear to conflict with existing national or international programs.

In view of the need to avoid these overexpectations and of the uncertainties as to its budget implications, this proposal was not intended for adoption by the General Assembly this year. Rather, it would have called for careful study by a special committee of the General Assembly. In order to avoid premature action, our Delegation was instructed to surface this proposal during the current debate only if necessary to do so in order to forestall unacceptable action on the Malta proposals.

Public announcement has now been reserved for the President.

Ambassador Goldberg has, however, set the stage for proposing consideration of such a "Decade" by suggesting that the General Assembly establish a Committee on the Oceans which would encourage international cooperation in marine research generally and develop principles to guide States in the exploration and use of the deep ocean floor.

This limited proposal for a "Decade" did not prejudge the ultimate scope of such an international

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program (e.g.: its expansion to include the entire ocean and its living resources). We were not unmindful of the appeal and relevance of a broader program. Indeed, the staff of the Marine Council and its consultants considered that, in view of the President's commitment to an accelerated food-from-the-sea program, it was essential to include exploration of fisheries within the scope of the "Decade". In the circumstances at the General Assembly this year, however, we felt that a choice to broaden the program should be made only as the result of a clear demonstration of international support, starting with careful consideration of a more limited concept.

A broader concept (not limited to the ocean floor) would be more attractive and worthwhile for the near future. On the basis of present knowledge, the measure of exploitable resources on the deep ocean floor is quite uncertain, and the prospects for early scientific exploration of the deep ocean floor appears limited. A program of broader scope would lend itself better to existing and near-term capabilities. It would probably attract broader participation, providing that the Member States, including the US, would be willing and able to expend efforts sufficient to make such a special international program meaningful. The broader concept would also be directed to scientific research; not to the management and use of resources.

Present Considerations

US participation in such a "Decade" anticipates expansion of our own national program for the exploration and use of the oceans and seabed over the next dozen years. However, the measure and direction and cost of this national effort are not clear. It has as yet neither been defined nor priced. This awaits the completion of preliminary technical program analyses being prepared by an inter-agency committee of the

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Marine Council. These analyses should provide our first precise estimate of possible program content and costs for US participation in such a "Decade". They are to be ready by February.

We are confident that there would be considerable foreign interest and participation in such a "Decade". At minimum this would involve the commitment to the international "Decade" program of national facilities and activities already in hand and in prospect. To be a truly meaningful proposal, however, the "Decade" should evoke some visible, additional effort -- a possibility which is as yet not clear.

It is in this context that a Presidential initiative for such a "Decade" needs be considered.

A public proposal by the President would provide valuable impetus to our continuing efforts in the United Nations as well as to the development of our own national program. It would emphasize the measure of our interest in serious international consideration of the problems involved, and would enhance the prospects for meaningful international cooperation in this field.

The timing and content of such a proposal should take into account the action taken by the UN General Assembly as a result of its current debate. We expect that the Assembly's final action will occur early in December and that a new Committee on the Oceans, if established, will hold its first meeting in the spring. If the announcement is made before the inter-agency program and cost analyses have been completed next February, it would have to avoid commitments as to scope and program support and would run the risk of creating overexpectations both at home and abroad.

Recommendation

It appears that the most useful course of action would be a public Presidential proposal of an

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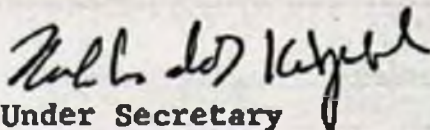
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- 5 -

International Decade of Exploration of the Oceans (not limited to the ocean floor) following final action by the General Assembly on the resolution developed during the present debate (probably early December) and before the first meeting of the Assembly's new Committee on the Oceans (probably in mid-Spring). This proposal should be based on the program and cost analyses which will be ready in February. A draft, which summarizes the possible content of such an announcement, is enclosed.

This report and recommendation are concurred in by Secretary Udall, Mr. Schultz, Dr. Hornig and Dr. Wenk as well as Assistant Secretary Frosch of the Navy and Assistant Secretary Kincaid of Commerce.

We will keep you informed as to both the timing and any changes in the context for such a Presidential initiative.


Under Secretary

Enclosure

Presidential Statement

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SCI:RFPackard:vm1
November 22, 1967



DEPARTMENT OF STATE

Washington, D.C. 20520

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SUGGESTED PRESIDENTIAL STATEMENT

In my first report to the Congress on marine resources and engineering development last year, I emphasized that the resources of the oceans can help us meet many of the challenges that face our nation and the world today. I pointed out that the vast food reserves of the sea must be developed to help end the cycle of famine and despair, that the influence of the oceans must be understood, that the wealth of the ocean floor must be freed for the benefit of all people and that the seas must be used as pathways to improved international understanding and cooperation.

Last fall the matter of utilization of the resources of the ocean floor was considered extensively in the General Assembly of the United Nations. The Assembly responded, as has this Government, to the increasing awareness that one of mankind's major environments, the ocean, is also the newest and perhaps most valuable frontier.

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- 2 -

Ambassador Goldberg called for new efforts for international cooperation in promoting the exploration and use of the ocean and the UN General Assembly has taken specific action to encourage such efforts. Its new Committee on the Oceans will hold its first meeting _____.

Under the Marine Resources and Engineering Act of 1966, the United States has already begun to establish a coordinated, long range program in marine science, and we stand ready to do our share in developing a comprehensive program of international cooperation.

I, therefore, am instructing Ambassador Goldberg to urge as an early step that the United Nations examine and consider an "International Decade of Exploration of the Oceans" which would seek, through international cooperation, to acquire greater knowledge and understanding of the uses of the oceans for the benefit of all people.

Such a program would bring together many national and international scientific endeavors. It would

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- 3 -

enhance other efforts already underway. It would lay the groundwork of further cooperation in the future. It would encourage all states which are in a position to do so to provide personnel, material, facilities and other support for acquisition of this knowledge, to share their scientific studies with other nations, to assist other nations to develop their related capabilities and to coordinate their national research efforts with those of other states.

We seek the views and contribution of all interested nations so that, through international cooperation, we would indeed be using the seas for improved international understanding and well-being.

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November 10, 1957

EYES ONLY

MEMORANDUM FOR

Honorable Stewart L. Udall
Secretary of the Interior

In accordance with our discussions concerning the Marine Sciences Program we would appreciate a report by November 21 on a possible five-year Fish Protein Concentrate program.

This report should contain recommended levels of expenditures during that period, a description of the types of projects to be funded (e.g., factories, marketing studies, etc.), and a forecast of the number of people who might be reached by the program.

Your study should be undertaken with the Administrator of the Agency for International Development, the Directors of the Bureau of the Budget and the Office of Science and Technology, and Dr. Edward Wenk of the National Council on Marine Resources.

Joseph A. Califano, Jr.
Special Assistant to the President



UNITED STATES
DEPARTMENT OF THE INTERIOR
OFFICE OF THE SECRETARY
WASHINGTON, D.C. 20240

NOV 14 1967

Dear Mr. Califano:

As a result of our discussions on November 8, 1967, I am pleased to describe further the Bureau of Commercial Fisheries "Food from the Sea" program and fund requirements for fiscal year 1968 and fiscal year 1969.

The budget of \$14.25 million is the minimum necessary to achieve the objectives of the program. This will perfect the processes for making FPC, develop new methods of catching and processing marine resources, improve techniques for distribution of the product, and define and monitor the fishery resources. We have reduced the original program of \$20.0 million by about 30 percent by eliminating those parts of it which could be deferred. I am convinced that the program will not be successful if it is reduced further. I recognize the President's commitment to keep Government spending at a minimum. We therefore propose to finance part of the new program by postponing other activities in the Bureau of Commercial Fisheries in the amount of \$4.25 million. We are requesting that the remaining \$10 million for "Food from the Sea" be included in the budget for fiscal year 1969.

A 5-year cost projection, beginning with \$14.25 million in fiscal year 1969, and totaling \$140.75 million for the 5-year period, is attached. (Attachment 1).

This program will produce a double benefit, by strengthening our domestic fishing industry and allowing the United States to assist a hungry world to feed itself. We anticipate that the program will bring about a doubling of the annual protein yield of the sea in 10 years. The increase will provide balanced protein diets for about one and one half billion people per year. The second attachment shows estimated FPC production in the next 5 years and the numbers of people who will benefit. We would plan to coordinate our activities closely with the Agency for International Development.

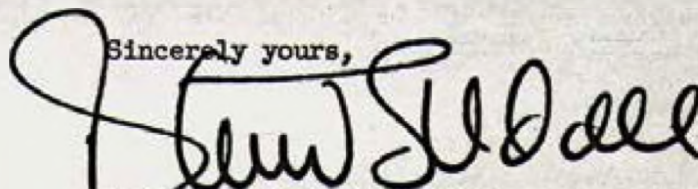
I am confident that the Bureau of Commercial Fisheries is ready to begin this comprehensive program in fiscal year 1969. Since the last meeting of the Marine Resources Council the Bureau has developed the outline of a management plan, which has been reviewed by the Council staff and approved in principle. If it appears that the Food from the Sea program will be funded in fiscal year 1969 the Bureau plans

RECEIVED

to appoint a program manager about January 1, 1968, to begin detailed planning. More than half of the work can be started rapidly by contract with private firms and research institutions.

I am enthusiastic about the "Food from the Sea" program. Your support is appreciated. A summary of the program for fiscal year 1969 is attached. (Attachment 3).

Sincerely yours,

A handwritten signature in dark ink, appearing to read "Howard Call". The signature is fluid and cursive, with a large initial "H" and a long, sweeping underline.

Secretary of the Interior

Hon. Joseph A. Califano, Jr.
Special Assistant to the President
The White House
Washington, D.C. 20500

Enclosure

Attachment 1

Food From the Sea
Department of the Interior Programs
5 Year Cost Projection

	<u>1969</u>	<u>1970</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>Totals</u>
Accelerated development of FPC	4.5	6.0	7.0	5.0	4.0	26.5
Automation and mechanization of vessels and gear	6.5	8.0	12.0	10.0	10.0	46.5
Ocean science and technology	2.5	3.5	^{1/} 5.5	^{2/} 17.0	^{3/} 31.0	59.5
Aquatic husbandry	<u>0.75</u>	<u>1.0</u>	<u>2.0</u>	<u>2.0</u>	<u>2.5</u>	<u>8.25</u>
Totals	14.25	18.5	26.5	34.0	47.5	140.75

1/ \$1.0 million for design of a submersible

2/ \$14.0 million to begin construction of submersible

3/ \$27.0 million to complete submersible

Attachment 2

5 and 10 Year Projections of FPC Production
and Numbers of People Who Will Benefit

<u>Fiscal Year</u>	<u>FPC Production in Tons</u>	<u>Numbers of People Fed at 10 g. Protein Per Day</u>
1969	824	166,000
1970	3,120	624,000
1971	6,240	1,248,000
1972	8,320	1,664,000
1973 ^{1/}	10,400	2,080,000
1979 ^{2/}	7,500,000	1,500,000,000

1/ Projected growth after fiscal year 1970 based on estimated growth rates of private industry.

2/ Fiscal year 1979 figure based on favorable response from foreign countries and American and foreign industry.

Attachment 3

Bureau of Commercial Fisheries
November 6, 1967

ACCELERATED FOOD FROM THE SEA DEVELOPMENT PROGRAM

There is food in the sea and there are people who urgently need this food. The challenge is to make this food available to those who need it. A start has been made, for FPC even in its research stage has demonstrated that a nutritious food product which can be fed even to infants can be made from marine resources now available in large amounts. This is just a start. Many problems still exist in the further development of FPC and its incorporation into diets and also in the broader context of locating, catching, processing, and utilizing food from the sea for all purposes.

Research and development programs within Government now directed to development of food from the sea are inadequately financed to make a significant contribution in meeting the world food problem. With development of advanced technology we should be able to increase the animal protein provided by fishery resources at least fivefold over the present level of 6 million metric tons annually.

This accelerated Food from the Sea Program consists of four major initiatives geared to fill gaps in our work that are presently blocking action by private enterprise. Once these obstacles are overcome it is expected that private capital will take over the responsibility for increasing world animal protein supplies. The uncertainty and costs of development have placed it beyond the capability of the private sector to do the necessary fundamental technological, biological, and oceanographic research.

The four major initiatives are:

	<u>Proposed Budgets in</u> <u>Millions</u>	
	<u>Original Proposal</u>	<u>No.1 Priority</u>
	\$20.0	(14.25)
1. Accelerated development of FPC--to utilize fish in a manner so it can be made available to people who need it. Includes development of new and cheaper ways of making FPC and securing FDA approval, and other new techniques for using fish.	6.5	(4.5)
2. Automation and mechanization of vessels and gear--to develop new and more efficient ways of catching fish. Includes development of methods for locating and catching unutilized resources; reducing labor at sea; and improving quality.	7.5	(6.5)
3. Ocean science and technology--to ensure maximum availability of, and prevent unwise use of, fishery resources. Includes resource mapping; understanding reasons for fluctuations in abundance; and ocean surveillance from spacecraft and submersibles.	2.5	(2.5)
4. Aquatic husbandry--to increase the productivity of fish and shellfish in natural and artificial environments.	3.5	(0.75)

11/4/67

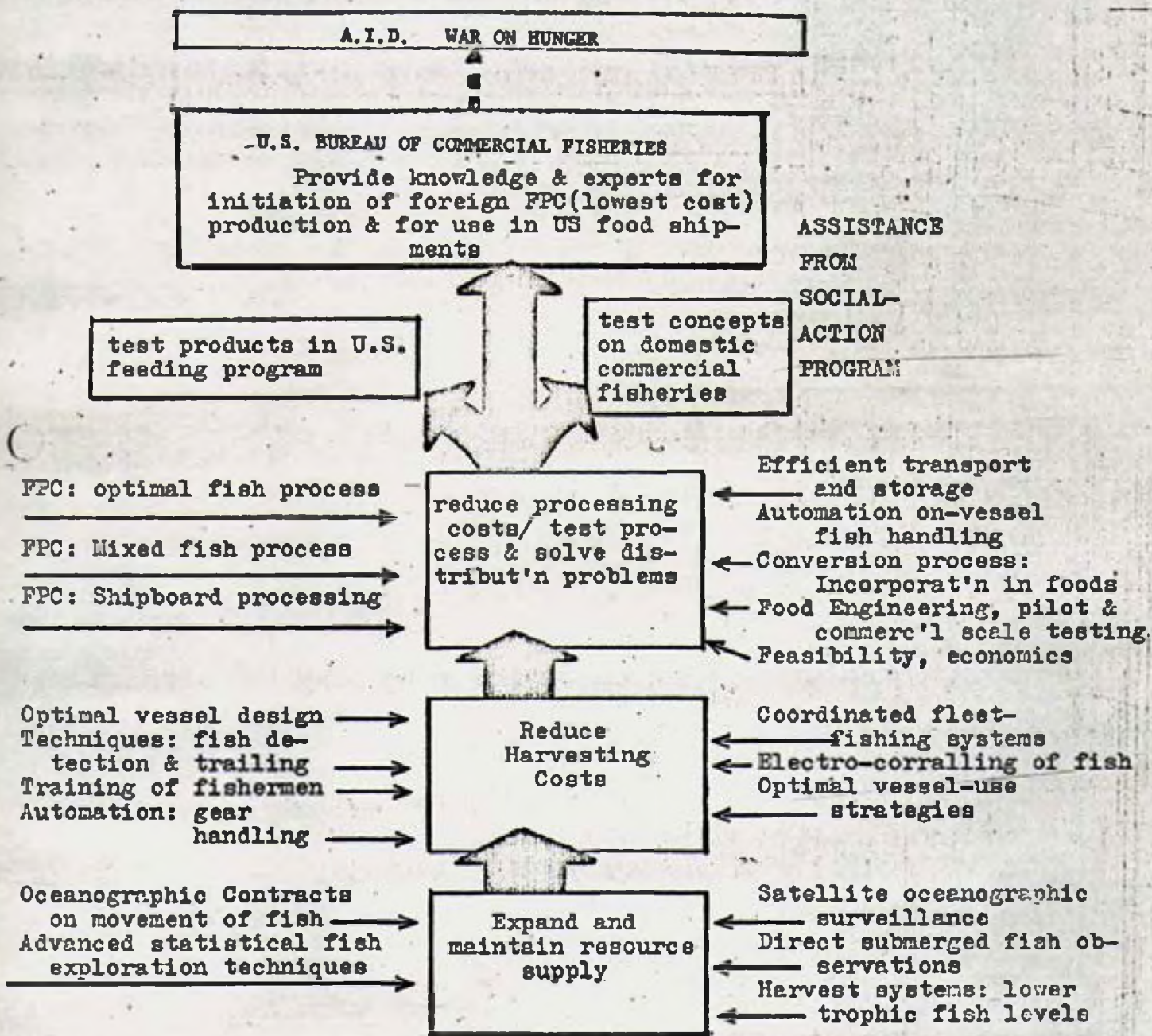
PRIORITY CLASSIFICATION
FOOD FROM THE SEA DEVELOPMENT PROGRAM
(IN MILLIONS OF DOLLARS)

	1st	2nd
Food from the sea development program (over ceiling):		
FPC - Refinement of present solvent extraction process	1.00	-
FPC - Development of enzymatic digestion process and application of processes to shipboard use	2.50	-
FPC - Development of unique and specialized processes and products from fishery resources	-	2.00
FPC - Market development and feasibility studies	1.00	-
Automation and mechanization of vessels and gear - Locating and harvesting techniques	1.50	-
Automation and mechanization of vessels and gear - Fishing vessel design and development	1.00	-
Automation and mechanization of vessels and gear - Modern fish handling aboard vessels	1.50	-
Automation and mechanization of vessels and gear - Fish processing and preservation techniques	1.00	1.00
Automation and mechanization of vessels and gear - Economics, marketing, storage, and transportation practices	1.50	-
Ocean science and technology	2.50	-
Aquatic husbandry - Development of techniques for control and enhancement of environment	-	2.00
Aquatic husbandry - Management through release of hatchery-reared stocks	.75	-
Aquatic husbandry - Pond fish culture for marketable products..	-	.75
TOTAL	14.25	5.75

FIGURE 1

Flow chart Accelerated Food from the Sea Program

ILLUSTRATING CONTRIBUTIONS OF MANY DISCIPLINES TO TOTAL SYSTEM





UNITED STATES
DEPARTMENT OF THE INTERIOR
OFFICE OF THE SECRETARY
WASHINGTON, D.C. 20240

NOV 14 1967

Dear Mr. Califano:

During our meeting on November 8, 1967, Assistant Secretary Cain introduced a proposal to fabricate immediately one or more research and development model units for production of fish protein concentrate (FPC) in foreign countries. He said that if funds could be made available, such a unit, capable of producing 1,000 pounds of FPC per day, could be installed and in production by midsummer of 1968.

The advantages of this timing are obvious. Our engineers have calculated that one such plant could be built in the United States, ready for shipment to a selected country, for about \$750,000. Operating at full capacity this plant could produce enough FPC in a year to meet the minimum daily animal protein requirement of more than 35,000 people. The product could be used by the local government in school lunch programs and other feeding tests.

Funds will need to be provided immediately if this timing is to be met. This would require a supplemental appropriation in fiscal year 1968. The Department of the Interior does not have authority to provide direct development assistance to foreign countries. We interpret this to mean that supplemental funds for construction, shipping, and operation of one or more model units would have to be added to the fiscal year 1968 budget of the Agency for International Development. The Bureau of Commercial Fisheries would provide technical assistance in construction and operation.

I believe that this proposal should be considered seriously for immediate funding.

Sincerely yours,

Secretary of the Interior

Hon. Joseph A. Califano, Jr.
Special Assistant to the President
The White House
Washington, D.C. 20500



EXECUTIVE OFFICE OF THE PRESIDENT
NATIONAL COUNCIL ON MARINE RESOURCES
AND ENGINEERING DEVELOPMENT

WASHINGTON 20500

EXECUTIVE SECRETARY

November 28, 1967

EYES ONLY

MEMORANDUM

TO: Mr. Joseph A. Califano, Jr.

FROM: Edward Wenk, Jr. *EW*

SUBJECT: Initiative on Food From the Sea

Secretary Udall's report on Food from the Sea, prepared in response to your November 10 request, is generally concurred with, but several aspects deserve additional comment.

1. Interior's proposed program was developed in collaboration with the Marine Sciences Council staff and the Council's Food from the Sea Committee;
2. The program was carefully reviewed by Council consultants and received their endorsement both in scope and content. Moreover, in relation to all other Council initiatives, it was considered of highest priority. A copy of our Consultant's analysis is attached.
3. This initiative was supported by the Council at its November 15 meeting and will be embodied in its recommendations being laid before the President;
4. Interior has developed program and management plans in excellent detail but they have not done justice to the case in terms of benefits. The program is presented timidly and without due recognition of the dimensions of the world hunger problem and of the contributions, for example, that could be made to MEET NUTRITIONAL REQUIREMENTS OF 200 MILLION PEOPLE IF AS LITTLE AS 5% OF THE WORLD FISHERIES CATCH IN 1980 WERE DEVOTED TO FPC;

5. Bureau of the Budget has been historically critical of internal management by the Bureau of Commercial Fisheries and they have severely nit-picked this program. Because of the budget squeeze, they have approached this question on grounds of "why not to do it," rather than "how to get it done." The potential of the program is so imperative to the President's announced goals that rather than delay the program because of management imperfections, I would propose urgent attention be given to improving BCF management, so as to get on with the program. I laid this out in strong terms to Udall personally in the context that the President should back the program only if a special project office were established with fresh leadership from outside BCF, and if the project received continuing oversight from the Secretary's own office. New personnel with required competence will not come to work for BCF now, but could be attracted by this challenging program. At a meeting on November 24, Udall concurred.
6. The AID caveat in Udall's report that they could not guarantee even the projected level funding for the next five years is derived from their organic organizational processes. This activity should be dealt with on a functional basis. AID is organized to deal with programs only by region and the regional offices have not spontaneously prepared new projects. They should recall that both House and Senate proposed amendments to their authorization in support of food from the sea. Further integration of the program within AID is required. I have brought this problem to Gaud's attention.
7. In view of the budget squeeze, agencies are nervous about supporting any new programs that they might have to support within their budget ceilings at expense of on-going. Notwithstanding Interior's restrained justification and BuBud's necessary concern for economy, I believe this initiative deserves an add-on for this year of \$9 million.
8. This is a modest increase but some new starts accompanied by funds are required to gain credibility of this Administration's support of marine sciences.

cc: The Vice President

PROPOSED
FISH PROTEIN CONCENTRATE PROGRAM

PREPARED
BY
BUREAU OF COMMERCIAL FISHERIES
IN COOPERATION WITH
AGENCY FOR INTERNATIONAL DEVELOPMENT

November 24, 1967

FISH PROTEIN CONCENTRATE PROGRAM

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FISH PROTEIN CONCENTRATE PROGRAM

SUMMARY STATEMENT

The third world food survey conducted by the Food and Agriculture Organization reveals that just to compensate for rising population and maintain the present level of nutrition, the requirement for animal protein must be increased from the present level of 31 million metric tons to 50 million metric tons by 1985. Almost 60 percent of the world population lives in countries where the national average diet is below the minimum standard of 10 grams per day of animal protein. To effect a reasonable improvement in nutrition, the supply of animal protein will have to be increased to a total of 61 million metric tons now, and to 98 and 140 million metric tons by 1975 and 1985, respectively.

The sea is a vast storehouse of food, particularly animal proteins. At the present time, approximately 6 million metric tons of animal protein comes from edible fish and shellfish. If the annual landings were to be increased to 200 million metric tons--an amount entirely possible--the sea would furnish 30 to 40 million metric tons of animal protein each year.

This proposal presents one approach for using the potential of the sea to provide the animal protein that man so greatly needs. It emphasizes an accelerated program for development of a protein supplement--Fish Protein Concentrate (FPC)--employing the technical and international capabilities of the Agency for International Development (AID) and the Department of the Interior, Bureau of

Commercial Fisheries (BCF). Present and future food-from-the-sea goals of AID and BCF are discussed in terms of such considerations as interactions with industry; costs, personnel, and facilities; alternatives and constraints.

FPC as a protein food additive can contribute substantially toward alleviating malnutrition of the hungry people of the world. The joint program envisioned by BCF and AID gives promise to reaching this goal.

The program will establish or provide:

- In developing countries the capabilities for solving their own food problems.

- Supplies of domestically produced FPC to meet critical animal protein deficiencies in developing countries on a short-range basis.

- A broad and flexible food resource base for the world.

- Protection against unwise use of this resource.

- New, more efficient fishing gear and vessels.

- Improved low cost methods of processing FPC.

- A product from presently underutilized resources that can fortify a variety of existing food products.

- Popular acceptance of protein fortified foods.

PROGRAM OBJECTIVES

The objectives of the FPC program are:

1. To demonstrate that much of the animal protein needs in developing countries, particularly of children, pregnant women and

lactating mothers, can be met through food from the sea. Initially, we intend that 10 grams of animal protein be provided through application of the FPC technology to no less than 4 million people daily by 1973.

2. To alleviate human hunger by long-range programs carefully designed to extract more usable food from the sea by the United States and other nations.

3. To translate scientific and technological achievements in the food-related marine sciences into industrial scale, commercial undertakings in less-developed countries and in the United States.

PROGRAM BENEFITS

The accelerated Fish Protein Concentrate program along with the present efforts of BCF and AID is expected to provide 2,000 tons of FPC in FY 1970 for use by AID in its food donation program to critical areas of the world. Availability of FPC would increase to an estimated 72,800 tons in FY 1975, most of which will be produced by AID-assisted and other commercial plants elsewhere in the world. These totals would supply annually, animal protein needs as follows:

Fiscal Year	Tons of Fish Caught for FPC	Tons of FPC Produced	Number of People Receiving Protein Supplement
1970	6,500	1,040	208,000
1972	110,500	17,680	3,536,000
1973	208,000	33,280	6,656,000
1975	455,000	72,800	14,560,000

Sources of FPC are expected to be as shown in Appendix II, table 4, along with the assumptions on which the above projections are based. These projections are considered conservative and it is expected that production of FPC would increase rapidly beyond 1975 as additional foreign and domestic manufacturers go into production. The resource potential is such that as much as 4.2 million tons of FPC for 832 million people could be produced by 1985 or later should conditions call for it.

The fiscal year 1969 cost of the program (BCF and AID) is estimated at \$13.4 million. The total 5-year costs of the program is estimated at \$99.4 million. Options which provide for lower levels of funding are in Appendix IV.

APPENDIX I

Overall Strategy, Plan of Action and Management Concepts for the Fish Protein Concentrate Program

I. OVERALL STRATEGY

To accomplish the goals of the FPC program, the following strategy is proposed:

1. The FPC Demonstration Program.--AID and BCF are currently implementing the FPC Demonstration Program as it was originally developed with the National Council on Marine Resources and Engineering Development earlier this year. AID, having lead agency responsibility for this program, is charged with:

- a. the improvement of fish catching, handling and processing capabilities in at least three protein-deficient countries;
- b. the development of markets for FPC in at least one protein-deficient country; and
- c. the establishment of a viable, commercial FPC industry in at least one protein-deficient country.

and; BCF as the primary support agency will provide the necessary technical assistance and capabilities for supplying FPC and related technology for export by AID by:

- a. establishing and maintaining a domestic resource supply. This initiation will locate, assess, map and provide recommendations for management of marine resources adjacent to the U.S. coast or accessible by U.S. fishermen and which offer potential for low-cost manufacture into FPC;

- b. reducing harvesting costs--to reduce the raw material costs by locating devices, fishing gear and vessels; and
- c. developing and commercializing the FPC process. This aspect will accelerate and expand technological capabilities to permit attainment of the FPC program objectives and to broaden the resource base from which FPC can be manufactured.

It is proposed to retain this strategy as a nucleus for the accelerated FPC program. These aspects are geared to international problems notwithstanding the present domestic program.

2. Acceleration of the FPC Demonstration Program.--In order to move beyond the demonstrational nature of the existing program, it is necessary for BCF and AID to establish FPC industries simultaneously in several developing nations. Acceleration of the program in this fashion underscores the necessity for (a) BCF to resolve promptly the existing technological and resource-related problems associated with FPC, and (b) for AID to multiply its efforts to establish the pre-conditions for viable FPC industries in several developing countries.

3. Roles of Private Enterprise and the Public Sector.—FPC will become a significant agent in the War on Hunger only if it can be established on a permanent, widespread and economical basis and can be taken over in large part by private industry and handled through regular marketing channels. Before this can be done, Government efforts are needed to overcome problems which block action by private enterprise. Once these obstacles are overcome, it is anticipated that private

capital and management would participate on an increasing scale toward production and distribution of FPB for providing protein needs worldwide.

It is recognized that there are many people in the developing world who are not in the "money economy," and to that extent, the continued support of the public sector will be needed.

4. Factual Basis of Action Plan.---An AID-BCF team recently completed a 60-day field survey of five Latin American and four Asian countries. The purpose of this project was to select one country in each of the two regions for FPC demonstration programs.

The criteria employed by the team were:

a. Assessment of the available fishery resources, including an evaluation of the existing fleet, harvesting capabilities, and shoreside support facilities.

b. Identification and evaluation of the indigenous scientific, technological and industrial capabilities.

c. Evaluation of the host economy, including Government policies, and the marketing and transportation systems.

d. Review of the existing nutritional problem and an assessment of the measures undertaken to alleviate the problem.

e. Evaluation of attitudes toward an FPC program on the part of the local public and private sectors, and the USAID mission.

On the basis of the team report, the following observations can be made:

a. Only in two instances were all of the elements considered essential to a successful program found present. The other countries studied are believed to be seriously deficient in respect to one or more of the criteria applied to the survey.

b. Even under the best circumstances, the ultimate cost of FPC to the consumer will remain a serious potential problem. Concerted cost reduction and market development programs are required.

II. PROCEDURE AND PLAN OF ACTION

Division of Program Responsibilities

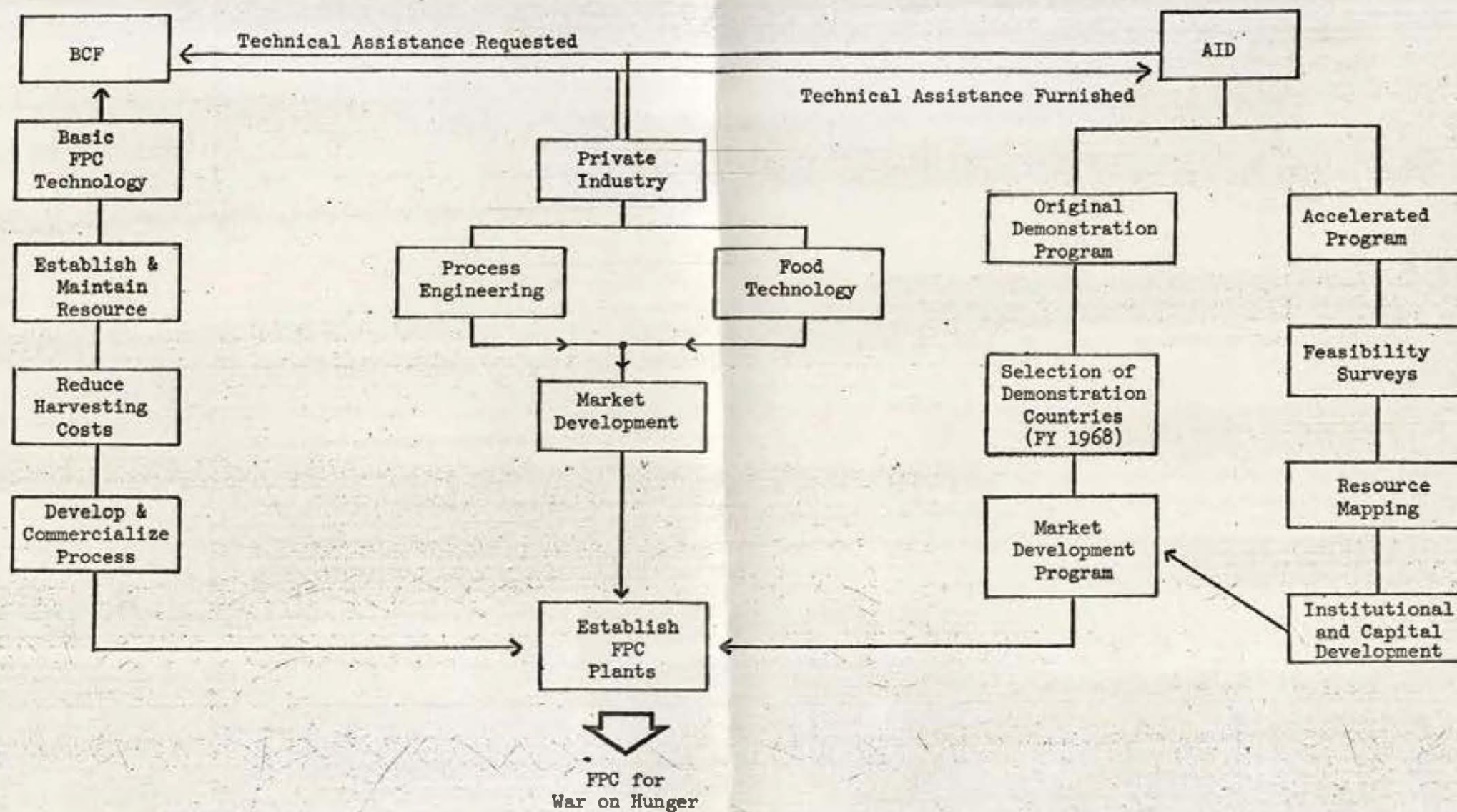
AID will continue to have lead agency responsibility for the FPC program, with guidance and coordination furnished by the Marine Sciences Council, and will have sole responsibility for all aspects of the program abroad. BCF will provide technical support to AID, and shall bear sole responsibility for all U.S. aspects of the program, including technology, construction and operation of the west coast pilot plant, and domestic market development. Both agencies shall bear equal responsibility for coordination of their programs with private industry.

The inter-relationship of the functions of AID and BCF and the projected role of industry is illustrated in Figure 1.

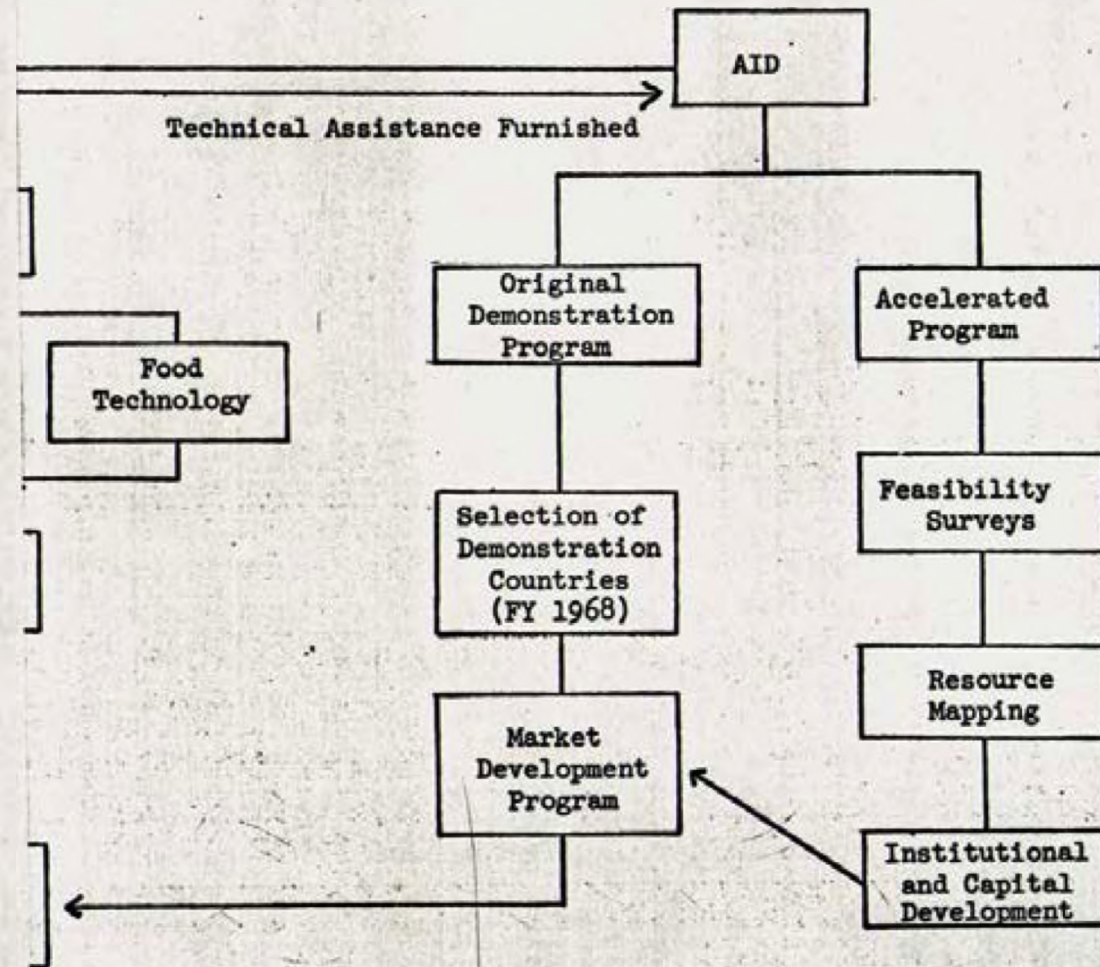
BCF's Plan of Action

BCF's program initiatives are described below along with the major steps for accomplishing each:

Figure 1. A Coordinated Systems Approach to the FPC Program



proach to the FPC Program



1. Establish and Maintain Resource Supply.

a. Locate, assess, and map hake, anchovy, thread herring, and other unutilized resources adjacent to U.S. coast.

b. Determine annual movements and seasonal availability for above species.

c. Predict maximum sustainable yield and recommend conservation practices for above species.

d. Develop improved monitoring system for above species.

2. Reduce Harvesting Cost.

a. Develop improved methods of locating hake, anchovy, thread herring, and other unutilized species.

b. Develop improved methods of catching above species.

c. Develop improved vessel (multi-purpose vessel and automated operations) for harvesting above species.

d. Develop improved fish storing and handling methods.

3. Develop and Commercialize FPC Process.

a. Develop and commercialize on-shore solvent extraction process for both lean and fatty fish.

b. Develop shipboard solvent extraction process.

c. Develop enzymatic digestion process for lean and fatty fish for both on-shore and aboard ship operation (low-cost method).

d. Incorporate FPC as additive to food products.

These initiatives will cost an estimated \$84.7 million over a 5-year period (Table 1). Phasing and sequence of work to be done are presented in Appendix II.

Table 1. Fish Protein Concentrate
Department of the Interior Programs
 5-Year Cost Projection

	<u>1969</u>	<u>1970</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>Totals</u>
	<u>(million dollars)</u>					
Locate, Assess and Map Resources and Provide for Managing and Conserving these Resources	2.2	3.5	4.5	5.0	5.0	20.2
Improve Fish Finding and Catching Techniques and Reduce Harvesting Costs	4.0	6.5	10.5	8.5	8.5	38.0
Develop and Commercialize FPC Process	4.5	6.0	7.0	5.0	4.0	26.5
	10.7	16.0	22.0	18.5	17.5	84.7

The importance of the integrated systems approach cannot be too strongly emphasized. A start has been made with on-going programs. FPC, even in its experimental stage, has demonstrated that a nutritious food product made from unutilized marine resources can be fed even to infants. But many problems still exist in the further development of FPC as a low cost product; in its incorporation as an additive into food products; and also in the broader context of locating, catching, and processing unutilized species at low cost and on a large scale.

Program Interfaces

There are several critical areas of the FPC program where the capabilities and support of BCP are indispensable to AID. Further, the success of BCP in developing the total technological system is considered to be the key to the overall plan. Illustrative of these critical areas are the following:

1. The Resource Base.--Although data concerning such select fish as tuna are available--even in the waters of most developing countries--little is known regarding the abundance, distribution, seasonal availability, or ecology of unutilized species. BCF must provide the expertise needed to investigate these questions before FPC can be manufactured on any significant scale in the U.S. or in the developing countries. Furthermore, steps to protect the resource base from overfishing must be taken at the outset.

2. Raw Product Cost.--If resources of the ocean are to become the source for large quantities of animal proteins, use will have to be made of fish now bypassed--bypassed because we do not now know how to harvest them economically and in quantity. If they are to be used, work must be done to improve efficiency and reduce costs of locating, catching and handling these fish. FPC for feeding hungry people must be a low priced product and this can only be achieved if harvesting costs are greatly reduced. FPC cannot succeed without achievements in this initiative.

3. Dynamics of FPC Technology.--It is vital that AID have the advantage of every available technological improvement in the FPC process, and that BCF have the wherewithal to make these improvements as well as to resolve technological problems that may be encountered during the program. The time element of resolving these problems is considerable, and the success of the accelerated program may depend upon BCF's ability to furnish a rapid solution.

AID's Plan of Action

To accelerate the FPC program, all phases of the present FPC Demonstration Program will be expanded to establish four commercial FPC plants in developing countries by the end of FY 1973.

1. The Present FPC Demonstration Plant.—As presently projected, AID's FPC program calls for:

a. Selection of three developing nations for demonstration projects. As discussed earlier, two of the countries have been selected. These meet the criteria and particularly have an adequate resource base. The third (an African nation) will be selected later in FY 1968.

b. Initiation of an exhaustive market analysis and development program in each of the three demonstration countries. This is a three-phase project, including:

Phase I.—Systems analysis for each national market, as a model for Phases II and III, to be commenced immediately and completed by the end of calendar year 1968.

Phase II.—Definitional market analysis of each demonstration country, to be commenced January 1968 and completed by December 1968 (except in the case of Africa where the study would begin and end respectively 6 months later).

Phase III.—Market testing, to be commenced in July 1968 and completed by the end of FY 1969 (except in the case of Africa where it would be completed by the end of FY 1970). FPC provided by BCF for this purpose is required.

c. Establishment of an FPC industry in at least one of the three countries. This represents obligations and contingent obligations to be incurred in FYs 1970 and 1971. This step in the FPC program contemplates the attraction of private capital in combination with Cooley funds and specific and extended risk guaranties.

Two research projects related to FPC are also planned, one to investigate the use of FPC as a protein supplement (FPC Technology Research Project) and one to investigate FPC made from fish found in tropical waters (FPC Research Project).

d. Introduction of FPC into developing nations through the Food for Freedom program on a limited basis is presently contemplated for FYs 1968 and 1969. Earmarked for this purpose is \$1,050,000, the sum required to purchase approximately 2,000 tons of U.S.-manufactured FPC for incorporation into formulated foods presently distributed through Title II and III programs of P.L. 480.

2. The Accelerated FPC Program.

a. Program Development.---This initial step calls for 90-day surveys of 8 maritime developing nations by interdisciplinary teams of the five years beginning in FY 1970. The mission of these teams would be to analyze existing resource bases, harvesting capabilities, and the preservation, marketing, and distribution systems; to determine whether FPC is feasible as a means of improving the nutritional status of the countries concerned; and to identify specific areas in quantitative terms where systems improvement is required for use of the FPC technology. In the event that it is concluded that FPC

cannot provide an economical solution to a country's specific problems, recommendations for other methods of utilization of marine resources would be made to the USAID mission and an action program developed.

b. Feasibility Studies.--The same phased program for systems analysis, definitional market analysis, and market testing is proposed for four of the eight developing countries surveyed.

c. Institutional and Capital Development Program.--This program is aimed at the improvement of the institutional and capital structures of the host countries in accordance with the results of the earlier studies. The objective is to create the conditions necessary for successful introduction of FPC, such as fleet expansion, gear improvement, and fisherman training, and the technical support of BCF is indispensable to this phase of the accelerated program.

d. Exploratory Fishing and Oceanography Program.--Essential to proper utilization and management of marine resources, this program contemplates the completion of three and one-half 2-year projects during the five fiscal years projected. Careful coordination with FAO programs in this activity will avoid redundancy and optimum application of funds allocated for this program.

e. Establishment of Additional FPC Plants.--The program contemplates the establishment of three additional FPC plants with daily output capacities of 16 tons each, or a total annual increase of 12,480 tons of FPC over the present program target. This would provide a daily ration of FPC to an additional 3 million people by

FY 1973. Risk guaranties are viewed again as the primary form of AID assistance to these projects.

It is anticipated that at least three additional plants would be established after FY 1973, reflecting the completion of systems improvement measures undertaken in the Institutional and Capital Development and Exploratory Fishing Programs.

3. Proposed AID Budget for Accelerated FPC Program.—AID's best estimate of a budget for the accelerated program based on expected foreign assistance appropriations in the immediate years ahead is one that would be maintained for the next several years at approximately the level estimated for the FY 1969 budget, i.e., about \$3 million per year. The breakdown by major categories of activities to be funded under such a budget is found in table 2.

This budget anticipates an extension for the next 5 years of the program now underway: feasibility studies for the purpose of identifying commercially viable FPC industries, limited fish mapping studies in selected areas designed to support the feasibility studies, and the purchase of FPC to be used in overseas food donation programs.

It will be noted that the budget presented does not include development assistance funds which might be required to establish commercial plants. The objective of the activities included in the budget, however, is to develop opportunities for establishing commercially viable facilities which would be eligible for financing by AID, IBRD or other institutions, both private and public. It

Table 2. Fish Protein Concentrate
Agency for International Development Program
5-Year Cost Projection

	<u>1969</u>	<u>1970</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>Totals</u>
	(million dollars)					
FPC Demonstration Program ^{1/}						
Feasibility Studies - Phase I	-	.10	-	-	-	.10
Feasibility Studies - Phase II	.06	.06	.06	.06	-	.24
Feasibility Studies - Phase III	.10	.10	.10	.10	-	.40
FPC Demonstration Plants ^{2/}	-	(1.20)	(1.20)	(1.20)	(1.20)	(4.80)
Food for Freedom FPC Purchases	1.00	1.00	1.00	1.00	1.00	5.00
Program Development ^{3/}	-	.10	.10	.10	.10	.40
Exploratory Fishing & Mapping	1.5	.75	.75	.75	.75	4.50
Institutional & Capital Development						
Tech. Corporation & Assistance	-	.40	.34	.15	.15	1.04
Development Loans	-	.50	.70	.85	1.00	3.05
Fishery Technology Studies ^{4/}	(.10)	-	-	-	-	(.10)
Food Technology Studies ^{4/}	(.50)	(.50)	-	-	-	(1.00)
Totals	2.66	3.01	3.05	3.01	3.00	14.73

^{1/} Figures appearing for FY 1969 do not represent either an accelerated FPC program or a variance from the present AID submission to BOB for FY 1969.

^{2/} Figures for this item represent contingent liabilities to commercial U.S. lenders incurred under AID specific and extended risk guaranties.

^{3/} Calculated on the basis of \$50,000 per survey.

^{4/} To be undertaken subject to availability of research funds and approval by the AID Research Advisory Committee.

would be reasonable to expect that at the end of 5 years there would be identified four or five possibilities for commercially viable FPC plants in developing countries. It is not, however, either possible or useful to make quantitative projections of the funds at this time that might be required for this purpose.

We believe that the foregoing represents a reasonable developmental effort in the field of Fish Protein Concentrate. We also believe that it stands a good chance of attracting non-governmental resources to the development of FPC which basically must be the objective of government effort in this field. It must be understood, however, that AID is not in any way bound by the projections made herein. Our efforts in this field, as in others, are dependent upon the availability of funds and relative priorities, a judgment which can only be made at a later date.

III. MANAGEMENT PLAN AND FULL-TIME MANPOWER REQUIREMENTS

BCF

The "program manager" concept--single person responsibility, authority, and accountability--will be used for the accelerated Fish Protein Concentrate program to insure thorough planning of the work, scheduling of subsystems, effective coordination and liaison, and continuing managerial evaluation and control.

The Assistant to the Director for Fish Protein Concentrate (Program Manager) will report directly to the Director of the Bureau of Commercial Fisheries and will have the authority to make the

Figure 2. Organization Bureau of Commercial Fisheries

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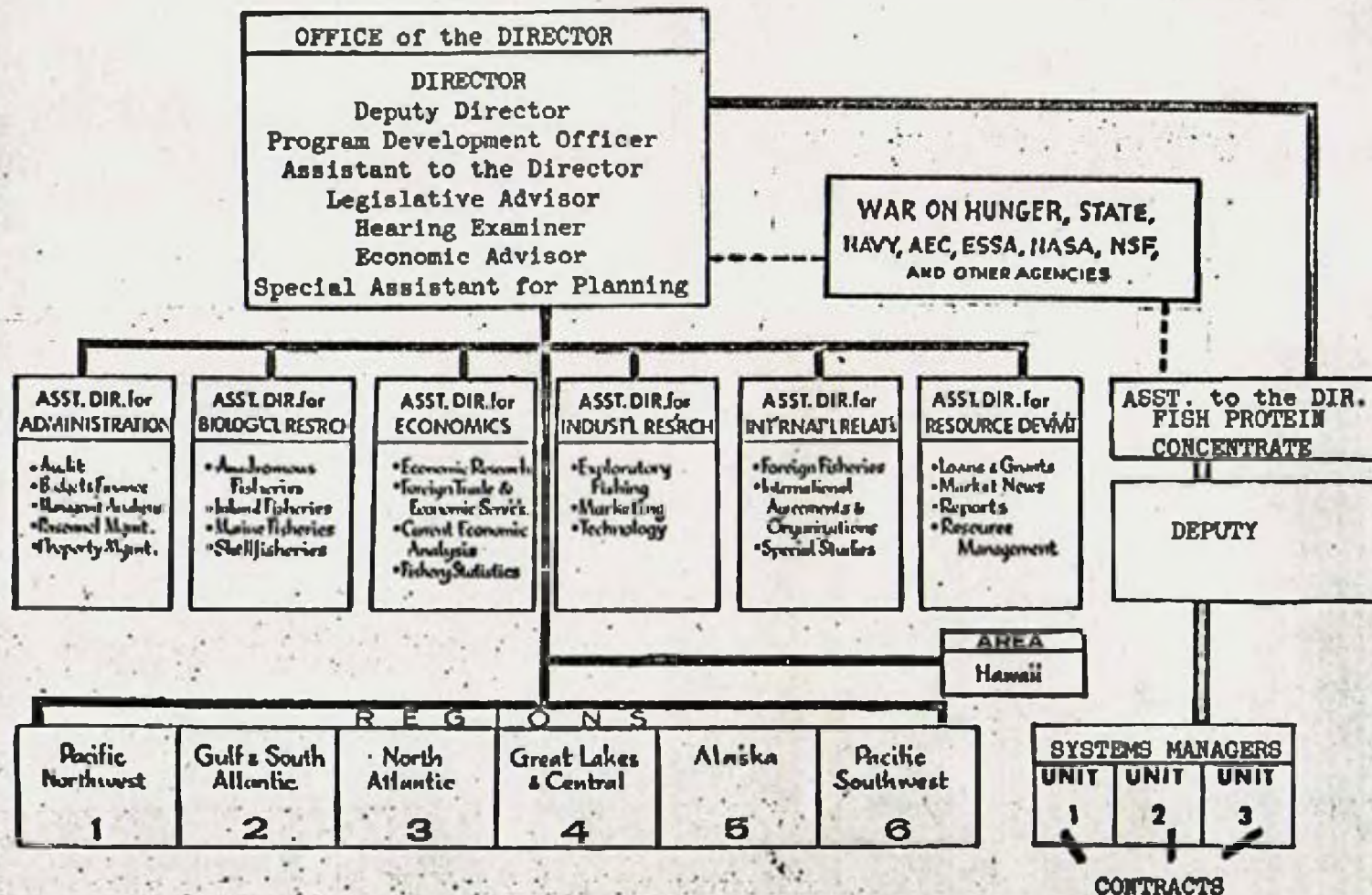


Figure 3. Organization - Accelerated Fish Protein Concentrate Program

REPORTING & BENEFITS/COSTS
OVERALL INTEGRATION
EVALUATION & ANALYSIS
REMEDIAL ACTIONS

BUDGET & PERSONNEL
COGNIZANCE
EVALUATION
LIAISON & INTEGRATION

CONTRACT AWARD &
MONITORING
PERT SCHEDULING
IMPLEMENTATION
ANALYSIS & REPORTING
MANAGEMENT ACTIONS

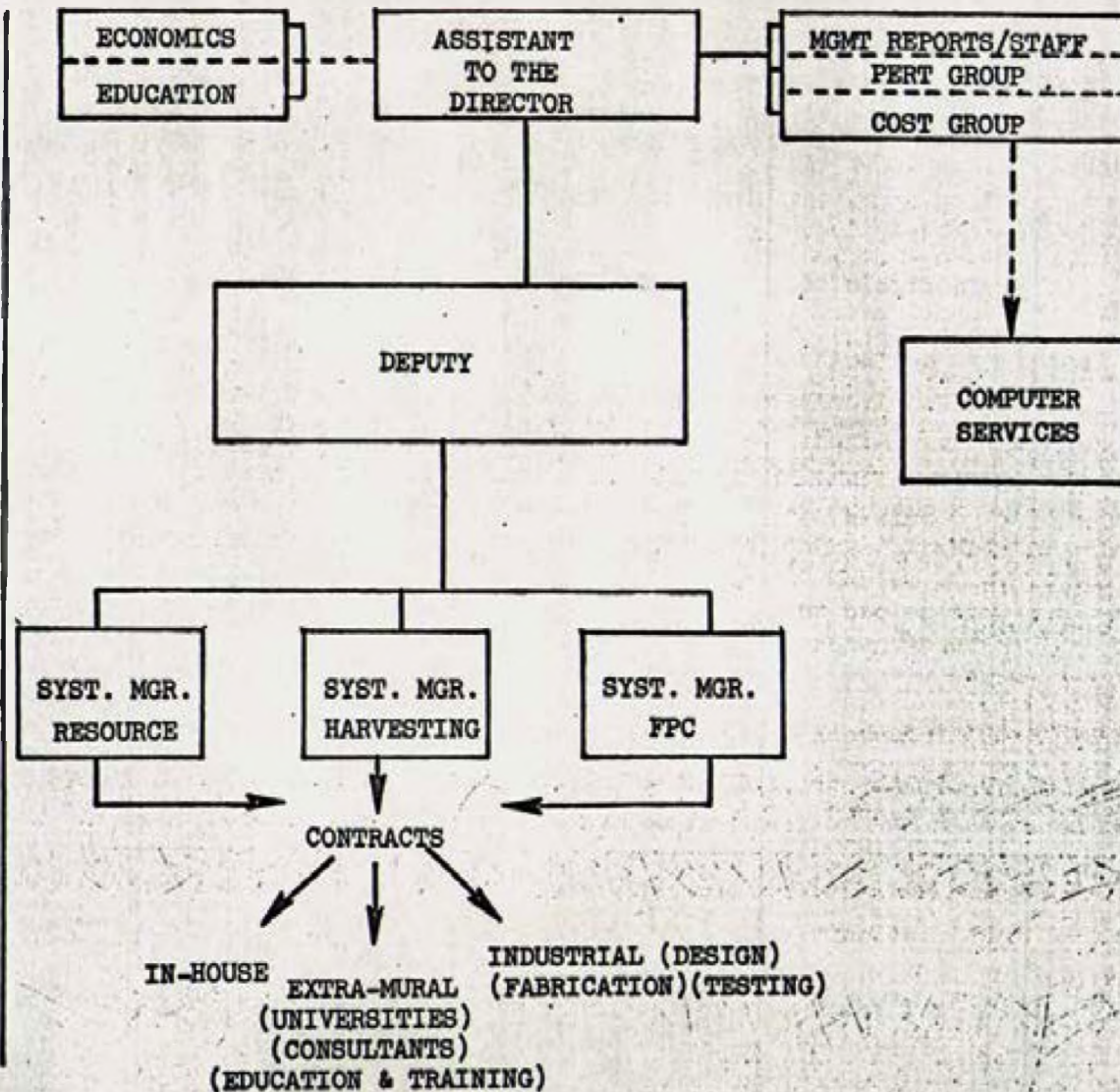


Table 3.--Estimated Full-Time Manpower Requirements for
BCP Fish Protein Concentrate Program
Fiscal Year 1969 1/

Program Area	Professional Classification								
	Administrator	Analyst	Engineers	Chemist	Marine and Biologist and Oceanographer	Economist	Budget & Procurement	Clerical	Total New Positions
Office of Program Manager	2	2	4	3	2	2	3	5	23
Establish and Maintain Resource Supply	1	-	1	-	17	-	-	1	20
Reduce Harvesting Cost	1	-	12	3	2	2	-	2	22
FPC Processing	3	2	13	18	1	-	-	3	40
Total Personnel Requirements	6	5	30	24	22	4	3	11	105

1/ New full time positions required by BCP for implementation of programs. In addition, some realignment of present personnel and programs will be undertaken for overall program effectiveness.

Coordination

The activities of BCF and AID in carrying out the FPC program are coordinated by the Food from the Sea committee established by the Council on Marine Resources and Engineering Development. Representatives on this committee include OST, AID, BCF, HEW, State, and the Smithsonian Institute. This committee

- (1) reviews progress in meeting goals;
- (2) reviews planning and budgetary requirements; and
- (3) makes appropriate recommendations to AID and BCF and to the Council for expediting the program. Informal liaison is maintained by the staffs of BCF and AID to coordinate the program.

The NAS Committee on Marine Protein Resource Development will continue to provide advice for the program on food technology, quality and safety of FPC.

APPENDIX II

DETAILS AND SEQUENCE OF EVENTS FOR BCF PROGRAMS BY AREA OF ACTIVITY

NOTE: Table 1 lists estimates of contractual services for various aspects of these programs.

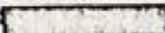
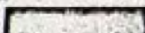
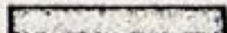
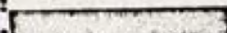
Table 2 lists sequence of events related to release of technology, FDA approval of other processes and manufacture of FPC.

Table 3 lists estimates of sources for Fish Protein Concentrate and assumptions for projecting number of people supplied animal protein.

Table 1. Details and Sequence of Events for BCF Program by area of activity

Item	Fiscal Year Cost and Sequence					
	1969	1970	1971	1972	1973	Total 5-year cost
	million dollars					
I. Establish and Maintain Resource Supply.--Programs designed to locate, assess, map, and provide recommendation for management of marine resources adjacent to the U.S. coast or accessible by U.S. fishermen which offer potential for low-cost manufacture into FPC.						
A. Locate assess, and map potential FPC resource.	0.7	1.3	1.0	0.7	0.5	4.2
1. Northeast Pacific hake, pollock, rockfish, anchovy and saury resources.						
2. Northwest Atlantic hake, sandlance, capelin and herring resources.						
3. Gulf of Mexico thread herring and anchovy resources.						
B. Determine annual movements and seasonal availability.	.7	1.0	1.5	2.0	1.8	7.0
1. Northeast Pacific hake, pollock, rockfish, anchovy and saury resources.						
2. Northwest Atlantic hake, sandlance, capelin and herring resources.						
3. Gulf of Mexico thread herring and anchovy resources.						
C. Determine maximum sustainable yield and develop management procedures.	.2	.4	.7	.7	.7	2.7
1. Northeast Pacific hake, pollock, rockfish, anchovy and saury resources.						
2. Northwest Atlantic hake, sandlance, capelin and herring resources.						
3. Gulf of Mexico thread herring and anchovy resources.						
D. Develop methodology of predicting annual and seasonal abundance and availability and related monitoring systems.	.6	.8	1.3	1.6	2.0	6.3
1. Northeast Pacific hake, pollock, rockfish, anchovy and saury resources.						
2. Northwest Atlantic hake, sandlance, capelin and herring resources.						
3. Gulf of Mexico thread herring and anchovy resources.						
Subtotal	2.2	3.5	4.5	5.0	5.0	20.2

Table 1. Details and Sequence of Events for BCF Program by area of activity
(continued)

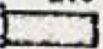
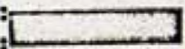
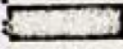
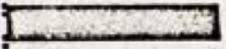
Item	Fiscal Year Cost and Sequence					
	1969	1970	1971	1972	1973	Total 5-year cost
II. Reduce Harvesting Costs.--Programs designed to reduce the raw material costs to minimum by developing optimal locating devices, fishing gear and vessels.	<u>million dollars</u>					
A. Develop improved methods of locating fish.	0.7	1.2	2.2	2.0	2.3	8.4
1. Feasibility studies of electromagnetic detection systems for hake and sardine-like species including application of electromagnetic detection devices on the seabed to detect disturbances created by passing fish schools.						
2. Construction and testing prototype electromagnetic systems.						
3. Evaluation of prototype electromagnetic systems for use in commercial fishery.						
4. Feasibility studies of laser systems for near surface schooling species such as thread herring.						
5. The improvement of pulsed laser systems to permit detection of fish schools in near surface waters from aerial platforms would permit coverage of vast areas in short periods of time.						
6. Construction and testing prototype laser systems.						
7. Evaluation of prototype laser system in commercial fishery.						
8. Feasibility studies of passive systems for locating migrating fish such as hake, sandlance, capelin, and thread herring.						
9. Construction and testing passive sonar systems.						
10. Evaluation of passive sonar systems for application in commercial fishery.						

These systems would monitor the position, density, and movement of fish schools and relay the information to a fishing fleet control and monitoring center established in proximity to resource and FPC plant.

Table 1. Details and Sequence of Events for BCP Program by area of activity
(continued)

Item	Fiscal Year Cost and Sequence					
	1969	1970	1971	1972	1973	Total 5-year cost
million dollars						
II. Reduce Harvesting Costs - cont.						
B. Develop improved and low cost methods of catching fish.	0.8	2.3	4.0	2.0	2.0	11.1
1. Feasibility study of automated traps for bottom species--hake and sandlance.						
2. Design of automated traps for bottom species--hake and sandlance.						
3. Construction and testing of automated traps.						
4. Design of pumping systems for surface and submerged traps.						
5. Design and construction of gear laboratory.						
6. Design and construction of gear mechanization and demonstration vessel.						
C. Develop improved vessels.	1.0	1.0	2.0	2.5	2.5	9.0
1. Analysis of anti-roll systems and development of stability standards.						
2. Evaluation and redesign of existing multi-purpose craft 50-80 feet for optimum operation.						
3. Design multi-purpose fishing vessel 120-140 feet.						
4. Evaluation of turbine engines for space-saving aspects.						
D. Develop improved fish storing and handling methods--mechanized net dumping, fish culling, hold storing, and quick-chilling facilities.	1.5	2.0	2.0	2.0	2.0	9.5
1. Conceptual design studies of fish handling equipment						
2. Industrial engineering studies for modernizing existing vessels.						
3. Development of preservation techniques.						
4. Testing and demonstration of techniques and equipment.						
Subtotal	4.0	6.5	10.5	8.5	8.5	38.0

Table 1. Details and Sequence of Events for BCF Program by area of activity
(continued)

Item	Fiscal Year Cost and Sequence					
	1969	1970	1971	1972	1973	Total 5- year cost
million dollars						
III. Develop and Commercialize FPC Process.--This aspect of the FPC program proposes that technological activities be accelerated and expanded to permit attainment of objectives of the FPC program and to broaden the resource base from which FPC can be manufactured.						
A. On-shore solvent extraction process for both lean and fatty fish.	1.0	1.0				2.0
1. West coast pilot plant in operation.		^{1/}				
2. FDA approval of fatty fish.						
3. Improvement of solvent systems. Study ethyl alcohol, hexane and alcohol combinations. A broader solvent base process is required in instances where availability of synthetic compounds is limited.						
B. Develop shipboard solvent extraction process.--Small plants will be designed, constructed and installed on vessels to determine feasibility of this technique. It offers considerable promise as a means of producing FPC which can be landed at ports in developing countries where fishing capability is lacking.	.5	1.0	.9	1.3	.5	4.2
1. Develop storage systems for vessels.						
2. Develop solvent systems for vessels.						
C. Develop enzymatic digestion process for lean and fatty fish for both on-shore and aboard ship operations.--Research and development of enzymatic digestion process leading to construction of a pilot plant. This method offers promise of lower product cost and offers a high degree of flexibility in producing different types of FPC products. It has the unique capability of producing a water soluble protein concentrate, thus this product can readily be incorporated into various food forms.	2.0	2.0	2.5	3.5	1.3	11.3

^{1/} Does not include design and construction cost.

Table 1. Details and Sequence of Events for BCF Program by area of activity
(continued)

Item	Fiscal Year Cost and Sequence					
	1969	1970	1971	1972	1973	Total 5-year cost
	<u>million dollars</u>					
C. Develop enzymatic digestion process for lean and fatty fish for both on-shore and aboard ship - cont.						
1. Process development.						
2. FDA approval lean fish.						
3. FDA approval fatty fish.						
4. Design and construct pilot plant for enzymatic process.						
5. Develop enzymatic process for vessel.						
D. Incorporate FPC as additive to food products.--As private firms begin to use products derived as a result of the FPC program and commercial plants are built in the United States and abroad, the Bureau should advise and assist in the introduction of FPC as an additive to food products.	1.0	2.0	2.0	2.0	2.0	9.0
1. Establish nutritional and flavor stability of FPC from lean fish.						
2. Establish nutritional and flavor stability of FPC from fatty fish.						
3. Develop new product forms.						
4. Conduct FPC economic and feasibility studies in U.S. FPC will be of value for increasing protein enrichment of many common foods high in carbohydrates and lacking in animal protein. Feasibility studies will permit introduction of this protein concentrate in areas where malnutrition is a problem and will permit its addition to basic foods used by children and adults alike. The economics of FPC production is an important part of this overall feasibility study.						
Subtotal	4.5	6.0	7.0	5.0	4.0	26.5
	10.7	16.0	22.0	18.5	17.5	84.7

Table 2. Estimates of Contractual Services for Various Aspects of the BCF
Fish Protein Concentrate Program

Item	Funds	Partial Listing of Qualified Contractors
	<u>thous.</u>	
I. Expand and Maintain Resource.		
A. Locate, assess, and map potential FPC resources.		
Charter fishing or research vessel.	300.0	Fishing industry, private enterprise or university
Ocean productivity.	75.0	U. of Wash., U. of Maine, Woods Hole Oceanographic Inst., Scripps Inst. of Oceanography
B. Determine annual movements and seasonal availability.		
Fishing or research vessel.	300.0	Fishing industry, private enterprise or university
C. None		
D. Develop methodology for annual and seasonal prediction of abundance and availability.		
Instrumentation development for environmental monitoring.	150.0	Geodyne, Alpine Geophysical Assn., Westinghouse Undersea Div., General Electric
Subtotal	825.0	
II. Reduce Harvesting Costs.		
A. Develop improved methods of locating fish.		
Construct and test electric-magnetic detection system.	135.0	General Dynamics, Alpine Geophysical Assn., Westinghouse Undersea Div., General Electric
Construct and test chemical detection system.	120.0	Woods Hole Oceanographic Inst., Westinghouse Corp.
Develop and evaluate improved acoustical system.	120.0	U. of Ill., Alpine Geophysical Assn., Westinghouse Undersea Div., Straza Industries, Honeywell
Develop and evaluate improved optical system (laser and high-aircraft photography).	125.0	U. of Mich., U. of Ill., General Electric, Westinghouse Undersea Div.

Table 2. Estimates of Contractual Services for Various Aspects of the BCF
Fish Protein Concentrate Program - cont.

Item	Funds	Partial Listing of Qualified Contractors
	thous.	
B. Develop improved methods of catching fish.		
Automated trap system.	200.0	Bendix Corp., Westinghouse Undersea Div.
Design of submerged pumping system.	150.0	General Dynamics, U. of Mich., MIT, Marine Const. and Design Co.
Design and testing of electro-corralling system.	250.0	U. of Mich., MIT, Cooke Laboratories, Marine Const. and Design Co., U. of Miami
C. Develop improved vessels.		
Analysis of anti-roll systems for vessels under 100 feet.	160.0	J.J. McMullin, Webb Inst. of Naval Arch., Stevens Inst. of Tech.
Development of stability standards, off-shore vessels.	200.0	W.C. Nickum & Sons, Webb Inst. of Naval Arch., U. of Mich., U. of Wash.
Development of stability standards, on-shore vessels.	200.0	W.C. Nickum & Sons, Webb Inst. of Naval Arch., U. of Mich., U. of Wash.
Computer applications in vessel design.	40.0	Litton Ind., MIT, Ocean Research Corp.
Subtotal	1,700.0	
III. Develop and Commercialize FPC Process.		
A. Develop and commercialize on-shore solvent extraction process for both lean and fatty fish.		
Byproduct recovery for IPA process.	200.0	Stanford Res. Inst., Ill. Inst. of Tech., S.W. Res. Labs., Battelle, Bechtel Corp., Artisan Corp., Food Machinery Corp., M.W. Kellogg
Continuous countercurrent IPA process.	300.0	
Solvent processes other than IPA.	200.0	
B. Develop shipboard solvent extraction process.		
Development of storage systems for vessel.	350.0	W.R. Grace Co., Bechtel Corp., Artisan Corp., Food Machinery Corp., M.W. Kellogg, Ill. Inst. of Tech., MIT
Land-based rocker system.	100.0	
Engineering of chemical system to operate at various degrees of roll and pitch to determine effect upon processing.	250.0	

Table 2. Estimates of Contractual Services for Various Aspects of the BCF
Fish Protein Concentrate Program - cont.

Item	Funds	Partial Listing of Qualified Contractors
	thous.	
C. Develop enzymatic digestion process for lean and fatty fish for both on-shore and aboard ship operation, low cost-method.		
Gathering data for FDA approval which would include chemical analysis for heavy metals, amino acids, lipid content, moisture and ash.	700.0	
Process development. Assembly of all physical and chemical data, including non-transfer coefficients, priorities, particle settling rates, absolute and relative density relationships and temperature solubility relationships.	300.0	W.R. Grace Co., Bechtel Corp., Artisan Corp., Food Machinery Corp., M.W. Kellogg, Ill. Inst. of Tech., MIT
D. Incorporate FPC as additive to food products.		
Determination of appropriate levels of incorporation of FPC in food systems in relation to optimum nutritional return and product susceptibility.	100.0	
Development of formulations including appropriate levels of FPC suited to the predetermined food habits and customs in given areas.	300.0	Swift & Co., Monsanto Chem. Co., General Foods, General Mills
Subtotal	2,800.0	
Total Contracts	5,325.0	

NOTE: The estimate of \$5.3 million for contractual services is 50 percent of FY 1969 program costs.

Table 3. Estimated Sequence of Events Relative
to Technological Aspects and Manu-
facture of FPC

	<u>Fiscal Year</u>
Initiate Studies for Solvent Process for Fatty Fish	1968
Preliminary Studies Enzymatic Process	1968
Government Plant in Operation	1970
Solvent Process Lean Fish Released to Private Sector	1970
Foreign Plant Design	1970
Foreign Plant Operations	1971
Solvent Process Fatty Fish Released to Private Sector	1971
Domestic U.S. Plant Operation (Solvent Extraction Process—Lean and Fatty Fish)	1972
Enzymatic Process - Request for Approval FDA	1972
Enzymatic Process - Approval FDA	1973
Design Enzymatic Demonstration Plant	1974
Enzymatic Demonstration Plant Operation	1975

Table 4. Estimates of Sources for Fish Protein Concentrate^{1/}

Source	FISCAL YEAR			
	1970	1972	1973	1975
U.S. Financed Plants				
BCF-Pilot Plant (Solvent Extraction) <u>2/</u>	1,040	2,080	2,080	2,080
BCF-Pilot Plant (Enzymatic process) <u>3/</u>	-	-	-	2,080
AID-Assisted Foreign Demonstration Plant <u>4/</u>	-	8,320	12,480	16,640
Private Industry Commercial Plants				
Within U.S. <u>5/</u>	-	3,120	6,240	18,720
Within Foreign Countries <u>6/</u>	-	4,160	12,480	33,280
Total FPC Available for Use by AID, Other Government Agencies or Private Industry	1,040	17,680	33,280	72,800

SEE ATTACHED SHEET FOR FOOTNOTES.

Footnotes for Table 4. Estimates of Sources for Fish Protein Concentrate

- 1/ It is estimated that one ton of FPC can be made from 6.25 tons of raw fish and that a minimum of 10 grams of animal protein per day can be supplied to 200 persons per year from one ton of FPC.

By 1975 the 72,800 tons of FPC would require 455,000 tons of raw fish or about 1.0 percent of the 1965 world catch.

- 2/ The Government solvent extraction pilot plant would go into production in FY 1970 and would operate as follows:

Fiscal Year		Number of 24-Hour Days for FPC Production	Yearly FPC Output @ 8 Ton Per Day Operation	Yearly Raw Product Input @ 50 Tons Per Day Operation
			Tons	Tons
1970	:	130	1,040	6,500
1972	:	260	2,080	13,000
1973	:	260	2,080	13,000
1975	:	260	2,080	13,000

Product figures do not include time spent on research and development. In 1970 it is assumed the plant would operate at one-half capacity because of research and development time. It is further assumed that private industry will take over the operation of both the pilot and lease plants during 1972.

- 3/ The Government enzymatic pilot plant would go into production late in 1973 and would provide 2,080 tons of FPC each year in 1974 and 1975. It would have the same daily output and would operate the same number of days as the solvent extraction pilot plant.
- 4/ One AID-assisted foreign demonstration plant would go into production in FY 1971 and two would be operating by 1972. Production capacity would be twice that of the U.S. pilot plant and plants would operate 260 24-hour days. By 1975 there would be four such plants.
- 5/ One commercial plant with a produce for export twice the size of the pilot plant would be in operation in the U.S. in early 1972. There would be at least five such plants by FY 1975. Plant would operate 260 24-hour days.
- 6/ One commercial plant with a production capacity twice the size of the pilot plant and operating 260 24-hour days would be in operation in a foreign country by FY 1972. By FY 1975 there would be four additional plants in foreign countries with three of them having a capacity of four times the size of the pilot plant.

APPENDIX III

Present Status of BCF Fish Protein Concentrate Program

Demonstration Plant (Government Constructed)

Approval by the Food and Drug Administration on February 2, 1967, made it possible to start implementing provisions of P.L. 89-701 authorizing the construction of an experimental demonstration plant. The general area in which the plant would be located was determined and requests for proposals for its design, construction, and operation were prepared and mailed to over 100 interested parties. Proposals were received from 7 commercial firms and evaluated. The final stages of negotiations are now underway and it is planned to execute a contract prior to the end of December 1968. Present negotiations indicate that total cost of design and construction will be substantially in excess of the \$1.0 million authorized in Public Law 89-701. Current estimates are that the total cost may approach as much as \$1.8 million.

To expedite construction, approval is being sought from appropriate committees in Congress to enter into a cost reimbursement plus fixed fee contract now to design, construct, and operate an experiment and demonstration Fish Protein Concentrate plant. The contractor will be authorized to proceed immediately with the work necessary to design the facility. As parts of the design are completed, additional work will be authorized as can be accomplished within the \$1,000,000 presently available.

A request is being prepared to amend Public Law 89-701 to authorize additional appropriations for design and construction of the

plant. A request for a supplemental appropriation for the additional construction costs will be submitted as soon as the detailed design is completed and a new estimate of the total cost of design and construction is prepared.

It is now estimated that the contractor will require in excess of \$800,000 to operate the plant for about 3,120 hours in one year instead of the \$285,000 estimated at the time Public Law 89-701 was under consideration. Since it is probable that the plant will not be in O&M status much before the end of fiscal year 1969, it is not planned at this time to request a supplemental appropriation for O&M purposes.

The request, previously mentioned, to amend Public Law 89-701 will also propose that authority be included to appropriate for the fiscal year beginning July 1, 1968, and for each fiscal year thereafter, such sums as may be necessary for operation and maintenance of the plant, and related costs such as quality control, product development, and engineering studies.

Unless other sources of Fish Protein Concentrate develop, present projections require the operation of the demonstration plant for 260 days per year beginning in fiscal year 1971 to produce necessary quantities of FPC to use in carrying out the War on Hunger program by the Agency for International Development. To keep amounts appropriated for O&M of the demonstration plant under P.L. 89-701 at the lowest possible level, it is intended to seek, in the revision of P.L. 89-701, authority to finance the additional cost for O&M in

excess of 3,120 hours by reimbursement from AID or other Federal agencies that may have need for the product, or by application of the proceeds from the sale of FPC to private, public, international, or foreign governments. The product produced during the 3,120 hours considered necessary for demonstration and research and development purposes (approximately 1,040 tons) would be distributed without charge to AID, UNICEF, FAO, and private industry as discussed in House Report No. 2165, 89th Congress, 2nd Session. It is anticipated that all of the output produced in excess of the Bureau's needs will be required by AID.

A summary of the scheduled key points in the plan of action for this plant is as follows:

December 1967	Clearance for award of contract by Department
December 1967	Clearance by BOB
January 1968	Clearance by Congressional committees
January 1968	Initiate request for Congress to revise P.L. 89-701 to provide for additional funds for plant construction and O&M
January 1968	Award of contract
March 1968	Site acquisition complete
June 1968	Completion of design
July 1968	Begin plant construction
February 1969	Complete plant construction
March 1969	Completion of shakedown
April 1969	First FPC available

This schedule is based on elements uncontrollable by BCF and failure to meet any of these dates could result in the slippage of the date of completion of the plant is that the plant will be in operation early in fiscal year 1970 if the necessary clearances to proceed are obtained.

The plant will use the isopropyl alcohol solvent process developed at the Bureau's College Park Laboratory. The basic components of the system have been defined. Engineering studies are now being started to purify the solvent on a continuous basis. Studies for bone separation and on the use of a continuous counter-current process will be completed and results incorporated into the design of the plant.

Demonstration Plant (Leased)

The Department of the Interior and Related Agencies Appropriation Act, 1968, included \$435,000 for lease and operation of a second demonstration plant. This amount has been placed in reserve status by the Bureau of the Budget and no funds are included in the budget estimate for fiscal year 1969. For this reason, and because there is no immediate requirement for the production of this plant by the Agency for International Development for the War on Hunger, the plan to operate a leased plant on the east coast of the United States at this time has been dropped.

Develop and Commercialization FPC Process

The FY 1968 Fish Protein Concentrate program is expected to cost \$1,718,000, exclusive of funds required for construction of the west coast demonstration plant. This is comprised of \$1,129,000 appropriated for FY 1968 and a request, now in process, to release an additional \$589,000 of Saltonstall-Kennedy funds for use in FY 1968. The amount of \$1,718,000 will be used as follows:

Development of solvent process	\$816,000
Adaptation to fatty fish and development of the data for FDA petition	330,000
Modify Beltsville unit to counter-current extraction	99,000
Preliminary studies on enzymatic digestion	33,000
Product development and market research	440,000
Total	\$1,718,000

The comparable amount for FY 1969 included in the current budget estimates is \$1,499,000; however, this would be increased by \$4,500,000 included in the accelerated FPC program.

Establish and Maintain Resource Supply

Resource studies of the Bureau of Commercial Fisheries, for the most part, have not been directed at low value underutilized species because until recently demand projections did not indicate need for development of these species. The FPC process underscores the need for low value species. To ensure and maintain a resource base for FPC products, an accelerated program on possible FPC resources must be superimposed on the present low-level effort on these resources which in FY 1968 consisted of the following:

1. Locate, assess and map resources.--small effort on hake, herring and Pacific anchovy, but none on thread herring, Gulf anchovy, saury, sandlance and capelin.
2. Determine annual movements and seasonal availability--small effort on hake, Pacific anchovy and herring but none on other species.
3. Determine maximum sustainable yield--small effort on hake, and Pacific anchovy but none on other species.
4. Develop methods for predicting abundance and availability--none on any species.

Anticipated expenditure in FY 1968 on the four phases of resource studies listed above cannot be accurately ascertained because there are

parts of larger studies. Expenditures, however, will be about \$400.0 thousand or about 20 percent of the FY 1969 increase of \$2.2 million in the accelerated FPC program.

Reduce Harvesting Costs

Present efforts to reduce harvesting costs are limited to refinement of mid-water trawling systems to harvest Pacific hake and feasibility studies for adaptation of this gear to harvest northern anchovy. This involves the expenditure of approximately \$400,000 in FY 1968. In addition, about \$150,000 is being spent carrying out sonar transects and aerial photography to determine the configuration of thread herring schools in the Gulf of Mexico.

APPENDIX IV

BCF Program Options

The FPC program presented here is consistent with the plans and programs submitted to the Bureau of the Budget in the FY 1969 Program Memorandum. The proposed overceiling Food from the Sea program recommending \$20 million for FY 1969 and \$183 million for the 5-year period was broader than the present FPC program in that it included provisions for development and utilization of food from the sea by means other than FPC. The \$84.7 million 5-year program (\$10.7 million for FY 1969) presented here is limited to those aspects of the broader program dealing with the development and commercialization of FPC. It is still based on the concept of the systems approach which recognizes that work on the resource base and on improving and reducing harvesting costs are as important as the work on the FPC process and that certain problems must be solved in these areas before FPC becomes a significant commercial reality.

This proposed 5-year program is based on our estimates of what would be the minimum cost for all work necessary to make FPC economically attractive to private industry both in the U.S. and abroad on a scale and in the time frame necessary for a significant contribution to the world food problem.

This is not to say that there are not some alternative options which could be considered for FY 1969 for this program in a period of limited Federal funds for non-defense activities. In view of this, we are submitting the attached options for consideration.

Option I

As a result of the Bureau of the Budget decision to withhold FY 1968 appropriations and delete the FY 1969 budget request for the lease plant on the east coast of the U.S., we propose to defer those activities associated with the development of the resource in Northwest Atlantic. By deferring this work, the proposed FY 1969 program would be reduced by \$1.1 million. Tables 1 and 2 show the adjusted costs for the 5-year program with the above specified costs deferred from FY 1969 to FY 1970.

The option would have little effect on the production schedule and the benefits shown on page 4 of the text and in table 3, Appendix II. It would of course delay private industry involvement in the Northwest Atlantic in that an adequate source of low cost fish would not be as readily available as early as would have otherwise been the case (table 3).

Table 1. BCF Fish Protein Concentrate Program

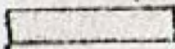
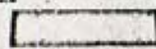
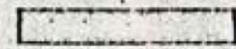
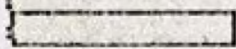
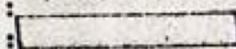
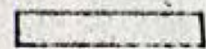
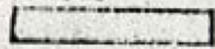
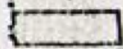
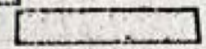
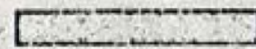
Option I
5-Year Cost Projection

	<u>1969</u>	<u>1970</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>Totals</u>
	(million dollars)					
Locate, Assess and Map Resources and Provide for Managing and Conserving these Resources	1.1	4.6	4.5	5.0	5.0	20.2
Improve Fish Finding and Catching Techniques and Reduce Harvesting Costs	4.0	6.5	10.5	8.5	8.5	38.0
Develop and Commercialize FPC Process	4.5	6.0	7.0	5.0	4.0	26.5
Total	9.6	17.1	22.0	18.5	17.5	84.7

Table 2. Option I.--Details and Sequence of Events for BCF Program by area of activity

Item	Fiscal Year Cost and Sequence					
	1969	1970	1971	1972	1973	Total 5-year cost
	million dollars					
I. Establish and Maintain Resource Supply.--Programs designed to locate, assess, map, and provide recommendation for management of marine resources adjacent to the U.S. coast or accessible by U.S. fishermen which offer potential for low-cost manufacture into FPC.						
A. Locate assess, and map potential FPC resource.	0.4	1.7				
1. Northeast Pacific hake, pollock, rockfish, anchovy and saury resources.	0.4	1.3	1.0	0.7	0.5	4.2
2. Northwest Atlantic hake, sandlance, capelin and herring resources.						
3. Gulf of Mexico thread herring and anchovy resources.						
B. Determine annual movements and seasonal availability.	0.4	1.8	1.5	2.0	1.8	7.0
1. Northeast Pacific hake, pollock, rockfish, anchovy and saury resources.						
2. Northwest Atlantic hake, sandlance, capelin and herring resources.						
3. Gulf of Mexico thread herring and anchovy resources.						
C. Determine maximum sustainable yield and develop management procedures.	2	.6	.7	.7	.7	2.7
1. Northeast Pacific hake, pollock, rockfish, anchovy and saury resources.						
2. Northwest Atlantic hake, sandlance, capelin and herring resources.						
3. Gulf of Mexico thread herring and anchovy resources.						
D. Develop methodology of predicting annual and seasonal abundance and availability and related monitoring systems.	0.3	1.1	1.3	1.6	2.0	6.3
1. Northeast Pacific hake, pollock, rockfish, anchovy and saury resources.						
2. Northwest Atlantic hake, sandlance, capelin and herring resources.						
3. Gulf of Mexico thread herring and anchovy resources.						
Subtotal	1.1	4.6	4.5	5.0	5.0	20.2

Table 2. Option I.--Details and Sequence of Events for BCF Program by area of activity
(continued)

Item	Fiscal Year Cost and Sequence					
	1969	1970	1971	1972	1973	Total 5-year cost
II. Reduce Harvesting Costs.--Programs designed to reduce the raw material costs to minimum by developing optimal locating devices, fishing gear and vessels.	million dollars					
A. Develop improved methods of locating fish.	0.7	1.2	2.2	2.0	2.3	8.4
1. Feasibility studies of electromagnetic detection systems for hake and sardine-like species including application of electromagnetic detection devices on the seabed to detect disturbances created by passing fish schools.						
2. Construction and testing prototype electromagnetic systems.						
3. Evaluation of prototype electromagnetic systems for use in commercial fishery.						
4. Feasibility studies of laser systems for near surface schooling species such as thread herring.						
5. The improvement of pulsed laser systems to permit detection of fish schools in near surface waters from aerial platforms would permit coverage of vast areas in short periods of time.						
6. Construction and testing prototype laser systems.						
7. Evaluation of prototype laser system in commercial fishery.						
8. Feasibility studies of passive systems for locating migrating fish such as hake, sandlance, capelin, and thread herring.						
9. Construction and testing passive sonar systems.						
10. Evaluation of passive sonar systems for application in commercial fishery.						

These systems would monitor the position, density, and movement of fish schools and relay the information to a fishing fleet control and monitoring center established in proximity to resource and FPC plant.

Table 2. Option I.--Details and Sequence of Events for BCF Program by area of activity
(continued)

Item	Fiscal Year Cost and Sequence					
	1969	1970	1971	1972	1973	Total 5-year cost
million dollars						
II. Reduce Harvesting Costs - cont.						
B. Develop improved and low cost methods of catching fish.	0.8	2.3	4.0	2.0	2.0	11.1
1. Feasibility study of automated traps for bottom species--hake and sandlance.						
2. Design of automated traps for bottom species--hake and sandlance.						
3. Construction and testing of automated traps.						
4. Design of pumping systems for surface and submerged traps.						
5. Design and construction of gear laboratory.						
6. Design and construction of gear mechanization and demonstration vessel.						
C. Develop improved vessels.	1.0	1.0	2.0	2.5	2.5	9.0
1. Analysis of anti-roll systems and development of stability standards.						
2. Evaluation and redesign of existing multi-purpose craft 50-80 feet for optimum operation.						
3. Design multi-purpose fishing vessel 120-140 feet.						
4. Evaluation of turbine engines for space-saving aspects.						
D. Develop improved fish storing and handling methods--mechanized net dumping, fish culling, hold storing, and quick-chilling facilities.	1.5	2.0	2.0	2.0	2.0	9.5
1. Conceptual design studies of fish handling equipment						
2. Industrial engineering studies for modernizing existing vessels.						
3. Development of preservation techniques.						
4. Testing and demonstration of techniques and equipment.						
Subtotal	4.0	6.5	10.5	8.5	8.5	38.0

Table 2. Option I.--Details and Sequence of Events for BCF Program by area of activity
(continued)

Item	Fiscal Year Cost and Sequence					
	1969	1970	1971	1972	1973	Total 5-year cost
	million dollars					
III. Develop and Commercialize FPC Process.--This aspect of the FPC program proposes that technological activities be accelerated and expanded to permit attainment of objectives of the FPC program and to broaden the resource base from which FPC can be manufactured.						
A. On-shore solvent extraction process for both lean and fatty fish.	1.0	1.0				2.0
1. West coast pilot plant in operation.		1/				
2. FDA approval of fatty fish.						
3. Improvement of solvent systems. Study ethyl alcohol, hexane and alcohol combinations. A broader solvent base process is required in instances where availability of synthetic compounds is limited.						
B. Develop shipboard solvent extraction process.--Small plants will be designed, constructed and installed on vessels to determine feasibility of this technique. It offers considerable promise as a means of producing FPC which can be landed at ports in developing countries where fishing capability is lacking.	.5	1.0	.9	1.3	.5	4.2
1. Develop storage systems for vessels.						
2. Develop solvent systems for vessels.						
C. Develop enzymatic digestion process for lean and fatty fish for both on-shore and aboard ship operations.--Research and development of enzymatic digestion process leading to construction of a pilot plant. This method offers promise of lower product cost and offers a high degree of flexibility in producing different types of FPC products. It has the unique capability of producing a water soluble protein concentrate, thus this product can readily be incorporated into various food forms.	2.0	2.0	2.5	3.5	1.3	11.3

1/ Does not include design and construction cost.

Table 2. Option I.--Details and Sequence of Events for BCF Program by area of activity
(continued)

Item	Fiscal Year Cost and Sequence					
	1969	1970	1971	1972	1973	Total 5- year cost
	million dollars					
C. Develop enzymatic digestion process for lean and fatty fish for both on-shore and aboard ship - cont.						
1. Process development.						
2. FDA approval lean fish.						
3. FDA approval fatty fish.						
4. Design and construct pilot plant for enzymatic process.						
5. Develop enzymatic process for vessel.						
D. Incorporate FPC as additive to food products.--As private firms begin to use products derived as a result of the FPC program and commercial plants are built in the United States and abroad, the Bureau should advise and assist in the introduction of FPC as an additive to food products.	1.0	2.0	2.0	2.0	2.0	9.0
1. Establish nutritional and flavor stability of FPC from lean fish.						
2. Establish nutritional and flavor stability of FPC from fatty fish.						
3. Develop new product forms.						
4. Conduct FPC economic and feasibility studies in U.S. FPC will be of value for increasing protein enrichment of many common foods high in carbohydrates and lacking in animal protein. Feasibility studies will permit introduction of this protein concentrate in areas where malnutrition is a problem and will permit its addition to basic foods used by children and adults alike. The economics of FPC production is an important part of this overall feasibility study.						
Subtotal	4.5	6.0	7.0	5.0	4.0	26.5
	10.1	16.0	22.0	18.5	17.5	84.7
	9.6	17.1				

Table 3. Changes in Benefits Resulting From Deferring Program Activities - Option I

Fiscal Year	Tons of Fish Caught For FPC	Tons of FPC Produced	Number of People Receiving Protein Supplement
1970	6,500	1,040	208,000
1972	110,500	17,680	3,536,000
1973	195,000 1/ 200,000	31,200 1/ 33,200	6,240,000 1/ 6,656,000
1975	429,000 1/ 455,000	68,640 1/ 72,800	13,728,000 1/ 14,560,000

1/ This assumes program deleted in FY 1969 will be deferred only to FY 1970.

Option II

The second option provides for a program of \$7.6 million in FY 1969. Under this option we propose to (a) reduce the efforts in all three of the initiatives--the resource-related work, the harvesting work, and the FPC development; and (b) defer this work to FY 1970 and not eliminate it entirely.

Under this option the following work would be given up in FY 1969 and deferred to FY 1970:

1. In the first initiative--Resource work in the amount of \$1.1 million in the Northwest Atlantic area.
2. In the second initiative--Reduce the harvesting program costs by:
 - a. Deferring work on sub-item--develop improved vessels--in the amount of \$0.5 million.
 - b. Deferring work on sub-item--develop improved fish storing and handling methods (mechanized net dumping, fish culling, hold storage, and quick-chilling facilities)--in the amount of \$1.0 million.
3. In the third initiative--Develop and commercialize FPC process--defer work on the development of shipboard solvent extraction process in the entire amount of \$0.5 million.

Total reductions for the \$10.7 million program for FY 1969 under Option II would amount to \$3.1 million. Adjusted costs for the 5-year program reflecting the deferrals recommended under Option II are shown in tables 4 and 5.

Adjustments for benefits are shown in table 6.

Table 4. BCF Fish Protein Concentrate Program

Option II
5-Year Cost Projection

	<u>1969</u>	<u>1970</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>Totals</u>
	(million dollars)					
Locate, Assess and Map Resources and Provide for Managing and Conserving these Resources	1.1	4.6	4.5	5.0	5.0	20.2
Improve Fish Finding and Catching Techniques and Reduce Harvesting Costs	2.5	8.0	10.5	8.5	8.5	38.0
Develop and Commercialize FPC Process	4.0	6.5	7.0	5.0	4.0	26.5
Total	7.6	19.1	22.0	18.5	17.5	84.7

Table 5. Option II.--Details and Sequence of Events for BCF Program by area of activity

Item	Fiscal Year Cost and Sequence					
	1969	1970	1971	1972	1973	Total 5-year cost
	million dollars					
I. Establish and Maintain Resource Supply.--Programs designed to locate, assess, map, and provide recommendation for management of marine resources adjacent to the U.S. coast or accessible by U.S. fishermen which offer potential for low-cost manufacture into FPC.						
A. Locate assess, and map potential FPC resource.	0.4	1.7				
1. Northeast Pacific hake, pollock, rockfish, anchovy and saury resources.	0.4	1.3	1.0	0.7	0.5	4.2
2. Northwest Atlantic hake, sandlance, capelin and herring resources.						
3. Gulf of Mexico thread herring and anchovy resources.						
B. Determine annual movements and seasonal availability.	0.4	1.8	1.5	2.0	1.8	7.0
1. Northeast Pacific hake, pollock, rockfish; anchovy and saury resources.						
2. Northwest Atlantic hake, sandlance, capelin and herring resources.						
3. Gulf of Mexico thread herring and anchovy resources.						
C. Determine maximum sustainable yield and develop management procedures.	2	0.6	.7	.7	.7	2.7
1. Northeast Pacific hake, pollock, rockfish, anchovy and saury resources.						
2. Northwest Atlantic hake, sandlance, capelin and herring resources.						
3. Gulf of Mexico thread herring and anchovy resources.						
D. Develop methodology of predicting annual and seasonal abundance and availability and related monitoring systems.	0.3	1.1	1.3	1.6	2.0	6.3
1. Northeast Pacific hake, pollock, rockfish, anchovy and saury resources.						
2. Northwest Atlantic hake, sandlance, capelin and herring resources.						
3. Gulf of Mexico thread herring and anchovy resources.						
Subtotal	2.8	3.5	4.5	5.0	5.0	20.2
	1.1	4.6				

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Item	Fiscal Year Cost and Sequence					Total 5-year cost
	1969	1970	1971	1972	1973	
II. Reduce Harvesting Costs.--Programs designed to reduce the raw material costs to minimum by developing optimal locating devices, fishing gear and vessels.	million dollars					
A. Develop improved methods of locating fish.	0.7	1.2	2.2	2.0	2.3	8.4
1. Feasibility studies of electromagnetic detection systems, for hake and sardine-like species including application of electromagnetic detection devices on the seabed to detect disturbances created by passing fish schools.	[Bar from 1969 to 1970]					
2. Construction and testing prototype electromagnetic systems.	[Bar from 1970 to 1971]					
3. Evaluation of prototype electromagnetic systems for use in commercial fishery.	[Bar from 1971 to 1973]					
4. Feasibility studies of laser systems for near surface schooling species such as thread herring.	[Bar from 1969 to 1970]					
5. The improvement of pulsed laser systems to permit detection of fish schools in near surface waters from aerial platforms would permit coverage of vast areas in short periods of time.	[Bar from 1969 to 1971]					
6. Construction and testing prototype laser systems.	[Bar from 1971 to 1972]					
7. Evaluation of prototype laser system in commercial fishery.	[Bar from 1972 to 1973]					
8. Feasibility studies of passive systems for locating migrating fish such as hake, sandlance, capelin, and thread herring.	[Bar from 1969 to 1970]					
9. Construction and testing passive sonar systems.	[Bar from 1970 to 1971]					
10. Evaluation of passive sonar systems for application in commercial fishery.	[Bar from 1971 to 1973]					
These systems would monitor the position, density, and movement of fish schools and relay the information to a fishing fleet control and monitoring center established in proximity to resource and FPC plant.						

Table 5. Option II.--Details and Sequence of Events for BCF Program by area of activity
(continued)

Item	Fiscal Year Cost and Sequence					
	1969	1970	1971	1972	1973	Total 5-year cost
million dollars						
II. Reduce Harvesting Costs - cont.						
B. Develop improved and low cost methods of catching fish.	0.8	2.3	4.0	2.0	2.0	11.1
1. Feasibility study of automated traps for bottom species--hake and sandlance.						
2. Design of automated traps for bottom species--hake and sandlance.						
3. Construction and testing of automated traps.						
4. Design of pumping systems for surface and submerged traps.						
5. Design and construction of gear laboratory.						
6. Design and construction of gear mechanization and demonstration vessel.						
C. Develop improved vessels.	0.5 1.0	1.5 1.0	2.0	2.5	2.5	9.0
1. Analysis of anti-roll systems and development of stability standards.						
2. Evaluation and redesign of existing multi-purpose craft 50-80 feet for optimum operation.						
3. Design multi-purpose fishing vessel 120-140 feet.						
4. Evaluation of turbine engines for space-saving aspects.						
D. Develop improved fish storing and handling methods--mechanized net dunnage, fish culling, hold storing, and quick-chilling facilities.	0.5 1.5	3.0 2.0	2.0	2.0	2.0	9.5
1. Conceptual design studies of fish handling equipment						
2. Industrial engineering studies for modernizing existing vessels.						
3. Development of preservation techniques.						
4. Testing and demonstration of techniques and equipment.						
Subtotal	4.0 2.5	6.5 8.0	10.5	8.5	8.5	38.0

Table 5. Option II.--Details and Sequence of Events for BCF Program by area of activity
(continued)

Item	Fiscal Year Cost and Sequence					
	1969	1970	1971	1972	1973	Total 5-year cost
million dollars						
III. Develop and Commercialize FPC Process.--This aspect of the FPC program proposes that technological activities be accelerated and expanded to permit attainment of objectives of the FPC program and to broaden the resource base from which FPC can be manufactured.						
A. On-shore solvent extraction process for both lean and fatty fish.						
1. West coast pilot plant in operation.	1.0	1.0				2.0
2. FDA approval of fatty fish.						
3. Improvement of solvent systems. Study ethyl alcohol, hexane and alcohol combinations. A broader solvent base process is required in instances where availability of synthetic compounds is limited.						
B. Develop shipboard solvent extraction process.--Small plants will be designed, constructed and installed on vessels to determine feasibility of this technique. It offers considerable promise as a means of producing FPC which can be landed at ports in developing countries where fishing capability is lacking.						
1. Develop storage systems for vessels.		1.5	.9	1.3	.5	4.2
2. Develop solvent systems for vessels.		1.0				
C. Develop enzymatic digestion process for lean and fatty fish for both on-shore and aboard ship operations.--Research and development of enzymatic digestion process leading to construction of a pilot plant. This method offers promise of lower product cost and offers a high degree of flexibility in producing different types of FPC products. It has the unique capability of producing a water soluble protein concentrate, thus this product can readily be incorporated into various food forms.	2.0	2.0	2.5	3.5	1.3	11.3

^{1/} Does not include design and construction cost.

Table 5. Option II.--Details and Sequence of Events for BCF Program by area of activity
(continued)

Item	Fiscal Year Cost and Sequence					
	1969	1970	1971	1972	1973	Total 5- year cost
	million dollars					
C. Develop enzymatic digestion process for lean and fatty fish for both on-shore and aboard ship - cont.						
1. Process development.						
2. FDA approval lean fish.						
3. FDA approval fatty fish.						
4. Design and construct pilot plant for enzymatic process.						
5. Develop enzymatic process for vessel.						
D. Incorporate FPC as additive to food products.--As private firms begin to use products derived as a result of the FPC program and commercial plants are built in the United States and abroad, the Bureau should advise and assist in the introduction of FPC as an additive to food products.	1.0	2.0	2.0	2.0	2.0	9.0
1. Establish nutritional and flavor stability of FPC from lean fish.						
2. Establish nutritional and flavor stability of FPC from fatty fish.						
3. Develop new product forms.						
4. Conduct FPC economic and feasibility studies in U.S. FPC will be of value for increasing protein enrichment of many common foods high in carbohydrates and lacking in animal protein. Feasibility studies will permit introduction of this protein concentrate in areas where malnutrition is a problem and will permit its addition to basic foods used by children and adults alike. The economics of FPC production is an important part of this overall feasibility study.						
Subtotal	4.5	6.0	7.0	5.0	4.0	26.5
	28.7	26.0	22.0	18.5	17.5	84.7
	7.6	19.1				

Table 6. Changes in Benefits Resulting From Deferring Program Activities - Option II

Fiscal Year	Tons of Fish Caught For FPC	Tons of FPC Produced	Number of People Receiving Protein Supplement
1970	6,500	1,040	208,000
1972	91,000 110,500 1/	14,560 17,680 1/	2,912,000 3,536,000 1/
1973	182,000 1/ 208,000	29,120 1/ 33,280	5,824,000 1/ 6,672,000
1975	403,000 155,000 1/	64,480 72,800 1/	12,876,000 14,560,000 1/

1/ This assumes programs deleted in FY 1969 will be deferred only to FY 1970.

Other Alternatives Considered

Serious consideration has been given to a possible third option-- that of eliminating or deferring all of the work on the resource and on improving harvesting methods in FY 1969. This would leave only the work on the FPC process and product in the amount of \$4.5 million.

We have concluded that this alternative is not realistic in that it seriously jeopardizes the probability of success for the entire program. Much of the world's potential FPC resource consists of unutilized species which we now cannot catch at a cost low enough for use in a low priced FPC to be fed to hungry people of the developing world. Many of the unutilized resources adjacent to the U.S. coast fall in this category. This applied to west coast hake until recently when our work on the resource and on the mid-water trawl developed by BCF made it possible to harvest these species at least during certain seasons at costs low enough for use of the catch in fish meal, pet food and FPC.

Some species located in various waters of the world such as the Peruvian anchoveta could no doubt be used for FPC without further resource or harvesting work, if the process for fatty fish were to be developed. For many of the potential resources, however, further development in harvesting and locating and in delineating the resource itself is a necessary prerequisite to its use in FPC or other low-priced fish products.

Nature of the work and the time required for significant achievements in initiatives one and two are such that deferral even one year would be very costly in terms of making the process profitable enough for industry adoption for most species at an early date.



EXECUTIVE OFFICE OF THE PRESIDENT
NATIONAL COUNCIL ON MARINE RESOURCES
AND ENGINEERING DEVELOPMENT

WASHINGTON 20505

EXECUTIVE SECRETARY

November 27, 1967

EYES ONLY

MEMORANDUM

TO: Mr. Joseph A. Califano, Jr.
FROM: Edward Wenk, Jr. *EJ*
SUBJ: Marine Sciences

In following up your instructions from the November 8 White House meeting, I have been keeping in close touch with agencies concerned in the further development of the five initiatives to be considered by the President. The documents being prepared by the agencies, in the main, incorporate our ideas. In some cases, however, there is additional background that you should be aware of and I shall be setting this forth in separate memoranda.

On November 15, the Marine Sciences Council endorsed all thirteen of the initiatives set before it, with the exception of one for design of a continental shelf research submarine. Their recommendations are shortly to be forwarded to the President by the Vice President. The Bureau of the Budget reserved their position on those items having fiscal implications over individual agency ceilings.

Following your comments with regard to the entire marine sciences package, I have prepared the attached memorandum proposing that initiatives supported by the President and other related Presidential comment on advances in this field be set forth in a special message.

Let me know if any follow through is desired.

Attachment

a/s

EYES ONLY



EXECUTIVE OFFICE OF THE PRESIDENT
NATIONAL COUNCIL ON MARINE RESOURCES
AND ENGINEERING DEVELOPMENT

WASHINGTON 20500

EXECUTIVE SECRETARY

November 25, 1967

EYES ONLY

MEMORANDUM

FOR: Mr. Joseph A. Califano, Jr.
FROM: Edward Wenk, Jr. *ed*
SUBJECT: Special Message in Marine Sciences

I should like to recommend that the President transmit his annual marine sciences report to the Congress, required by PL 89-454, via a special message for the following reasons:

- a) The Marine Sciences area can contribute in new ways to future Great Society programs--war on hunger; improved quality of environment; economic growth; trade, international cooperation--ultimately resources, recreation and living room;
- b) Present rate of investment and domestic progress not adequate to meet foreseeable needs--and depend critically on Federal leadership;
- c) Cooperation of other nations is essential and depends on U. S. leadership;
- d) There is a pronounced ground swell of public support, even in the absence of sharp crisis or severe pressures from special interests;
- e) Partisan attacks may evolve from both directions--liberal Democrats and Republicans--because the position of President has not been clear and support has not been previously committed to marine sciences sector;
- f) Legislative impatience--could develop because initiatives in marine science began in the Congress and they are watching Presidential response. House Appropriations Committee is currently conducting an investigation.

Therefore, the Annual Report offers ideal opportunity to:

- a. Identify maritime contributions to human needs and economic growth;
- b. Assert U. S. leadership domestically and internationally;
- c. Put the President in the picture;
- d. Set forth new program initiatives;
- e. Mobilize support for public and private programs.

The message should be built around five initiatives now under consideration - showing immediate and long range impact:

- .. Food from the Sea;
- .. New attention to conflicts in use of the Coastal Zone;
- .. An International Decade of Exploration;
- .. Port Development and Waterfront Urban problems;
- .. Improved Safety at Sea.

In addition, programs have evolved that could be enunciated by the President in relation to:

- ... Legal regimes and arms control on the seabed;
- ... Intensified mapping of oil and gas on the continental shelf for economic development of U. S. and other nations;
- ... Extension of the Sea Grant College program;
- ... Use of new technologies of spacecraft and buoy networks for ocean observations;
- ... New focus of attention in the Arctic;
- ... Improved effectiveness of data handling

EYES ONLY

Background considerations:

Because of fragmentation in this field, advances depend on Federal leadership;

In the absence of a lead agency such as NASA for outer space, and with 11 major departments or agencies involved, responsibility for momentum and direction is vested by statute in the President;

President Johnson's personal support of this field has not been enunciated strongly. In fact, Presidential recognition of marine sciences has been largely absent since the "Kennedy add-on" of March 1961. Initiative has been largely in the Congress.

75 percent of the population lives near the Coasts or Great Lakes. Marine science has more appeal than the space program--with both an unexplored frontier and clear benefits to people. Evidence of interest lies in increasing newspaper and magazine coverage; requests for speeches; student enrollments; applications for Sea Grant; new professional societies; publication of investment brochures;

There is also keen interest from the aerospace and petroleum industries as to Federal intentions;

The importance of the oceans is gaining international attention in a large number of separate nations, in the UN, NATO, etc. Especially because the US leads in underwater technology, the world is interested in US motives and needs both the assurances and encouragement at the Presidential level to head off any colonial race by working together before rivalry becomes heated.

A partisan attack is beginning - asserting lack of Administration action -

.. Congressman Bob Wilson refers to "a turtle in the Administration's tank:"

.. Kiplinger Newsletter reports little progress

EYES ONLY

Page 4 - Mr. Joseph A. Califano, Jr.
November 25, 1967

.. Republican pressure at state level from
Reagan, Evans, Kirk, Rockefeller, Volpe.

There is a record of accomplishment since enactment of PL 89-454:

- .. Accelerated transition from scientific study of the sea to effective use, thus implementing some of the recommendations from PSAC;
- .. Identification of goals, and milestones;
- .. Selectivity in establishing priorities;
- .. Improved Federal management of a multi-agency program by planning ahead and planning together;
- .. Advisory Commission is hard at work evaluating role of the private sector and alternatives as to Federal organization.

These fresh initiatives and assertion of Presidential interest could meet complaints that the budget squeeze has blocked any new programs and that the Administration has weakened support for science and technology.

Credibility of the program depends upon some increases in funding. The Marine Sciences Council reviewed and is endorsing to the President initiatives listed earlier that amount to some \$70 million increase, Government-wide. At this time in the budget process, agencies have agreed to include some \$50 million within their ceilings. Justification for the remainder is being set forth in a memorandum from the Vice President to the President.

We are able to get a great deal of mileage out of this program for very little money this year because so many of the new initiatives are in a planning phase and do not yet involve funds for operating programs.

cc: The Vice President

EYES ONLY

