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

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The Honorable John D. Dingell
Chairman, Subcommittee on Fisheries
and Wildlife Conservation
Committee on Merchant Marine and Fisheries
House of Representatives

Dear Mr. Chairman:

As you requested on August 21, 1972, we reviewed the Fish Protein Concentrate Program as administered by the National Marine Fisheries Service, National Oceanic and Atmospheric Administration, Department of Commerce.

We reviewed legislation, procedures, and practices related to the administration of the program. We interviewed officials of the Agricultural Research Service and the Economic Research Service, Department of Agriculture; Agency for International Development, Department of State; Food and Drug Administration, Department of Health, Education, and Welfare; a major university; and several independent firms and an association having a specific interest in fish protein concentrate.

We did our work principally at the National Oceanic and Atmospheric Administration headquarters office in Rockville, Maryland, and the fish protein concentrate experimental and demonstration plant at Aberdeen, Washington.

The experimental and demonstration plant served a useful purpose in developing a process for the production of fish protein concentrate but did not demonstrate the economic feasibility to produce it commercially. The domestic market potential for the type of fish protein concentrate produced by the Service is limited at this time and the U.S. fishing industry will not be enhanced by a commercial fish protein concentrate industry. We believe that only limited benefits could be realized by the Government if it were to continue operating an experimental plant. It appears that when a strong domestic and foreign need for fish protein concentrate has become evident, industry may become interested and begin to produce it. We also believe that if an extension of the program is authorized, the plant should be located at a site close to the source of fish and to a fishmeal plant.

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We are suggesting that if the House Subcommittee on Fisheries and Wildlife Conservation gives favorable consideration to an extension of the program, the Subcommittee consider including, in a report thereon, language instructing the Service to:

--Develop, on a continuing basis, information on the present and potential fish protein concentrate markets, both domestic and foreign.

--Determine the present and future available fish resources for producing fish protein concentrate commercially.

--Evaluate sites on the Atlantic and gulf coasts, including a determination of the detailed costs for each site and industry's willingness to participate.

--Complete the research into storage methods to develop and demonstrate alternatives to using frozen fish.

As agreed with your office, we sent our draft report to the National Oceanic and Atmospheric Administration for its comments. The Administration told us that the draft report presented a fair evaluation of the program. Its comments have been considered in the appendix.

We do not plan to distribute this report further unless you approve or publicly announce its contents.

We trust the information will assist you.

Sincerely yours,

Comptroller General
of the United States

FISH PROTEIN CONCENTRATE PROGRAM

BACKGROUND

Fish protein concentrate (FPC) is defined as "an inexpensive, stable, wholesome, highly nutritional, and hygienically prepared product" in which the protein and other nutrients are more concentrated than those in fresh fish. FPC can be produced as an essentially odorless and tasteless food supplement which does not create any perceptible physical changes to most products to which it is added. This type of FPC is described as nonfunctional.

The FPC program began in fiscal year 1962. The act of November 2, 1966, as amended (16 U.S.C. 778), expanded the program and authorized the Secretary of the Interior to develop, through the use of an experimental and demonstration plant, practical and economical means for the commercial fishing industry to produce FPC.[1]

The National Marine Fisheries Service administered the program. Major program goals were to:

--Develop a domestic industry to produce FPC from underutilized species of fish.

--Aid U.S. fishermen by providing a potential outlet for fish which are underutilized, which could be upgraded in value, or which are not now utilized.

--Make FPC available to persons, especially children, suffering from protein deficiency.

The Service contracted with a specially formed private joint venture to construct and operate an experimental plant in Aberdeen to produce FPC. The plant began operating in March 1971 but discontinued its operation in May 1972 in anticipation of the expiration of program authority on June 30, 1972, as provided by the act. Not all of the program goals had been accomplished; therefore the Service sought legislative authority for a 2-year extension to complete the program. The 92d Congress did not provide such authority.

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[1]The President's Reorganization Plan No. 4, effective October 3, 1970, transferred the Department of the Interior activities concerning commercial fisheries to the National Oceanic and Atmospheric Administration, Department of Commerce.

FPC's MARKET POTENTIAL

Studies conducted by three major colleges on the economics of processing and marketing FPC showed only a limited domestic demand for the type of FPC produced by the Service. Also statistics on protein consumption in the United States indicate that daily protein requirements generally are being fulfilled by sources other than FPC. FPC's greatest potential for success appears to be in diet-deficient countries[1] that can establish a government-supported industry for producing FPC.

The Commission on Marine Science, Engineering and Resources studied all aspects of marine science and recommended an overall plan for developing an adequate national oceanographic program to meet present and future national needs. The Commission reported on January 9, 1969, to the President and Members of the Congress that:

--The most important use of FPC is as a dietary supplement in low-income areas where the consumption of protein, particularly animal protein, is chronically below minimum nutrition requirements.

--The process by which FPC is produced limits its functional properties which reduces substantially the flexibility with which it can be blended with formulated foods.

--The FPC program is not a major element in rehabilitating the U.S. fishing industry.

The Commission concluded that, to insure distribution of FPC, government financial support, whether by the United States, other governments, or a combination of governments, is needed.

Domestic and foreign need for protein

Many domestically marketed food products are currently supplemented with protein ingredients--such as casein and sodium caseinate, dried milk solids and nonfat dry milk, various soy proteins, egg white and egg solids, egg yolk, hydrolized vegetable protein, and chicken meat. Selecting a

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[1]Those defined as having nutritionally inadequate national average diets. Diet-deficient areas include all of Asia except Japan and Israel, all but the southern tip of Africa, the northern part of South America, and almost all of Central America and the Caribbean.

protein ingredient to supplement a food product is generally based on the functional characteristic the ingredient will impart to the final product. For example, food processors may use soy concentrate as an ingredient in baby foods because of its ability to carry flavor and improve product texture. These protein ingredients not only perform specific functions but also enhance the nutritional value of the final product. Food processors would also consider cost in selecting a protein ingredient.

FPC was intended to be used as a supplement in food products. FPC produced by the Service's experimental plant does not contribute functional characteristics when added to a food product, because most of the functional properties of the natural fish protein are lost in the production of FPC. FPC, as a nonfunctional ingredient, does enhance a product's nutritional value.

Cornell University, the Massachusetts Institute of Technology, and the University of Washington studied the economics of processing and marketing FPC. The studies identified some of the problems that a non-functional-type FPC would encounter in competition with other marketed protein ingredients. These studies concluded, generally, that the domestic market potential for a nonfunctional protein ingredient, such as FPC, was limited.

The Department of Agriculture has made various nationwide surveys evaluating the quantity, money value, and nutritive content of diets in the United States. The report on its most extensive survey, issued in January 1972, included the following table showing those nutrients in the diets of individuals in the United States that were below the recommended daily allowances established in 1968 by the Food and Nutrition Board, National Research Council.

Nutrient Intake Below Recommended Allowance

Sex and age (years)	Protein	Calcium	Iron	Vitamin A value	Thiamin	Ribo-flavin	Ascorbic acid
Male and female:							
under 1			****				
1-2			****				
3-5			**				
6-8							
Male:							
9-11		*					
12-14		**	***		*		
15-17		*	*				
18-19							
20-34							
35-54		*					
55-64		**					
65-74		**					
75 and over		***		*		**	*
Female:							
9-11		***	****		*		
12-14		***	****	*	*		
15-17		****	****		**		
18-19		***	****	*	*		
20-34		***	****		*	*	
35-54		****	****		*	**	
55-64		****			*	*	
65-74		****	*	*	**	**	
75 and over		****	*	**	**	***	

Below by

*	1-10%
**	11-20%
***	21-29%
****	30% or more

Agriculture reported that protein consumption requirements established by the Food and Nutrition Board were being met and that protein presented no problem in most of the diets of persons in the United States. Agriculture recognized that isolated groups in the United States suffered from protein malnutrition; however, the cause was generally not associated with protein availability but rather with factors such as eating habits, food likes and dislikes, supply distribution, and education.

We interviewed officials and/or economists of the Departments of State and Agriculture, the University of Washington, and private industry to obtain their views on the market potential of FPC. The consensus was that only a limited domestic demand existed for FPC with nonfunctional characteristics. In their opinion, the greatest market potential for FPC was in certain diet-deficient countries that have an adequate fish resource which could be harvested cheaply and in which FPC processors would be assured that the FPC produced would be used in programs financially supported by the governments of these countries.

Two fishmeal industry officials were of the opinion that, although current domestic supplies were adequate, there was a long-range domestic need for additional protein. They expressed the belief that (1) world demands for protein sources were increasing, (2) additional supplies of protein would be needed, and (3) as foreign demands increase, U.S. supplies of protein would have to be increased to meet both domestic and foreign demands.

Another industry official said that he was not at that time interested in producing FPC as a food supplement to be used by large food processors. He told us that he believed that a higher price for FPC could be obtained in the more sophisticated pharmaceutical or diet food markets. He said that, if he wanted to market FPC to large food processors, he would have to produce FPC by a process which would increase its functional characteristics.

Package size restriction
limited industry interest

On February 2, 1967, the Food and Drug Administration (FDA) amended the Code of Federal Regulations (21 CFR 121.1202) to approve FPC as a food additive when it is produced from whole hake or hake-like fish using the Service's isopropyl alcohol extraction process. The regulations included specifications concerning the content of protein, moisture, residues of isopropyl alcohol, fat, fluoride, and bacterial count which FPC must meet before it may be safely used as a food supplement.

The regulations provided that FPC was to be used only in the household and could be marketed only in 1-pound or smaller packages. FDA imposed these restrictions to insure that individual consumers would have a free choice in deciding whether to use the additive as a source of protein in their diets. An FDA official, in testifying before the House Subcommittee on Fisheries and Wildlife Conservation on August 15, 1972, said that "the one-pound package limitation was to discourage industrial use * * *."

In testimony before the House Subcommittee on Oceanography in November 1972, it was pointed out that the 1-pound package limitation not only rendered the FPC production uneconomical but also hindered industry's attempt to attract adequate capital to provide plant and facilities to produce FPC.

In July 1968, a company interested in producing FPC petitioned FDA to remove the 1-pound package limitation because it deterred the sale of FPC to food processors. On August 16, 1968, FDA responded to the petition stating that it needed more information regarding FPC's specific food uses and levels of use as well as information on product labeling to insure that the consumer would not be deceived. The company submitted various supplements to the petition to FDA to provide such information. FDA, however, did not consider these supplements sufficiently responsive to its request to warrant the removal of the 1-pound package limitation. On September 8, 1971, the company withdrew its petition.

In January 1972 a national fishmeal association petitioned FDA to remove the limitation. Because of its concern about the heavy mercury content found in tuna and swordfish, FDA requested the petitioner to furnish information concerning the content of heavy metals in FPC and the methods of determining the amount of heavy metals. In addition, FDA requested more specifics on FPC's food uses, levels of use, and labeling before the limitation would be removed. The information requested by FDA was subsequently provided, and on November 6, 1972, the petition and the proposed amendment to the Code of Federal Regulations to remove the 1-pound package limitation were forwarded to the Commissioner, FDA, for approval and publication in the Federal Register.

On November 13, 1972, the Director, Compliance Regulations Policy Staff, FDA, expressed the opinion that FDA should further consider the data supporting the petition. The data was further considered, and on January 31, 1973, the petition and the proposed CFR amendment were resubmitted to the Commissioner, FDA, for his approval. As of March 27, 1973, the proposed amendment had not been approved.

AVAILABILITY OF DOMESTIC FISH RESOURCES TO PRODUCE FPC

FDA requires that its approval be obtained for the type of fish used in producing FPC. The Bureau of Commercial Fisheries (the Service's predecessor organization in the Department of the Interior) petitioned FDA in February 1966 to approve the use of hake and in December 1969 to approve the use of menhaden, herring, anchovy, ocean pout, and alewife. As of March 31, 1973, FDA had approved the use of hake, menhaden, and herring. During the operation of the experimental plant, hake, menhaden, and unapproved anchovy were processed; no attempt was made to process herring.

Hake

The Service chose hake as the initial source of raw material for FPC because it was (1) abundant off the Atlantic and Pacific coasts, (2) a schooling fish easy to catch, (3) largely not used as a food fish, (4) available for a considerable part of the year, (5) high in nutritional level, (6) a lean fish low in fat content, making it easy to process, and (7) believed to be the most likely fish to meet FDA approval.

When the experimental plant became operational in 1971, the population of Pacific hake was relatively low. Although it was reported that Pacific hake was being intensively fished by Soviet vessels, the Service believed that the hake population decline resulted primarily from natural fluctuations.

A Service official said that not enough Pacific hake was available to support a commercial FPC industry but that enough was available to support an experimental plant using 24 tons a day. Also competition from other fisheries (e.g., salmon) having higher earning expectations would serve as a deterrent to fish for hake.

Menhaden

There are two U.S. fisheries for menhaden--the Atlantic and gulf coast fisheries. Landings of menhaden in 1970 and 1971 amounted to about 1.8 and 2.2 billion pounds, respectively, worth about $70 million. Menhaden landings in 1971 accounted for 44 percent of the total U.S. landings of all species of fish. Commercial uses for menhaden include processing it into (1) fishmeal, used mainly as a supplement for poultry feed, and (2) fish oil, used in manufacturing paint, lubricants, cosmetics, and other products.

Service officials have expressed the view that the U.S. menhaden fishing industry would not benefit from an increased

catch of menhaden to be used in producing FPC because menhaden was reaching or had reached a point where it was overfished. Landings in the gulf coast fishery in 1971, for example, exceeded the Service's latest estimate of maximum sustainable yield by 68 percent. According to the Service, the menhaden industry could benefit economically from an alternative upgraded use for menhaden in producing FPC. Industry officials with whom we spoke were of the opinion that menhaden was not being overfished. They expressed the view that present landings could be sustained for an indefinite period but that such landings should not be increased. Both the Service and industry expressed the view that some of the menhaden landed for commercial uses would have to be diverted for use in FPC production.

PAST OPERATIONS OF THE EXPERIMENTAL PLANT

The past operations of the experimental plant have demonstrated that acceptable FPC can be produced from both lean and fatty fish, i.e., hake and menhaden, but have not shown the economic feasibility of producing FPC commercially.

The plant operated from March 1971 to May 1972. About 2,871 tons of fish were processed into about 209 tons of FPC for an average product yield of 7.3 percent. The private contractor who operated the plant estimated a 12.2-percent average yield of FPC from whole hake, but the average yield obtained after processing the hake was only 7.3 percent. The amount and percentage yield of FPC produced from the different types of fish processed follow.

	Hake	Menhaden	Anchovy	Total
Number of months in which processed	8	5	3	
Tons of fish used	2,280.4	406.7	184.0	2,871.1
Tons of FPC produced	166.8	30.2	11.9	208.9
Percent of yield	7.3	7.4	6.5	7.3
Range of monthly percentage yield	0 to 10.2	3.6 to 11.1	2.5 to 6.8	
Tons of FPC meeting FDA specifications (see p. 5)	46.95	.35	-	47.3
Percent of FPC meeting FDA specifications to total tons of fish used	2.1	.08	-	

The monthly percentage yield of FPC for the different types of fish varied considerably. Also only 24 percent of the total FPC produced from hake and menhaden met FDA specifications--11.9 tons of FPC were produced from anchovy which had not been approved by FDA for processing.

The following major factors contributed to these results.

--Engineering plant and equipment design deficiencies which became apparent during plant operations caused severe sanitary problems and product rejection.

--Equipment breakdowns and poorly selected equipment caused production problems.

--Method used to store and handle fish caused protein losses.

--The production process varied frequently.

Estimated per pound FPC production cost

Most FPC produced in the plant which met FDA specifications was processed from hake during June, July, and August 1971. We examined the accounting records available for the period and discussed the accounting system and procedures with the certified public accounting firm employed, after the plant began operations, to maintain the books and accounts. The accounting system did not provide for recording unit costs of production; therefore, to approximate the cost to produce a pound of FPC, we analyzed account schedules prepared by the certified public accounting firm, the related cost accounts, and the supporting documentation.

We estimate that in June, July, and August 1971 it cost, exclusive of depreciation and contractor fees, $5.08 to produce, from hake, a pound of FPC meeting FDA specifications. This FPC was produced in an experimental prototype plant experiencing various process modifications during operations. Therefore the production costs generally would not represent the costs associated with a commercial FPC operation. The cost of $5.08 a pound is substantially greater than the Service's estimated cost range of 35 cents to 50 cents a pound to produce FPC from hake in a commercial plant. The cost would be affected also by such factors as plant production capacity, number of operating days, cost of fish, and byproduct yield.

FPC distribution

During plant operations, 208.9 tons (417,800 pounds) of FPC was produced, of which 47.3 tons (94,600 pounds) met FDA

specifications. On July 27, 1972, the Service announced that FPC was available for research and development to the food industry, universities, and other organizations. As of December 11, 1972, the Service had distributed, to 50 requestors, 64,699 pounds of FPC that met FDA specifications.

	Pounds
Agency for International Development	62,200
Governor of American Samoa	1,000
Two Service laboratories	550
46 industries, universities, or other organizations	949
Total	64,699

The Service also had pending a request from the Agency for International Development for an additional 6,000 pounds which, after being furnished, would leave an inventory of 23,901 pounds of FPC meeting FDA specifications.

PLANS FOR FUTURE OPERATIONS OF THE PLANT

The Service employed a consulting firm to develop a plan for resuming and completing the FPC program over a 2-year period, including a management plan for implementing, monitoring, and controlling future work. The plan consisting of five major areas, each with defined objectives, developed approaches and schedules and identified resource requirements. The five areas were:

- --Laboratory process development to resolve processing problems and to develop adequate methods for fish handling and storage.
- --Engineering evaluation consisting of a private engineering firm's review, redesign, and modification of the experimental plant and an evaluation of past and future plant operations.
- --Plant operations consisting of efforts directed toward procuring equipment and obtaining needed technical and economic data.
- --Economic and marketing studies to examine resource availability, economics of processing, and domestic and foreign market potential for FPC.
- --Product acceptability efforts to improve the FPC product; to distribute the FPC to potential users; to analyze feedback from recipients of FPC; and to gain acceptance of FPC as a viable commodity through consultation, dissemination of information, and possible further laboratory development.

The Service initiated work in several of these areas. It contracted with an engineering firm to review past plant operations, to determine the modifications needed to solve plant problems, and to estimate the related costs.

Service efforts to relocate the experimental plant

In response to a congressional inquiry as to the feasibility of moving the experimental plant from Aberdeen to a gulf coast site close to the source of menhaden, the Service estimated a one-time cost of about $866,000 to move the plant. The Service determined that, if the plant were to remain at Aberdeen, it would be necessary to transport 5,200 tons of frozen menhaden from the gulf coast to Aberdeen at a cost of about $598,000 during the proposed 2-year extension.

A Service representative and an engineering firm representative visited seven Mississippi gulf coast locations between August 23 and 25, 1972, and developed relocation cost estimates. Each of the seven sites was evaluated on the basis of site suitability, the availability of facilities, site and construction work needed, and cost estimates for work required. The Service did not evaluate other sites or attempt to determine the ideal location for an experimental plant or determine to what extent, if any, industry would be willing to absorb any of the cost of relocating the plant.

The Service developed the following estimates on the assumption that it would bear all relocation costs. The Service did not intend these estimates to be precise and referred to them as "order of magnitude" estimates. We did not verify the estimates because of the absence of supporting documentation.

Description	Average cost of seven sites
Final design	$ 18,000
Land transfer or purchase	20,000
Site work	17,000
Utilities	90,000
Buildings	272,000
	417,000
Disassemble and move existing equipment	67,000
Isopropyl alcohol storage tank	9,000
Field supervision and engineering	35,000
Fresh fish handling equipment	100,000
General and administrative expense	81,000
Contingency (25%)	157,000
Total	[a]$866,000
Less cost to ship frozen fish to Aberdeen	-598,000
Net cost to relocate to gulf coast	$268,000

[a]Ranged from $640,000 to $975,000.

We interviewed officials of three fishmeal producers having plants in the Mississippi and/or Louisiana gulf coast area, one of which produced fishmeal at one of the seven sites visited by the Service. Officials of the three producers emphasized the need to establish an experimental plant near a fishmeal plant to utilize inferior quality fish which could not be used to produce FPC. There is no fishmeal plant operating in Aberdeen.

Officials of two of these producers said that their organizations would be interested in negotiating with the Service to relocate the plant to their sites. They said also that their respective organizations would furnish a site, would provide the money necessary to construct a building to house the experimental plant equipment, and would lease the building to the Service at a nominal cost for the time required to complete the FPC program. One official estimated that the costs to construct such a building would range from $130,000 to $150,000. If industry furnished a building and related facilities, the Service's estimated costs to relocate the plant would be reduced by about $521,000 (land, building, and related costs--$417,000--and a 25-percent contingency allowance--$104,000). The cost of general and administrative expense was not included because information was not available to enable us to properly allocate these expenses.

Two industry officials we interviewed said that the Louisiana gulf coast area would be the best location for the plant because menhaden is more abundant there than in the Mississippi gulf coast area. Service representatives did not visit potential relocation sites in Louisiana. The Service's cost estimate (see p. 11) shows a cost of $598,000 to ship frozen menhaden from the gulf coast to Aberdeen. The estimate was based on the need to process 5,200 tons of fish to complete the FPC program. Subsequently, the engineering firm recommended that only 3,600 tons of fish be used, which would reduce the cost of shipping frozen fish from $598,000 to $414,000. If the experimental plant was moved to an industry-furnished building and related facilities, the Service's costs based on the estimates shown on p. 11, would be $345,000 ($866,000 less $521,000) and the cost to relocate would be about $69,000 less than the cost of shipping fish to Aberdeen. In addition there would be the advantages of having the plant close to the source of fish and to a fishmeal plant.

If the plant was close to a fishmeal plant, the FPC that did not meet FDA specifications and poor quality fish could be readily used by the fishmeal processors. Also, if the plant remained at Aberdeen and operated beyond a 2-year period, the cost to produce FPC would be increased in proportion to the cost of shipping frozen fish from gulf coast points.

The engineering firm representative who assisted the Service in the relocation evaluation told us that the Service

overestimated the relocation costs because (1) about $115,000 needed to modify the plant at Aberdeen would be saved by moving the plant (this information was not available when the Service made its estimate), (2) the 25-percent contingency was too high for a project of this type, and (3) the Service had no firm basis for estimating the costs of $100,000 for fresh-fish-handling equipment because it did not know at that time what method of storing fish would be used.

A major cost consideration in producing FPC is the method used to store and/or process the fish. There are several possible methods, but the Service has not determined which method would be most economical and effective for commercially producing FPC. Methods already identified include storing in brine or isopropyl alcohol, freezing the fish, and processing fresh fish as received or in presscake form. The Service planned to use frozen fish in future experimental plant operations at Aberdeen and to research the other methods of storing fish. The advantages of using frozen fish in an experimental plant are (1) a continuous inventory of fish for efficient and economical plant operations and (2) little protein loss. Fishmeal industry officials told us that they preferred to process fresh fish, thereby saving the cost of freezing the fish.

Representatives of the contractor that operated the plant and the previously referred to engineering firm told us that an adequate method of storing fish must be found and demonstrated to stimulate industry interest in FPC. They believed that demonstrating the use of frozen fish at an experimental plant was not adequate because other storage methods have not been explored to conclusively determine the most economical storage method.

CONCLUSIONS

We believe that the experimental plant served a useful purpose in developing a process for producing FPC. The market potential for FPC in the United States is limited at this time, however, because (1) food processors prefer functional ingredients, such as soy concentrate, over the nonfunctional FPC produced at the experimental plant, (2) individual daily protein consumption requirements are being fulfilled by other protein sources, and (3) the 1-pound package restriction established by FDA has discouraged industrial use. As a result industry interest in FPC has been relatively low. We believe that the U.S. fishing industry will not be enhanced by a commercial FPC industry because (1) the menhaden catch has reached the maximum sustainable yield as estimated by the Service and (2) some of the menhaden now landed for commercial purpose would have to be diverted for use in producing FPC.

Past operations of the experimental plant did not demonstrate the economic feasibility of commercially producing FPC as illustrated by the relatively high cost of producing a pound of FPC and by the low yield of FPC meeting FDA specifications.

The experimental plant demonstrated that FPC meeting FDA specifications could be produced. We believe, however, that only limited benefits could be realized by the Government if it were to continue operating an experimental plant. It appears that, when a strong domestic and foreign need for FPC has become evident, industry may become interested and begin to produce FPC. We believe that, if an extension of the program is authorized, the experimental plant should be located at a site close to the source of fish and to a fishmeal plant.

MATTER FOR CONSIDERATION BY THE HOUSE SUBCOMMITTEE ON FISHERIES AND WILDLIFE CONSERVATION

If the House Subcommittee on Fisheries and Wildlife Conservation gives favorable consideration to an extension of the program, we suggest that the Subcommittee include in a report thereon, language instructing the Service to:

1. Develop, on a continuing basis, information on the present and potential FPC markets, both domestic and foreign.

2. Determine the present and future available fish resources for producing FPC commercially.

3. Evaluate sites on the Atlantic and gulf coasts, including a determination of the detailed costs for each site and industry's willingness to participate.

4. Complete the research into storage methods to develop and demonstrate alternatives to using frozen fish.