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OMANI-AMERICAN JOINT COMMISSION

For Economic and Technical Cooperation

FISHERIES DEVELOPMENT PROJECT

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*Available in Omani-American Joint Commission and AID/Washington files.

I. PROJECT SUMMARY AND RECOMMENDATION

A. Project Summary

1. Grantee

The Government of the Sultanate of Oman. The Ministry of Agriculture and Fisheries will be the Executing Agency.

2. The Grant

This project, a five year effort, will be a sub-project activity authorized for funding with funds granted to the Government of the Sultanate of Oman in FY 1980 and subsequent years for the purpose of promoting economic development.

3. Background of Project Development

Fishing has been a principal means of livelihood for Omanis. The coastline of Oman stretches more than 1,000 miles, with the Arabian Sea and Gulf of Oman believed to be rich in marine resources. A significant share of the population, largely the rural people living along the coast, have continued to depend on fishing and for its living.

The Government of Oman has been concerned about the welfare of traditional fishermen and carried out a number of programs to help them increase their earnings from fishing. At the same time, the Government has sought to expand the contribution of the fisheries sector to the economy.

For these reasons, when the Omani-American Joint Commission for Economic and Technical Cooperation began its talks with Oman Government officials, to identify ways the Commission might be most helpful, in supporting Oman's development program, fisheries was recommended as an area warranting first priority attention.

In the spring of 1981, the Joint Commission retained the services of Fisheries Consultant Philip M. Roedel, former director of the National Marine Fisheries Service and official of California's Bureau of Commercial Fisheries, as well as an advisor to AID for a number of years. Mr. Roedel visited Oman in May and June 1981, to observe fisheries activities. Roedel's report, "An Evaluation of the Fisheries Sector in Oman" was used by the Commission and the Oman Government as a framework for planning the present project. Roedel returned to Oman in the fall of 1981 and joined the Joint Commission and Directorate of Fisheries staffs in refining the project.

4. Project

The Fisheries Development Project is a joint undertaking of the Omani-American Joint Commission and Ministry of Agriculture and Fisheries to address major constraints to the further development of fisheries by providing technical assistance and training to develop the institutional capacity of the Directorate of Fisheries in four areas: general fisheries program management, estimating of fisheries resource measurement, extension, marine science and fisheries research. In addition, short-term technical assistance would be provided to address development issues and implementation problems relating to location and numbers of marketing centers, cold stores, and surveillance and enforcement of Oman's zone of extended fisheries jurisdiction (200 mile limit).

B. Recommendations

That a project of \$6,600,000 million for fisheries development be approved for funding from grants to the Sultanate of Oman for economic development projects to be implemented under the auspices of the Omani-American Joint Commission. It is judged to be an appropriate means of putting American technology at Oman's disposal, one of the objectives of the Oman and U.S. Government in setting up the Joint Commission.

II. BACKGROUND AND DETAILED PROJECT DESCRIPTION

A. Background

1. Oman's Economy

The principal economic activity of Oman is the production of crude oil. The oil sector contributes two-thirds of the Gross Domestic Product, produces 90 percent of government revenues and accounts for almost all of the country's exports. Oman is not a major world supplier of petroleum, but its 103 million barrels of oil produced in 1980 nonetheless resulted in \$3.6 billion earned for its less than one million population. Although oil production in Oman declined in the second half of the 1970's, from a high of 366,000 barrels per day in 1976 to 282,000 in 1980, increases in the price per barrel of oil, from \$13 in 1977 to \$32 in 1980 increased the country's oil income from \$1.5 billion in 1976 to the \$3.6 billion of a year ago.

The non-oil segment of the economy of Oman has benefited from government and private investments made possible by the oil income. The largest of the Government's development investments were in infrastructure -- schools, roads, health facilities, telecommunications, electric power and potable water systems. The statistics for Oman development in these fields show, among other gains, the following:

	<u>1970</u>	<u>1980</u>
Schools	2	363
Asphalted roads (km)	10	2,142
Graded roads (km)	1,817	14,703
Hospital Beds	12	1,783
Telephones installed	557	15,044
Electricity produced (m KWH) in capital area	8	642
Water produced (m gal.) in capital area	14	2,459

1. Oman's Economy (cont.)

In the two traditional fields of Omani productive enterprise, agriculture and fisheries, gains have been modest despite Oman Government effort and investment. Although most Omanis derive their employment from agriculture and fisheries, the combined share of GDP of the two activities averages two percent, a share unchanged from 1975 and projected not to change even in 1985, the end of the current five year plan. Omani agriculture concentrates on the production of dates, mangoes, limes, bananas, alfalfa and livestock. Opportunities exist for production of other foodstuffs, notably vegetables, but water shortages and relatively high labor costs complicate the economics of agriculture.

Fisheries supports some 7,000-9,000 traditional small-scale fishermen and Omani licensing of foreign commercial fishing vessels for fishing in Omani waters yields additional income for the sector.

Industrial development has so far been very limited. The largest of Oman's industrial undertakings are the production of flour, cement and copper.

2. Fisheries Development

a. Overview

The waters within the 200 mile jurisdiction of the Sultanate of Oman, along the coast of Gulf of Oman and the Southeast coast bordering the Arabian Sea, appear to contain large unexploited stocks of fish. As such, they can constitute an important self-renewing economic resource. The government favors development of fisheries as a non-oil source of income.

a. Overview (cont.)

During the first Five-Year Plan (1976-1980) \$17 million were spent mainly for developing basic infrastructure. This amount is more than tripled in the Second Five-Year Plan, 1981-85.

The second plan budget, provides more marketing facilities for the continued development of the fisheries infrastructure. The plan is not explicit in defining what level of fishing activities the facilities are being designed to support. Instead, a number of goals and targets are identified as major objectives essential to the general development of the fisheries sector.

- Assisting traditional fisherman.
- Strengthening the capabilities of the Ministry of Agriculture and Fisheries.
- Improving the statistical data base on the quantity and type of catch.
- Expanding programs implemented by the Fishermen's Fund. These are providing boats, motors and equipment at subsidized prices to fishermen.

b. Constraints to Further Development

If fisheries are to be developed, the following major constraints must be overcome:

Not enough is known about the size of the fisheries resource

While most experts agree that Oman's fisheries can almost certainly be expanded, there is not a consensus as to how much expansion would be feasible without depleting the resource. Without an effort to obtain more detailed information on fisheries stocks there is a risk of over fishing on the one hand, and of wasting an exploitable resource on the other.

There are too few trained fisheries professionals in the Directorate of Fisheries

In the Directorate's management staff more trained individuals are needed to implement the plans for fisheries development in the Second Five-Year Plan. The Plan's Budget for fisheries is \$62.4 million. That amount represents a sharp acceleration of fisheries activities, being almost equal to what the entire Ministry of Agriculture and Fisheries spent under the first plan, \$67.5 million.

Skills of traditional fishermen need further development

While accurate data on the activities of traditional fishermen are scarce, it is widely believed that they are continuing to turn away from the seas as they have been doing for some years. To stem this decline and assure that traditional fishermen play an important role in the development of fisheries, extension services are needed to show fishermen how to increase and properly handle their catch.

B. Detailed Project Description (See Logical Framework Annex A)

1. Sector Goal

The sector goal is to promote fisheries as a non-oil source of income and to promote the welfare of traditional fishermen. Measure of goal achievements are: (a) the share of fisheries contribution to the GNP is increasing or not declining more than oil's share is increasing; (b) the fish catch is increasing; and (c) traditional fishermen realizing increased economic benefits from fishing while their numbers have not declined.

2. Project Purpose

The purpose of the project is to strengthen the technical capabilities of the Directorate of Fisheries. The project will address over a five-year period this major constraint to further development of fisheries by providing technical assistance and training to manage

2. Project Purpose (cont.)

fisheries development and implement two five-year plan projects - the Marine Science and Fisheries Center and the Fisheries Extension Program. In addition, technical assistance would be provided to address development issues and problems relating to resource assessment and the establishment of marketing centers, cold stores and surveillance and enforcement of Oman's zone of extended fisheries jurisdiction.

3. End-of-Project Status consists of:

- management of the Directorate of Fisheries without the full-time assistance of resident non-Omani Fisheries experts;
- functioning programs that take scientific and socio-economic factors into consideration in determining the optimum yield;
- recruitment programs attracting secondary school and college graduates for employment in fisheries;
- estimates of sustainable yield being made on reliable statistical and biological data;
- catch and effort data being provided on a continuing basis;
- services being provided to traditional fishermen.

4. Major Outputs

The major outputs strengthening the technical capabilities of the Ministry of Agriculture and Fisheries to manage the development of fisheries are:

- (a) A Marine Science and Fisheries Center built and operational with a trained staff;
- (b) A Fisheries Statistical System functioning with a trained Omani staff;
- (c) The Fisheries Extension Service operating with a staff of trained Omani field agents;
- (d) The Directorate of Fisheries staff capabilities upgraded with training appropriate to the development needs of Oman's fisheries.

5. Inputs

The Fisheries Development Project was structured to provide inputs, technical assistance and training to achieve the above described major outputs as a means of helping Oman develop its fisheries potential as a non-oil source of income. A discussion of these inputs follows:

a. Directorate of Fisheries

The staff in the Fisheries Directorate is inadequately staffed in management positions with individuals trained in fisheries science and management. Generally there is an overall lack of sufficient numbers of people in the Directorate with professional or technical training. In addition, there are only three foreign experts working in the Directorate. One has experience in refrigeration, another in fresh water fisheries and one has experience in marine biology. Consequently, the system is stretched taut, and the present staff has difficulty coping with the expansion of activities planned in the Second Five Year Plan, which includes major new projects such as the Marine Science and Fisheries Center and Fisheries Extension, and also, address specific issues related to expansion of fishing efforts and rational management of the resource. An obvious need is further education or training for members of the current staff who have the basic attributes to do higher level training and the creating of a Fisheries Service that will attract young Omanis with the potential for assuming greater responsibility after further experience and education.

a. Directorate of Fisheries (cont.)

This element of the project, assistance to the Directorate of Fisheries, has three components:

- (1) providing senior experts (12½ person years) to fill key posts in the Directorate while Omanis are being trained to replace them (See Annex B-4);
 - a fisheries administrator attached to the office of the Director General, who will also serve as manager (chief of party) of the Fisheries Development Project;
 - a fisheries scientist/administrator attached to the office of the Director of Research;
 - a fisheries utilization and marketing expert attached to the office of the Director of Fisheries Production and Marketing;
- (2) providing training for senior officials in the Directorate to build a cadre of professionally trained Omanis competent to develop, administer and manage the nations living marine resources (See Annex B-1) and;
- (3) selecting promising young Omanis with an interest in fisheries and placing them in two and four year academic training programs (See Annex B-1).

As an initial implementation step during the first four months of project implementation, an expert in fisheries administration/manpower will complete a preliminary manpower assessment of the Directorate of Fisheries and prepare a draft training plan.

(See Annex B-2).

b. Fisheries Statistics

The major issue in developing fisheries is whether there are enough fish in Omani waters* to support a large enough sustainable fishery to constitute a significant portion of the national economy. The belief is that there are enough fish and

*(within the 200 mile off shore limit, as defined by international treaty)

b. Fisheries Statistics (cont.)

that the fishery can be greatly expanded. The fact is that no one knows, for the data on standing fish stocks and current catch rates are scanty and exhibit such a wide variation that little faith can be placed in them. Until some reasonable approximation can be made, fisheries development in Oman is a gamble. While most experts agree that there is a harvestable surplus, that surplus may not be as large as anticipated, and there is always a danger that overfishing may result from even a small increase in fishing pressure. A continuing statistical program is needed to provide this information.

Because a long range statistics program would take three or four years to implement, a one-year sampling survey is required, as an interim measure, to provide reasonably accurate baseline data by key species and species group against which catch data can be measured. Implementation of such a survey would provide excellent training opportunities for the Fisheries Directorate personnel who would become the permanent field staff responsible for collection of data in the continuing statistical program.

In the fisheries statistics element of the project two fisheries statisticians (4 person years) will be provided to:

- design and conduct a one year stratified field sampling survey by species or species-group of the total fish catch taken in Omani waters by both traditional and industrial fishery and

b. Fisheries Statistics (cont.)

- develop and implement a long-range fisheries statistical program suitable to conditions in Oman that can be carried out by Omanis with a minimum amount of expatriate assistance.

The Oman Government will provide about ten Omani field agents to be posted in key fishing villages in the Battina, Sur, Masirah Island and Salalah. In addition, vehicles, office and field equipment will also be provided by the government, (See Annex C-2).

c. Fisheries Extension

The government development policies for the first five year plan have had largely positive results on the fisheries sector. The establishment of cold stores and ice plants and the distribution, at subsidized costs, to fishermen of boats, motors, nets and similar equipment have benefited the traditional fishermen. However, the rather scanty available information indicates that fish production has increased only slightly. If traditional fishermen are to be active participants in the development of the fisheries, they must not only increase their catch but must receive a price for their product that will adequately reward their efforts. An extension program could help address the major constraints to increasing their catch or at least reduce the fishing effort required for taking their normal catch. However, other problems in marketing and distribution must also be addressed concurrently if an extension program to assist traditional fishermen is to be successful.

c. Fisheries Extension (cont.)

The Fisheries Directorate has a general outline for an extension program that emphasizes direct work with the fishermen and wholesalers which would utilize twelve field agents. Before this program is ready to implement, there are questions which should be addressed concerning program emphasis in its first years. Options include conventional direct assistance to fishermen; help in fishing methods and gear, boat design, handling and preservation of the catch at sea; assistance at the wholesale level with particular attention to sanitation and quality control, and assistance at the retail level to help assure a wholesome product being available to larger numbers of Omanis. Consumer education may be required to stimulate the consumption of certain species of fish that have not been previously available in some parts of the interior. In addition, the social/cultural considerations must be taken into account.

As part of the initial implementation steps (See Annex B-2) required before the arrival of the major implementing contractor, a social anthropologist and two fisheries experts would spend two months in Oman. In examining the needs of traditional fishermen, the experts would advise on how the fisheries extension program could be structured to meet their needs and also, whether there is a role for Peace Corps Volunteers (PCVs) in the program. The social anthropologist would develop the initial social/cultural background information necessary to assure that the extension program is finally designed by the major contractor to meet the needs of the traditional fishermen and also be

c. Fisheries Extension (cont.)

appropriate to the social/cultural setting of rural Omani fishing villages.

Under the Fisheries Extension element of the project, a fisheries extension specialist would be provided by the major contractor for three years to assist in implementing the extension program.

The Oman Government will provide 13 persons to be trained as field agents, field vehicles, boats, motors, fishing equipment and funding for the operating cost of the extension program, (See Annex C).

d. Marine Science and Fisheries Center (MSFC)

Oman is constructing a Marine Science and Fisheries Center in the Muscat area that will be the only such institution in the area of the Arabian Sea. The building is scheduled to be completed in 1983. The Center will present a challenge to Oman to properly staff and channel its research into programs that will provide information useful in resource management. A particularly important aspect will be stock assessment studies that will provide stock yield estimates essential for fisheries management. A better understanding of the summer upwelling process during the southwest monsoon is fundamental to an understanding of its impact on fish stocks. However, first an Omani staff must be trained before the Center's programs expands beyond the activities related to resource assessment.

d. Marine Science and Fisheries Center (MSFC) (cont.)

The Fisheries Development Project is designed to provide a scientific core staff during the early years of the Center's operations and graduate level training for Omani counterparts. The three core staff members are a center director for 4½ person years, a population dynamicist for 3 person years and a fisheries biologist for 3 person years.

Concurrently, Oman will be asked to nominate candidates for overseas education that will eventually fill the core staff positions. While ideally all should obtain their doctorates, the programs will be tailored to fit the candidates in the time available to initially train them.

In addition, a sister relationship will be developed with a U.S. institution to promote an exchange of information and institutionalize ties that will assist in the development of an institution to support Oman's long-range efforts to manage its fisheries sector.

UNESCO has already done a preliminary scope of the MSFC activities and has agreed to assist in supervision of the constructing of the Center and also provide a Marine Environmental Specialist. This Specialist will be the fourth member of the Center's expatriate core team of experts.

As an initial implementation step during the first four months of project implementation, two fisheries experts will visit Oman to:

d. Marine Science and Fisheries Center (MSFC) (cont.)

- (1) review the plans for opening and operating the Center and prepare a critical path implementation schedule;
- (2) recommend educational programs for the training of Omani scientists to meet the Center's short and long-term staffing needs;
- (3) define how a sister relationship with a U.S. institution would benefit Oman's Marine Science and Fisheries Center;
- (4) draft a request for technical proposals (RFTP) to be used in soliciting interested U.S. institutions to open and staff the Center with its initial core staff. Also incorporate in the RFTP the sister institution relationship concept.
- (5) determine the need for the establishment of a Scientific Advisory Committee to advise the Director General of Fisheries periodically on the focus and priorities of the MSFC's research program. If required, make recommendations as to the Committee's compositions and also draft a scope of work and guidelines for its operations.

III. PROJECT SPECIFIC ANALYSIS

A. Institutional Capability

In examining the institutional capability of the Directorate of Fisheries the Directorate's operations were evaluated by Consultant Roedel for comparative purposes against what are considered essential elements in a government fisheries organization. Seventeen elements were identified to provide Oman the institutional capability to manage national fisheries development to insure the maximum supply of marine products at a reasonable price while maintaining an economically viable fishing community. The results of this evaluation are summarized below:

(1) A strong national fisheries policy supported by adequate funding

A review by Consultant Roedel of the fisheries policies and programs of the two five year plans and progress achieved in the first plan, revealed the policies are strong. Planned investments during the first plan in agriculture and fisheries sector of R.O. 31.9 million were only 57% executed.* The development budget for fisheries in the second plan is R.O. 21.4 million or U.S. dollars 62 million.

- A major input of the Fisheries Development Project is strengthening the technical capabilities of the Directorate of Fisheries to mobilize and manage resources to develop fisheries.

*Development Council follow-up report on First Five Year Plan and Statistical Yearbook

(2) A cadre of fisheries professionals in senior level posts

In the Directorate's management staff there are not enough individuals with fisheries training. Three foreign experts assist in the Directorate, but a larger number is needed. One of the experts working in the Directorate has experience in refrigeration, another in fresh-water fisheries and the third in marine biology. Considering the complexity of the projects and issues which must be dealt with in developing fisheries a larger and more varied cadre of experts is required. Training for existing and new staff is also an urgent need to strengthen management at the top.

- The Fisheries Development Project will provide technical assistance to the Directorate over a five year period while the current and new staff receives academic training. Special in-service training programs will also be developed.

(3) A strong supporting staff

Supporting ranks are thin, and training has been insufficient. The training element of the Fisheries Development Project will help address this weakness by offering opportunities for existing staff to gain more knowledge and by enabling newly recruited staff to become better prepared for the work.

(4) Legislation

A basic fisheries law which might form the basis for similar laws elsewhere in the region has been promulgated. Implementing regulations are in draft for final approval.

(5) Enforcement and surveillance

Although Oman has not made significant progress in the field of enforcement and surveillance, there is an awareness of the need for operational protocol concerning surveillance of Oman's zone of extended fisheries jurisdiction to prevent unauthorized foreign incursion as well as to facilitate enforcement of domestic statutes.

- Short-term technical assistance will be provided through the Fisheries Development Project to evaluate the enforcement and surveillance requirements and develop a plan of action for protecting Oman's Marine resource.

(6) A fisheries statistics system

The Directorate of Fisheries lacks the technical capability to design and implement a country wide fisheries statistical system.

- Technical assistance will be provided through the Fisheries Development Project to implement a continuing data collection system.

(7) Scientific competence

Few Omanis have had advanced level academic training in fisheries and marine sciences. The decision to construct a Marine Science and Fisheries Center means that graduate level education in marine sciences and fisheries is now a matter of urgency.

- The Fisheries Development Project will provide experts with the Scientific competence to open and run the center while Omanis receive academic training.

(8) Fisheries Extension System

The Five Year Plan provides for the development of an extension program. However, considerable field investigation needs to be done before a system is designed.

- Both short and long-term technical assistance will be provided through the Fisheries Development Project to assess the requirements for an extension program and design and implement a program.

(9) Food technology and quality control

Systems of handling fish, sanitary processing and maintenance of quality standards need evaluation. New plans and regulations will need drafting. A food technology component needs to be developed for the extension program.

- Fisheries Development Project will provide short and long-term technical assistance to address the problems in this area.

(10) Environmental Factors

The Oman Government has committed itself to protecting the environment. A national environmental council was established in 1980. Earlier, in 1974, a Marine Pollution Law was promulgated which states:

"the policy of the Sultanate is to eliminate all forms of pollution of the waters within 50 miles of the coast of the Sultanate so as to preserve the ecology of the area."

In several instances the government has taken steps to enforce environmental laws. In two major projects, for example, the Raysut cement plant and an oil refinery, environmental impact studies were called for and approval of the projects was delayed pending completion of the studies and consideration of their findings.

(11) Fish culture

There are no possibilities for fresh-water fish culture unless permanent reservoirs are built, which seems most unlikely, Mariculture may be possible.

- A short-term consultant will be provided under the Fisheries Development Project to address the feasibility of mariculture.

(12) Fisheries library

Little reference material in fisheries is available for Omani planners and managers.

- A fisheries library for use by fisheries' managers and scientists will be developed as a part of the Marine Science and Fisheries Center.

(13) Marine recreation

When and if Oman is opened to tourists, there is a major potential for marine recreational fishing.

(14) International Organizations

Oman is a member of several global and regional fisheries bodies, including the Indian Ocean Fisheries Commission (IOFC), the FAO Committee on Fisheries (COFI), and the FAO Regional Fishery Survey and Development Project. It has not participated regularly in either IOFC or COFI. IOFC is concerned with fisheries issues of the Indian Ocean while COFI serves as a forum for global issues. Oman is an active participant in the International Whaling Commission which it joined two years ago. It is also a member of the International Union for the Conservation of Nature. These last two memberships indicate Oman's interest in conservation.

- The technical assistance and training to be provided under the Fisheries Development Project will help the Directorate of Fisheries become a more active participant of the international organizations in which Oman is now a member.

(15) Fisheries industry support

Oman's development policy for fisheries is intended to stimulate private sector interest in developing its fisheries. The Oman National Fishing Company, a private sector company, was formed with a 20 percent government share of equity.

Technical assistance provided as part of the Fisheries Development Project in the area of production and marketing is expected to produce not only information and policies, but results that will be supportive to the operations of private sector companies such as the Oman National Fishing Company.

(16) Training

A program of short and long-term training for personnel of the Directorate of Fisheries will increase the Government's capability to direct an active fisheries program.

- A training component is a major input of the Fisheries Development Project.

(17) Long-range planning

During Oman's first Five Year Plan, 1976-1980, the Government of Oman carried out a number of programs to aid traditional fishermen. These included building ice houses and extending loans for boats and motors. Less attention was given to acquiring an understanding of Oman's fisheries resource or advancing the marine sciences or the formulating of fisheries policy. These shortcomings must be overcome if the fisheries are to be developed and managed.

The emphases of the first plan are understandable. First consideration had to be given to providing capital infrastructure necessary for growth of the fisheries sector. Matters of resource assessment, regulations, conservation, and scientific knowledge were of lower priority when viewed next to increasing the catch, improving fishermen's livelihood and living standard, and increasing the amount of animal protein available to the consumer.

Nevertheless, the fact must be faced that without a knowledge of the resource base and its potential yield, the long-term prospectus for a productive and sustainable fishery are less certain. With such knowledge, they are enhanced. This is the most important fishery issue confronting Oman's government.

- The Fisheries Development Project will assist the government during the Second Five Year Plan (1981-85) in addressing the planning issues now of most urgency for the sector.

B. Fishery Resources

During the past 12 years a number of studies have been carried out in the territorial waters of the Sultanate of Oman by FAO, Mardela of the U.S. and others in an effort to determine the extent of its fishery resources. The surveys all tend to indicate that the present resources may be underutilized and a potential exists for increasing the present yield of marine products. The yield projections resulting from the surveys are based on gross estimates of total biomass with an unknown sampling error. As imprecise as these and catch estimates may be, they indicate that a larger potential harvest may be possible. In moving forward to develop fisheries, the major issue to address is whether there are enough fish in Omani waters to support a large enough sustainable fishery to constitute a significant portion of the national economy.

While most experts agree that there is a harvestable surplus, that surplus may not be as large as anticipated and there is always the danger that even a small increase in fishing pressure may be enough to bring about overfishing. Without more knowledge of the catch, catch rates, and their impact on the fish population being exploited, it is impossible to regulate catches for maximum production (MSY-

B. Fishery Resources (cont.)

Maximum sustainable yield) on a rational basis. If Oman fishery takes less than the MSY, then a valuable protein resource is wasted, though at some measureable point below the MSY, there is a level of fishing that will provide a maximum economic return. However, if more than the MSY is taken, then the overfishing would deplete the resource.

The Fisheries Development Project will provide the necessary technical assistance to address the issues relating to resource assessment. An immediate one year sampling survey of fish catch will provide the necessary information to help address the development issues in the short-run. A permanent statistical system would be developed and implemented to provide fishery statistics on a continuing basis.

C. Social Analysis

This section reviews the compatibility of the proposed project with the sociocultural environment of Oman generally and specifically with traditional fishermen and the distribution of project benefits. The Social Analysis for the purpose of the project paper was based on interviews with government officials and limited contacts with local fishermen by the Joint Commission staff and fisheries consultants who advised the Commission on the project's feasibility. Additional social/cultural/economic field work related to traditional fishermen is planned in the first four months of project implementation to provide baseline information in planning a Fisheries Extension Program.

1. Beneficiaries

The project's direct beneficiaries are (a) recipients of training to be made available for the purpose of strengthening the technical capabilities of the Directorate of Fisheries and (b) Omani traditional fishermen. Indirectly, the general Omani population will benefit from the wider availability of larger quantities of fresh fish.

a. Recipients of Training

Thirty-three Omanis will receive academic training as part of the institutional building components of the project (See Annex B-1). Eighteen will be from the Directorates of Fisheries current staff and fifteen will be newly recruited to work in fisheries.

b. Traditional Fishermen

Before the early seventies, the economy was based entirely on subsistence agriculture and fisheries. Oil exports have since changed the economy with its resulting many fold increase in foreign exchange earnings and government revenues. The Fisheries' role is much diminished. Although Oman's new wealth has not been used to develop fisheries full potential, some progress has been made. Ice plants and cold stores have been built. Fishermen have benefited from government programs providing boats and motors, yet their numbers decreased. Although, there are no reliable statistics on traditional fishermen, they were reported to total 15,000 - 17,000 ten years ago, whereas, they are now believed to total 7,000 - 9,000. A fisherman's family size is estimated at 6-7 persons. They live in small

b. Traditional Fishermen (cont.)

coastal villages, many of which are isolated with only access by sea. The decline in fishermen is attributed to the lure of higher paying employment resulting from the oil boom. Although some younger fishermen may have left the industry, there appears to still be a reasonable mix of both the young and old. Traditional fishermen fall into three categories - part-time, seasonal and full-time.

- Part-time fishermen, usually small farmers, are probably the smallest in number. They normally fish in the shashas (small rafts made of date palm fronds) in the morning for their own use.
- Full-time fishermen fish and market in their own areas. They total approximately 80%* of the traditional fishermen and populate the coastal village of the Batinah and from Muscat to Sur. Monthly incomes are estimated to range from R.O. 180.000 - 200.000 (or \$526.00 - 585.00).* However, based on Fishermen's ability to purchase expensive market items in the major cities, this may be a low estimate. Fishermen that market in major cities will have higher incomes. Considering religious holidays, marriages, deaths and adverse weather conditions, full-time fishermen probably average on a daily basis ten months of fishing.
- Seasonal fishermen are estimated to total only about 10% of the traditional fishermen. They fish between September and April using 20-30 foot Dhows (ARAB sailing vessels) crewed by approximately five fishermen. The catch is split between the owner and crew. In some instances, Dhows are family owned and operated. This category of traditional fishermen come from Sur, Jashkara and Gumaila and are probably the more prosperous because they can land larger quantities of fish.*

*Source - Directorate of Fisheries

2. Project Impact

The successful implementation of the Fisheries Development Project will provide Oman, for the first time, a comprehensive assessment of its fisheries resources and the ability to develop and enforce policies promoting the taking of a self-sustaining level of catch. A continuing statistical system will monitor the resource base and provide data necessary to adjust future fisheries policies to assure the right mix of commercial and traditional fishing activities and resource conservation. Important assumptions critical to the project having maximum impact are the government's willingness to regulate and enforce the level of catch by commercial fishing operations and continued high priority on assistance to traditional fishermen and their responsiveness to extension programs focused on making fishing more economic.

3. Social/Cultural Feasibility

The project's key intervention points at the national level are the formulation and implementation of development and management policies and at the local level, extension efforts focused on traditional fishermen. The government has demonstrated in the five year plan, its willingness to develop policies supportive of fisheries. Traditional fishermen have demonstrated their responsiveness to previous government efforts (Fishermen's Encouragement Fund) to assist them with motors and better boats and nets on a subsidized basis. Yet to be determined is whether traditional fishermen will be receptive to the introduction of more efficient fishing methods and taking the logical step of cooperatively fishing with larger boats. Prior to designing a Fisheries Extension Program, a social anthropologist will conduct field investigations to explore these

3. Social/Cultural Feasibility (cont.)

and other questions necessary for developing the traditional fishermen's role in an expanded fishery (See Annex B-2).

4. Role of Women

Among the states of the Arabian peninsula, Oman has made notable progress in integrating women into the development process, an achievement more remarkable given Oman's 11 years of being in the modern era. Omani women are working in government ministries, police and airport security, though the proportion of women to men is small. Widespread illiteracy among women and traditional (religious and social) feeling against women being elsewhere than the home have limited opportunities for women. In Oman's fisheries, women have not been involved either in fishing or marketing of fish. Whether the Fisheries Development Project can play a role in initiating the involvement of women in fisheries will be dependent upon the results of an indepth social/cultural analysis, planned in the first four months of project implementation.

5. Special Issues with Social Implications

a. Trawlers Versus Traditional Fishermen

Since 1976, the Oman Government has had concession agreements, first with the Japanese for three years and now with the Koreans to commercially fish deepwater areas. If the government's objective was to develop fisheries in the fastest and most economical way, then commercial fishing using large trawlers would probably be the desired approach. However, the government's fisheries policy gives priority to assisting fishermen while also trying to stimulate the private sector to play a dominant role in the development efforts. It appears that there may be

some serious conflicts between the commercial project making fishing ventures and the traditional fishery. In fact, the current commercial concession which operates two trawlers, has been reported on numerous occasions by Omani fishermen to be encroaching in their fishing areas. With the beginning of Oman National Fishing Companies' commercial fishing operations (three trawlers), such incidents may become more frequent. A surveillance and enforcement system is needed to not only protect fishermen, but also Oman's fisheries resource from encroachment by foreign fishermen. If traditional fishermen are to benefit from the development of fisheries, Oman fisheries' policy must continue to favor them and their fishing grounds must also be vigorously protected.

b. Subsidized Development of the Traditional Fishery

The government's desire to aid traditional fishermen has thus far taken the form of providing boats and motors at subsidized prices. Future plans include the construction of marine maintenance and repair workshops, extension services and provision of boats and motors on a subsidized basis. In addition, a recently established agriculture and fisheries bank has been established to provide low interest short, medium and long-term loans to individuals or enterprises for financing activities in agriculture and fisheries. All of these efforts will provide aid to traditional fishermen. However, they also create the need for fisheries management and development policies that will help assure that fisheries development reaches a level whereby the sector operates on

a sound economic basis. Otherwise the fisheries sector especially the traditional fishery, may require a continuing high level of subsidy, unless traditional fishermen are receptive to extension efforts focused on making them economically self-sufficient.

6. Participation in Planning the Project

The Directorate of Fisheries' personnel participated in the planning of this project with the Joint Commission. The training that they will receive as a part of this project's inputs will enable them to play a more substantive role in the national development of fisheries. Traditional fishermen have not participated in planning of this project. The project recognizes the need to assist traditional fishermen as part of the government policy of including them in the development of fisheries. A comprehensive social/cultural/economic analysis planned as an input in this project will provide the necessary inter-action with traditional fishermen to assure that their needs are met by the extension program to be designed during project implementation.

D. Economic Analysis

The Fisheries Development Project is an institutional building effort that does not lend itself to cost benefit and cost effective analysis as would a fisheries production project. Because the outputs are not easily translated realistically into monetary equivalents and the general lack of fisheries statistics, the economic analysis was approached from the view point of deciding whether or not fisheries development as a government priority made economic sense. The conclusion was positive and the project was designed as an intervention

D. Economic Analysis (cont.)

to assist the governments in its development efforts. The following summarizes the results of the economic analysis.

1. Sector Considerations

The Omani economy grew substantially over the first five year plan period, (1976-1980) as a result of 122 percent increase in oil revenues. The gross domestic product at current prices recorded an average annual growth rate of 20.3% to reach \$5 billion, whereas, agriculture and fisheries growth rate was 12.6% compared to the total non-oil sector's annual growth rate of 19.7%. Agriculture and Fisheries annual average share of the GDP was 2.5%. However, the trend was downward, 2.8% in 1975 to 2% in 1980. Petroleum with a 57% annual share of the GDP was the largest contributor.

The downward trend in agriculture and fisheries share of the GDP could be interpreted to mean that the sector was losing importance as a non-oil source of revenues. However, when considering the GDP 152% increase since 1975, the downtrend may only mean the sector has adjusted statistically within a larger GDP. Although supporting statistics were not available, fisheries' contribution to the agriculture and fisheries component (2.5%) of the GDP may be approximately 50% of the total.

Because of the lack of a system collecting catch and market statistics, the above GDP figures only reflect estimates for the traditional fishery. Therefore, the economic relevance of the traditional fishermen is not known except for projections based on educated guesses. The Directorate of Fisheries calculates the 7-9,000 traditional fishermen's current catch to range from 50-60,000 tons. Based on these estimates, fishermen are probably investing

about \$2,200 annually to gross \$5,600.* The Directorate also feels there is a strong demand for fish locally and that fishermen can easily sell their catch. Export figures for fish show a 73% increase to 7,500 tons for the period 1978-80. It appears that higher prices in neighboring countries may be making the export of fish more profitable than selling locally.

Leaving aside the economic considerations, the importance of fisheries to the economy, especially the traditional segment, can probably be best judged by its social implication. Seven to nine thousand fishermen with perhaps six family members constitute 5-9% of the total population. This is a large enough segment of the population to warrant attention. Especially, since their means of livelihood involves the exploitation of what is believed to be a major renewable resource. For these reasons, the government places high priority on the development of fisheries and particularly the participation of traditional fishermen.

2. Available Omani Resources

The Oman Government has the resources to develop fisheries and has demonstrated its willingness to invest funds for this purpose. During the first five year plan period government investments totaled \$17 million (R.O. 5.7 million) in the sector. The Second Five Year Plan continues to reflect the government's high priority for developing this sector. Sixty-two million dollars (R.O. 21.3

*R.O. 759 to gross R.O. 1,932

million) were budgeted for development expenditures. This is almost double what the entire Ministry of Agriculture and Fisheries spent on all of its development projects during the first plan period. The Fisheries Development Project is focused on providing technical assistance to help the Directorate of Fisheries mobilize its resources for developing the sector while providing training to strengthen the Directorate's institutional capacity.

In addition to the funds planned for expenditure under the development budget, the government also has agreed to provide funds in its annual recurrent budgets for the continued operational requirements of the new fisheries activities, Marine Science and Fisheries Center, Fisheries Statistics and Extension.

E. Environmental Concerns

This project's activities will not have an adverse effect upon the physical and human environment. A negative environmental determination was made by the A.I.D. Near East Bureau Environmental Coordinator, (See Annex D).

IV. FINANCIAL PLAN

A summary of the total contributions of the U.S. and Oman Governments required to implement the Fisheries Development Project is given below:

	<u>Total Contribution</u>	
	<u>In U. S. Dollars</u>	<u>In Omani Rials</u>
Oman Government	10,600,000	3,660,000
U. S. Government	<u>6,600,000</u>	<u>2,280,000</u>
TOTAL	<u><u>17,200,000</u></u>	<u><u>5,940,000</u></u>

A. Schedule of Dollar Requirements (U.S. Contribution)

Projected Yearly Requirements for U.S.G. Funds

(THOUSANDS OF U.S. DOLLARS)

	<u>1982</u>	<u>1983</u>	<u>1984</u>	<u>1985</u>	<u>1986</u>	<u>TOTAL</u>
<u>Technical Assistance</u>						
Directorate of Fisheries	765	580	520	545	170	2,580
Fisheries Statistics Program	280	130	150			560
Fisheries Extension Program	65	125	130	70		390
Marine Sciences & Fisheries Center		160	485	475	530	1,650
<u>Training</u>	<u>210</u>	<u>400</u>	<u>590</u>	<u>200</u>		<u>1,400</u>
TOTAL U.S. CONTRIBUTION	<u><u>1,320</u></u>	<u><u>1,395</u></u>	<u><u>1,875</u></u>	<u><u>1,290</u></u>	<u><u>700</u></u>	<u><u>6,580</u></u>

Details of the above schedule are found in Annex C.

B. Schedule of Local Currency Requirements (Oman Contribution)

The Government of Oman will provide the Omani Rial equivalent of an estimated \$10,600,000 to support the implementation of this project.

B. Schedule of Local Currency Requirements (Oman Contribution) (cont.)

Part of this (\$4,660,000) will be provided through the Development Budget for the Second Five Year Plan 1981-85 and the rest (\$5,940,000) through the recurrent budgets for the years 1982-1986. The following summary is the Oman Government contribution by budget year (See Annex C):

Projected Yearly Requirements of Oman Government Funds

(THOUSANDS OF U.S. DOLLARS)

<u>BUDGET YEAR</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>	<u>1985</u>	<u>1986</u>	<u>TOTAL</u>
<u>DEVELOPMENT BUDGET</u>						
Marine Science & Fisheries Center Construction/Equip.		4,060				4,060
Fisheries Extension	<u>320</u>			<u>280</u>		<u>600</u>
TOTAL DEVELOPMENT BUDGET	320	4,060		280		4,660
<i>Omani Rial Equivalent</i>	110	1,400		100		1,610
<u>RECURRENT BUDGET</u>						
Training	150	1,120	170	120	65	1,625
Omani Staff & Operation Resources Assessment Statistical Unit	240	175	175	255	180	1,025
Fisheries Extension	220	230	240	245	260	1,195
Marine Science & Fisheries Center			120	290	290	700
Housing & Furnishings for Expatriate Technicians	<u>370</u>	<u>225</u>	<u>405</u>	<u>260</u>	<u>150</u>	<u>1,410</u>
TOTAL RECURRENT BUDGET	980	1,750	1,110	1,170	945	5,955
<i>Omani Rial Equivalent</i>	335	605	385	405	325	2,055
TOTAL OMAN CONTRIBUTION	<u>1,300</u>	<u>5,810</u>	<u>1,110</u>	<u>1,450</u>	<u>945</u>	<u>10,615</u>
<i>Omani Rial Equivalent</i>	445	2,005	385	500	325	3,660

V. IMPLEMENTATION PLAN

A. Methodology

1. Technical Assistance

This project will be funded with A.I.D. funds as an Omani-American Joint Commission sponsored activity. After project approval of the A.I.D. and the Oman Government, a project agreement will be signed with the Ministry of Agriculture and Fisheries to provide for procurement of the necessary technical services with an Oman Government contract. The procurement procedures are set forth in implementation letter number six to the grant between the Oman Government and the U.S.G. (A.I.D.), (See Annex H).

The implementation of this project will be accomplished through (1) work order issued to an A.I.D. contractor (Indefinite Quantity Contractor) and (2) two contracts for professional and technical services signed by the Government of Oman.

a. Indefinite Quantity Contract (IQC)

Using an IQC contractor during the four months immediately following project agreement signing will allow specific and urgent short-term tasks to be undertaken while the major contractor is being selected. A.I.D. already has IQCs with firms that have had extensive experience in fisheries. The tasks to be accomplished by the IQC (Annex B-2) are:

- (1) Recommend a fisheries extension program.
- (2) Complete a social/cultural/economic assessment of traditional fishermen.

- (3) Evaluate the plans for construction and operation of the MSFC and develop a critical path implementation plan to assure timely completion of construction, procurement of equipment and provision of experts to open and run the center.
- (4) Complete an initial manpower assessment of the Directorate of Fisheries and prepare a draft training plan (including MSFC).
- (5) Draft the Request for Technical Proposal (RFTP) to be issued by the Ministry of Agriculture and Fisheries in obtaining a contractor to initially staff, open and run the center until Omanis are trained to assume the responsibility.

b. Oman Government Contracts

Two contracts will be negotiated using formal procedures for the procurement of professional and technical services (See Annex H) of a major and Marine Science and Fisheries Center contractor.

(1) Major Contractor

The first long-term contract to be executed will be that for the major contractor responsible for overall project implementation and the provision of the technical assistance required to implement the project, with the exception of the Marine Science and Fisheries Center. Six experts will come to Oman (See Annex B-4), a senior fisheries administrator, a fisheries scientist/administrator, a senior fisheries utilization and marketing expert, two fisheries statisticians and a fisheries extension specialist, to work in the Directorate of Fisheries and strengthen the Directorate's capabilities to implement the Five Year Plan while key Omanis are being trained. The Senior Fisheries Administrator will report directly to the Director General of Fisheries and also serve as the chief of party for the contractor. He will have the in-country responsibility for coordinating all inputs that are to be provided by the contractor in conducting a one year sampling survey of total fish catch, implementing a continuing system of fisheries data collection, implementing a fisheries extension program, developing in-country training programs and selecting appropriate academic programs at U.S. institutions to train both currently-employed and newly-recruited Omanis in the Directorate.

(2) Marine Science and Fisheries Center Contractor

The second country contract will provide technical assistance needed to open and staff the Marine Science and Fisheries Center. The chief party for the prime contractor will assist the Director General of Fisheries in supervising the MSFC contract.

2. Commodities/Vehicles

All commodities/vehicles needed for the project will be procured with Oman Government funds by the MOA&F. Vehicles will be maintained by the MOA&F.

3. Construction

The construction element in the project is the Marine Science and Fisheries Center. The funds for construction are in the Development Budget. Design and construction supervision are being provided by UNESCO.

4. Training

Long and short-term training under the project will be conducted at U.S. institutions. Some in-country training courses will be conducted in Muscat, probably at the Institute of Public Administration. A summary of the projected number of participants is contained in Annex B-1. The IQC contractor will prepare a draft training plan for the Directorate of Fisheries and identify academic courses for the first group of students to go for training. The Major Contractor will review this plan and update it to reflect the Directorate's continuing training needs over the next five years. Selection of academic programs and identification of participants for training will be the responsibility of the Major Contractor/MOA&F. The Major Contractor will also be responsible for the programming of participants and related administrative paper work.

B. Monitoring Plan

The Oman Government will implement the project. Monitoring of implementation by the Joint Commission will necessarily be limited because of the small A.I.D. staff. With the assistance of TDY visitors from A.I.D./ Washington, however, and locally-hired Commission staff members, the A.I.D. officers will monitor progress through review of the grantee's reports, field visits and regular meetings with the Directorate General of Fisheries. Formal evaluation will be periodically performed as discussed in Part VI, Evaluation.

C. Scheduled of Implementation - Major Events and Timetable for Action

<u>Date</u>	<u>Action</u>	<u>Responsibility</u>
<u>1981</u>		
January	Project Paper approved	JC Co-chairman; MOA&F; A.I.D.
<u>1982</u>		
January/February	Project agreement signed PIO/T issued for IQC (See Annex B-2)	JC MOA&F
February	IQC Work Order Issued	A.I.D.
	Prequalification Notice for Major Contractor Issued (See Annex B-3)	JC MOA&F
March	IQC Personnel Arrive	IQC; JC
April	Prequalification Notice for MSFC Contractor Issued (See Annex B-3)	JC; MOA&F
	Major Contractor Short List prepared	MOA&F; JC
May	RFTP for Major Contractor issued	MOA&F; IQC
	Social/cultural/econ report on fishermen completed	MOA&F; IQC

<u>Date</u>	<u>Action</u>	<u>Responsibility</u>
<u>1982</u>		
May	Initial IQC MSFC tasks completed	MOA&F; IQC
June	Draft Training Plan for Directorate of Fisheries completed	MOA&F; IQC
July	Training course identified and selection first group of training participants completed.	MOA&F; IQC; JC
	RFTP for MSFC issued	MOA&F; JC
	Draft long-range training plan completed	MOA&F; IQC
August	Major Contract Negotiated & Signed	MOA&F; JC
	Departure first group participants for training. (See Annex B-1)	MOA&F; JC
September	MSFC Construction begins	MOA&F
	Arrival Major Contractor's Chief of Party	MOA&F; JC
October	Major Contractor's work plan approved (First two years)	MOA&F; MC;* JC
	Fisheries Statistician Supervisor arrives	MOA&F; MC
November	MSF&C Contract Negotiated & Signed	MOA&F; JC
	Fisheries Extension Specialist Arrives	MOA&F; JC

*MC - Major Contractor

<u>Date</u>	<u>Action</u>	<u>Responsibility</u>
<u>1983</u>		
January	MSFC Director arrives (See Annex B-4)	MOA&F; MC*
	Fisheries Scientist/Researcher arrives	MOA&F; MC
	Fisheries Production/Marketing expert arrives	MOA&F; MC
	Fisheries Statistician arrives	MOA&F; MC
	One year sample survey of total fish catch begins	MOA&F; MC
June	Long-range fisheries statistical system designed	MOA&F; MC
	Fisheries Extension Program begins	MOA&F; MC
December	MSFC Construction completed	MOA&F; MC
<u>1984</u>		
January	Marine Science and Fisheries Center opened	MOA&F; MC
	Population Dynamist arrives to serve as member MSFC core staff	MOA&F; JC
	Fisheries Biologist arrives to serve as member of MSFC core staff	MOA&F; JC
	First Project Evaluation	MOA&F; JC
	One Year sample survey of total fish catch completed	MOA&F; MC
	Marine Environmental Specialist (UNESCO) arrives	MOA&F; MC; UNESCO

*MC - Major Contractor

<u>Date</u>	<u>Action</u>	<u>Responsibility</u>
<u>1985</u>		
June	Second Project Evaluation	MOA&F; JC
September	Fisheries Statistical System operation with only Omani personnel	MOA&F; MC*
November	Fisheries Expansion Program Implemented	P/CONT; MOA&F; MC
<u>1986</u>		
June	Third and final evaluation	MOA&F; JC
December	All Experts depart	MOA&F; JC

*MC - Major Contractor

VI. EVALUATION PLAN

A. Focus

The evaluation process will focus on the effectiveness of the technical assistance and training provided under this project to strengthen the technical capabilities of the Directorate of Fisheries to manage the development of fisheries. In the first two annual evaluations the focus will be primarily on the training aspects of the project - the success in developing specialized academic programs suited to the educational level of existing staff and identification/departure of new staff for training. The last three evaluations will focus more on the success of return participants (current staff) in assuming the expanded responsibilities of their jobs because of the increased amount of fisheries activities. Another major consideration will be the Directorate's success in assigning returned participants (new staff) to jobs that will be interesting and challenging so as to retain them in the Directorate of Fisheries as candidates for positions of greater responsibilities. In addition to training the Directorate's success in implementing the statistical system, extension program, Marine Science and Fisheries Center and surveillance/enforcement program will also be evaluated in the last three evaluations.

B. Methodology

The primary means of evaluation will be through an annual joint review participated in by the concerned MOA&F offices and the Joint Commission. The evaluation will utilize the project and DGF records, data and documents. In addition, the evaluation will include field observations

of the extension efforts, research and statistical programs and a review of the Directorate progress in implementing the Development Plan. The results of these annual evaluations will be summarized in a report to the Minister of Agriculture and Fisheries. Project evaluations will be conducted in January 1984, June 1985 and June 1986.

C. Responsibilities

The Director General of Fisheries and the Joint Commission will cooperate in scheduling and conducting the yearly evaluations and managing any other special evaluations that may be decided upon during the project life. Due to the limited staff capabilities of the Joint Commission, it may be necessary to utilize outside consultants to evaluate the project. If necessary, funds will be budgeted in the Commission's annual operating expense budget (grant and Government of Oman funds).

FISHERIES DEVELOPMENT PROJECT
LOGICAL FRAMEWORK

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATOR	MEANS OF VERIFICATION	ASSUMPTIONS
<p><u>Goal</u></p> <p>(1) To promote fisheries as a non-oil source of income.</p> <p>(2) To promote the welfare of traditional fishermen.</p>	<p><u>Measures of Goal Achievements</u></p> <p>The share of fisheries in GNP is increasing or not declining more than oil is increasing.</p> <p>The fish catch is increasing.</p> <p>Increased income to traditional fishermen.</p> <p>Numbers of traditional fishermen have not declined.</p>	<p>Government of Oman records, national accounts, etc.</p> <p>Directorate of Fisheries catch statistics.</p> <p>Catch and market statistics.</p> <p>Agriculture & Fisheries Development Bank Loans.</p> <p>Directorate of Fisheries census estimates.</p> <p>Extension service records.</p>	<p>Continuation of development policies favoring fisheries. Stocks will not be overfished.</p> <p>Continuing favorable economic rate of return.</p> <p>Continuation of assistance to fishermen as a high government priority.</p> <p>Social attitudes of traditional fishermen will be such as to demonstrate that fishing is economic.</p>

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATOR	MEANS OF VERIFICATION	ASSUMPTIONS
<p><u>Outputs</u></p> <p>Marine Science and Fisheries Center (MSFC) operational with trained staff.</p> <p>Fisheries statistical system operational with trained staff.</p> <p>Fisheries Extension Service with trained staff.</p> <p>Directorate of Fisheries staff trained.</p>	<p><u>Magnitude of Outputs</u></p> <p>MSFC</p> <p>4 Omanis trained for technical/scientific positions.</p> <p>Support staff recruited & trained.</p> <p>Fisheries statistical program established with 2 management personnel and 10 trained data collectors.</p> <p>Fisheries Extension Service established with 2 management personnel and 11 field agents.</p> <p>33 Omanis complete long and short training.</p>	<p>Site Inspection Project Evaluation DOF records.</p> <p>DOF Records</p> <p>DOF Records</p> <p>DOF Records</p>	<p>Sufficient numbers of Omanis can be identified and staff training within first two years of project.</p> <p>Establishment of a government pay scale that will attract Omanis into the statistical program.</p> <p>Establishment of a government pay scale that will attract Omanis into the extension service.</p> <p>Sufficient numbers of Omanis can be attracted to work in fisheries.</p> <p>Sufficient numbers of the current staff of Omanis will be accepted at U.S. institution for training.</p> <p>That appropriate training courses can be made available.</p>

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATOR						MEANS OF VERIFICATION	ASSUMPTIONS
	1982	1983	(\$000) 1984	1985	1986	TOTAL		
INPUTS								
1. <u>Joint Commission (AID)</u>							<u>Joint Commission</u> Project Documentat- tion.	Funding availability from A.I.D.
a. Technical Assistance								
(1) Directorate of Fisheries	763	580	519	543	172	2,577		
(2) Fisheries Statistics	277	132	149	-	-	559		
(3) Fisheries Extension	64	125	130	69	-	388		
(4) MSFC	-	159	483	473	531	1,646		
b. Training	211	400	591	198	-	1,399		
TOTAL	1,315	1,396	1,872	1,283	703	6,569		
2. <u>Oman Government</u>							<u>Government of Oman</u> Finance Records Directorate of Fisheries Records	That required funding will be made availability on a timely basis from the development and procurement budgets. Government of Oman will nominate and provide the proper number of qualified participants.
DOF - Expatriate Support	370	225	405	260	150	1,410		
Statistics - Staff/ Commodities/Equipment	240	175	175	255	180	1,025		
Extension - Staff/Equipment	540	230	240	525	260	1,795		
MSFC - Building/Staff/ Equipment	-	4,060	120	290	290	4,760		
Training	150	1,120	170	120	65	1,625		
TOTAL	1,300	5,810	1,110	1,450	945	10,615		
TOTAL INPUTS	2,615	7,206	2,982	2,733	1,648	17,184		

PROJECTED GENERAL TRAINING REQUIREMENTS AND LIFE-OF-PROJECT TRAINING PLAN

Department/Candidate	Eductational Program	1982					1983					1984					1985					1986				
		1982					1983					1984					1985					1986				
<u>FISHERIES RESEARCH</u>																										
Fisheries Manage/Res.	2 Yr.	/-----/					/-----/																			
Marine Sciences	B.S.	/-----/					/-----/																			
" "	M.S.	/-----/					/-----/																			
" "	PhD.	/-----/					/-----/																			
Spec. Prog. - Statistics	1 Yr.	/-----/																								
<u>MARKETING & PRODUCTION</u>																										
Fisheries Management	2 Yr.						/-----/					/-----/														
Marine Science	Ph.D.	/-----/					/-----/																			
Spec. Prog.-Prod./Mark.	2 Yr.	/-----/					/-----/					/-----/														
" " " "	2 Yr.						/-----/					/-----/														
" " " "	1 Yr.											/-----/														
<u>PROJECTS - MUSCAT/SALALAH</u>																										
Fish. Man./Proj. Impl.	2 Yr.	/-----/					/-----/																			
Salalah- Fish. Man.	2 Yr.	/-----/					/-----/																			
" " "	2 Yr.						/-----/					/-----/														
" " "	2 Yr.											/-----/					/-----/									
<u>MARINE SCIENCE & FISHERIES CENTER</u>																										
Marine Biology	M.S.						/-----/					/-----/														
" "	M.S.						/-----/					/-----/														
" "	M.S.						/-----/					/-----/														
" "	PhD.	/-----/					/-----/																			
<u>NEW STAFF</u>																										
Marine Sciences	B.S.	/-----/					/-----/					/-----/					/-----/					/-----/				
" "	B.S.	/-----/					/-----/					/-----/					/-----/					/-----/				
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Spec. Prog.- Fisheries	2 Yr.	/-----/					/-----/					/-----/														
" " "	2 Yr.						/-----/					/-----/														
" " "	1 Yr.						/-----/					/-----/														
" " "	1 Yr.						/-----/					/-----/														

SUMMARY:

Total Current Staff to Receive Training:	18
Total New Staff to Receive Training:	<u>15</u>
TOTAL STAFF TRAINED	<u><u>33</u></u>

INITIAL IMPLEMENTATION ACTIONSShort-term ContractorScope of Work

The Ministry of Agriculture and Fisheries of the Government of the Sultanate of Oman is seeking a long-term major contractor to provide technical assistance in implementing the Fisheries Development Project financed by the Agency for International Development through the Omani-American Joint Commission. Prior to executing this contract (probably May/June), there are certain short-term tasks to be accomplished which would provide information needed by the Contractor selected to implement a Fisheries Development Project in the Sultanate of Oman. A work order will be issued to an A.I.D. Indefinite Quantity Contractor to accomplish the following:

SCOPE OF WORK

The Contractor will plan for and staff a field team to accomplish the following segments of work in Oman. At the conclusion of each segment of work a draft report will be prepared and presented to the Director General of Fisheries and the Omani American Joint Commission before the concerned experts depart Oman.

1. Fisheries Extension. In a two months period a two persons field team will address the following specific topics, plus any others that may become pertinent during the course of their work, and recommend a fisheries extension program taking into consideration the results of the anthropologist's social analysis of traditional fishermen.
 - a. Assistance to traditional fishermen
 - (1) Assess the existing fishermen's support programs.
 - (2) Assess the Fisheries Directorate's plans for extension.
 - (3) Assess other government plans to fund extension efforts that may include fishermen.

- b. Marketing and distribution as it is related to the needs of traditional fishermen.
 - c. Government programs for constructing and operating marine repair workshops.
 - d. The need for consumer education programs concerning different species of fish.
 - e. Feasibility of using Peace Corp volunteers in implementing an extension program. If feasible, make recommendations concerning their participations.
2. Social Analysis. Prior to designing an extension program to assist Omani traditional fishermen, a social anthropologist would spend two months in Oman conducting a social/cultural/economic analysis of Omani fishermen. This work should include but not be limited to the following topics/questions.
- a. Who are the seasonal, full-time and part-time fishermen?
 - b. What are the levels of effort by categories of fishermen?
 - c. What are the fishermen's expectations for their male and female children?
 - d. What is the geographic dispersion of fishermen?
 - e. Estimates of fishermen's income levels by categories.
 - f. What are the reasons for the decline in numbers of fishermen by geographic area? The general opinion is that the oil boom has created other employment with higher incomes.
 - g. Examine joint fishing efforts and determine fishermen's receptivity to programs promoting larger scale cooperative efforts.
 - h. Determine fishermen's perception of their most pressing problems in earning a livelihood from fishing.
 - i. What taboos and folklore govern fishermen daily lives?
 - j. How do fishermen (by category) generally market their catch?
 - k. Identify middlemen involved in marketing of fish caught by traditional fishermen.
 - l. Are fishermen using banks located near their villages?
 - m. What evidence exists which might indicate fishermen are receptive to new fishing technology.

Marine Science and Fisheries Center (MSFC)

The field team's tasks concerning the MSFC will consist of the following:

- a. Reviewing the Directorate's plan for coordinating the various steps for constructing and equipping the center and preparation of a critical path implementation schedule.
- b. Reviewing the MSFC's requirements for a reasearch vessel and after taking into consideration budget constraints, recommend an appropriate type of vessel to meet the center needs.
- c. Recommending educational programs and institutions where Omanis can be trained to staff the technical positions in the MSFC.
- d. Suggesting appropriate U.S. institutions where the Omanis might explore the possibilities of a sister relationship for the MSFC.
- e. Defining the immediate purpose and long-range goal of sister relationship between the MSFC and a U.S. institution and how such a relationship would benefit the MSFC.
- f. Drafting a request for technical proposals (RFTP) to be used in soliciting interested U.S. institutions to open and staff the MSFC with its initial core staff. Also, incorporate in the RFTP the sister relationship concept.
- g. Determining the need for a scientific advisory committee to advise the Director General of Fisheries on the focus and priorities of the MSFC's research program. If required, make recommendations as to the committees composition and also, draft a scope of work and guidelines for its operations.

4. Training

The field team under the direction of the team leader will address the long and short-term manpower needs of the Directorate of Fisheries and prepare a draft training plan for the Directorate with recommendations concerning the first group of candidates for training. The team leader would also be responsible for coordinating all field work to be accomplished by IQC.

5. Experts

The contractor will provide 12 3/4 person months of qualified short-term experts with experience in fisheries administration/management, extension, marine research and social anthropology (fisheries). They will as a group be experienced in fisheries extension efforts in developing countries, fish processing and marketing systems and understand traditional fishermen's needs and desires.

6. Budget for Four-month Indefinite Quantity Contract (IQC)

<u>Task (No. of Consultants)</u>	<u>Person/ Months</u>	<u>Location</u>	<u>No. of Trips</u>
Training - Fisheries Administrator & Management (Team Leader for Field Team)	3/4 3	U.S. Oman	1
Social/Cultural/Economic Analysis (One Consultant)	2	Oman	1
Marine Science and Fisheries Center (Two Consultants)	1/4 2	U.S. Oman	2
Extension Program (Two Consultants)	1/4 4	U.S. Oman	2
Totals	12 1/4		6
Contingency	1/2		
TOTAL PERSON MONTHS	12 3/4		

Cost Estimates:

- \$200 per day salary for consultants plus 150% overhead = \$500/day	
- TOTAL SALARIES: \$500/day X 22 workdays/month X 12 3/4 months	= \$140,250
- Travel: 6 round-trips at \$3000/ticket	= \$ 18,000
- PER DIEM in Muscat: 11 1/2 months X 30 days X \$138/day	= \$ 47,610
- Other Costs	\$ 25,000
- TOTAL COSTS:	<u><u>\$230,860</u></u>

ANNEX B-4

FISHERIES ASSESSMENT

I. Resources

The favorable maritime situation of Oman has always made fisheries an important element in Omani life and traditions. The interest of the Oman Government in the development of the marine fisheries dates back to late 1969. Despite the fact that a number of studies have been carried out since that time, there are no reliable sources of information on actual yield potentials or present levels of catches. There is, however, enough information available about general oceanic productivity at the regional level in the Gulf of Oman and the Arabian Sea to give an indication of potential fisheries resources. In the absence hitherto of real resources data, high productivity indices such as the upwelling centers along the coast of Oman have been used by fisheries experts as an indication of potential fisheries resources; but the knowledge of the fisheries resources and their behavior under exploitation is limited and hampered by the lack of proper fisheries statistics.

The following table prepared by Philip Roedel in his report for the Joint Commission illustrates the great variability in potential yield estimates. Roedel noted that Royce and Mundt probably drew on the FAO surveys for their estimates. Looking at their figures and Roedel's figures for the FAO reports gives one the impression that there is considerable room for interpretation in the data so far presented.

Estimates of Potential Yields from Various Sources^{*}
(in thousands of metric tons)

<u>Source</u>	<u>Demersal</u>	<u>Pelagic</u>
Trucial States Council Survey (1968-71)	---	600 (sardine)
Mardela International Survey (early 1970's)	up to 300	"high yield"
FAO (5 NANSEN cruises, 1970's)	24	190
FAO - 1979 Survey	50	18 - 64
Royce (1977)	50	200
Mundt (1980)	around 250	200 small; 30 large
Second Five Year Plan	"potential for growth is large"	

^{*} Philip M. Roedel, An Evaluation of the Fisheries Sector in Oman, (a report prepared for the Omani-American Joint Commission, 1981), p.13.

The following summary of fishery resources presents the 'educated guesses' made by the FAO's Regional Fishery Survey and Development Project report on Yield Estimates for Fisheries Resources in the Sultanate of Oman dated 1981. They have drawn on all available information about fisheries in Oman in arriving at their estimates. The wide range in estimates and wide gaps in information illustrate that these cannot be taken as more than 'rough estimates' or 'guesses'.

The FAO Yield Estimates reported on the following major groups: demersal, small pelagic, large pelagic, mesopelagic, and others. In order to facilitate the reporting the coastline was divided into three major maritime provinces as follows:

a) Musandam Province located in the Strait of Hormuz with coasts touching the Gulf and the Gulf of Oman.

b) Gulf of Oman Province from Khor Kalba (northern border) to Ras al Hadd (Sur) consisting of the Batina coast from the border to Muscat and the Sur coast from Muscat to Ras al Hadd.

c) Arabian Sea Province from Ras Al Hadd to Jadhīb (southern border) with two sectors, the Ras al Jabsh coast from Sur to Masirah Island and the Shauwaniya coast from Masirah Island to Jadhīb. This is the largest maritime province and the most interesting from the fishing resources point of view. Its main characteristic is that it is open to the Arabian Sea in a region where the south-west monsoon produces large areas of intense upwelling creating centers with the highest primary productivity of the Indian Ocean. This province represents the richest immediate fisheries development potential in demersal and small pelagic resources.

A. Demersal Resources

1. Musandam Province

Species Survey sampling with a trawler indicated that the demersal resources in this area include such commercial or marketable species as the threadfin breams (Nemipterus sp.) which seems to be the most abundant constituting 45% of the catches, followed by the jacks (carangidae) with 23%, grunts (Plectorhynchus) with 8%, scavengers (Lethrinus sp.) with 0.3%, groupers (Epinephelus sp.) with 0.9%, cuttlefish (Sepia sp.) with 0.3%, and a variety of species grouped as "mixed fish", forming 19.2% of the catches.

Present Level of Exploitation The scarce information available indicates that the present level of utilization is at the subsistence level of fishing. There are no statistics on landings or traditional fishing units in operation, but from preliminary statistics demersal landings are believed to be in the order of 1,000 tons.

Potential Yields The maximum potential yield, i.e., the yearly fraction of the standing stock that can be harvested from the resources utilizing their productive capacity and without damaging them, is estimated by FAO to be at least 8,000 tons for commercial species and in the range of 3,000-6,500 tons for non-commercial species, a total of at least 11,000 tons/year.

2. Gulf of Oman Province

Species The demersal resources in this province include commercial species which can be grouped under the main species groups of seabreams (Argyrops sp.), jacks (Carangidae), scavengers (Lethrinus sp.), grunts (Plectorhynchus sp.), cuttlefish (Sepia sp.), groupers (Epinephelus sp.) and mixed species.

Present Level of Exploitation All the coastal area, and in particular the Batina coast, is heavily fished by traditional fishermen with all types of traditional fishing gear. By some extrapolations on the studies done, FAO estimated that traditional landings of demersals in this province are in the range of 2,500 tons/year.

The Government trawl fishing project (more recently the Oman National Fisheries Company) as operated in this area since December 1976. Their statistics show around 300-400 tons/year of commercial species of demersals landed.

The FAO suggests from these figures that the present level of demersal resources landings in the Gulf of Oman Province are in the vicinity of 3,000 tons annually.

Potential Yields The FAO estimated the maximum potential yield was in the range of 7,700-16,000 tons for commercial species, and 3,500-7,000 tons for non-commercial species, with a total of 11,200-23,000 tons.

3. Arabian Sea Province

Species On the Ras Al Jibsh (northern) fishing ground, government trawler landing statistics indicate the predominant commercial species groups are seabreams (Argyrops sp.), jacks (Carangidae), and scavengers (Lethrinus sp.). On the larger southern fishing grounds 43 species of demersals of commercial interest in Omani markets were identified by the Department of Fisheries. The main species groups are seabream, porgy (Pagellus), scavenger, trevally (Caranz sp.), lizardfish (Saurida), jack mackerel (Decapterus), threadfin bream, ribbonfish (Trichiurus), cuttlefish, groupers, barracuda (Sphyraena sphyraena), and croaker (Sciaena ronchus).

Present Level of Exploitation Government trawlers operate sporadically on the Ras Al Jibsh ground with an average annual landing of about 200 tons of commercial species.

The southern fishing grounds have supported intensive fishing from large Japanese and Korean vessels under consecutive concession agreements with the Oman government. The total annual catches for commercial species were between 5,000 and 7,000 tons from 1976 to September 1979. The estimated total catch for non-commercial species in the concession area was about 750-1,200 tons annually.

Potential Yields Due to the upwelling phenomena which is so pronounced in this area, there is a significant seasonality of catch rates.

No actual estimate of potential yield for this area is given in the FAO report, but the magnitude of the potential is to be seen in the biomass figure. Through an extensive diagnosis of the statistics from the test voyages of the R/V DARBAT (Mardela International Ltd. study vessel), the FAO study with the R/V DR FRIDJOF NANSEN, and the catch statistics from the Japanese and Korean trawlers, FAO comes up with an estimate of total biomass in the area of 260,000 tons, though they place serious reservations on their estimate. This figure takes on more meaning when compared with the biomass estimates they give for the Musandam Province which was "in the neighborhood of 39,000 tons", and the Gulf of Oman at about 46,000 tons. Also significant is the estimated percentage of commercial species in the three provinces, 58.7% in the Musandam, 61.2% in the Gulf of Oman and between 85% and 88% in the Arabian Sea (according to the statistics from the Japanese and Korean trawlers).

B. Small Pelagic Resources

A distinction is made between small pelagic resources (including sardine-like fish) and the large pelagic resources (mackerel, tuna-like fish and sharks).

1. Musandam Province

Species The explorations made by the R/V LEMURU and the R/V DR FRIDTJOF NANSEN (both conducting surveys sponsored by the FAO) indicated the presence of oil sardine (Sardinella longiceps), the sind sardinella (Sardinella sindensis), rainbow sardine (Dussumieria acuta), anchovy (Stolephorus sp.) and small horse mackerels (Carangidae).

Present Level of Exploitation There are no statistics or information about the level of utilization of the resources by the local fishermen, although it is known that there are small sporadic catches for local consumption and sun-drying. No information is available about fishing or catch rates.

Potential Yields The environmental conditions do not offer the conditions for commercial concentrations of small pelagic resources. The FAO surveys detected some concentrations but not in quantities to substantiate any industrial development or investment towards their exploitation.

2. Gulf of Oman Province

Species The FAO survey cruises indicated the presence of the sind sardinella, the oil sardine, the rainbow sardine, anchovy, bigeye scad (Selar crumenophthalmus), the malabar cavalla (Carangoides malabaricus) and horse mackerels.

Present Level of Exploitation Because of the lack of regular collection of landing statistics or landing surveys it is difficult to evaluate the present level of utilization of these resources. The University of Durham survey reported some small pelagic resources caught by beach seining in the coastal fishing villages of the Batina coast, but this labor-intensive method of harvesting is gradually being abandoned due to lack of manpower.

Potential Yield The FAO estimates a sustainable yield of between 6,500 and 10,500 tons using estimates of biomass from the FAO survey cruises. They hold that this may be a serious underestimate in that the survey vessels were probably unable to survey inshore where a significant part of the resource is likely to be located.

3. Arabian Sea Province

Species Species identified indicate a predominance of Indian oil sardine and the round herring (Etrumeus teres) while other species of sardine (Sardinella sp.), rainbow sardine, anchovy and horse mackerel also made significant contributions.

Present Level of Exploitation Traditional fishermen along the Dhofar plain on the southeast coast of Oman have long fished sardines by beach seining. The seines are operated from small traditional wooden canoes. The season lasts from October to February, after which the schools move offshore to adjacent areas where small quantities are caught by castnetters through May. The seasonal catch per boat is estimated at 12 tons. Most of the catch is sun-dried, stored and sold to the Jebel population as fodder for cattle. Present landings are estimated to be in the vicinity of 11,000 tons/year.

Potential Yield This area was tested repeatedly by the NANSEN and because of the high fish abundance was considered to be one of the areas of immediate economic potential. From biomass estimates taken from these cruises, FAO estimated the potential yield at 344,000 tons, and a "safe" yield level of 200,000 tons. The potential yield estimates are again only "best approximations" since they are largely based on acoustic determinations and have not been tested by fishing. There is also no information available on the stock structure and to what extent these stocks are migratory and exploited outside Omani waters.

The large annual yield figure proposes an immediate economic utilization supported by the nature of the pelagic resources which is composed of species with a short lifespan and high production rate. Industrial development plans are now being considered by the Oman Government.

4. Summary of Yield Estimates for Small Pelagic Resources

The FAO through a study of available information computed a total expected yield estimate of around 236,000-293,000 tons/year in Oman coming mainly from the Arabian Sea maritime province.

C. Large Pelagic Resources

The traditional fishery lands a great variety of species of which 70% were noted as pelagics, mainly large pelagics. The varieties of large pelagic species landed varies greatly by the type of boat used due to the different ranges of operation and variety of fishing gear, but the resource group is clearly dominant in traditional landings.

Reliable data on the abundance and potential yield of large pelagic fish in Omani waters are not readily available since information on the traditional fisheries is very tentative and because the seasonal and highly migratory nature of these resources makes their assessment by conventional survey methods impractical.

Exploratory surveys for pelagic resources in the Oman provinces were conducted by the R/V MAJID, the UAE research vessel, from March 1970 to June 1971. The following information reported by the FAO is largely based on these surveys. A reliable assessment is seriously hampered by lack of landing statistics.

1. Musandam Province

Species The MAJID surveys indicated the presence of small yellowfin tuna (Thunnus albacares), skipjack (Katsuwonus pelamis), frigate tuna (Auxis thazard), bonito (Euthynnus alletteratus) and queenfish (Chorinemus sanctipetri). The FAO pelagic survey of 1977-78 showed the longtail tuna (Thunnus tonggol) and the eastern little tuna (Euthynnus affinis) as the predominant species with minor catches of the frigate tuna, hardtail scad (Megalaspis cordyla), the common dolphinfish (Coryphaena hippurus), and skipjacks.

Present Level of Exploitation There are no statistics about traditional landings although it is thought that the small resident fishermen community fish for king mackerel and small tunas for the UAE markets.

Potential Yield No data are available to substantiate biomass estimates for the large pelagics so no estimate can be made. The MAJID results indicate that a "substantial" resource of yellowfin tuna exists in the Strait of Hormuz and to a lesser extent in the Gulf of Oman, but no quantitative estimate was made.

2. Gulf of Oman Province

Species The scanty information available indicates the presence of scombrids or tuna-like species such as longtail tuna, little tuna, king mackerel (Scomberomorus commerson), barracudas (Sphyrna sp.), rainbow runner (Elegatis bipinnulata), hammerhead shark (Sphyrna mokarran), rays (Mobula sp.), sawfish (Pristis sp.), and guitarfish (Rhinobatis sp.).

Present Level of Exploitation These resources are fished by traditional fishermen along the coast, especially the Batina coast. Based on the limited information available the FAO pelagic survey estimated the yearly production from the northern coast at 9,000 tons with king mackerel, longtail tuna, little tuna, jacks and sharks predominating.

Potential Yield Once again, no estimation of biomass or yield could be made due to insufficient information.

3. Arabian Sea Province

Species The same species indicated in the previous provinces appear in this province with the narrow-barred king mackerel, the Indo-Pacific king mackerel (Scomberomorus guttatus), longtail tuna, little tuna, hammerhead and tiger sharks predominating. In addition pompano (Trachinotus blochii), cobia (Rachycentron canadus), small caranz (Caranz djeddaba), and marlin (Makaira sp.) have been found.

Present Level of Exploitation The only information available is that the exploitation of large pelagic species is a seasonal winter activity in the Arabian Sea province. The fishing is performed during the night mainly for king mackerel. The catches are sold locally to middlemen or sent to fresh fish markets in Muscat, Ibri and the interior. The excess is salted and sun-dried together with the shark catches.

Potential Yield No estimate of the standing stock (and therefore potential yield) has been made due to lack of statistics and insufficient information on resources.

D. Mesopelagic Resources

The small pelagic explorations of the R/V DR FRIDTJOF NANSEN and R/V LEMURU detected the existence of vast resources of mesopelagic species in the Gulf of Oman and Arabian Sea provinces. These resources formed by small myctophids, small lanternfish about 3-4 cm. in size, are distributed during the day in 300-400 meter depth layers coming close to the surface during the night.

Present Level of Exploitation None

A research program between FAO and the Government of Norway is investigating the best industrial utilization of these resources.

Potential Yield The abundance estimates of this resource from the FAO survey cruises are in the range of 1.9 to 12.6 million tons in the Gulf of Oman and 16 million tons in the Arabian Sea. According to the FAO, the potential yields should not theoretically be much less than the standing stock size of about 14 million tons, however a much small proportion is likely to be harvestable economically.

The exploitation of these resources still pose some technological problems such as fishing gear, storing the catches, and industrial processing. Considering the level of international fisheries technology and industrial research capacity today, it should be possible to exploit these resources in the not too distant future.

E. Other Resources

1. Lobster

Species Two species of rock lobsters, or drayfish, are present in Omani waters, the painted lobster (Panulirus versicolor) and the scalloped lobster (Panulirus homarus).

Level of Exploitation The scalloped lobster is the only commercially exploited species in the country. Masirah Island has a small full-time established fishery that supplies the local airbase population, though lobsters can also be purchased along the Gulf of Masirah, Kuria Muria Islands, and Salalah areas. The fishing is conducted by local fishermen from small boats. Present landings level is estimated around 10 tons/year of total live weight or around 15,000 lobster units.

Potential Yield Exploratory studies by the R/V DARBAT indicate that the scalloped lobster occurs in sufficient population densities in the Dhofar area to warrant development of a fishery. The preliminary yield estimate for such a fishery is between 10 to 40 tons/year. This added to the yield from Masirah would make a total annual yield of 20-50 tons.

More exploratory research is necessary in the Gulf of Oman to determine the potential yield of the painted lobster.

2. Abalone

The existence of abalones (Haliotis sp.) was detected by the Mardela International Ltd. (1975) inshore investigations. The species seems to be distributed in the coastal areas of the south-east of Oman from Masirah Island to the south border. The report mentioned that the fishery could be developed for the export market.

Present Level of Exploitation At present there is no exploitation of these resources.

Potential Yield The potential yield is not known.

II. Fishing Technology

Marine fishing has traditionally been a major industry in Oman and still occupies about 10 percent of the population. The main Omani fishing grounds are in the Arabian Sea province of the south-eastern coast. The main fishing population, however, is in the Gulf of Oman province between the northern border and Sur. Fishing in the Arabian Sea is done from large boats while in the coastal areas smaller boats are used.

Traditional coastal fishermen utilize a variety of vessels ranging from the small shasha up to the bedan. The shasha is made from palm fronds, is usually 4-5 meters long, and is usually powered by sail and paddle although a few use small outboard motors. They are fished by one or two men. Huris are the most common vessels of the coastal fishermen. They are dugout canoes 17 to 28 feet long usually powered by small outboard motors and fished by one to three men. Sambuks, wooden boats 25-40 feet long powered by inboard-engines, are usually fished by four to five men. The bedan or beach seiner is a large canoe 42-48 feet in length which may be fished by as many as ten men. More recently 23-25 foot fiberglass and 12-16 foot aluminium boats using outboard motors have been introduced.

The Fishermen's Encouragement Fund was established by the government to aid fishermen in obtaining equipment at no cost or at subsidized prices. Under this program 505 small craft, 100 diesel engines, and 1,577 outboards had been provided as of April 29, 1980.

The gear used by Omani fishermen include handlines, longlines, fish traps, stationary gillnets, drifting gillnets, cast nets, pen-type fixed nets, and beach seines. As might be expected, the catches made by these different kinds of gear are varied.

If traditional fishermen are to remain viable economic participants in the development of fisheries, their boats, equipment, and fishing techniques need to be assessed to determine what makes sense for the role they can and wish to play in an expanded fisheries. As part of the Fisheries Development Project, a social/cultural/economic analysis will be included in the efforts to design a fisheries extension program.

Looking beyond the traditional fishery, the Oman National Fisheries Company which is largely privately owned has taken over the commercial activities in Muttrah and Salalah, under terms of the government's policy to divest itself of commercial activities. It took over the three government trawlers which had been put into operation in December 1976.

Oman's only industrial-scale fishery is pursued by trawlers on a concession agreement with the Korean Overseas Fishing Co. Ltd. They have operated two trawlers in the concession area since 1978. A previous concession agreement with a Japanese firm permitted up to 4 trawlers. This was terminated after two years.

III. Marketing and Distribution

Recent studies conducted in northern Oman on artisanal fisheries and the marketing of fish products indicated that fish is still by far the most important source of animal protein for the population in Oman. Fish is cheaper than meat and the study results suggest that the local demand is unsatisfied. Fish marketed in the interior was traditionally dried or salted. However, the percentage of fish marketed fresh or refrigerated has dramatically increased over the past few years as ice-plants, cold-storages, and refrigerated trucks have become more abundant.

A major cold store and ice facility has been constructed in Muttrah and small local cold store and ice facilities have been built in Sohar, Nizwa and Salalah. The cold stores are receiving fish from local fishermen, from the trawlers, and from the Korean vessels licensed to fish in Omani waters. The fish are frozen whole and distributed to buyers from refrigerated transports and trucks.

The cold stores and distribution trucks are, however, not being used to capacity. Consumers are slow to accept frozen fish instead of

their traditional (so-called) fresh or dried fish. Fishermen usually sell through their customary outlets rather than to the new cold stores. The cold stores are experiencing these and other problems normal to new installations and organizations, plus some special ones due to the very small number of experienced personnel available.

Before further expansion of these facilities are undertaken, more in-depth surveys and feasibility studies should be done to assure expansion is more in line with development needs of the sector. These considerations will be addressed by the Prime Contractor of the Fisheries Development Project.

The question of transportation (e.g. ships and roads) appears to be solving itself insofar as fisheries needs are concerned with the ambitious road projects of the government.

There is room for expansion of fishery yields both locally and in export markets. The local market can absorb additional supplies of fish as indicated by the fact that Oman imports certain quantities annually. Export markets are also available in the neighboring countries to whom Oman has exported fish throughout history.

ANNEX C - 1

SUMMARY OF U. S. CONTRIBUTIONS

ANNEX

Summary of U.S. Contribution to Fisheries Development Project
in Thousands of U.S. Dollars

<u>Inputs</u>	1982	1983	1984	1985	1986	TOTAL
I. TECHNICAL ASSISTANCE						
A. <u>Directorate of Fisheries</u>	<u>763</u>	<u>580</u>	<u>519</u>	<u>543</u>	<u>172</u>	<u>2,577</u>
1. Experts (Long-term)						
Fisheries Administrator (54pm)	158	152	167	164	128	769
Fisheries Scientist/Research (48pm)	148	142	156	161		607
Fisheries Utilization & Development (48pm)	148	142	156	161		607
2. Consultants (Short-term)						
Initial Implementation (12 3/4pm) Actions	231					231
Evaluation of Enforcement & Surveillance (3pm)	47					47
Evaluation Marine Culture (2pm)	31					31
Socio-Economic Analysis (2pm)		29				29
Environmental Concerns (2pm)		31				31
Scientific Advisory Committee (8pm)		37	40	40	44	161
Special Development Issues (2pm)		31				31
Evaluation (2pm)		16		17		33
B. <u>Fisheries Statistical Services</u>	<u>278</u>	<u>132</u>	<u>149</u>			<u>559</u>
Fisheries Statistician Supervisor (36pm)	138	132	149			419
Fisheries Statistician (12pm)	140					140
C. <u>Fisheries Extension Service</u>	<u>64</u>	<u>125</u>	<u>130</u>	<u>69</u>		<u>388</u>
Fisheries Extension Specialist (36pm)	64	125	130	69		388
D. <u>Marine Science & Fisheries Center</u>		<u>159</u>	<u>483</u>	<u>473</u>	<u>531</u>	<u>1,646</u>
Senior Fisheries Scientists (Center Director) (48pm)		159	163	167	185	674
Population Dynamicist (36pm)			160	153	173	486
Fisheries Biologist (36pm)			160	153	173	486
II. TRAINING	<u>210</u>	<u>400</u>	<u>591</u>	<u>198</u>		<u>1,399</u>
One Year Certificate Programs	22		84			106
Two Year Certificate Programs	94	211	295	132		732
MS's - Marine Science Programs	47	105	118	66		336
Ph.D.'s - Marine Science Programs	47	84	94			225
TOTAL INPUTS	<u>1,315</u>	<u>1,396</u>	<u>1,872</u>	<u>1,283</u>	<u>703</u>	<u>6,569</u>

Cost Estimates for Long Term Technicians

Cost estimates for the long term technicians as given in the Projected Yearly Expenditure Schedule are based on the following salaries plus Cost of Living Allowances and overhead at 100% of salary.

<u>Position</u>	<u>BASE</u>	<u>COLA</u>	<u>OVERHEAD</u>	<u>TOTAL</u>
Fisheries Administrator Senior Fisheries Scientist	\$60,000	\$2300	\$60,000	\$122,300
Fisheries Scientist/Research Fisheries Utilization & Dev. Population Dynamicist Fisheries Biologist	\$55,000	\$2200	\$55,000	\$112,200
Fisheries Statistics Sup.	\$50,000	\$2100	\$50,000	\$102,100
Fisheries Statistician Extension Specialist	\$45,000	\$2000	\$45,000	\$ 92,000

A salary incrementation of 8% in the third and fifth years to accommodate inflation and raises is built into the figures thus:

<u>1st & 2nd Years</u>		<u>3rd & 4th Years</u>		<u>5th Year</u>	
(\$60,000)	\$122,300	(\$64,800)	\$132,084	(\$70,000)	\$142,650
(\$55,000)	\$112,200	(\$59,400)	\$121,176	(\$64,152)	\$130,870
(\$50,000)	\$102,100	(\$54,000)	\$110,268	(\$58,320)	\$119,090
(\$45,000)	\$ 92,000	(\$48,600)	\$ 99,360	(\$52,500)	\$107,309

The following provisions, allowances, and costs will be provided for the technicians.

	<u>1st Year</u>	<u>2nd Year</u>	<u>3rd Year</u>	<u>4th Year</u>	<u>5th Year</u>
Utilities	\$10,000	\$10,000	\$10,800	\$10,800	\$11,700
Education Allow. ¹	\$14,000	\$14,000	\$15,000	\$15,000	\$16,500
Travel ²	\$ 4,000	\$ 5,500	\$ 9,000	\$ 6,000	\$ 5,000
Freight ³	\$ 8,000	--	--	--	\$ 9,300
TOTALS	\$36,000	\$29,500	\$34,800	\$31,800	\$42,500

For HOUSING and FURNISHINGS expenses see Oman Government Expenses, Annex C-2.e.

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¹Based on two children, one receiving in-country education and one overseas.

²Based on four one-way tickets the first year from the U.S. to Oman; four round-trip tickets for R&R to Athens in the second and fourth years; four round-trip tickets for home leave in the third year, and four one-way tickets from Oman to the U.S. in the fifth year. In the cases where the technicians do not remain the full five years these figures are shifted to the years when applicable.

³The two figures are naturally for the first and last years the consultant serves.

⁴Furnishing expenses in the third and fourth years are for replacement of worn-out articles or refurbishing. These would only be incurred in the case the residence will be maintained for four or five years.

Notes on figures recorded in the Projected Yearly Expenditure

Schedule:

1. The 1982 figures for the Fisheries Statistician includes transportation and freight charges for both directions.
2. The third-year start-up costs for the Population Dynamicist and Fisheries Biologist make the following adjustments for inflation:
Travel \$5,000, Freight \$8,500 .

Cost Estimates for Short-term Consultants (Major Contract)

Per day costs for consultants are estimated below with a 10% salary increase in the third year and 9% in the fifth year of the project. Overhead is based on 100% of salary. Per diem is given at the present (1981) rate for the first two years with 8% increases in the third and fifth years.

<u>Per Day Costs</u>	<u>1st & 2nd Years</u>	<u>3rd & 4th Years</u>	<u>5th Year</u>
Salary	\$200	\$220	\$240
Overhead	\$200	\$220	\$240
Per Diem	\$138	\$150	\$162
<u>TOTAL</u>	<u>\$538</u>	<u>\$590</u>	<u>\$642</u>
Per Month	\$12,940	\$14,180	\$15,420

(Monthly costs are estimated at 22 salaried days and 30 days per diem.)

Additional Costs

Travel (1 round-trip)	\$2500	\$2750	\$3000
Miscellaneous	\$ 200	\$ 225	\$ 250
<u>TOTAL</u>	<u>\$2700</u>	<u>\$2975</u>	<u>\$3250</u>

Consultant costs as given on the Projected Yearly Expenditure Schedule were estimated using the above information for the following man-months:

A. Evaluation of Enforcement and Surveillance

Three persons for one month each in the first year (\$12,940 + \$2700 = \$15,640 X 3 = \$46,920)

B. Evaluation of Potential for Mariculture

Two persons for one month each in the first year

C. Socio-Economic Analysis

One person making one trip of two months.

D. Environmental Concerns

Two persons for one month each

E. Scientific Advisory Committee

Four persons making four trips each, each trip with a duration of 2 weeks in the 2nd, 3rd, 4th, and 5th years.

F. Special Development Issues

Two persons for one months each

G. Evaluation

One person making two trips of one month each

Budget for Four-month Indefinite Quantity Contract (IQC)

<u>Task (No. of Consultants)</u>	<u>Person/ Months</u>	<u>Location</u>	<u>No. of Trips</u>
Training - Fisheries Administrator & Management (Team Leader for Field Team)	3/4 3	U.S. Oman	1
Social/Cultural/Economic Analysis (One Consultant)	2	Oman	1
Marine Science and Fisheries Center (Two Consultants)	1/4 2	U.S. Oman	2
Extension Program (Two Consultants)	1/4 4	U.S. Oman	2
Totals	12 1/4		6
Contingency	1/2		
TOTAL PERSON MONTHS	12 3/4		

Cost Estimates:

- \$200 per day salary for consultants plus 150% overhead =	\$500/day
- TOTAL SALARIES: \$500/day X 22 workdays/month X 12 3/4 months	= \$140,250
- Travel: 6 round-trips at \$3000/ticket	= \$ 18,000
- PER DIEM in Muscat: 11½ months X 30 days X \$138/day =	\$ 47,610
- Other Costs	\$ 25,000
- TOTAL COSTS:	\$230,860

Training Cost Estimates for U.S. Contribution

The cost factor used in training cost estimates was a monthly cost of \$1650 for tuition, room and board, etc. plus a 12% charge to the Office of International Training for processing totalling \$1850 per month. Based on a yearly inflation rate of 12% and a 12 month school year, the following yearly figures were derived:

1982 - \$22,200 1983 - \$24,864 1984 - \$27,848 1985 - \$31,189
 1986 - \$34,932

The following summary shows the training program and number of participants for each year of the project.

<u>Program</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>	<u>1985</u>	<u>1986</u>	<u>Total</u>
One Year Certificate	1		3			4
Two-Year Certificate	2	4	5	2		13
Master's in Science	1	2	2	1		6
PhD. - Two-Year Program	1					1
PhD. - Three-Year Program		1	1			2
Nos. Starting Each Year	5	7	11	3	TOTAL	26

The cost factor for each participant is allocated completely in the first year of the program.

A N N E X C - 2

D E T A I L S O F O M A N
G O V E R N M E N T C O N T R I B U T I O N

ANNEX C - 2

PROJECTED YEARLY REQUIREMENTS OF OMAN GOVERNMENT FUNDS

(in thousands of Omani Rials)

	1982	1983	1984	1985	1986	Total
<u>DEVELOPMENT BUDGET</u>						
Marine Science & Fisheries Center - Constr/Equip		1,400				1,400
Fisheries Extension	<u>110</u>			<u>97</u>		<u>207</u>
TOTAL Development Budget	<u>110</u>	<u>1,400</u>		<u>97</u>		<u>1,607</u>
<i>U.S. Thousands of Dollars Equivalent</i>	<u>320</u>	<u>4,060</u>		<u>280</u>		<u>4,660</u>
<u>RECURRENT BUDGET</u>						
Training	51	386	59	42	22	560
<u>Omani Staff & Operation</u>						
Resources Assessment Statistical Unit	83	60	61	87	63	354
Fisheries Extension	76	80	83	85	89	413
Marine Science & Fisheries Center			41	99	99	239
Housing & Furnishings for Expatriate Experts	<u>127</u>	<u>78</u>	<u>139</u>	<u>90</u>	<u>52</u>	<u>489</u>
TOTAL Recurrent Budget	<u>337</u>	<u>604</u>	<u>383</u>	<u>403</u>	<u>325</u>	<u>2,055</u>
TOTAL Oman Contribution	<u>447</u>	<u>2,004</u>	<u>383</u>	<u>500</u>	<u>325</u>	<u>3,662</u>
<i>U.S. Thousands of Dollars Equivalent</i>	1,300	5,870	1,110	1,450	945	10,675

TRAININGCost Estimates for Oman Government Contribution

The Oman Government contribution to the training of present and new staff for the Directorate of Fisheries includes transportation of students, one round-trip for each student each year; stipends for the students while overseas, scholarships for seven four year study programs leading to Bachelor of Science degrees, and short term in-country training. A schedule of these cost estimates and explanations of figures follows.

Oman Government Training Costs for Directorate of Fisheries Staff

	(IN THOUSANDS OF OMANI RIALS)					Total
	1982	1983	1984	1985	1986	
Transportation ¹	6.0	18.0	25.0	19.0	10.0	78.0
Stipends ²						
One-Year Programs	2.4		7.2			9.6
2-4 Year Programs	6.0	21.6	26.4	22.8	12.0	88.8
Scholarships - 4 Year ³	36.6	246.0				282.6
Short Term In-Country Training		100.0				100.0
TOTAL	<u>51.0</u>	<u>385.6</u>	<u>58.6</u>	<u>41.8</u>	<u>22.0</u>	<u>559.0</u>
<i>U.S. Thousands of Dollars Equivalent</i>	<i>148.0</i>	<i>1,118.0</i>	<i>170.0</i>	<i>121.0</i>	<i>64.0</i>	<i>1,621.0</i>

¹Figured at R.O. 1,000 per round trip.

²Based on R.O. 200/month for a one-year program and R.O. 100/month for programs longer than one year.

³Based on 7 four year B.S. programs, 1 beginning in 1982 and 6 in 1983. See Annex C-1 for the analysis of these costs.

Fisheries Resource Assessment Statistical Unit Cost Estimates
Oman Government Contribution

The Fisheries Assessment Statistical Unit is to be comprised of 10 Field Agents with 2 Field Supervisors. Salaries and benefits are the same as those for Extension Agents and Supervisors, see Appendix The budget for salaries and operations.

(IN THOUSANDS OF OMANI RIALS)

	<u>1982</u>	<u>1983</u>	<u>1984</u>	<u>1985</u>	<u>1986</u>	<u>TOTAL</u>
Agents (10)	40.2	40.8	41.4	42.0	42.6	207.0
Supervisors (2)	11.8	12.0	12.1	12.3	12.5	60.7
Vehicles ¹	22.0	--	--	24.0	--	46.0
Fuel & Main. ²	3.8	4.4	5.0	4.0	4.6	21.8
Field Equipment	.4	.2	.2	.3	.3	1.4
Office Equip.	<u>4.4</u>	<u>2.4</u>	<u>2.5</u>	<u>4.6</u>	<u>2.7</u>	<u>16.6</u>
TOTAL	R.O. <u>82.6</u>	<u>59.8</u>	<u>61.2</u>	<u>87.2</u>	<u>62.7</u>	<u>353.5</u>
<i>U.S. Thousands of Dollars Equivalent</i>	239.0	173.0	177.0	255.0	182.0	1,025.0

¹ Based on four 4-wheel drive vehicles purchased in 1982 at R.O. 5,500 each and in 1985 at R.O. 6,000 each.

² Based on fuel at R.O. 200 per month for 4 vehicles, plus insurance at R.O. 150 per year per vehicle and maintenance at R.O. 200 per year per vehicle.

Fisheries Extension Cost Estimates Oman Government Contribution

I. Recurrent Budget Costs

Included in the recurrent budget costs are expenses for personnel operating expenses. The program is planned for eleven extension agents with two supervisors. Salaries are taken from the Oman Government Genreal Schedule for Grades and Salaries at Group 2 Grade 4 for Agents and Group 2 Grade 3 for Supervisors. Annual increments of R.O. 7.000 per month for Grade 3 and R.O. 5.000 per month for Grade 4 are the only increments built into the salary estimates.

	(IN OMANI RIALS)				
	<u>Salary</u>	<u>Housing</u>	<u>Utilities</u>	<u>Total/Month</u>	<u>Total/Year</u>
Agents	249.000	70.000	16.000	335.000	4,020.000
Supervisors	295.000	180.000	17.000	492.000	5,904.000

Yearly Budget Estimates

(IN THOUSANDS OF OMANI RIALS)

	<u>1982</u>	<u>1983</u>	<u>1984</u>	<u>1985</u>	<u>1986</u>	<u>TOTAL</u>
Agents (11)	44.2	44.9	45.5	46.2	46.9	227.7
Supervisors (2)	11.8	12.1	12.1	12.3	12.5	60.7
Fuel & Main.						
Vehicles ¹	12.4	14.3	16.3	18.2	20.1	81.3
Boats ²	<u>7.4</u>	<u>8.5</u>	<u>9.6</u>	<u>8.0</u>	<u>9.1</u>	<u>42.7</u>
TOTALS R.O.	<u>75.8</u>	<u>79.8</u>	<u>83.5</u>	<u>84.7</u>	<u>88.6</u>	<u>412.4</u>
<i>U.S. Thousands of Dollars Equivalent</i>	220.0	237.0	242.0	246.0	257.0	1,195.0

II. Development Budget Costs

The following schedule of costs will be covered under the allotment for training of fishermen of the Development Budget under the Second Five-Year Plan.

(IN THOUSANDS OF OMANI RIALS)

	<u>1982</u>	<u>1983</u>	<u>1984</u>	<u>1985</u>	<u>1986</u>	<u>TOTAL</u>
11 Boats ³	16.5	-----	-----	-----	-----	16.5
Motors ⁴	6.1	-----	-----	7.2	-----	13.2
4 Trailers ⁵	2.6	-----	-----	3.0	-----	5.6
13 4-wheel ⁶ Dr. M.V.	71.5	-----	-----	78.0	-----	149.5
Fishing Gear, Misc.	<u>4.2</u>	<u>4.2</u>	<u>4.4</u>	<u>4.4</u>	<u>4.6</u>	<u>21.8</u>
TOTALS	<u>100.9</u>	<u>4.2</u>	<u>4.4</u>	<u>92.6</u>	<u>4.6</u>	<u>206.6</u>
<i>U. S. Thousands of Dollars Equivalent</i>	293.0	12.0	13.0	269.0	13.0	600.0

¹Figured on fuel R.O. 50/month/vehicle, insurance R.O. 150/year/vehicle, and maintenance R.O. 200/year/vehcile.

²Figures on fuel and oil R.O. 550/boat/year, insurance R.O. 75/boat/year, and maintenance R.O. 50/boat/year.

³Based on 11 Yamaha fishing boats, 22 or 25 foot. The 22' boats are R.O. 1400 and 25' are R.O. 1600.

⁴Based on 40 H.P. Yamaha motors for the 22' boats and 55 H.P. Yamahas for the 25' boats. The 40 H.P. motors are R.O. 500; the 55 H.P. are R.O. 600.

⁵Four trailers at R.O. 650 each being replaced in the fourth year at a cost of R.O. 750 each.

⁶Thirteen vehicles at an average cost of R.O. 5,500 each in 1982, R.O. 6,000 each in 1985.

Marine Science and Fisheries Center Cost Estimates for
Oman Government Contribution

A. Development Budget

Capital Expenditure for Construction and Equipment

The Second Five Year Plan for 1981-1985 reports the following expenses from the Development Budget for the construction and equipping of the Marine Science Center:

Consultancy	R.O. 60,000
Site development, equipment and buildings	850,000
Research Vessel	350,000
Library	6,000
Vehicles	10,000
Contingency	124,000
	<hr/>
TOTAL	R.O. 1,400,000 \$ 4,058,000

B. Recurrent Budget

Support Staff

The support staff requirements for the Marine Science Center are not yet clearly determined. The following support staff estimates are based on 50% of the staff salary figures (which includes expatriates) of the Ministry of Agriculture/Directorate of Fisheries.

		<u>1984</u>	<u>1985</u>	<u>1986</u>	<u>Total</u>
Support Staff	R.O.	40,650	99,000	99,000	238,650
U.S. Dollars Equivalent		117,800	287,000	287,000	691,800

In-Country Support of ExpertsOman Government Local Currency Contribution

The following estimates are for housing and furnishings to be provided by the government of Oman for the expatriate technicians.

(IN THOUSANDS OF OMANI RIALS)

	<u>1982</u>	<u>1983</u>	<u>1984</u>	<u>1985</u>	<u>1986</u>	<u>TOTAL</u>
Fisheries Administrator	23.0	12.0	15.2	15.2	7.2	72.6
Sen. Fisheries Scientist	23.0	12.0	15.2	13.2	-	63.4
Sen. Fish. Util. & Dev.	23.0	12.0	15.2	13.2	-	63.4
Fish. Stat. Supervisor	23.0	12.0	14.2	-	-	49.2
Fish. Statistician	23.0	-	-	-	-	23.0
Fish. Extension Spec.	11.5	17.5	13.7	6.8	-	49.5
Sen. Fish. Scientist ¹	-	12.0	15.2	15.2	14.4	56.8
Population Dynamicist	-	-	25.2	13.2	15.4	53.8
Fisheries Biologist	-	-	<u>25.2</u>	<u>13.2</u>	<u>15.4</u>	<u>53.8</u>
TOTAL	<u>126.5</u>	<u>77.5</u>	<u>139.1</u>	<u>90.0</u>	<u>52.4</u>	<u>485.5</u>
<i>U.S. Thousands of Dollars Equivalent</i>	367.0	225.0	403.0	267.0	152.0	1408.0

Cost estimates above are based on rents of R.O. 1,000/month the first two years, R.O. 1,100/month in 1984 and 1985, and R.O. 1,200/month in 1986.

Furniture costs are estimated at R.O. 11,000 for initial furnishing in 1982, R.O. 12,000 for initial furnishings in 1984. R.O. 2,000 is allowed in the third and fourth years of occupancy for refurbishment and replacement of worn articles.

¹These figures are based on the Sen. Fisheries Scientist taking over the house vacated by the Fisheries Statistician.

A N N E X D

E N V I R O N M E N T A L D E T E R M I N A T I O N

memorandum

DATE: November 20, 1981

REPLY TO
ATTN OF: NE/PD/PDS, Stephen F. Lintner, Bureau Environmental Coordinator *SFL*

SUBJECT: OMAN - Fisheries Development Sub-project Identification Document
(272-0101) - Environmental Clearance

TO: NE/TECH/AD, Robert Morrow, Project Chairperson

I have reviewed the Sub-project Identification Document submitted for the proposed project and concur that it be given a "Negative Determination" in compliance with the requirements of 22 CFR 216, "A.I.D. Environmental Procedures." It is requested that the Environmental Coordinator be advised of all major actions relating to this project given its importance to the Bureau for Near East portfolio of projects in support of the Foreign Assistance Act, Section 118, "Environment and Natural Resources."

cc: GC/NE, M. Kleinjan
Joint Commission/Muscat, G. Towery, Environmental Officer ✓

STATURORY CHECKLIST

A Statutory checklist was not prepared for the Fisheries Development project paper because the project will be funded by a sub-obligation of funds from the annual grants to the Oman Government for economic development projects developed and implemented under the auspices of the Omani-American Joint Commission. A strategy check list is, however prepared for the obligation of each annual grant.

PROJECT IMPLEMENTATION DOCUMENT

The Project Implementation Document (PID) was approved by the Near East Advisory Committee on 10/08/81 State 278075 with the recommendation that the Joint Commission phase the project to address issues which may take time to study. The first phase was to include (1) a stock assessment (2) an assessment of opportunities for people, technical and structural options for the sector, (3) a manpower assessment, plan for those elements of fisheries institutions which will continue to be common to the industry regardless of future structure.

The PID approval recommendations summarized above were reviewed with the Government and the Fisheries Consultant, Philip Roedel, who performed the initial review and assessment of the development status of the Fisheries sector. This consultant also assisted in developing the project's final design to address the issue raised. Because of the Government's desire to move ahead rapidly with fisheries development and benefit traditional fishermen in this process, rigid phasing of a series of implementation steps was not possible. Instead, a number of actions are planned simultaneously that could take place while the major contractor is being selected. These actions are programmed for implementation in the first four months after project approval through the use of an A.I.D. Indefinite Quantity Contractor (see annex B).

TELEGRAM
STATE 278045

FISHERIES DEVELOPMENT PID

- " 1. NEAC met 10/08/81 and approves development of a PP for the fisheries sector but recommends phasing of the project due to issues which may take considerable time and study to resolve.
- " 2. NEAC discussion centered around lack of documentation in the PID, and supporting report, describing the small scale fishermen, their problems and their potentials. While recognizing that the objective of the project is to build institutional capacity and that certain services would be common to almost any type of future structure of the industry AID/W believes that considerable analysis needs to be done before one can plan a Fisheries Extension Service or engage in extensive investments. Particularly if there is a lack of knowledge on technology options, incentives needed to retain small scale operators in business and localized fish demand. A phased project should be one in which the first phase would focus on :
- " A. Carrying out stock assessment and developing the informational base on fish.
- " B. Carrying out an assessment of opportunities for people, technical options and structural options for the sector. I.E. over time is it practical to assume the very small scale operation will persist or might the resource be better exploited by village letting concessions or by cooperative ownership of larger vessels? While it may not be possible to precisely predict future industry structure, it is felt that one should at least have a more thorough knowledge of potential beneficiaries than that which apparently exists now. Micro-analysis would appear needed on fishing techniques and economics and on social/cultural values and relationships in fishing villages. AID/W believes the scope of work for such studies, or detailed description of the studies, should be contained in the PP and we would help locate contractor assistance in preparing such scopes of other parts of the PP.

- " C. Carrying out a manpower assessment, staffing and training plan for those elements of fisheries institutions which will continue to be common to the industry regardless of future structure. E.G. stock assessment surveillance of stock levels, pollution and overfishing control, fisheries administration, market assessments and facilities development.
- " 3. Developing end of project indicators for institutional development as well as other project components would help clarify what is to be done. AID/W is supportive of the governments aim to help to small fishermen but our concern is knowing what, in fact, is achievable and is sustainable overtime without excessive subsidy. Your concern for a phased project appeared to be derived from the trained manpower constraint. While AID/W also has that concern, our major reservations rests more on justifying what types of activities to support.
- " 4. Regarding the role of U.S. assistance, we foresee the need for some technicians/managers who may in fact be serving as operating personnel in the directorate of fisheries while Omanis are being trained. Notwithstanding concerns about what activities need to be done and necessary analysis leading to decisions, it would be hoped that all action programs would not have to await the long lead time for Omanis to return home. Expensive advisory services and no material results has negative fall out with local officials. Perhaps some items remaining from the first five year plan or new items in the second plan could benefit from short-term EA or some U.S. capital, provided we have clear justification for them in light concerns expressed paras. 2 and 3 above.
- To the degeree the project supports action programs, the basis for the negative environmental statement will need to be cited.
- " 5. PP should justify proposed scale of project, which seems quite large. It would appear that PID envisions about 100 person years of training and 50 person years of technical assistance, which seems high unless/until purposes of same are more clearly defined. The phase I budget would be expected to contain time frame and financial costs estimates for the various project components. "

ANNEX H

Procurement of Professional and Technical Services

A. Contracting Method

Contracts for professional and technical services are awarded on the basis of competitive technical selection rather than on a formal bid basis. The selection of a prospective contractor with whom to negotiate is based exclusively on professional qualifications for the project. Price is not included with the technical proposals which are evaluated qualitatively based on the needs of the specific project. A price proposal is requested from the offeror submitting the highest ranked technical proposal and negotiations are conducted concerning both technical and cost proposals. If a satisfactory contract cannot be concluded, the Contracting Agency terminates negotiations with that contractor and initiates negotiations with the next ranked offeror.

Exceptions to this rule may be authorized by AID. The request for the exception must fully explain the procedure to be used in evaluating both the technical and price elements of the proposal.

B. Competition

1. AID requires that the Contracting Agency follow competitive procedures in procuring services with AID financing. Such competitive procedures include obtaining as many proposals as practical and competitive selection based on technical quality. Sections 3.3, 3.4, and 3.5 of reference (1) (Guidelines for Procuring Professional and Technical Services, AID Handbook 11, Chapter 1) are the usual steps in competitive negotiated procurement.

2. In the following two cases, advertising and written requests for proposals are not required:

a. If the services are to be performed personally by an individual, selection is based on an evaluation of the qualifications of all potential contractors known by Contracting Agency as being capable of performing the work.

b. If the estimated contract value does not exceed R.O. 30,000 negotiation may be undertaken without United States advertised formal solicitation of proposals. However, informal solicitation of several sources and advertising in the Omani press media is desirable.

3. If the Contracting/Agency wishes to employ, for work related to project implementation, a contractor who has satisfactorily performed work in connection with the identification, development, or study of a project, competitive selection need not be used provided that it is agreed by the Omani Tender Board and that (a) the contractor was initially selected on a competitive basis; (b) all competing firms were advised in the Commerce Business Daily notice, if any, and in the Request for Technical Proposals that the Contracting Agency reserved the right to contract with the selected contractor for specified subsequent work; and (c) the firm is eligible in accordance with section E following. Work performed under the initial contract might be a sector assessment, project, design, social studies, or a feasibility study covering technical, economic, financial, or environmental aspects of a defined project. Subsequent work might be engineering design, construction supervision, the provision of advisors needed for the execution of a project, or a combination of such services.

4. Competition in the procurement of services may be waived and a single-source negotiated contract authorized by AID and the Omani Tender Board. Such waivers may be sought only in one of the following situations and must be supported by a written record of the reasons for negotiating with only a single source:

a. The Contracting Agency has failed, after diligent efforts, to secure a contract through normal competitive procedures and further use of competitive procedures of any kind clearly would not be productive.

b. The Contracting Agency can demonstrate the existence of an emergency situation in which the requirement for competition would result in unacceptable project delay.

c. Special design or operational requirements require services available from only one source.

d. One firm can be demonstrated to have the unique capability by reason of special experience or facilities, or specialized personnel who are recognized as predominant experts in the particular field to perform the services required for the project.

e. The Contracting Agency desires to utilize a contractor previously engaged in a project for follow-on work and the contractor clearly has special capability by virtue of previous experience in the work but the contractor was either not initially selected on a competitive basis or the Contracting Agency did not advise all competing firms that a follow-up contract might result.

f. Adherence to competitive processes would result in the impairment of the objective of the United States foreign assistance

program in the Sultanate of Oman or would not be in the best interests of the United States and the Sultanate of Oman.

C. Advertising

1. Solicitation of potential contractors is effected through widely disseminated advertising. This is accomplished by publishing a notice of the availability of prequalification questionnaires or, if prequalification is not required, Requests for Technical Proposals (RFTP) in the Commerce Business Daily of the U.S. Department of Commerce. The Contracting Agency may also utilize additional advertising in appropriate regional, and international journals, newspapers, etc., and otherwise in accordance with the Omani Government practice.

2. This rule does not apply to contracts with an individual or with an estimated value under R.O. 30,000, follow-on work, or waiver of competition.

3. The requirement for advertising in the Commerce Business Daily may be waived by AID to avoid serious delay in project implementation, provided that efforts shall in any event be made to secure proposals from a reasonable number of potential contractors.

D. Nationality and Source

1. The source and origin for goods and services as specified in Article 6 of the Project Agreement is the United States or Oman.

2. A contractor providing services or a subcontractor providing services under an AID-financed prime contract for services must fit one of the following categories a., b., or c. to be eligible for AID financing:

a. An individual who is a citizen of and whose principal place of business is in a country included in the authorized geographic

code or a non-U.S. citizen lawfully admitted for permanent residence in the United States whose principal place of business is in the United States;

b. A corporation or partnership that is incorporated or legally organized under the laws of a country or area included in the authorized geographic code, has its principal place of business in a country or area included in the authorized geographic code, and meets the criteria set forth in either subparagraph i. or ii. below:

i. The corporation or partnership is more than 50% beneficially owned by individuals who are citizens of a country or area included in the authorized geographic code. In the case of corporations, "more than 50% beneficially owned" means that more than 50% of each class of stock is owned by such individuals; in the case of partnerships, "more than 50% beneficially owned" means that more than 50% of each category of partnership interest (e.g., general, limited) is owned by such individuals. (With respect to stock or interests held by companies, funds or institutions, the ultimate beneficial ownership by individuals is controlling.)

ii. The corporation or partnership:

(1) has been incorporated or legally organized in the United States for more than 3 years prior to the issuance date of the invitation for bids or request for proposals, and

(2) has performed within the United States administrative and technical, professional, or construction services under a contract or contracts for services and derived revenue therefrom in each of the 3 years prior to the date described in the preceding paragraph,

(3) employs United States citizens in more than half its permanent full-time positions in the United States, and

(4) has the existing capability in the United States to perform the contract;

or

c. A joint venture or unincorporated association consisting entirely of individuals, corporations, or partnerships which fit categories a. and b. above. However, joint ventures with firms wholly or partially owned by the host government are ineligible.

d. A duly authorized officer of the firm shall certify that the participating firm meets either the requirements of subparagraphs b.i or b.ii. In the case of corporations, the certifying officer shall be the corporate secretary. With respect to the requirements of subparagraph b.i, the certifying officer may presume citizenship on the basis of the stockholder's record address, provided the certifying officer certifies, regarding any stockholder (including any corporate funds or institutional stockholder) whose holdings are material to the corporation's eligibility, that the certifying officer knows of no fact which might rebut that presumption.

3. Citizens or firms of any country not included in AID Geographic Code 935 are ineligible as suppliers, contractors, subcontractors, or agents in connection with AID-financed contracts for goods or services. However, non-U.S. citizens lawfully admitted for permanent residence in the United States are eligible.

4. Any waiver by AID of (change in) the authorized list of eligible countries or geographic code must be based upon one of the following criteria:

a. There is an emergency requirement for which non-AID funds are not available and the requirement can be met in time only from suppliers in a country not included in the authorized geographic code;

b. There are no suppliers from countries included in the authorized geographic code available to supply the services;

c. The cost of procurement from eligible suppliers from countries included in the authorized geographic code exceeds the cost from suppliers in countries not so included by 50% or more;

d. Impelling political considerations;

e. Procurement of locally available services (where the host country is not already eligible) would best promote the objectives of the foreign assistance program;

f. Such other circumstances as are determined to be critical to the success of project objectives.

5. The nationality policy of D.2 above, does not apply to the employees of contractors or subcontractors, but all contractor and subcontractor employees engaged in providing services under AID-financed contracts must be citizens of countries included in AID Geographic Code 935 or non-U.S. citizens lawfully admitted for permanent residence in the United States.

6. Source and origin requirements for commodities are set forth in section 4.3.22 and in the contract clause in 5.22 of reference (2). The requirements and clause apply to any country contract which includes

an element of commodity procurement. These requirements may be waived in accordance with D.4 above.

E. Factors Other Than Nationality Affecting the Eligibility of Firms to Compete for the Contract

In addition to the eligibility criterion in D. above, firms may be ineligible for AID-financed contracts for any of the following reasons:

1. A firm, including its affiliates and subsidiaries, should not be employed to perform services when, in the judgment of the AID official authorized to approve the contract, the firm has been, or might be, placed in a position where its judgment may be biased, or where it has achieved an unfair competitive advantage. However, a firm will not be disqualified solely because it was previously employed to make a feasibility study, participate in sector assessments or project design, or perform other technical or engineering services for a single project provided it is otherwise qualified for detailed design, supervision, or rendering of other subsequent technical services for the project.

2. Unless specifically approved by the AID official authorized to approve the contract (for example, turnkey jobs or other exceptional circumstances), no firm, including its affiliates and subsidiaries, may perform engineering services and provide commodities or perform construction services on the same project.

3. A firm is not eligible for an AID-financed contract if it is included on any list of suspended, debarred, or ineligible bidders used by AID and available from the Small Business Office, AID/W.

4. Any firm incorporated or legally organized in the United States is eligible for an AID-financed contract only if it certifies prior to

contract award that it is in compliance with its equal employment opportunity obligations under Executive Order 11246, as amended, and regulations and orders issued thereunder. This requirement may be waived only by the AID Administrator.

F. Language and Specifications

1. Documents submitted to AID shall be in English or Arabic. When Arabic is used, legal and other official documents shall be divided with English text in one column and Arabic in another. The English text governs.

2. The customary U.S. system of measurement or the metric system may be used. Specifications shall be based on U.S. standards, with consideration made to Omani standards, except as otherwise agreed by the AID official authorized to approve the contract.

G. Prohibition Against Certain Types of Contracts

In no event will AID finance a cost-plus-percentage-of-cost contract; i.e., a contract in which the fee (profit) however described, increases without limitation as the cost of the contract increases. Nor will AID finance a contract for engineering services when the price is expressed as a percentage of the final cost of construction of a facility.

H. Documentation for Payment

Each AID-financed contract must require that claims by contractors for payment or reimbursement for goods and services be supported by appropriate documentation which is usually specified in the Project Implementation Letter or other related documents. Each document should be completed, executed, and submitted in the number of copies specified

in instructions thereon or in the Project Implementation Letter and should show the number of the AID-financing agreement.

The documents and related certifications may not include less information nor authentication than outlined in the Project Implementation Letters or related documents.

The documentation requirements under different methods of payment are discussed in Section 3.6.5 of reference (2).

I. Submission of Contracts to AID

The Joint Commission will inform the Contracting Agency how many copies of the final executed contract are to be submitted to it. One copy of every contract must be submitted by the Joint Commission to SER/CM/SD/SUP, AID/W, promptly after signature.

J. Mandatory Contract Clauses

1. The mandatory contract clauses discussed in this section are required by U.S. Government statute or regulation. There are other clauses, discussed in Section 4.3 of reference (2) which are sound contracting practice but not directly imposed by such legislation.

2. AID requires the reservation of certain approval rights with respect to the contract but must not incur legal liability by reason of the exercise of those rights. The clause in section 5.11 of reference (2) which must be included verbatim in each contract, does not itself reserve approvals; it does recognize AID's role as the financing entity and protects AID against exposure to liability.

3. The contract must state the eligible nationality of any sub-contractors for services and nationality and source for procurement of commodities. The eligible countries must match those stated in the

Project Agreement unless a waiver for specific services or goods has been obtained (see D.4). The nationality and source requirements arise from a number of U.S. Government statutes and regulations. While the language contained in the clause in 5.22 of reference (2) is not required to be used verbatim, any changes should be carefully worked out because this is a very complex subject.

4. The contract must give the Contracting Agency and AID (or their authorized agent) the right to examine the books and records of the contractor to ensure that U.S. Government funds have been spent properly (see 4.3.18 and 5.18 of reference (2)).

5. A U.S. Government statute requires the use of United States flag carriers for all AID grant-financed international travel and transportation by air, unless such service is not "available." The language defining "available" and "unavailable" carriers in 5.23 of reference (2) must be used verbatim in grant-financed country contracts.

6. Defense Base Act insurance must be provided under services contracts financed by AID grants or Supporting Assistance loans. Contracts financed by other loans must include adequate workmen's compensation insurance coverage. This clause is discussed in detail in 4.3.41 of reference (2).

7. The Foreign Assistance Act requires that job sites and commodities be identified to show that the project is financed by the United States Government. AID may waive the requirement if marking is impractical

8. AID funds may not be used to pay identifiable taxes of the host government or its political subdivision. This basic immunity is

generally set forth in the bilateral agreement between the U.S. and host governments. The contract must contain a clause (see 4.3.20 and 5.20 of reference (2)) applying the immunity to the particular contract.

K. Guidance

The guidance in section 3 of reference (2) should be applied based on the circumstances of the procurement.

Omani-American Joint Commission
for Economic & Technical Cooperation

P. O. Box 6001

Rawi

Sultanate of Oman

Tel: 701-357, 702-438

اللجنة العمانية الأمريكية المشتركة

للتعاون الاقتصادي والفني

ص.ب. ٦٠٠١

روي

سلطنة عمان

تلفون : ٧٠٢-٤٣٨ ، ٧٠١-٣٥٧

Annex I

No. 2 الرقم

Date 23 January 1982 التاريخ

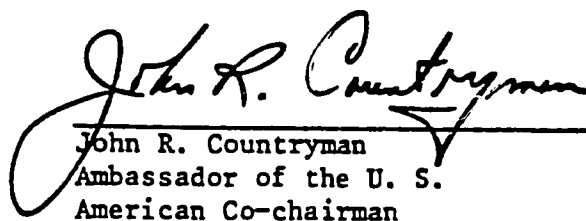
To: The Co-chairmen
Omani-American Joint Commission
for Economic and Technical Cooperation

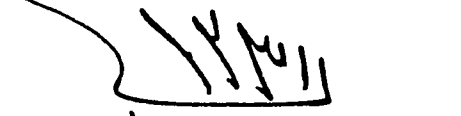
Subject: Request for your Approval of a Project Subactivity

Section 4.3 of the Project Grant Agreement requires that you consider the project paper for subactivities before submission to A.I.D.

We need your approval therefore of the Fisheries Development Project Paper. This project paper was developed after your approval by the Joint Commission staff with the assistance of a fisheries expert, Mr. Philip Roedel, whose consultations you also approved.

Approval of the Fisheries Development Project Paper:


John R. Countryman
Ambassador of the U. S.
American Co-chairman


Yusuf al-Alawi Abdulla
Undersecretary
Ministry of Foreign Affairs
Omani Co-chairman