

JAPAN INTERNATIONAL COOPERATION AGENCY  
DEPARTMENT OF CONSERVATION &  
RESOURCES SURVEILLANCE, POHNPEI STATE  
THE FEDERATED STATES OF MICRONESIA

No. 01

**BASIC DESIGN STUDY REPORT  
ON  
THE POHNPEI ARTISANAL FISHERIES  
SUPPORT STATION PROJECT  
IN  
THE FEDERATED STATES OF MICRONESIA**

**March 1993**

**D & A Engineering Co., Ltd., Tokyo**

G R S
<del>001</del>
93-055

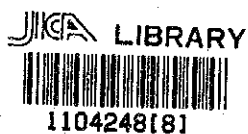
BASIC DESIGN STUDY REPORT ON THE POHNPEI ARTISANAL FISHERIES SUPPORT STATION PROJECT IN THE FEDERATED STATES OF MICRONESIA March 1993 D & A Engineering Co., Ltd., Tokyo



JAPAN INTERNATIONAL COOPERATION AGENCY

DEPARTMENT OF CONSERVATION &  
RESOURCES SURVEILLANCE, POHNPEI STATE  
THE FEDERATED STATES OF MICRONESIA

**BASIC DESIGN STUDY REPORT  
ON  
THE POHNPEI ARTISANAL FISHERIES  
SUPPORT STATION PROJECT  
IN  
THE FEDERATED STATES OF MICRONESIA**



24873

**March 1993**

**D & A Engineering Co., Ltd., Tokyo**

国際協力事業団

24873

## P R E F A C E

In response to a request from the Government of the Federated States of Micronesia, the Government of Japan decided to conduct a basic design study on the Pohnpei artisanal fisheries support station project, and entrusted the study to the Japan International Cooperation Agency (JICA).

JICA sent to the Federated States of Micronesia (FSM) a study team headed by Mr. Noboru Tazoe, Chief Fisheries Officer, Office of the Overseas Fisheries Cooperation, Fisheries Agency, and constituted by members of D & A Engineering Co., Ltd., from December 2 to December 13, 1992.

The team held discussions with the officials concerned of the Government of the Federated States of Micronesia, and conducted a field study at the study area. After the team returned to Japan, further studies were made and the present report was prepared.

I hope that this report will contribute to the promotion of the project and to the enhancement of friendly relations between our two countries.

I wish to express my sincere appreciation to the officials concerned of the Government of the Federated States of Micronesia for their close cooperation extended to the team.

March 1993



Kensuke Yanagiya

President

Japan International Cooperation Agency



Mr. Kensuke Yanagiya

March 1993

President

Japan International Cooperation Agency

Tokyo Japan

## Letter of Transmittal

We are pleased to submit to you the basic design study report on the Pohnpei artisanal fisheries support station project in the Federated States of Micronesia.

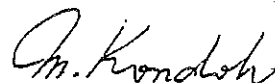
This study has been made by D & A Engineering Co.,Ltd., based on a contract with JICA, from November 5, 1992 to March 26, 1993.

Throughout the study, we have taken into full consideration of the present situation in the Federated States of Micronesia, and have planned the most appropriate project in the scheme of Japan's grant aid.

We wish to take this opportunity to express our sincere gratitude to the officials concerned of JICA, the Ministry of Foreign Affairs, the Ministry of Agriculture, Forestry and Fisheries, the Fisheries Agency and the Embassy of Federated States of Micronesia in Japan. We also wish to express our deep gratitude to the officials concerned of the Department of Conservation, Resources and Surveillance of the Pohnpei State Government, the Consulate-General of Japan in Guam and the JOCV FSM Office for their close cooperation and assistance during our study.

At last, we hope that this report will be effectively used for the promotion of the project.

Very truly yours,



Project Manager, Mamoru Kondo

Basic design study team on  
the Pohnpei artisanal fisheries  
support station project

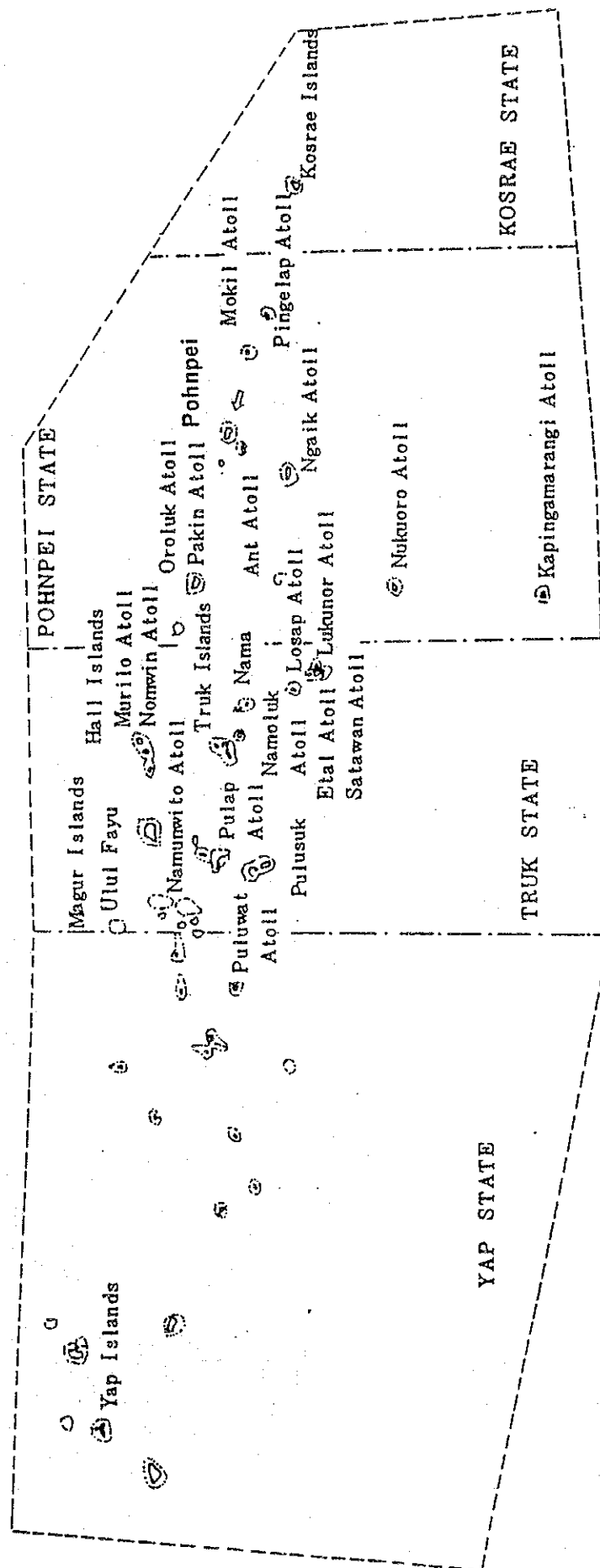
D & A Engineering Co.,Ltd.





# THE FEDERATED STATES OF MICRONESIA

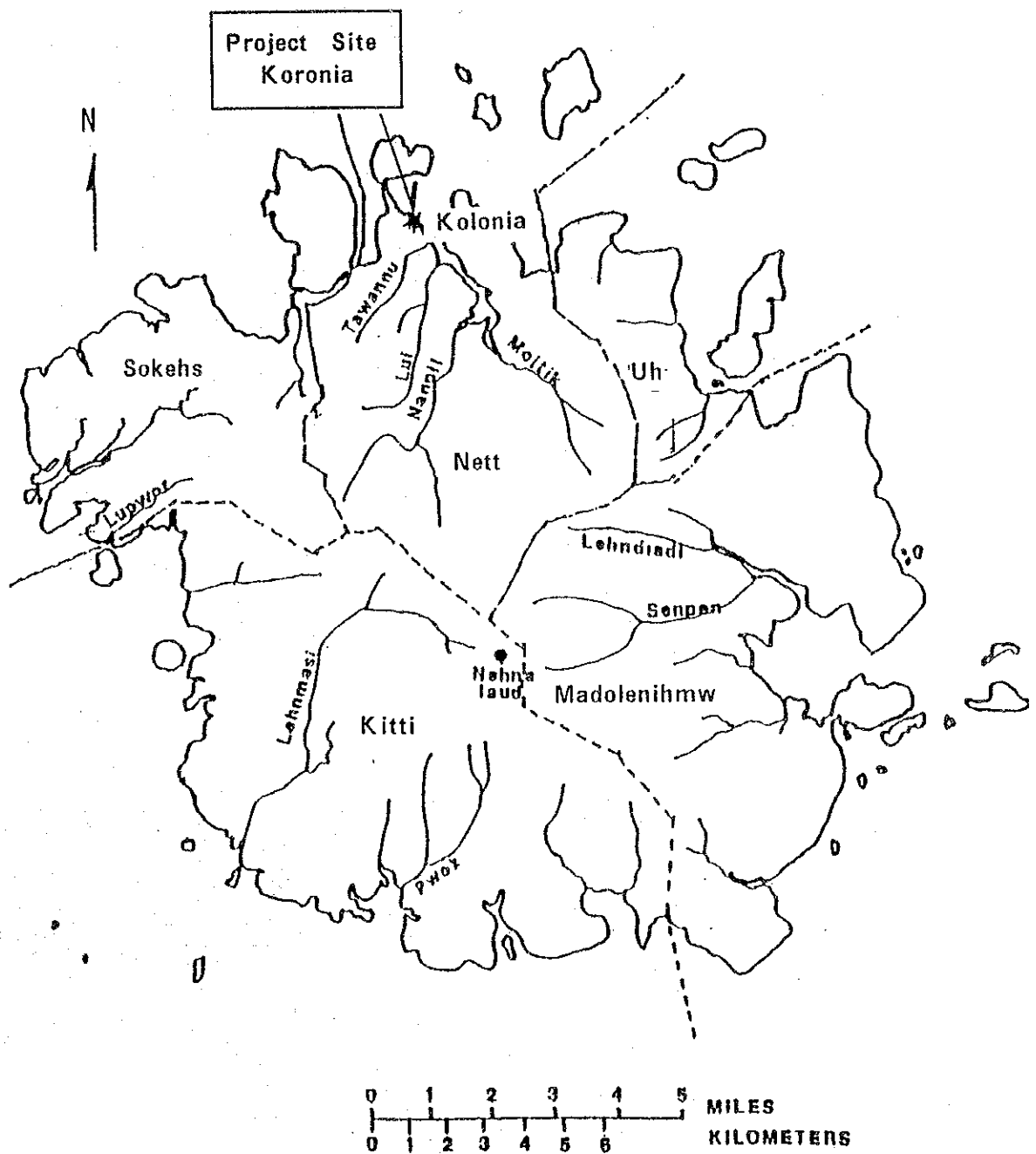
N  
4





# PROJECT SITE

## KOLONIA, POHNPEI





## SUMMARY



## Summary

Located between the equator and 14 ° N, and between 135° E and 166 ° E, lying in the Carolines, the Federated States of Micronesia (FSM) is an archipelagic nation with a land area of about 700 km<sup>2</sup> and a total population of about 100 thousand. Major economic activities are such the primary industries as agriculture and fishery, employing about 48% of the country's work force. The FSM operates a dual economy; the monetary economy in the country's capital and provincial capitals and the subsistence economy at the rural community level. On planning any development programs therefore earning and living standard differentials between two sectors must always be taken into consideration. The Government of the FSM puts emphasis on the optimal utilization of the fisheries resources within its EEZ of some 2.9 million km<sup>2</sup>, developing the commercial tuna fishery and the artisanal fishery to meet local requirements.

Almost all the artisanal fishery production is consumed domestically but its supply is short of the demand, resulting in import of canned fish. For artisanal fishermen, making one day fishing trip, the existing fishery related facilities are unavailable for ice or preservation of their catches because these facilities are exclusively for foreign fishing vessels. Also the rejected tuna for export at transshipment are sometimes brought in the local fish markets and affects adversely artisanal fishermen's earnings.

Under these situations, to support small scale fishermen's fishing activities of Pohnpei State, the Government of the FSM formulated the Pohnpei Artisanal Fisheries Support Station Project, and requested the Government of Japan to offer a grant aid on the procurement of the facility and equipment necessary for the project.

The Government of Japan, responding to the request, decided to conduct a basic design study on the project, and Japan International Cooperation Agency (JICA) sent a basic design study team to Pohnpei State for a period between December 2 and 13, 1992. The team had a series of discussions about the project with the FSM and Pohnpei State officials concerned, carried out necessary site surveys including collecting data and materials. Based on the analysis of the results of surveys in Japan the team prepared the present Basic Design Study Report.

The original request by the FSM side consisted of a prefabricated barracks

(housed a fish handling space, a storage, an office, a toilet, a chilling storage, an ice-making machine, and an ice storage), a water catchment tanks, ice chests, and a transportation pick-up to prepare an artisanal support station at Kolonia, Pohnpei.

The artisanal fishery in Pohnpei is an important animal protein source as well as an income source, and the content and scale of the request were judged to be appropriate on the whole. As for a chilling storage, the necessity of chilling preservation of surplus fish caught by local artisanal fishermen depends on the volume of unfit fish for export which are discharged into the local markets as well as on the frequency of discharging. Through the field survey, however, the volume was found not so large, about 6 tons on an average, and the average frequency was once or twice a week. Based on the result, it was concluded that an insulated room plus ice cooler boxes are proper for the present situation instead of a chilling storage after the discussions with the FSM side. The specifications however will take an increasing necessity of chilling preservation in the future into consideration. The facility and equipment covered by the project therefore are as follows;

- |                                                    |          |
|----------------------------------------------------|----------|
| 1. Prefabricated barracks                          | 1 unit   |
| 2. Ice making plant (with an emergency generator)  | 1 unit   |
| 3. Water catchment tank                            | 1 unit   |
| 4. Ice cooler boxes                                | 60 boxes |
| 5. Pick-up truck                                   | 1 unit   |
| 6. Insulated room (without a refrigeration system) | 1 unit   |

The authority responsible for promoting and coordinating the project is the Department of Conservation, Resources & Surveillance, the Pohnpei State Government, and the agency responsible for operating the facility and equipment when they are supplied is the Marine Resources Division (MRD) under the aegis of the said Department.

It is estimated that the work of the project will take 10 months to complete; the detail design requires 2.5 months, the preparation, manufacturing, and procurement in Japan 6 months, and the transportation 1.5 months.

The implementation of the project will extend the subsistence fishing activities of Pohnpei, increasing employment opportunities and income generation, improving import substitution, and thus accelerate the growth of the artisanal fishery of Pohnpei to a semi-commercial fishery. The requested



chilling storage was changed to an insulated room, but its specifications envisage the installation of a refrigeration system in the future in case of the development of fresh fish markets in Pohnpei. Finally, in order to enhance the utilization and effect of the facility and equipment provided under the project, it is of importance that the introduction of a refrigeration system should be promoted as soon as the need of it become clear.



## CONTENTS

PREFACE

LETTER OF TRANSMITTAL

MAPS

SUMMARY

CHAPTER 1 Introduction . . . . .	1
----------------------------------	---

### CHAPTER 2 Outline of the Request

#### 2-1 Background of the request

(1) Outline of the Federated States of Micronesia (FSM) . . . . .	3
(2) Outline of Fisheries . . . . .	4
(3) National Development Plan . . . . .	5

#### 2-2 Objective and Contents of the Request

(1) Outline of the Request . . . . .	6
(2) Expected Benefit . . . . .	7
(3) Implementation Arrangements . . . . .	8

### CHAPTER 3 Outline of the Project

3-1 Basic Policy of the Project . . . . .	9
3-2 Agreement Resulted from Discussions . . . . .	10
3-3 Project Target Area and Project Site . . . . .	11
3-4 Outline of Implementation Arrangement . . . . .	13

### CHAPTER 4 Basic Design of the Equipment

#### 4-1 Study and Examination of the Equipment

(1) Design Criteria . . . . .	15
(2) Study and Examination of the Specifications . . . . .	15

#### 4-2 Specification

(1) Basic Requirement . . . . .	18
(2) Specifications . . . . .	19

#### 4-3 Implementaion Arrangements of the Project and the Scope of Work

(1) Implementation arrangements . . . . .	21
(2) Implementation agency . . . . .	22
(3) Scope of work . . . . .	24
(4) Project schedule . . . . .	24

### CHAPTER 5 Effects of the Project and Recommendations

5-1 Benefits to Artisanal Fishermen . . . . .	27
5-2 Effects to Artisanal Fisheries . . . . .	27

5-3 Activation of the Artisanal Fisheries . . . . .	28
5-4 Conclusion and Recommendation . . . . .	29

## APPENDIX

I ① Members List of Study Team . . . . .	A-1
② Study Itinerary . . . . .	A-2
③ List of Persons Concerned . . . . .	A-3
④-A Organization Chart of THE FSM Government . . . . .	A-4
④-B Organization Chart of Pohnpei State Government . . . . .	A-5
④-C Organization Chart of Department of Conservation & Resources Surveillance. . . . .	A-6
⑤ Minutes of Discussions . . . . .	A-7
II ① Photographs . . . . .	A-14
② Prefabricated barracks plan . . . . .	A-18
③ Ice making plant plan . . . . .	A-22

## LIST OF TABLES

Table- 1 Fishery Products Distribution in Pohnpei . . . . .	4
Table- 2 Request and Agreement . . . . .	10
Table- 3 Artisanal Fisheries Activities in Pohnpei . . . . .	12
Table- 4 Estimate of Yearly Balance . . . . .	23

## LIST OF FIGURES

Figure-1 FSM Exports by State (1985-89) . . . . .	3
Figure-2 Project Schedule . . . . .	26

# CHAPTER 1

## INTRODUCTION



## Chapter 1 Introduction

The marine resources sector in the FSM consists of three subsectors; artisanal coastal fishing, commercial fishing, and aquaculture activities. The commercial fishing is one of important industries in the country, with a tuna catch of some 140,000 tons in 1990, valuing at US\$ 2 million (about¥ 24.6 billion), and exports accounting for about 28% of the total exports. In the Second National Development Plan 1992-1996, the fisheries sector has been given top priority in development, aiming at an increase of production, a long-term marine resources management, the establishment of the domestic tuna fishery, and so forth.

In line with the Plan, the Pohnpei State Government made it the basic policies in the fisheries development to improve fishermen's incomes, to increase employment opportunities, and to prompt import substitution through increased fish production, and formulated a project called the Pohnpei Artisanal Fisheries Support Station Project to support artisanal fisheries activities, and requested the Government of Japan to offer a grant aid the procurement of facilities and equipment necessary for the project.

On the request the Government of Japan decided to conduct a basic design study on the project and Japan International Cooperation Agency (JICA) sent a basic study team headed by Mr. Noboru Tazoe, Chief Fisheries Officer, Office of the Overseas Fisheries Cooperation, Fisheries Agency, to the FSM for a period between December 2 and 13, 1992. The Team discussed the details of the request with the FSM and Pohnpei State officials concerned, examined the urgency and appropriateness of the project, previous foreign assistance, implementation arrangements of the project, collected materials available, and carried out a field survey including fisheries conditions and related conditions.

Major points of the mutual agreement resulted from discussions with the FSM side were confirmed on the "Minutes of Discussions, Basic Design Study on the Pohnpei Artisanal Fisheries Support Station Project in the Federated States of Micronesia" signed mutually. And then, based on the analysis and review of the results of the field survey, the team assessed the effect of the project in developing the FSM fisheries, conducted a basic design on the facility and equipment for the station necessary for supporting artisanal fisheries activities in Kolonia, Pohnpei, and established the most suitable scale and

contents of the facility and equipment above.

The present report covers the basic design, implementation schedule, recommendations and so forth which are judged the most suitable for the implementation of the project.

The Members List of the Study Team, Study Itinerary, List of Persons concerned, and the Minutes of Discussions are shown in Appendix.



## CHAPTER 2

### OUTLINE OF THE REQUEST



## Chapter 2 Outline of the Request

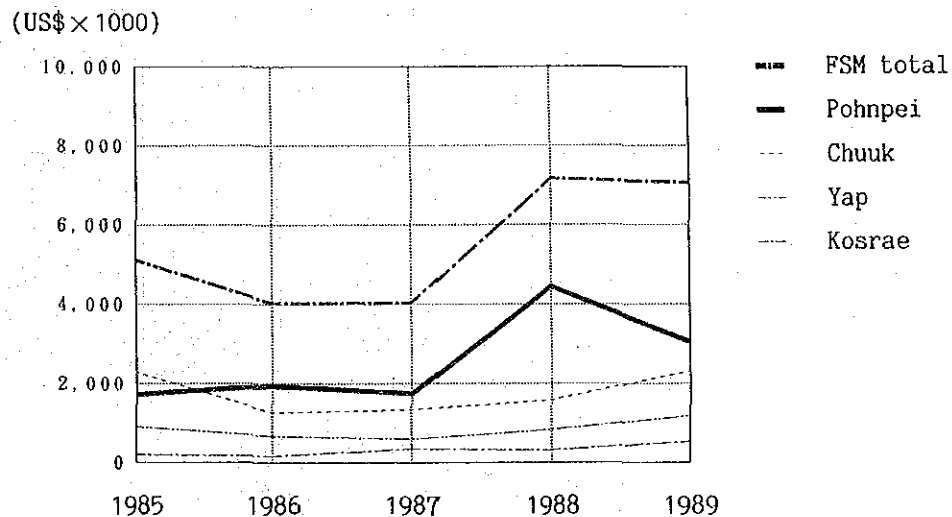
### 2-1 Background of the Request

#### (1) Outline of the Federated States of Micronesia (FSM)

The FSM embraces more than 600 islands and islets, lying in the Caroline archipelago, ranging from the equator to 14 ° N, and 135° E to 166° E. The country is divided into four states, Kosrae, Pohnpei, Chuuk, and Yap from east to west. It has a total land area of about 700 km<sup>2</sup>, belonging to the tropical marine climate, with a population of some 100 thousand, almost all the people are Micronesians. Christianity prevails. The capital is Palikir, Pohnpei, and the official language is English but each state has different languages and different traditional customs. In general, the society holds still a traditional hierarchy and strong family ties remains.

After independence from the U.S. trusteeship in 1986, the FSM Government's major objective of the National Development Plans was to achieve self-supporting economy with traditional cultural inheritance maintaining. Besides the U.S. assistance, the national economy depends greatly on the primary industry including agriculture and fishery. The major export is copra but its price at the international markets is now sluggish. Having no products other than copra, the FSM government, placing the emphasis on the optimal utilization of the marine resources in the vast ocean surrounding the country, is striving to develop the commercial tuna fishery as well as the coastal fishery for the domestic markets.

Figure-1 shows the FSM exports by state.



(Source: Second National Development Plan 1992/96)

**Figure-1 FSM Exports by State (1985-89)**

## (2) Outline of Fisheries

National Fisheries Corporation (NFC) was established to develop the fisheries resources within the vast EEZ of about 2.9 million km<sup>2</sup>, inviting foreign interests and developing international markets. The commercial fishery is now growing through the introduction of small tuna fishing boats into service. Tuna caught by the commercial fishery are being exported at the fresh state from the States of Pohnpei, Chuuk, and Yap to Guam, Hawaii, and Japan by air. Quality bottom fish also are exported to Guam and Hawaii. The country's EEZ is well known as a treasury of tuna, and fishing vessels from Japan, Korea, and Taiwan are operating under fishing license associated with access fees.

Though almost all the catches by the artisanal fisheries are sold at the domestic markets but undersupply always exists, resulting in importing canned fish. For artisanal fishermen, making usually one day fishing trip, the existing fisheries facilities are unavailable for ice or preservation of their catches because these facilities are entirely for foreign fishing vessels. Also the rejected tuna for export at transshipment are sometimes released in the domestic markets and affects adversely artisanal fishermen's earnings. Table-1 shows the distribution of 1992 fishery products in the Pohnpei State. Under these conditions, it is becoming an urgent problem for the FSM Government to support artisanal fisheries activities through the preparation of a support station with a ice making plant necessary for keeping the freshness of the catches and maintaining their marketing prices.

**Table-1 Fishery Products Distribution in Pohnpei**

(Unit: Metric ton)

	Production	Exports	Consumption for subsistence	Imports	Domestic distribution
Artisanal fishery	3,400	-	3,000	-	400
Commercial fishery	600	450	-	-	150*
Total	4,000	450	3,000	N.A.	550

- Note: 1. The table was made on the results of the interview surveys at the MRD of the Pohnpei State.
2. The total distribution in the FSM is 140 to 190 thousand tons annually.
3. \*: The domestic distribution by the commercial fishery is about 6 tons per month on the average. In case more than 10 tons are brought into the domestic markets, a certain regulation including dumping is applied to protect artisanal fishermen.
4. On the Table above and a 1992 total population of 39,899, an annual per capita consumption of fish in the Pohnpei State is estimated at about 90kg.

### (3) National Development Plan

Objectives of each fishery subsector in the Second National Development Plan 1992 - 1996 are as follows;

#### (1) Commercial Fisheries

- Substantial domestic involvement in the tuna fishery should be attained within 10 years;
- Tuna-related on-shore capital investment, including processing, should be made in each state;
- Tuna resources should be managed for long term sustained yield; and
- Liaison should be further developed between the states, the Micronesian Maritime Authority, the National Government and the NFC, and other involved entities.

#### (2) Artisanal Fisheries

- Increase the artisanal fisheries harvest and local consumption of marine products;
- Manage marine resources for long-term benefits; and
- Enhance artisanal fisheries marketing, including export sales where appropriate.

#### (3) Aquaculture

- To develop or import viable aquaculture technologies;
- To transfer those technologies to the private sector, either at the subsistence or commercial level; and

- Where practical, to use aquaculture technologies to introduce species or restock depleted areas.

In line with the national objectives above the Pohnpei State Government decided on the following policies in the fisheries development.

- (1) To increase employment and income opportunities in fisheries activities;
- (2) To increase provision of fish products for the local market as a substitute for imported proteins;
- (3) To conserve and support the long-term resource availability of lagoon and coastal fisheries; and
- (4) To increase exports of fish products through the utilization of marine resources as far as practicable.

Under these situations the FSM Government formulated the Pohnpei Artisanal Fisheries Support Station Project and requested the Government of Japan to offer a grant aid on the implementation of the Project.

## 2-2 Objective and Contents of the Request

### (1) Outline of the Request

Pursuant to the national objectives in the artisanal fisheries development, i. e. an increase of production and its domestic consumption, a long-term marine resources management, and the extension of the local markets, the Pohnpei State Government decided on their basic policies in developing the state's fisheries as follows; (1) to improve the quality control of catches and increase the fish consumption, (2) to increase import substitution and artisanal fishermen's earnings, and (3) to sustain the long-term resource availability of lagoon and coastal fisheries. Despite the rich fishery resources, there are partly signs of overfishing on inshore fishing grounds in Pohnpei. Undersupply of ice and lack of preservation facilities make it difficult for the State Government to control supply and demand of fish at the fresh state, resulting in occasionally a sacrifice sale or disuse of surplus fish. Under the present situation the efficient and sustainable utilization of fisheries resources in Pohnpei is problematic. With the copra market abroad sluggish, there is a pressing need for the State Government to develop the fishery, another mainstay of the

economy of Pohnpei.

In order to overcome these situations the FSM Government formulated a project on the preparation of a fisheries station to support artisanal fisheries activities within the public market premises of Kolonia, Pohnpei, and requested the Government of Japan to offer a grant aid on the implementation of the project.

The facilities and equipment requested by the FSM Government are as follows;

- |                                                   |          |
|---------------------------------------------------|----------|
| ① Prefabricated barracks                          | 1 unit   |
| ② Ice making plant (with an emergency generator)  | 1 unit   |
| ③ Water catchment tank                            | 1 unit   |
| ④ Ice cooler boxes                                | 40 boxes |
| ⑤ Pick-up truck                                   | 1 unit   |
| ⑥ Insulated room (without a refrigeration system) | 1 unit   |

#### (2) Expected Benefits

The expected benefits from a supply of the requested facilities and equipment are as follows;

- ① Fishermen can get ice easily, which desirable situation makes it possible to improve the quality and price of fish, and hence fishermen can expect to increase their incomes.
- ② Fishermen and fish middlemen can preserve fish until the price of fish is restored.
- ③ The price of reef fish becomes stable through usage of ice and preservation, which situation promotes efficient harvest of the reef fish resources.
- ④ A fish handling space covered with concrete makes it possible to handle landings hygienically.
- ⑤ A place and opportunity for marketing fresh fish is created.

Trough these effects the Pohnpei fishery will go a step towards an increase of fish production and domestic consumption, a long term resources management, expansion of markets.

(3) Implementation arrangements

The authority responsible for the project is the Department of Conservation, Resources & Surveillance, the Pohnpei State Government, and the agency responsible for operating the facility and equipment when these are supplied is the Marine Resources Division (MRD), in consultation with the Department of Resources & Development, the FSM Government.

The budget necessary for acquisition, land reclamation, and leveling of ground of the project site has already been allotted to the MRD, which deals with all matters concerning the project.



## CHAPTER 3

### OUTLINE OF THE PROJECT



## Chapter 3 Outline of the Project

### 3-1 Basic Policy of the Project

The basic design study team had a series of discussions about the background, content, scale, and implementation arrangements of the request with the FSM Government and the Pohnpei Government officials concerned, carried out necessary field surveys, and studied and examined the necessity and appropriateness as a Japan's grant aid project. As the result the team concluded to deal with the project in line with the following basic policy.

- (1) The fishery is a mainstay of the economy of the FSM and its development based on the National Development Plan is essential to develop the FSM.
- (2) From the viewpoint of the country's speciality (many dispersing small islands and virtually subsistence economic activities), it seems best to develop gradually. A drastic investment and a sudden change of the social structure may be ruined, affecting adversely the social development.
- (3) The Pohnpei fishery is important as a protein source as well as an income source. Furthermore artisanal fishing activities at each village, together with fish middlemen's marketing activities, are converging to Kolonia, the biggest consuming center in Pohnpei, which situation is developing steadily commercial activities. The number of full-time fishermen is also increasing, fishing is becoming actively more and more, the growth to semi-commercial fishery from subsistence fishery is under way. There is however no facility for supporting artisanal fishing activities and the preparation of a support station is desired earnestly. It is judged that the project is absolutely necessary for the development of artisanal fisheries in Pohnpei.
- (4) The preparation of a support station makes it easy to supply ice for artisanal fishermen, which desirable situation makes it possible to improve the quality and price of fish, and hence an increase of fishermen's income and the improvement of their living standard are achievable. Also import substitution and sustainable utilization of marine resources will be enhanced.
- (5) Promoting the distribution of artisanal fisheries products may cause a problem with domestic markets in connection with a commercial fishery. Careful marketing control is required in parallel with the implementation

of the project.

- (6) The basic policy of the project must be a step-by-step approach. After the completion of the first project, then proceed to the next step. It is appropriate as well as important to contribute to the development of the FSM fisheries through such a process.

### 3-2 Agreement Resulted from Discussions

The following is the mutual agreement resulted from discussions about the original request from the FSM and Pohnpei sides.

Table-2 Request and Agreement

Request		Agreement
1	Prefabricated barracks about 180 km <sup>2</sup> : 1 unit (with an ice making plant, a chilling storage, a fish handling space, an office, a store, a toilet)	A two-storied barracks with the first floor ceiling as low as practicable. The project includes the installation of the barracks. An insulated room is provided instead of a chilling storage.
2	Ice making plant: 1 unit 2 ton/day, plate ice Ice storage: 7 m <sup>3</sup> , 0 ~ -5°C	An emergency generator is added due to the electric condition in Pohnpei.
3	Water catchment tank: 1 unit FRP, 8 kℓ	The capacity of the tank is reviewed due to water supply restriction (sometimes 18 hours a day).
4	Ice cooler boxes: 40 boxes Capacity: 160 ℓ	Additional 20 boxes are provided since the chilling storage is changed to an insulated room.
5	Pick-up truck: 4WD 1 unit Loading capacity: 0.75 t	Agreed as requested.

Request		Agreement
6	Chilling storage: 1 unit Capacity: 7m <sup>3</sup> , 0 ~ -5°C	The chilling storage is changed to a insulated room without a refrigerating unit whose specifications are designed to take the installation of a refrigeration system in the future into consideration.

### 3-3 Project Target Area and Project Site

#### (1) Project target area

The project target area is the Pohnpei State and the project site is located at Kolonia, Pohnpei.

The overview of Kolonia is as follows;

Location	Pohnpei Proper, the state capital		
Population	Pohnpei State:	43,677	
	Pohnpei Proper:	39,899	
	Kolonia:	7,155	
Land area	Pohnpei State:	328	km <sup>2</sup>
	Pohnpei Proper:	317	km <sup>2</sup>
	Kolonia:	1.5	km <sup>2</sup>

Distance from the Capital approx. 15 km

Note: A half hour drive is required from Palikir, the Capital, while a 15 minute drive from the airport.

Pohnpei State has some 1,000 artisanal fishermen with a fleet of about 400 small FRP fishing boats, harvesting some 600 tons a year. Commonly practiced fishing methods in the artisanal fishery, which is an important cash earning source as well as a protein source, are shallow bottom fishing, gill netting, spear fishing, and reef gleaning. Table-3 shows the outline of artisanal fisheries activities in Pohnpei.

Table-3 Artisanal fisheries activities in Pohnpei

	Whole	Kolonia	Kitti	Madolenihmw	Nett	Sokens	Uh
A. Population (Distribution : %)	26,198. (100%)	6,169. (23%)	3,987. (15%)	4,340. (17 %)	4,067. (16%)	5,047. (19%)	2,588. (10%)
B. Population between 15 and 59 years old (Distribution : % (f))	12,743. (100%)	3,232. (25%)	1,698. (13%)	2,000. (16 %)	2,037. (16%)	2,477. (19%)	1,299. (10%)
C. Employment Total (%) FSM Gvt (%) State Gvt (%) Private (%)	5,469. (43%) 513. (14%) 1,733. (4 %) 3,183. (25%)	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
(1) Working force not included in statistics (1) = B-C	7,274. (57%)	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
(2) Distribution of half of (1) in proportion to (f) (2) = (1) × 0.5 × f	3,637.	910.	473.	582.	582.	691.	364.
(3) Assuming that 2/7 of (2) employ in fishing* (3) = (2) × 2/7	1,029.	260.	135.	166.	166.	197.	104.
(4) Fish retail shops	59.	25.	7.	11.	3.	3.	10.
(5) Number of fishermen by fish retail shop	17.	10.	19.	15.	55.	66.	10.

\*: Assumed that 2 men, father and son, of a household consisting of assumed 7 persons.

Note: The calculation is based on 1985 data. The 1992 population is 39,899 which is 1.5 times of the one of 1985 with a growth rate of 6.2%. The number of people employing in fishing accordingly seems to exceed the figure in Table.

The development of the fisheries in Pohnpei is carried out by two authorities, the Marine Resources Division (MRD) and Economic Development Authority (EDA). MRD is responsible for the artisanal fisheries, while EDA's major duties are to develop commercial fisheries and aquaculture and to provide foreign fishing vessels with transshipment. On controlling the domestic markets of fish products, in particular of fresh fish, MRD having an intention of protecting artisanal fishermen is sometimes confronted with EDA concerning the discharge of tuna unfit for export.

## (2) Project site

The project site is within the public market premises in Kolonia, Pohnpei Proper. It is close by the trunk road of Kolonia, having an easy access by both sea and land. There exist two barracks of the public market and nine stores in total are dealing in vegetables, fruit, and fishery products. According to the interview survey, a rental of store is US\$80 per month, while the proceeds of fishery products alone reach US\$4,000 per month on an average.

Considering the access to the site and a landing space seawards, partly reclamation of the foreshore is essential. The permit and the budget have already been obtained and the reclamation, which was started in December 1992 and completed by February 1993. A two-storied building is appropriate due to the space of the site, but the first floor should be low as far as practicable due to the proximity of sea and weather conditions including typhoons.

The Environmental Protection Act 1973 provides that public buildings is connected with the public sewerage system, and the barracks of the project can be connected with the existing public sewerage system.

## 3-4 Outline of Implementation Arrangements

### (1) Implementation arrangements

The authority responsible for the project is the Department of Conservation, Resources & Surveillance, the Pohnpei State Government, and the agency responsible for operating the facility and equipment is the Marine Resources Division (MRD) under the aegis of the Department of Conservation, Resources & Surveillance, the Pohnpei State Government. The outline of the Division is as follows;

• Marine Resources Division (MRD) of the Department of Conservation, Resources & Surveillance, the Pohnpei State Government

Personnel 19

Budget US\$107,270 in 1992

Authorities and duties: Responsible for the development of the State's artisanal fisheries, conservation of reef and inshore resources, development of aquaculture, fisheries statistics.



## CHAPTER 4

### BASIC DESIGN OF THE EQUIPMENT



## Chapter 4 Basic Design of the Equipment

### 4-1 Study and Examination of the Equipment

#### (1) Design Criteria

The selection and determination of the facility and equipment are to be conducted based on the results of the field survey on the current situation of the fisheries and fisheries related industries, FSM's technological level, the purpose and operating conditions of the facility and equipment. At the same time, the particular of each equipment, necessity of accessories and spare parts, handling easiness, technical assistance to MRD from the contractor, after-sale service, and so forth were taken into consideration to select the most suitable equipment.

All spare parts are to be delivered at the site together with the facility and equipment. Separately delivered parts are to be assembled and test-operated at the site before the delivery by the contractor who will give guidance in operation, maintenance, and inspection of the facility and equipment.

#### (2) Study and Examination of the Specifications

##### ① Prefabricated barracks

The purpose of an artisanal fisheries support station at Kolonia is to support fishing and marketing activities of artisanal fishermen of Pohnpei proper including Kolonia, Kitti, Madolenihmw, Nett, Sokehs and Uh and of neighboring islets of Pakin and Ant. Also the station will function as the hub station to govern sub-stations which will be installed in imitation of it in each district in the future. Not having any support facility for their activities, Pohnpei artisanal fishermen are at present carrying out landing, marketing and preparing for the next fishing trip at the shore in the premises of the public market of the project site, which working condition under tropical blazing sun is causing a problem on quality control of fish.

In order to improve these conditions and support their activities, it is of necessity to prepare a prefabricated barracks housed a fish handling space, a fishing gear storage, an office space and so on. The fish handling space protects fishermen and fish from the strong sunshine and rain during landing

and marketing. The fishing gear storage makes it possible for artisanal fishermen to carry out more efficient operation with preparing hours for fishing reducing through offering a storing space of fishing gear.

As for the structure of the proposed prefabricated barracks, taking a favorable location of the project site being utilized as a public market with fish shops and vegetable stores, easy car access to the main road, a space for land reclamation, traffic lines of men, fish, ice, and more effective use of the site into consideration, it was concluded that, instead of a one-story house, a two-storied building saving the area of the site is most appropriate.

The area of the fish handling space was established as follows; The number of fishing vessels operating in Pohnpei is now estimated at about 400, of which about 175 vessels are entering the cash economy. The number of fishing vessels to be expected to utilize the proposed station is estimated at 74 on the basis of the distribution of fish retail shops (59 shops in whole Pohnpei and 25 in Kolonia) and the number of fishing vessels per shop. Moreover, the number of fishing vessels presently using the waterfront of the public market is 39, of which 20 vessels, about 50% of them, are using there a day (according to an interview survey). Assuming that the rate is 60%, therefore, the number of fishing vessels to use the station in the future is  $74 \times 60\% \approx 45$ . When 45 vessels land their catch from 10 a.m. to 3 p.m., 9 vessels land during an hour with each vessel taking 30 minutes. Hence, when 2 fishermen per vessel work at landing and handling fish, the number of fishermen to use the fish handling space at the same time is 9. Since one person requires 6 m<sup>2</sup> working space, the total area of the fishing handling space is some 54 m<sup>2</sup>. On the basis of the fish handling space, the office (with a fishing gear selling counter), the fishing gear storage, the ice storage, and so on are to be designed.

② Ice making plant (with an emergency generator)

An ice making plant of 2 ton/day of plate ice, with an ice storage of about 7 m<sup>3</sup> was requested. The requested kind of ice of plate ice is considered to be appropriated due to the limited fishing ground inshore, utilization ice cooler boxes, and the easiness of transport and handling. Above all the plant for making plate ice is comparatively easy to operate and maintain. The

requested capacity is also appropriate due to necessary supply of some 40 kg of ice a day a vessel plus the consumption other than fishing vessels at the plant working ratio of 90%. The ice storage capable of storing 4 tons of ice, 2 days production of ice, is to be prepared; its configuration is decided with due regard to the location of the water catchment tank and the access to the fish handling space.

③ Water catchment tank

Though the public waterworks of Kolonia are functioning in outline, water supply is restricted for 4 to 6 hours a day due to worn-out pipe lines with a heavy leakage of water. In ice production, raw water 1.25 to 1.5 times of projected ice, that is 2.5 to 3.0 tons, is required. At the station, water for washing landings at the fish handling space is required, which quantity is estimated at 0.5 to 1.0 ton. The required quantity of water therefore is 3.0 to 4.0 tons in total. The requested capacity of the water catchment tank of 8 m<sup>3</sup> is almost equal for 2 to 3 days consumption, which meets the minimum requirements. Considering the configuration of the facility it was concluded that the requested capacity is appropriate.

④ Ice cooler boxes

These boxes, being used in transportation of fish and ice by artisanal fishermen, are much in demand. In the project, therefore, 60 boxes are to be supplied instead of 40 boxes of the original request; 20 for active fish retail shops among 59 shops in Pohnpei, 10 for the insulated room, 10 for supporting artisanal fishermen having no vehicle, and 20 for reserve. A popular 160 l type box is to be provided.

⑤ Pick-up truck

Besides full-time fishermen, almost all Pohnpei people, including women and children, are being participate in artisanal fisheries activities, and except for a few of full-time fishermen and fish retailers, a majority of fishermen have no vehicle, using taxis for delivering fish to Kolonia or transporting ice from Kolonia with a long time spending. Actually land transport of ice necessary for the next day's fishing to fishermen and retailers of Kitti and Madolenihmw at the opposite side of Pohnpei proper to Kolonia, when they have

no shipment to Kolonia because of rough weather, is essential. Furthermore a vehicle is also necessary for extension services and publicity. Since there are 18 fish retail shops in Kitti and Madolenihmw, at least 720 kg of ice (40 kg per shop) must be delivered. A pick-up truck of 720kg load capacity, a 4 WD one due to road conditions such as steep slopes and unpaved roads, is to be supplied.

⑥ Insulated room (with a refrigeration system)

The fish distribution in Pohnpei is estimated at about 550 tons annually, 400 tons landed from the artisanal fisheries and 150 tons of rejected fish for export. For marketing control during the peak fishing season and also for the period of rejected fish's appearance on the market the necessity of chilling storage of landings by artisanal fisheries may exist. The quantity and frequency of rejected fish which discharge into the local market, however, were found to be about 6 tons and 8 times per month (twice a week) respectively, which accounts for only one day consumption in Kolonia with a population of 7,155. Based on this, an insulated room equipped with ice cooler boxes is to be provided instead of a chilling storage initially requested by the FSM side, together with a consideration of a cost-benefit ratio in the management of the station. The specifications of the room however will take an increasing necessity of chilling preservation in the future into consideration.

The capacity of the insulated room is established to be about 7m<sup>3</sup>, one forth of a yearly contribution of 400 tons by the artisanal fisheries (about 1,600kg a day), equivalent to 10 ice cooler boxes.

#### 4-2 Specifications

(1) Basic requirements

- ① (a) The facility and equipment shall be endurable for the natural conditions of the FSM, in particular the Pohnpei State waterfront; a temperature of 22 to 32°C and humidity of 40 to 80%.
- (b) All the equipment shall be in accordance with the existing the FSM regulations.
- (c) All the equipment shall be manufactured in accordance with the

specifications.

② Provide the service manuals and others as follows;

- |                         |                             |
|-------------------------|-----------------------------|
| (a) Service manuals     | 3 copies for each equipment |
| (b) Maintenance manuals | 3 copies for each equipment |
| (c) Parts catalog       | 2 copies for each equipment |
| (d) Tools list          | 1 copy for each equipment   |

③ Spare parts

Spare parts, equivalent of 10% of FOB-Japan price of the equipment, shall be designated among the spare parts list submitted by the contractor. All the spare parts shall be delivered together with the equipment proper.

④ Guarantee

The term of guarantee of each equipment shall be at least one year after delivery.

(2) Specifications

① Prefabricated barracks 1 unit

1) Structure Prefabricated two-storied building

2) Exterior specifications

- |               |                                                                                    |
|---------------|------------------------------------------------------------------------------------|
| Roof          | Vinyl chloride steel plate, or equivalent                                          |
| Wall          | Vinyl chloride steel plate, or equivalent                                          |
| Furniture     | Window and Door: Aluminium sash, or equivalent<br>Glass: Mesh glass, or equivalent |
| Veranda floor | Chequered steel plate, galvanized                                                  |
| Stairs        | Phthalic acid resin coating or equivalent                                          |
| Handrail      | Steel round pipe, galvanized,<br>Phthalic acid resin coating or equivalent         |

3) Interior specifications

Floor of 1st floor Mortar troweling finish

Office Wall: Plywood, semi-hard nonasbestos tile covering or equivalent

Ceiling: Glass wool insulation, decorated plaster board or equivalent

Store Floor: Painted plywood finish

Wall: No interior wall

Ceiling: No ceiling

Steel frames shall be galvanized and coated with phthalic acid resin, or equivalent.

4) Areas are as follows

Office	about	26 m <sup>2</sup>
Fishing gear storage	about	45 m <sup>2</sup>
Fish handling space	about	68 m <sup>2</sup> (including working spaces in front of ice bin and insulated room.)
Ice plant and ice bin	about	23 m <sup>2</sup> (ground level 12 m <sup>2</sup> , 2nd level 11 m <sup>2</sup> )
Insulated room	about	11 m <sup>2</sup>
Generator room	about	6 m <sup>2</sup>
Water catchment tank	about	8 m <sup>2</sup>
Toilet	about	8 m <sup>2</sup>
Total	about	195 m <sup>2</sup>

5) Accessories

Drainage, piping, lighting, electricity, wiring arrangements  
Steel frames shall be galvanized and painted.

② Ice making plant 1 unit

1) Ice making machine

Type	Full-automatic, air-cooling plate ice making machine
Capacity	2 tons/day
Ambient temp.	+35°C
Raw water temp.	+25°C
Refrigerant	Freon R-22
Compressor	7.5 KW
Ice crusher, pumps	1.5 KW
Machine seat	Steel frame (installed on the ice storage)

2) Ice storage

Type	Prefabricated insulated panel type
Capacity	about 4 tons
Ambient temp.	+35°C
Preservation temp.	0°C ~ -5°C
Refrigerant	Freon R-22
Insulation	Self-extinguishing polyurethane foam, 100 mm thick
Compressor	1.5 KW



Accessories      Upper-limit devices, insulated door, door curtain,  
                  Wooden grating, thermometers, wall sparring, etc.

3) Emergency generator

Type              Diesel engine driven self-cooling type, three-phase AC  
Capacity          about 25 KVA, 220 V/60 Hz  
Diesel engine     Rated output: 28 PS

③ Water catchment tank      1 unit

Type              FRP prefabricated square tank (with a separation board  
                  between rainwater and city water)  
Capacity          about 8 m<sup>3</sup>

④ Ice cooler boxes          60 boxes

Dimensions       Outside: about 1050(L)×500(W)×500(H) mm  
                  Inside: about 950(L)×400(W)×420(H) mm  
Capacity          160 ℓ  
Type              With a lid and grips or strings for carrying

⑤ Pick-up truck              1 unit

Driving           4 WD  
Seating capacity   3 persons (single cabin)  
Total weight      about 2,500 kg  
Max loading capacity    about 750 kg

⑥ Insulated room              1 unit

Type              Prefabricated insulated room  
Capacity          about 7 m<sup>3</sup>  
Accessories       Insulated door, door curtain, wooden grating,  
                  thermometers, wall sparring, etc.

#### 4-3 Implementaion Arrangements of the Project and the Scope of Work

(1) Implementation arrangements

The request for grant aid to the project was initiated by the Department of External Affairs, the Federated States of Micronesia, and the agency

responsible for operating the facility and equipment under the project when these are supplied is the Marine Resources Division (MRD) under the aegis of the Department of Conservation, Resources & Surveillance, the Pohnpei State Government. The budget necessary for the project, including land reclamation, has already been allotted to the said Division dealing with all matters concerning the project.

The FSM Government is to govern the aid money (arrangements of procedure concerning the Banking Agreement and the Authorization to Pay, receipt of the granted project, issuance of necessary certificates, and so forth), and then the facility and equipment are to be delivered to MRD. On the delivery, a Memorandum of Understanding (MOU) to ensure a proper management and operation of the facility and equipment of the project is to be concluded between the FSM Government and the Pohnpei State Government.

## (2) Implementation agency

The State Government is to operate the facility and equipment of the project in accordance with the MOU. The facility and equipment are to be operated within the range of MRD's budget during the first year, and, for the second year, based on the first year's record of performance, a subsidy, if necessary, will be provided, though the project is managed on a self-paying basis. When additional actions necessary for the development of the artisanal fisheries is anticipated, MRD is given guarantee for a budget necessary for such actions.

### ① Staffing plan

Manager: 1 person

In charge of management of the support station and guidance to fishermen, he holds concurrently the post of MRD.

Accountant 1 person

Workers 2 persons (employed on the part-time basis)

Engineer 1 person

In charge of operation, maintenance, inspection, and repair of the facility and equipment of the support station, he holds concurrently the post of MRD.

② Estimate of balance

(a) Revenue

• Sales of ice

Assuming that ice production is 80% of the capacity, working days are 6 days per week, 50 weeks per year, and the selling price of ice is US\$0.07 per kg, the sales of ice is

$$2000\text{kg/day} \times 0.8 \times 50 \text{ weeks/year} \times 6 \text{ days/week} \times \text{US\$}0.07/\text{kg} = \text{US\$}33,600$$

• Rental of ice cooler boxes

Twenty boxes are to be rented at a rental of US\$10.00 per month.

$$20 \text{ boxes} \times 12 \text{ months} \times \text{US\$}10.00 = \text{US\$}2,400$$

(b) Expenditure

• Wages

Manager 1 person Paid by MRD

Accountant 1 person US\$ 8,000

Workers 2 persons US\$10/day  $\times$  365 days  $\times$  2 persons =US\$ 7,300

Engineer 1 person Paid by MRD

Subtotal US\$15,300

• Power rates: 365 days  $\times$  24 hrs  $\times$  5 KWH  $\times$  US\$0.23/KWH =US\$10,074

• Water rates: 365 days  $\times$  3 m<sup>3</sup>/day  $\times$  US\$0.20/m<sup>3</sup> =US\$ 219

• Fuel oil: 250 days  $\times$  3 gln/day  $\times$  US\$1.65/gln =US\$ 825

• Maintenance: 20% of the total of above costs =US\$ 2,224-

Subtotal US\$13,342

In total the estimate balance of the equipment is shown in Table-4.

**Table-4 Estimate of Yearly Balance**

(unit: US\$)

Revenue		Expenditure	
Sales of ice	33,600	Wages	15,300
		Power rates	10,074
Rental of ice	2,400	Water rates	219
cooler boxes		Fuel oil	825
		Maintenance	2,224
Total	36,000	Total	28,642

(3) Scope of work

Major undertakings to be taken by each Government are as follows;

① The following are covered by grant aid.

- Procurement of all necessary equipment and materials for the project and provision of sea and land transportation for the equipment and materials to the project site, including the payment of transportation insurance.
- Assistance in the preparation of the detail design and tendering, and consultancy on controlling the project.

② Responsibilities of the FSM side

- Maintenance of a land for stocking the equipment and materials of the project.
- Prompt unloading, tax exemption, and customs clearance of the equipment and materials of the project at the port of disembarkation in the FSM.
- Exemption of internal taxes and other fiscal levies imposed to the Japanese nationals concerned in the FSM for supply of goods and services for the project.
- Preparation and budgetary arrangements for the operation/maintenance expenses of the equipment supplied under the grant aid.

(4) Project schedule

After the conclusion of the Exchange of Notes concerning the project between the Governments of the FSM and Japan, a consulting firm of Japan will conclude an agreement regarding consulting services with the Government of FSM, on the basis of the content of the Exchange of Notes.

The consulting firm will prepare necessary tendering documents, which are to be authorized by the FSM Government, and render help to hold the tender after a necessary pre-qualification investigation. Based on the result of tender evaluation, the consulting firm will recommend a successful tenderer to the FSM Government.

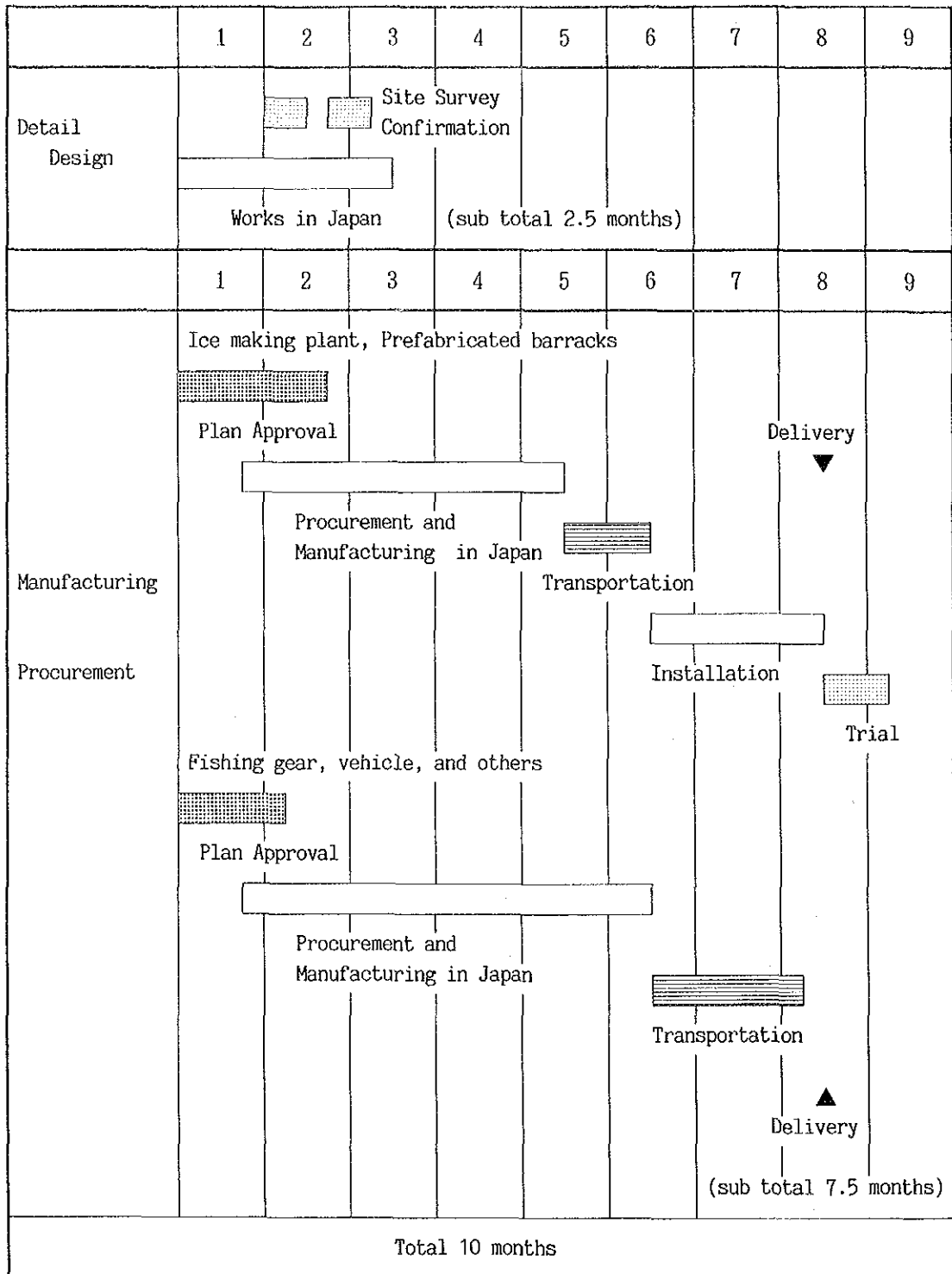
The successful tenderer will conclude an agreement on supply of the equipment and spare parts for the project, on the basis of the content of the tender, with the FSM Governments, and procure and manufacture the necessary equipment and materials in accordance with the plans and drawings approved by the consulting firm. Meanwhile the consulting firm will conduct necessary inspections including test working, report the progress of the project to the

Governments of Japan and FSM. After the completion of controlling business, the consulting firm will receive a completion certificate of the project from the FSM Government, when the project will be finished.

The project will require about 10 months; about 2.5 months for the detail design, about 6 months for preparation, manufacturing, and procurement, plus 1.5 months for marine transportation.

The project schedule is shown in Figure-2.

Figure-2 Project Schedule



## CHAPTER 5

EFFECTS OF THE PROJECT

AND

RECOMMENDATIONS





## Chapter 5 Effects of the Project and Recommendations

The Chapter covers an estimate of effects of the project on the basis of the aim of the fisheries development in the national development plan, the objective of the project, and the indices on the achievement of the objective of the project.

### 5-1. Benefits to Artisanal Fishermen

The Pohnpei artisanal fishermen will enjoy benefits from the project as follows;

- Easy access to ice (Ice making plant)
- Short term preservation of catch (Insulated room and ice cooler boxes)
- Place and opportunity for marketing fresh fish (Fish handling space)
- Transport services of ice and catch (Pick-up truck)
- Keeping fishing gear (Fishing gear storage)

### 5-2 Effects to Artisanal Fisheries

From the above-mentioned effects, the following effects to the artisanal fisheries will be expected.

#### (1) Improvement of quality of fish

The provision of the ice making plant, insulated room, and ice cooler boxes will make it possible for artisanal fishermen to obtain ice when necessary, to preserve their catch when they have no chance to market due to late landing or when the markets become saturated temporarily due to rejected tuna for export, resulting in improving the quality of fish. Also the fishermen and fish middlemen will be able to trade fish at the hygienic fish handling space instead of the landing spot on the shore, which situation will improve the quality of fish.

#### (2) Increase of fish supply

Short term preservation of fish in the insulated room will reduce waste or family consumption of fish having no chance to sell, resulting in an increase

of supply of fish on the market.

(3) Increase of local consumption of fish

The supply of fish at the good state, along with the increase of supply, will increase consumption of fish by the people in Kolonia and other areas due to their dietary preference for fresh fish.

(4) Increase of fishermen's income

The increasing supply to the market will directly produce an increase of income. Also the constant supply of good fish will make it possible to maintain reasonable prices of fish, resulting in an increase of income.

(5) Gathering of data on the artisanal fisheries

Despite their importance in that they are supplying foodstuffs in the self-reliance economy, the Pohnpei artisanal fisheries are being scarcely conducted on the commercial basis, and there is no reliable data on even the number of fishermen engaging in artisanal fishing. It is expected that through the management of the support station data and information on marketing, fishing conditions will be collected. These collected data and information will promote to prepare statistics on the artisanal fisheries.

(6) Other effects

The increase of local consumption of fish will bring down the level of dependence on imported marine products such as canned fish, which situation will contribute to saving foreign currency through import substitution. Also the establishment of the ice and catch transport system by pick-up truck will reduce fish wastes, contributing to effective and sustainable use of coastal fisheries resources.

### 5-3 Activation of the Artisanal Fisheries

The Pohnpei artisanal fisheries are now being conducted as part of routine work in villages throughout the island, and hence the majority of artisanal fishermen are not active to turn their catch money. Because of this passive attitude of artisanal fishermen on marketing, once rejected marine products for

export are bought to the local fish markets from the commercial fisheries, outlets for their catch are substantially reduced, when their will to fish becomes weak since they cannot recover expenses for fishing, and thus the artisanal fishing activity is enfeebled. The construction of the support station will improve such the situation as the artisanal fishermen and fish retailers are placed disadvantageously, first in Kolonia. And then these effects will extend to other areas, resulting in the activation of the artisanal fishing activity in Pohnpei.

#### **5-4 Conclusion and Recommendation**

Objectives of the artisanal fisheries development in the Second National Development Plan 1992-1996 of the Federated States of Micronesia are, as described in Chapter 2, to increase the artisanal harvest and local consumption of marine products, to manage marine resources for long-term benefits, and to enhance artisanal fisheries marketing, including export sales where appropriate. Based on these objectives, the basic policies formulated by the Pohnpei State Government on the fisheries development were to increase employment and income opportunity in fisheries activities, to increase provision of fish products for the local market as a substitute for imported proteins, to conserve and support the long-term marine resource availability, and to increase exports of fish products through the utilization of marine resources as far as possible. And then, the Pohnpei State Government gave attention to the artisanal fishery which is being conducted as self-supply activities of foodstuffs and is now striving to develop this fishery. There is a wide gap between these policies and the actual situation. However, the most important fact is that the artisanal fishery which has been neglected until today was recognized anew as a promising industry capable of contributing to the country's economy in such various aspects as the creation and increase of employment opportunity, increase of income, saving of foreign money by means of export substitution, sustainable management of marine resources. Under these backgrounds the FSM Government requested the Government of Japan to offer a grant aid on the project. The project is the one that the Pohnpei State Government formulated for the first time to develop the artisanal fishery of the State, and that becomes the first step toward the achievement of the objective on the National Development Plan.

The number of people who will benefit from the project are about 375 fishermen on board 174 fishing boats; 74 boats to use the support station plus 101 full-time and part-time fishing boats which enjoy indirectly benefits through the support station. Indirectly, about 1,000 artisanal fishermen including subsistence fishermen and their folks of about 2,600, totalling 3,600 people.

The authority responsible for the project is the Department of Conservation, Resources & Surveillance, the Pohnpei State Government, and the agency responsible for operating the facility and equipment is the Marine Resources Division. Having no experience in the management of the support station, the Fisheries Division is now operating a trochus farm and finished land reclamation for the project site with its own budget. Viewed in the light of management, the Division can meet the requirements, but they have a plan to recruit engineers necessary for the operation and maintenance of the ice making plant. It is recommended that based on the plan the Division should set up a reliable system capable of operating, maintaining, and repairing the support station.

From the viewpoint of the expected profound effects and the contribution to the improvement of the living standard of the people as mentioned above, the project deserves to be implemented as a grant aid project.

## APPENDIX



## APPENDIX

- I
  - ① Members List of Study Team
  - ② Study Itinerary
  - ③ List of Persons Concerned
  - ④-A Organization Chart of THE FSM Government
  - ④-B Organization Chart of Pohnpei State Government
  - ④-C Organization Chart of Department of Conservation & Resources Surveillance.
  - ⑤ Minutes of Discussions
- II
  - ① Photographs
  - ② Prefabricated barracks plan
  - ③ Ice making plant plan





Members List of Study Team

Noboru, TAZOE	Leader Chief of Section, Office of the Overseas Fisheries Cooperation, Fisheries Agency
Yoshio, ISHIYAMA	Project Coordination Second Basic Design Study Division, Grant Aid Study & Design Department, JICA
Mamoru, KONDO	Fisheries Promotion Planner D & A Engineering Co.,Ltd.
Harumasa, HIRAKAWA	Facilities and the Cost Estimate Planner D & A Engineering Co.,Ltd.

## Study Itinerary

	December		Governmental Officials	Accommodation	Consultants		Accommodation
					Fisheries Promotion Planner	Facilities and Cost Estimation	
1	Dec. 2	Wed.			11:55 Tokyo ⇒ 17:05 Guam ⇒ 22:15 Pohnpei		Pohnpei
2	3	Thu.			Courtesy call to Department of External Affairs and Pohnpei Government. Meeting with Marine Resources Division.		Pohnpei
3	4	Fri.			Site survey, Collection of Materials		Pohnpei
4	5	Sat.			Site survey, Collection of Materials (Sokehs, Nett, Kitti, Madolenihmw, Uh)		Pohnpei
5	6	Sun.			Technical Studies		Pohnpei
6	7	Mon.			Site survey, Collection of Materials		Pohnpei
7	Dec. 8	Tue.	10:00 Tokyo ⇒ 15:35 Guam Courtesy Call on the Consulate General of Japan (GUAM)	(Guam)	Site survey, Collection of Materials		Pohnpei
8	9	Wed.	08:10 Guam ⇒ 12:35 Pohnpei Courtesy Call on the National Government (DNR) /State Government (MRD of DCRS) Meeting with MRD, Team Discussion	Pohnpei	Site survey  (joint to the team leader and officials)  Meeting with MRD		Pohnpei
9	10	Thu.	Site Survey, Team Discussion	Pohnpei	Same as Officials		Pohnpei
10	11	Fri.	Discussion with MRD, Signing of Minutes of Discussion	Pohnpei	-ditto-		Pohnpei
11	12	Sat.	Site Survey	Pohnpei	-ditto-		Pohnpei
12	13	Sun.	13:10 Pohnpei ⇒ 18:15 Majuro	(Majuro)	-ditto-		

## List of Persons Concerned

### Department of External Affairs

Mr. Resio S. Moses	: Secretary
Mr. J. Ranglmar-Subolmar	: Assistant Secretary
Mr. Rolin Robert	: Deputy Assistant Secretary
Mr. Carl Delfin Apis	: Foreign Service Officer
Mr. Deem S. Lippwe	: Deputy Assistant Secretary

### Department of Resources Development

Ms. Lucille D. Apis	: Conservation & Management Specialist
---------------------	----------------------------------------

### Pohnpei State Government

Mr. Johnny P David	: Governor
--------------------	------------

### Governor's Office, Pohnpei State Government

Mr. Nicolson Solomon	: Assistant to Governor, Office of Budget Planning & Statistics
Dr. Dan E Perin	: Advisor, -Ditto-

### Dept. of Conservation & Resources Surveillance

Mr. Bumio T. Silbanuz	: Director, DCR&S
Mr. Tashiro Ludwig	: Chief, Marine Resources

### Economic Development Authority (EDA)

Ms. Dolores N. Clavio	: Comptroller (Finance)
-----------------------	-------------------------

### National Fisheries Corporation (NFC)

Mr. Christer S. Friberg	: General manager, Micro. Yap/Chuuk Fresh Tuna Inc.
-------------------------	--------------------------------------------------------

### Consulate-General of Japan in Guam

Mr. Mitsuo Watanabe	: Consul General
---------------------	------------------

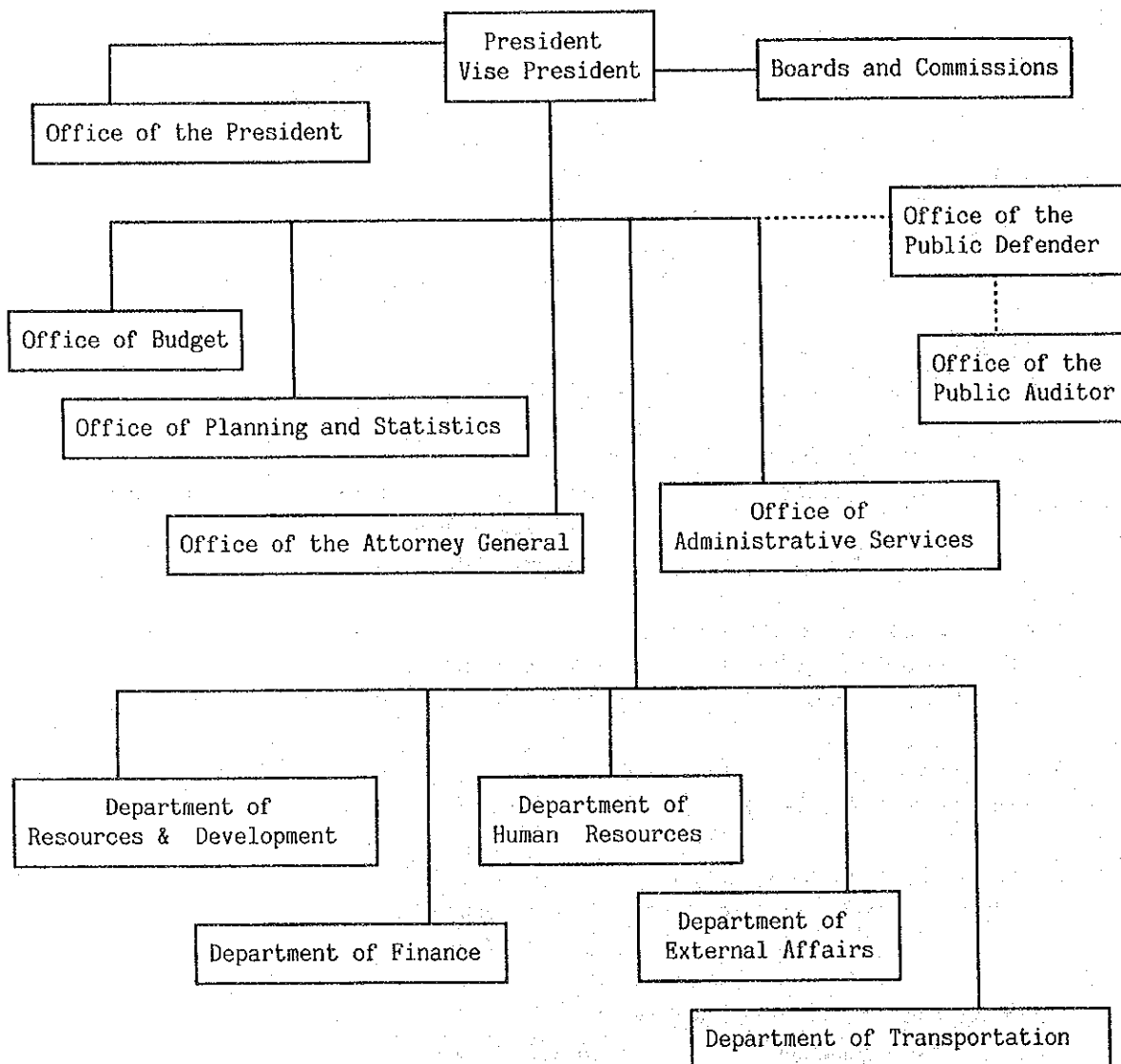
### JOCV, FSM Office

Mr. Kyo Yoshida	: Director
Mr. Yasuo Ohno	: Coordinator

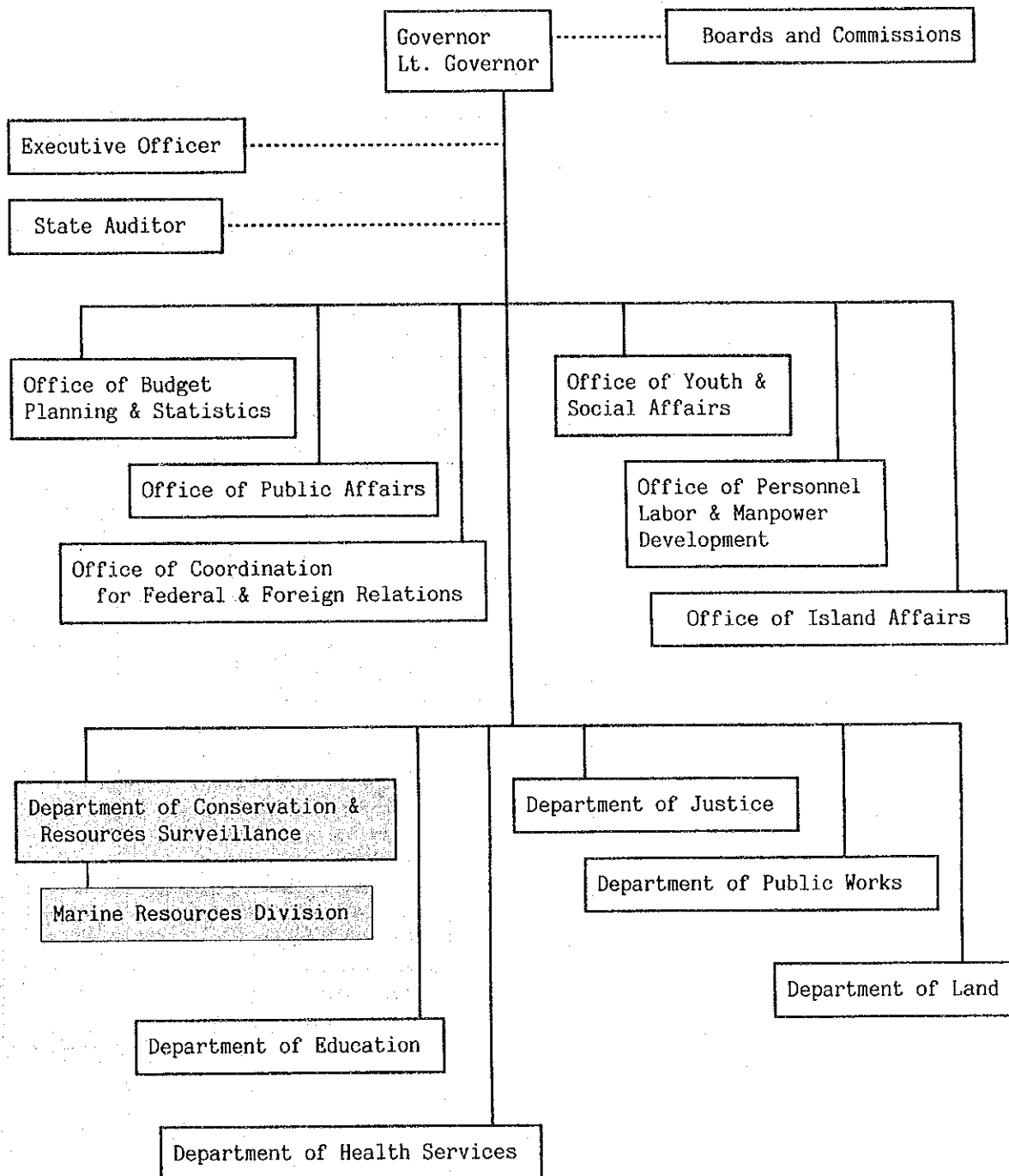
### Agent in FSM for 4 Japan Fisheries Associations

Mr. Yuzo Akinaga	: Representative
------------------	------------------

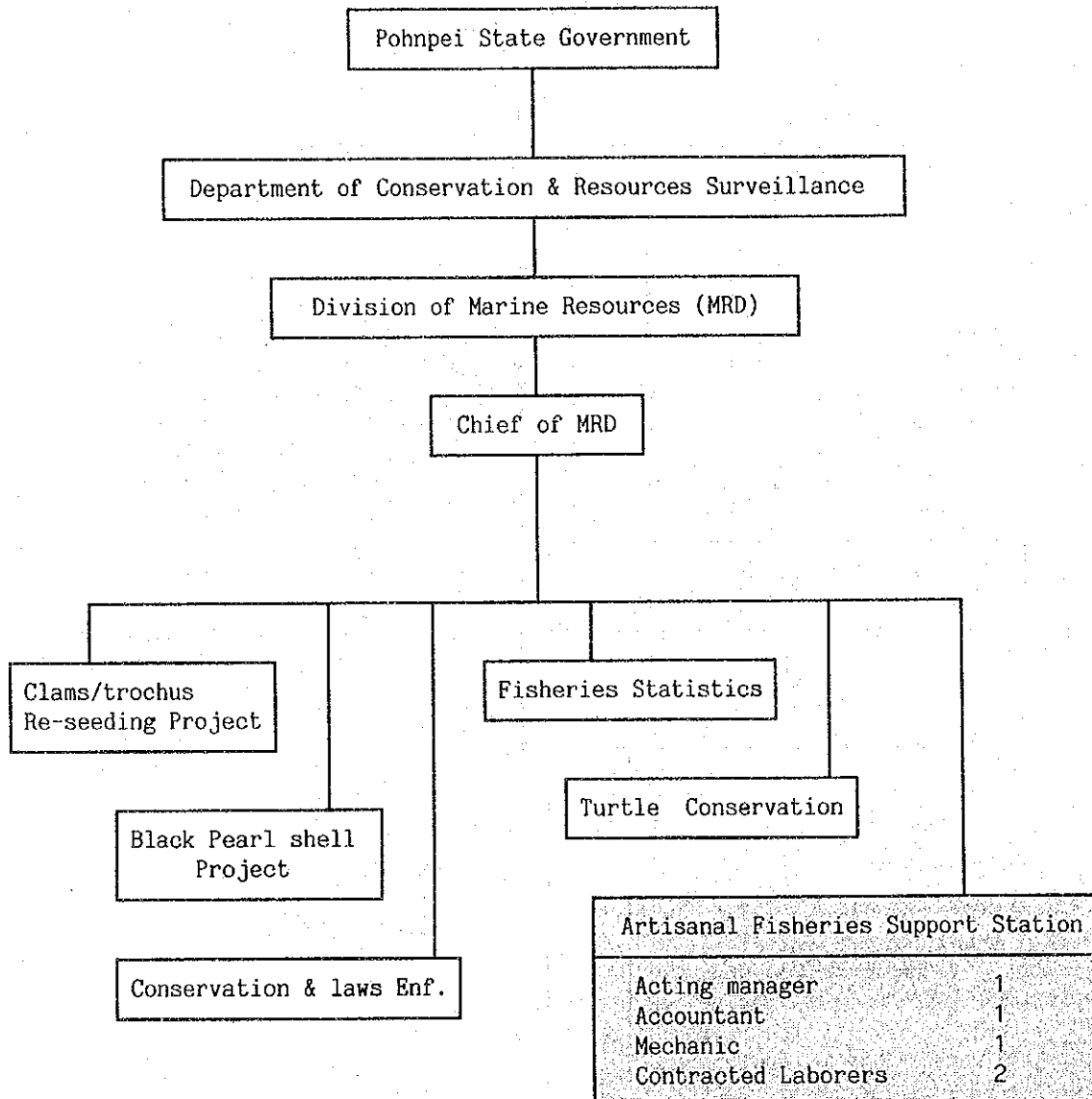
ORGANIZATION CHART  
OF  
THE FMS GOVERNMENT



ORGANIZATION CHART  
OF  
POHNPEI STATE GOVERNMENT



ORGANIZATION CHART  
OF  
Department of  
Conservation & Resources Surveillance



Minutes of Discussions





MINUTES OF DISCUSSIONS  
BASIC DESIGN STUDY  
ON  
THE POHNPEI ARTISANAL FISHERIES  
SUPPORT STATION PROJECT  
IN  
THE FEDERATED STATES OF MICRONESIA

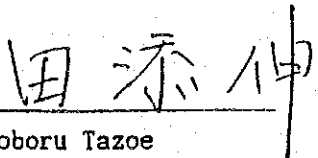
In response to a request from the Government of the Federated States of Micronesia, the Government of Japan decided to conduct a Basic Design Study on the Pohnpei Artisanal Fisheries Support Station Project (hereafter referred to as "the Project"), and entrusted the study to the Japan International Cooperation Agency (JICA).

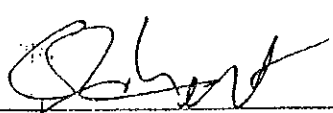
JICA sent to Federated States of Micronesia (FSM) a study team, which is headed by Mr. Noboru Tazoe, Chief Fisheries Officer, Office of the Overseas Fisheries Cooperation, Fisheries Agency, and is scheduled to stay in the country from December 2 to December 13, 1992.

The team held discussions with the officials concerned of the Pohnpei State Government and National Government of FSM and conducted a field survey at the study area.

In the course of discussions and field survey, both parties have confirmed the main items described on the attached sheets. The team will proceed to further works and prepare the Basic Design Study report.

Pohnpei, December 11 1992.

  
Mr. Noboru Tazoe  
Leader  
Basic Design Study Team  
JICA

  
Mr. Lorin Robert  
Deputy Assistant Secretary  
Department of External Affairs  
FSM National Government

## ATTACHMENT

### 1. Objective

The Objective of the Project is to promote small-scale fisheries by providing necessary facilities and equipment for improving living conditions.

### 2. Project Sites

The Project site is Kolonia, Pohnpei proper.

### 3. Executing Agency

Pohnpei State Government

Division of Marine Resources,

Department of Conservation, Resource and Surveillance

### 4. Items requested by the Government of FSM

After discussions with the Basic Design Study Team, the following items were finally requested by the Government of FSM, as shown in "Annex II"

However, the final components of the Project will be decided after further studies.

### 5. Japan's Grant Aid system

(1) The Government of FSM has understood the system of Japan's Grant Aid explained by the Team.

(2) The Government of FSM will take necessary measures, described in "Annex III" for smooth implementation of the Project, on condition that the Grant Aid Assistance by the Government of Japan is extended to the Project.

### 6. Schedule of the Study

Based on the Minutes of Discussions and technical examination of the study results, JICA will complete the final report and send it to the Government of FSM by the end of March 1993.

### 7. Particular items discussed and requested to the Government of Micronesia by the Team

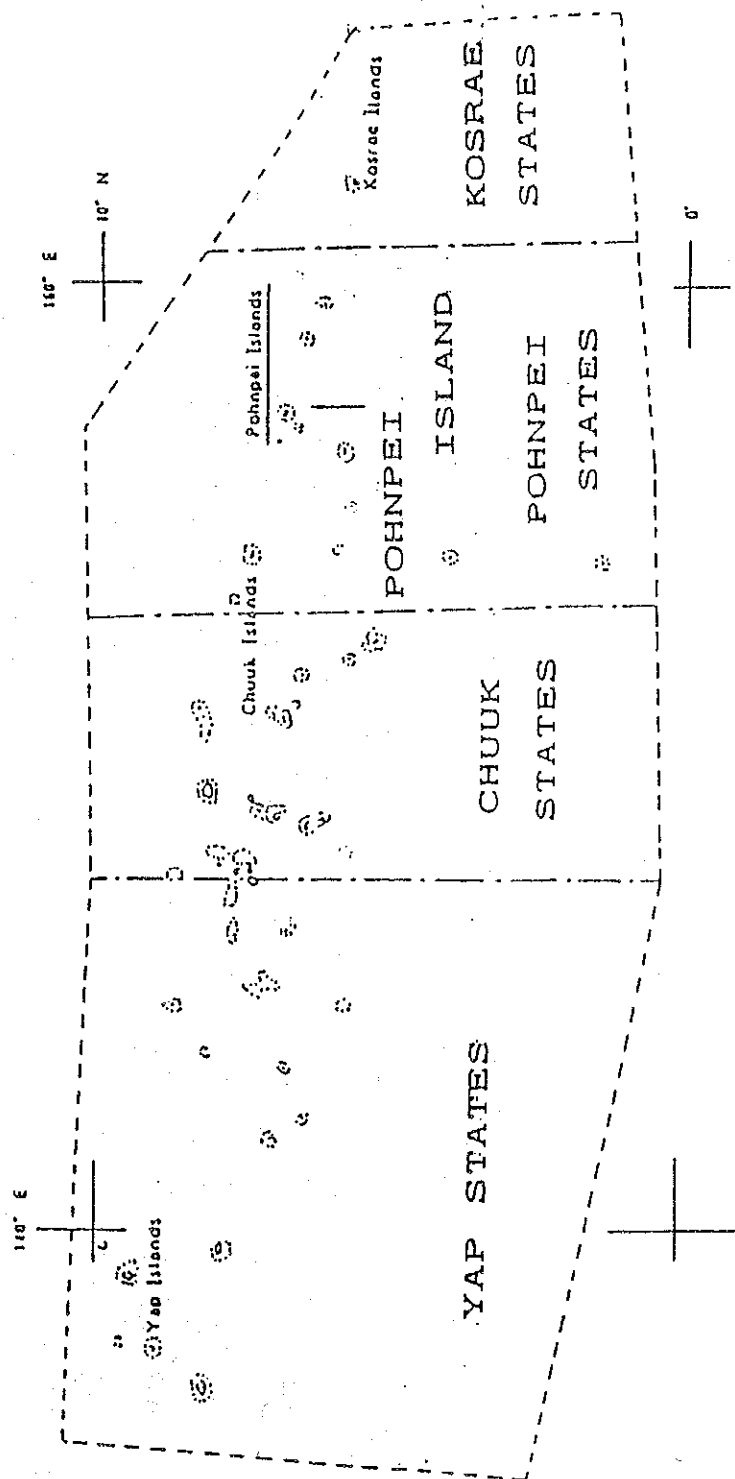
(1) To ensure the operation budget and staffing required for the Project.

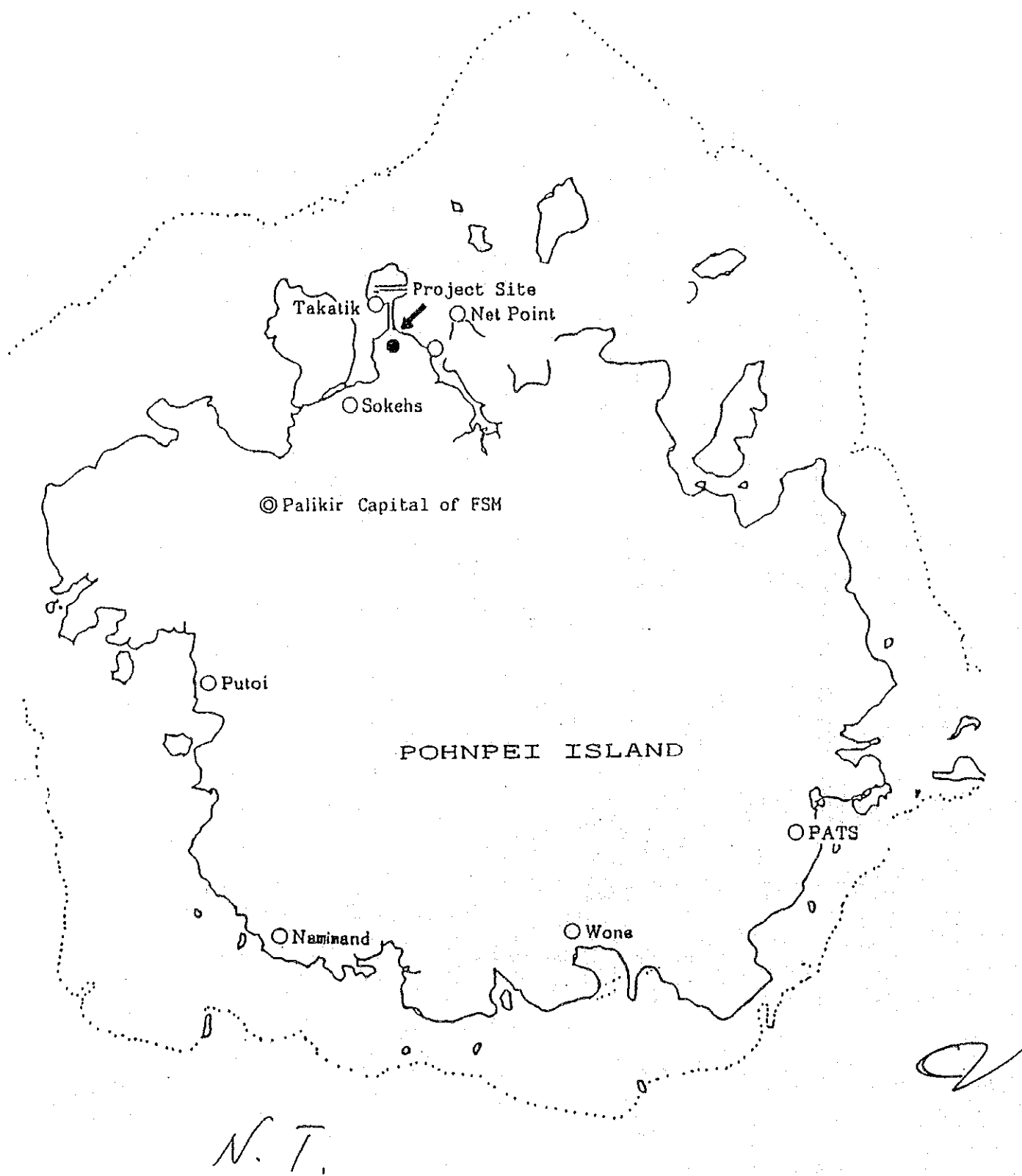
(2) To inform the Government of Japan the reclamation plan and the completion date required for the Project implementation.

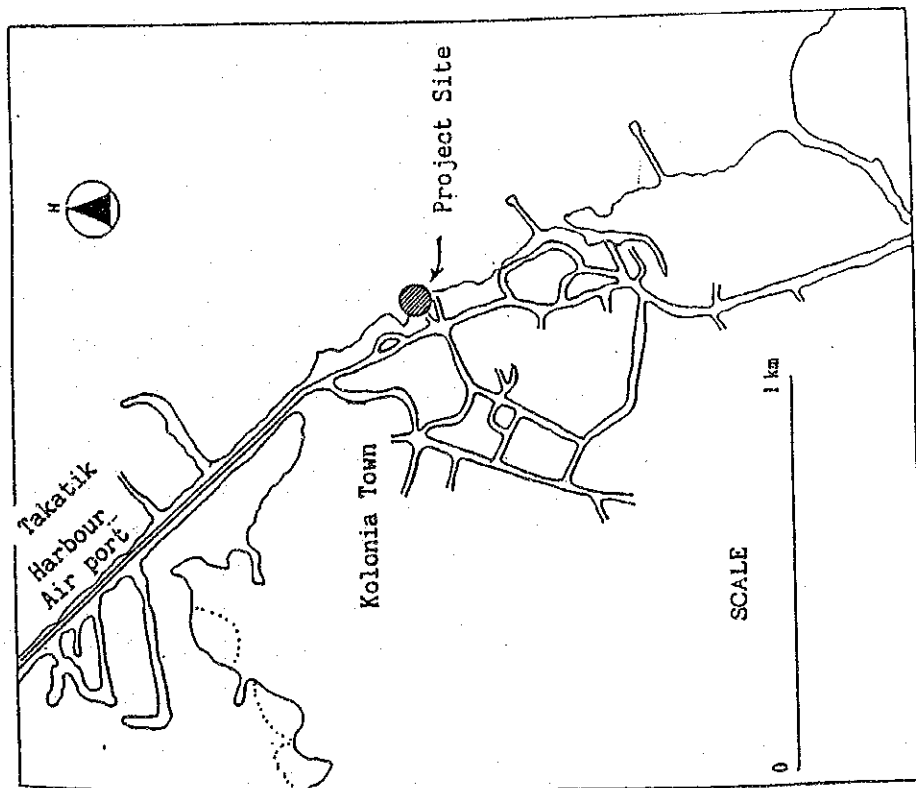
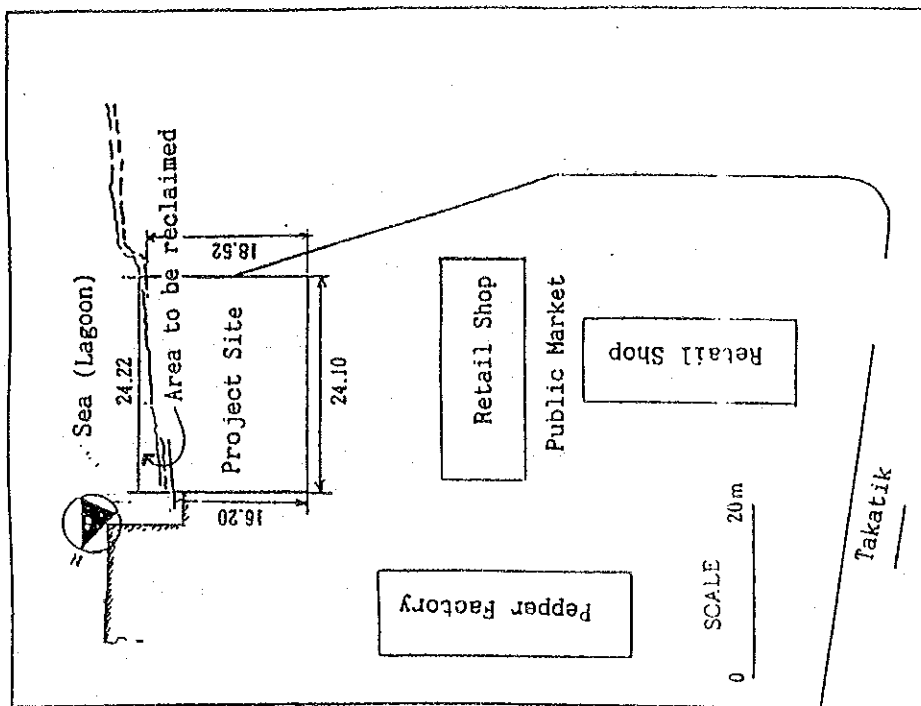
N. T.

Q

FEDERATED STATES OF MICRONESIA







N.T.

27

## Annex II

Items requested by the Government of FSM

- (1) Prefabricated barrack
- (2) Ice making plant (with Emergency generator)
- (3) Water catchment tank
- (4) Ice cooler box
- (5) Pick-up truck
- (6) Insulated Room (without Refrigeration system)

N.T.

Q

### Annex III

Necessary measures to be taken by the Government of FSM in case Japan's Grant Aid is executed.

1. To secure the sites for the Project.
2. To clear, level and reclaim the sites prior to commencement of the Project.
3. To undertake incidental outdoor works such as fencing, gates around the Project site.
4. To construct the access road to the sites prior to commencement of the Project.
5. To provide facilities for distribution of electricity, water supply, telephone, drainage, sewage and other incidental facilities to the Project site.
6. To bear commissions to the Japanese foreign exchange bank for the banking services based upon the Banking Arrangement. (B/A)
7. To exempt taxes and to take necessary measures for custom clearance of the materials and equipment brought for the Project at the port of disembarkation.
8. To accord Japanese Nationals whose services may be required in connection with the supply of products and the services under the verified contract such facilities as may be necessary for their entry into the Federated States of Micronesia and stay therein for the performance of their work.
9. To maintain and use properly, and effectively that the facilities construction and equipment purchased under the Grant.
10. To bear all the expenses other than those to be borne by the Grant, necessary for the construction of the facilities as well as for the transportation and the installation of the equipment.





PHOTOGRAPHS





① Koronia, Pohnpei (Public Market)

Proposed Site for Artisanal Fisheries Support Station.

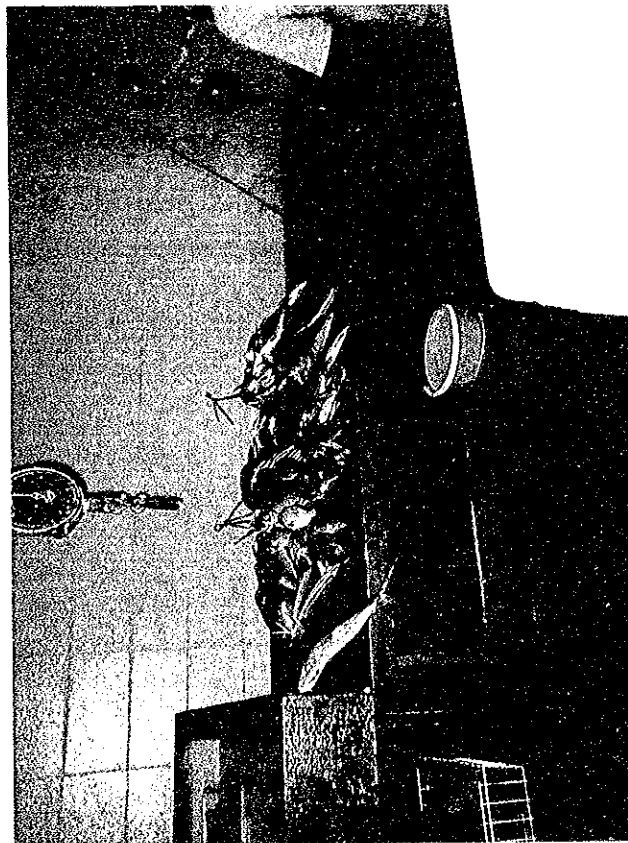
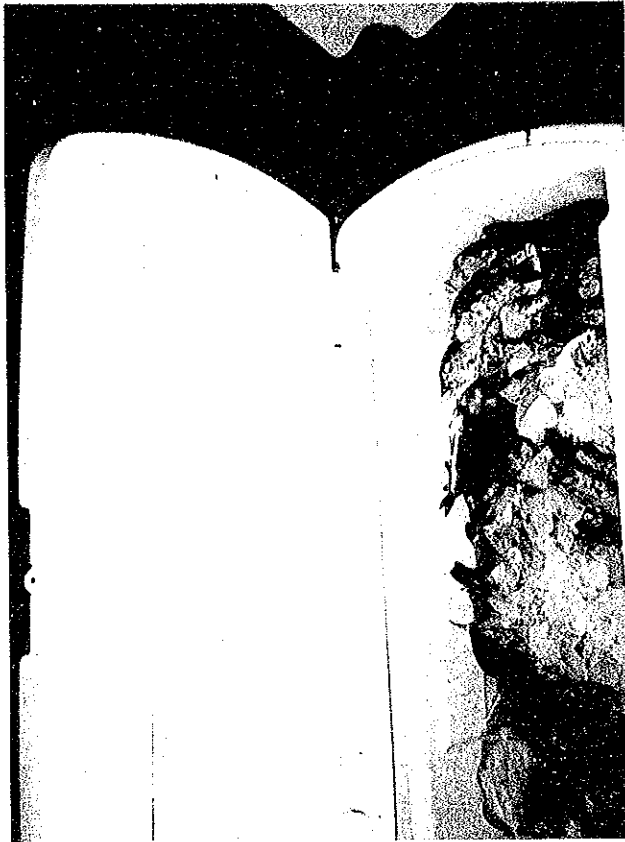




② Koronia, Pohnpei (Public Market)

Proposed Site for Artisanal Fisheries Support Station.



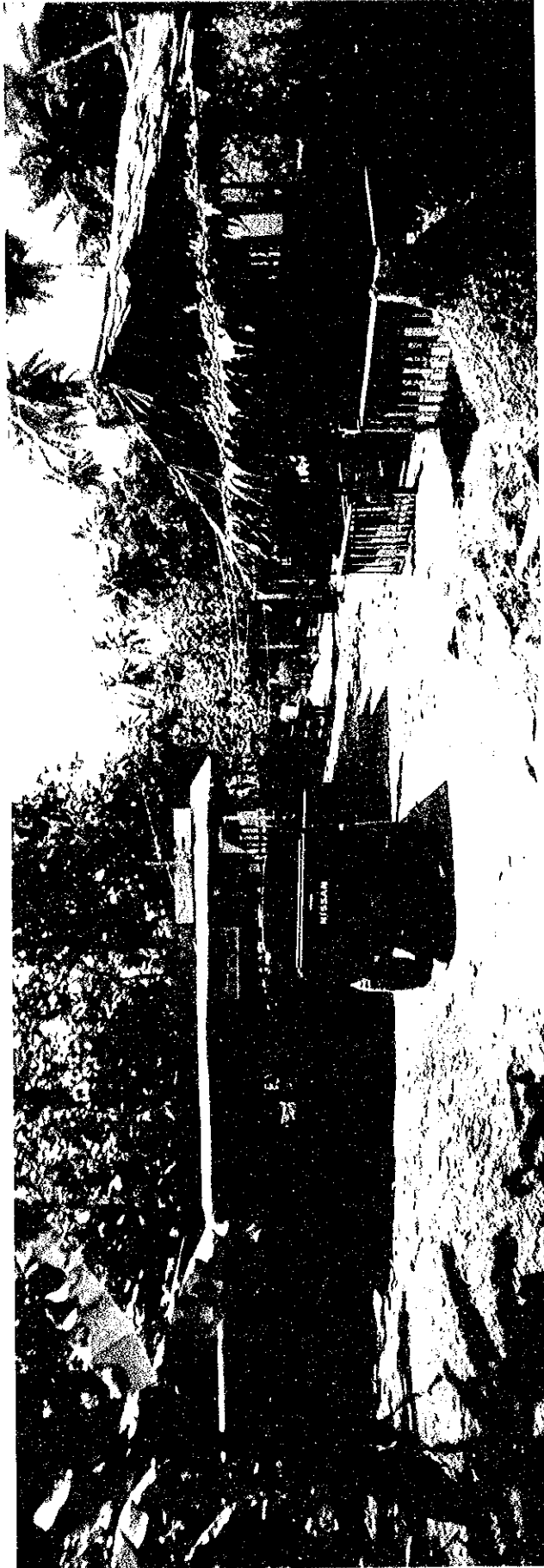


③ Koronia, Pohnpei (Public Market)

Fish retail shop in Koronia







④ Kitti, Pohnpei

Fish retail shop in Kitti

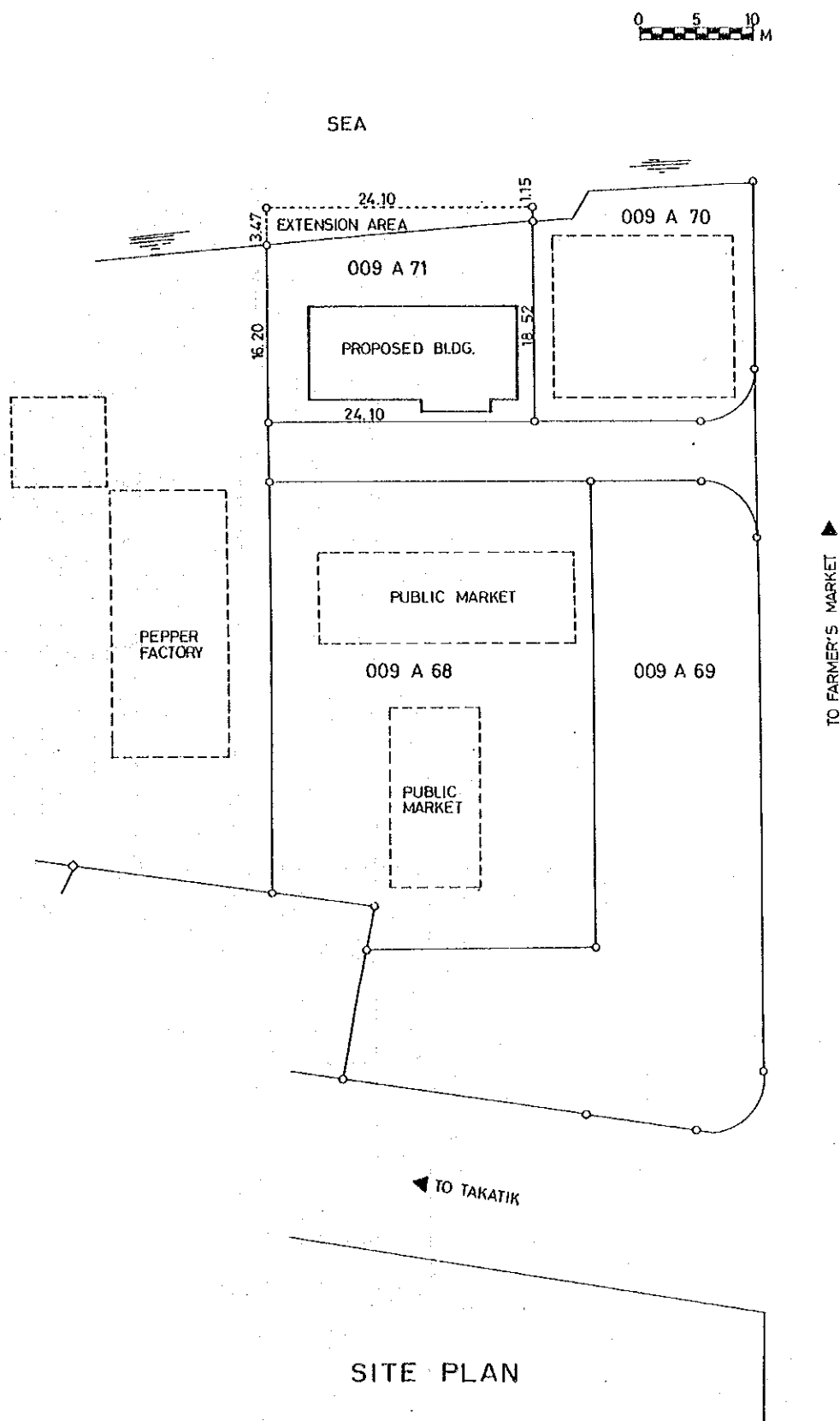


## PREFABRICATED BARRACKS PLAN

- A. Site Plan
- B. 1st Floor Plan
- C. 2nd Floor Plan
- D. Elevation (South, West), Section

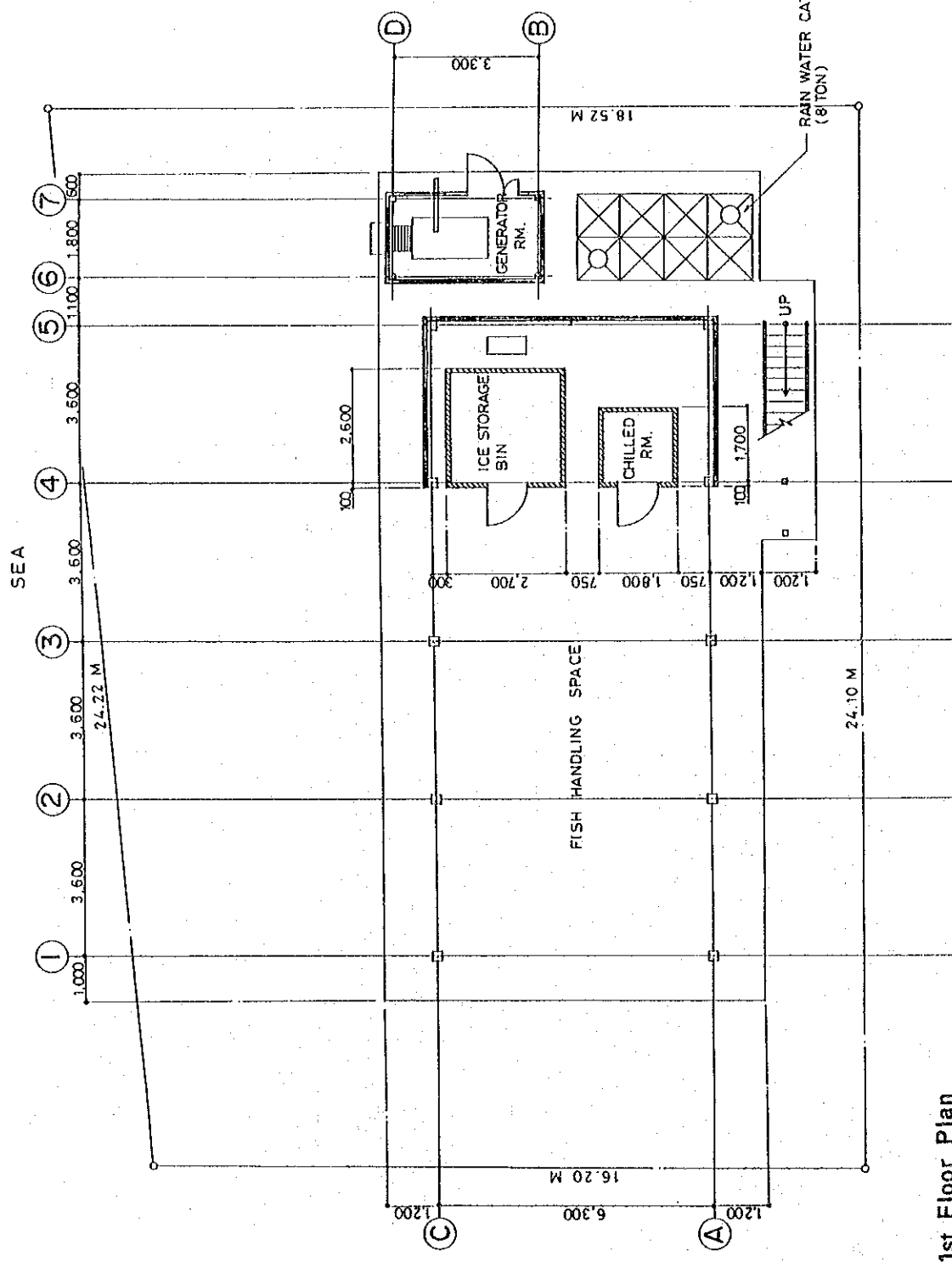


# A. Site Plan

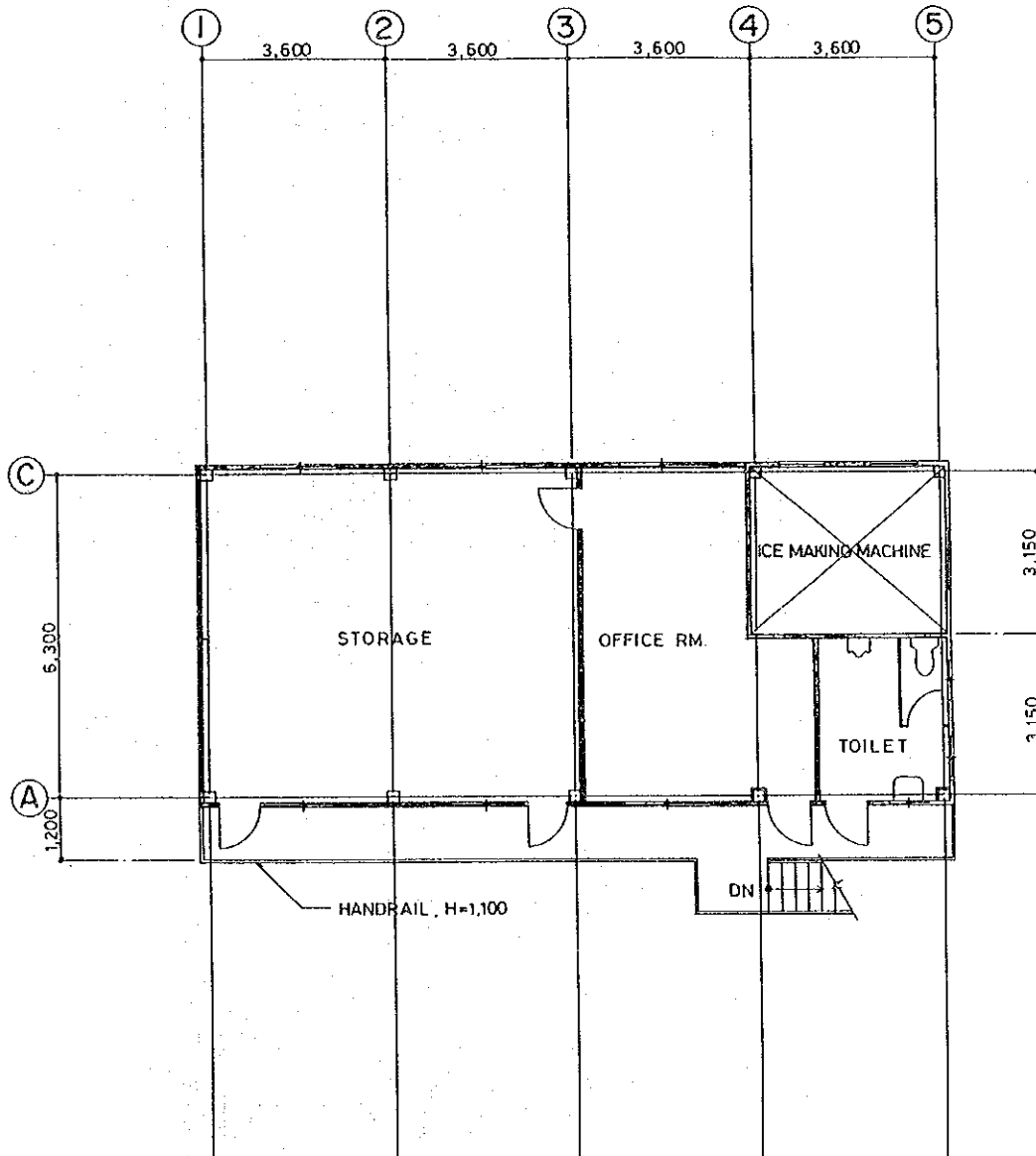


SITE PLAN

И — ② — В



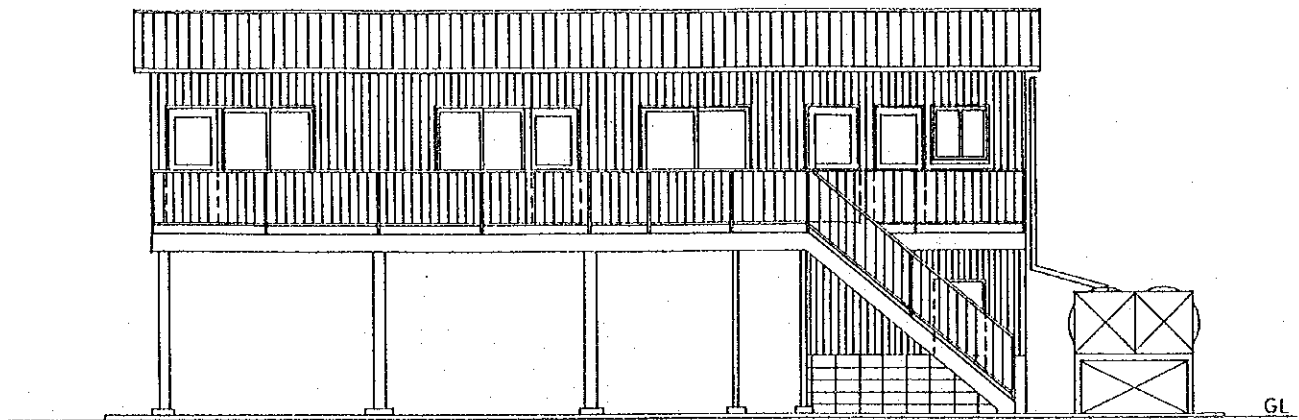
C. 2nd Floor Plan



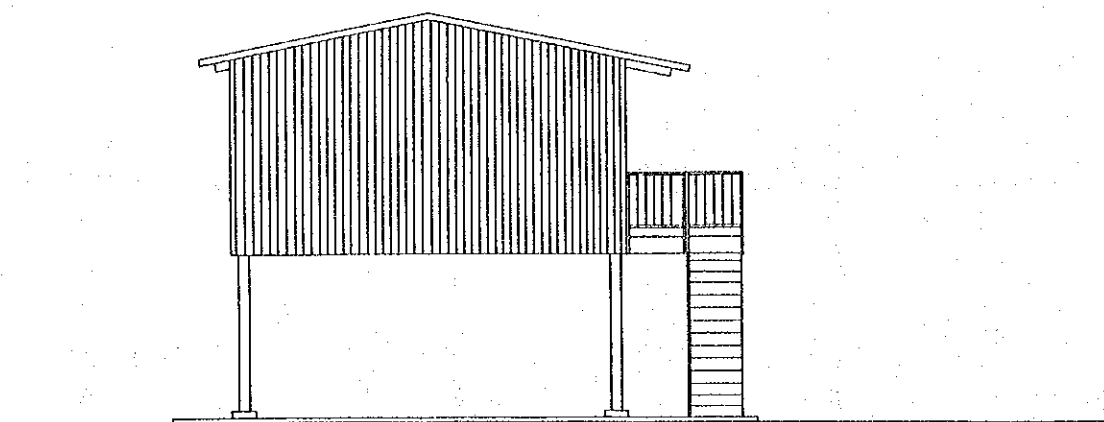
2nd Floor Plan

D. Elevation (South, West), Section

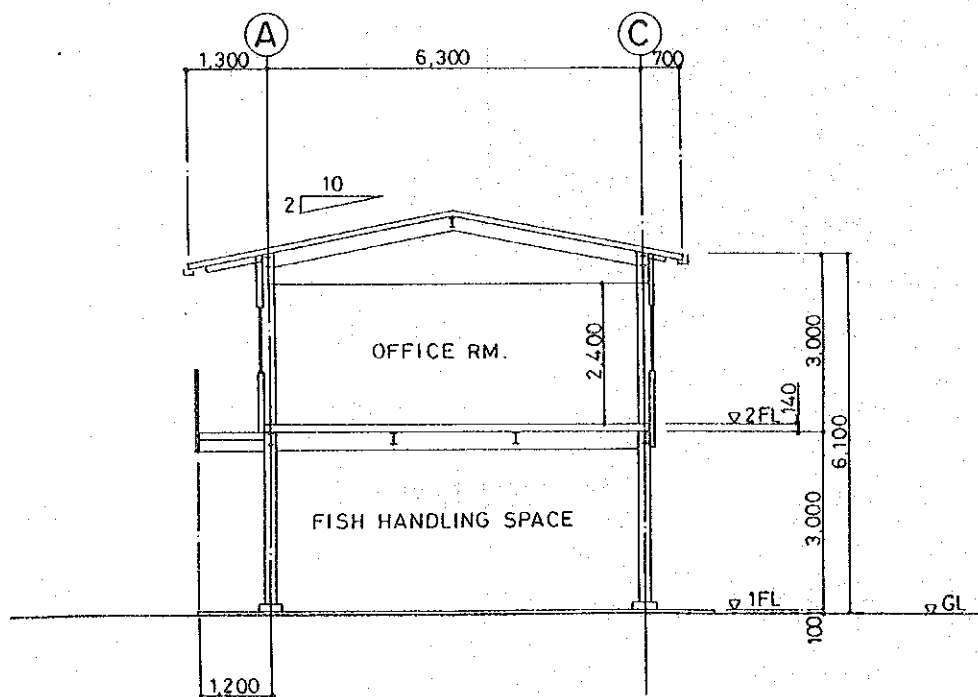
II -- ② -- D



WEST ELEVATION



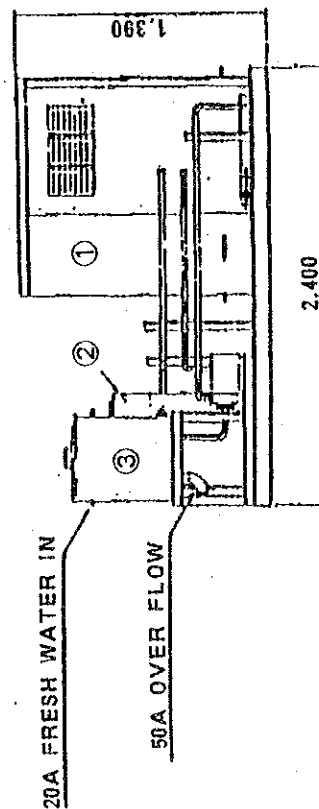
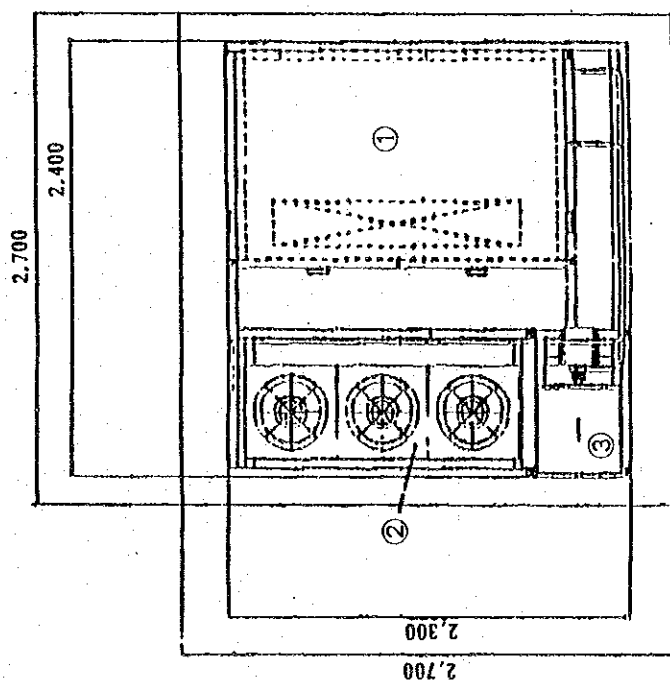
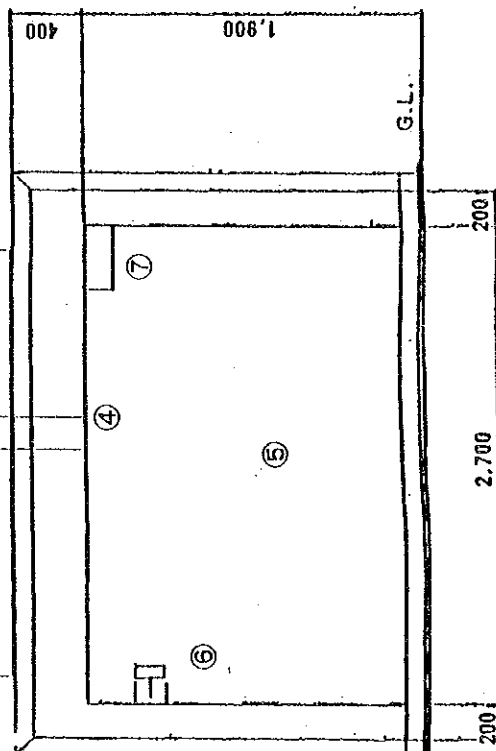
SOUTH ELEVATION



SECTION  
A-21



## U - ③







JICA

1