REPUBLIC OF INDONESIA

REPORT
ON
FISHERY DEVELOPMENT PROJECT

NOVEMBER, 1970

OVERSEAS TECHNICAL COOPERATION AGENCY
GOVERNMENT OF JAPAN

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Preface

The Government of Japan, in response to the request of the Government of the Republic of Indonesia, decided to render assistance in the survey for the Fishery Development Project for Indonesia and entrusted the Overseas Technical Cooperation Agency with the implementation of the survey.

The Overseas Technical Cooperation Agency on its part organized a survey team comprising eight members, headed by Mr. Shigeru Jimbo, and dispatched the team to Indonesia for the period from July 25 to September 10, 1970.

The survey was made on the conditions of locations and the state of existing port facilities in four areas, Kendari (Celebes Island), Benoa (Bali Island), Kupang (Timor Island) and Sabang (Sumatra Island).

After returning to Japan, the survey team reviewed the results of the survey on the basis of various data collected during the survey and prepared a report for presentation to the Government of the Republic of Indonesia.

It is hoped that the report will be helpful for the development of fishing industry in Indonesia and will contribute to the promotion of friendly relations between the Republic of Indonesia and Japan.

Finally, I express my sincere gratitude and appreciation to the Government of the Republic of Indonesia and other organizations for their unlimited support and cooperation extended to the team during the survey.

Keiichi Tatsuke

Director General

Overseas Technical Cooperation Agency

Contents

SURVEY FOR THE FISHERY DEVELOPMENT PROJECT

THE REPUBLIC OF INDONESIA

INTRODUCTION

(1) Background

This survey on the feasibility of the Fishery Development Project in the Republic of Indonesia was conducted by the survey team sent by the Japanese Government upon request of the Government of the Republic of Indonesia.

(2) Survey period and organization of survey team

(a) Survey period

48 days from July 25 to September 10, 1970

(b) Members of survey team

Shigeru Jimbo :	Chif of the Team Adviser for Fishery Agency
Masaaki Arai :	Fishing Deputy Chief of Production Division, Fishery Agency
Shunichi Hozumi :	Karketing Deputy Chief of Production Division, Fishery Agency
Osamu Sakeda :	Fishery Facilities Adviser for Fishery Agency
Yoshio Imai :	Operation and Management Adviser for Fishery Agency
Hiroshi Yokokura :	Fishery Economy Chief of Fishery Section, 2nd Finacing Division, Agriculture Forestry and Fisheries Finance Corporation

Toshihiro Kojima :	Liaison Official, Second Southeast Asian Affairs Division, Asian Affairs Bureau, Ministry of Foreign Affairs
Shigeo Iwakiri :	Chief Adviser Indonesian Fishery Technical Cooperation Project

(3) Outline of survey

The survey team held discussions with officials of the Directorate General Fisheries of the Indonesian Government on the details of the Fishery Development Project mapped out by the same directorate, the feasibility of introducing fishery techniques from foreign countries and the financial situation in the country and at the same time, conducted a field survey on the conditions of location and the state of existing port facilities in four proposes sites for the construction of fishing operating bases - Kendari (Celebes Island), Benoa (Bali Island), Kupang (Timor Island) and Sabang (Sumatra Island).

1. Conclusions

The conclusions reached by the survey team on this tuna fishing development project is:

(1) That for the construction of fishing operating bases, Kendair (Celebes Island) and Kupang (Timor Island) are not considered appropriate as the site of the base in view of the state of existing port facilities and the conditions of location and that Sabang (Sumatra Island) and Benoa (Bali Island) are considered more appropriate and suitable for the construction of fishing operating bases even though there are some minor problems involved, fishing operating bases as the result of our survey (See Appendix 1).

(2) For the operating scale and the capacity of shore facilities, the availability of fishing grounds, experience in fishing operation and conditions of marine product market were taken into consideration. It is considered appropriate to provide tuna long-line fishing boats of 70 ton class made of steel and equipped with refrigeration units. The number of fishing boats required will be 20 and the shore facilities required will be two 900 ton capacity cold storage units in consideration of the requirement for refrigeration and operating efficiency.

If the project were carried out with the establishment of operating bases on the scale as mentioned above, and if appropriate measure were provided and fully implemented by the Indonesian Government on the items to be pointed out in the following recommendations, this tuna fishing development project is considered to be reasonable and justifiable.

2. Outline of Project Planning

It is considered advisable that the project be implemented in accordance with the following project planning.

(1) Target of Project

This project is expected to contribute greatly to the expansion of tuna long-line fishiery in Indonesia with an annual production of 6,000 tons in tuna in and after 1975, 5 years after the start of the project, earnings of $3.12 million in foreign currency and the realization of direct employment of more than 510 persons.

(2) Operating Body

Corporation with the investment of the Central Government

(3) Type of Project

(a) Tuna long-line fishing, refrigeration and cold storage and proudction and sales of frozen tuna.

(b) Project site

Sabang (Sumatra-WEH Island) and Benoa (Bali Island)

(c) Start of Project

1971

(d) Scope of Project

Fishing boat: 20 tuna long-line fishing boats, 700 tons class
(Capacity; 350 HP, 45 tons loading and 2 tons refrigeration capacity)
(See Appendix 2)

Refrigeration and cold storage facilities; Two facilities
(Capacity; Holding capacity of 900 tons, refrigeration - 5 tons, Ice-making - 5 tons
(See Appendix 2)

Housing; 40 units, total floor space - 4,880 m^2

Vehicles: 4 Jeeps
4 Trucks

(e) Facilities Construction Schedule

Construction of facilities including the procurement of fishing boats will be expanded gradually in the three year period following the start of the project in accordance with the progress in the training of crew members, as shown in the following table.

Facilities Construction Schedule by Year

	1971	1972	1973	Total
Fishing boats (each)	3	6	11	20
Refrigeration, Cold Storage facilities (Unit)	1		1	2
Housing (Unit)	13	7	20	40
Vehicles (Unit)	4		4	8

(f) Operation Plans

Under the project each operating base is to be provided with refrigeration and cold storage facilities and 10 fishing boats. In operation the two bases are to be utilized strategecally depending on the formation of fishing grounds.

Tuna long-line fishing operation is to be carried out in the fishing grounds in the eastern zone of the Indian Sea (Off the coast of Sunda Island Group). Each fishing boat, with a crew of 23, is to be at sea for 40 days (25 days for operation) per trip and is to aim at realizing a catch of 40 tons on the average. Each boat is to make a total of 7.5 trips a year.

Refrigeration and cold storage facilities are to be used mainly for the storage of catches. All catches are to be shipped out within three months after unloading at the base (Turnover of storage is four)

(4) Financial Plan

The project requires an investment totaling $6,635,000 in three years, of which $5,356,000 is for equipment fund required mainly for fishing boat and ice making and refrigeration facilities and $1,279,000 is required for operating fund including the expenses for foreign specialists.

The requirement is to be filled by the yen credit amounting to $5,500,000, government investment amounting to 500 million RP and the loan from the National Bank amounting to 216 million RP.

a. Required Investment (1971 - 1974)

		IN 1,000 RUPIAH			IN US DOLLARS		
		Local Currency	Foreign Currency	Total	Local Currency	Foreign Currency	Total
Facility Expenses	Fishing boat		1,470,000	1,470,000		3,888,890	3,888,890
	Fishing Implements		66,000	66,000		174,603	174,603
	Refrigeration & Cold storage fac.	63,600	256,000	319,600	168,254	677,249	845,503
	Vehicles		12,880	12,880		34,074	34,074
	Buoys		2,000	2,000		5,291	5,291
	Wireless telephone		4,000	4,000		10,582	10,582
	Housing	146,880		146,880	388,571		388,571
	Furnishings & Furnitures	3,000		3,000	7,937		7,937
	Sub total	213,480	1,810,880	2,024,360	564,762	4,790,689	5,355,451
Service charges	Consultant		18,000	18,000		47,619	47,619
	Advisor		81,000	81,000		214,286	214,286
	Instructor-crew		168,480	168,480		445,714	445,714
	Sub total		267,480	267,480		707,619	707,619
Operating fund		216,000		216,000	571,429		571,429
Total		429,480	2,078,360	2,507,840	1,136,191	5,498,308	6,634,499

b. Fund Requirement by Year (1971 - 1974)

		1st Year	2nd Year	3rd Year	4th Year	Total
Foreign Currency US $	Material cost	975,768	1,219,048	2,595,873		4,790,689
	Labor cost	150,714	220,000	220,000	116,905	707,619
	Total	1,126,482	1,439,048	2,815,873	116,905	5,498,308
Local Currency 1000 RP	Material and labor cost	73,620	33,120	106,740		213,480
	Reserve fund against losses	145,371	85,731	29,451		260,553
	Working capital	10,000	64,000	142,000		216,000
	Total	228,991	182,851	278,191		690,033

c. Sources of Local Currency (1971 - 1973)

	1st Year	2nd Year	3rd Year	Total
				100 RP
Government investment	300,000	100,000	100,000	500,000
Loans	10,000	64,000	142,000	216,000
Total	310,000	164,000	242,000	716,000

Notes: 1. Items to be procured by Yen Credit are fishing boats, fishing implements, ice-making and refrigeration facilities (Buildings and land excluded), vehicles, buoys, and expenses for foreign specialists.

2. Items to be covered by government investment are equipment funds for construction of housing, etc. (2.14 million RP) and reserve fund against losses (2.61 million RP).

3. Government investment was estimated at 300 million RP for 1971, 100 million RP for 1972 and 100 million RP for 1973.

4. Operating fund to cover a three month period is to be loaned by the National Bank, amounting to 10 million RP for the 1st year, 64 million RP for the 2nd year and 14 million RP for the third year.

5. Conversion rate used was US$1.00 = ¥360 = 378 RP.

(5) Forecast of Business Earnings

Since the efficiency of fishing operation is expected to increase gradually after the inauguration of operation as crews accumulate experiences and become familiar with the operation and the catch is also expected to reach the average level (Index of 1.0) after 4 years, the estimated level of catch was set at 0.7 for the first year, 0.8 for the 2nd year and 0.9 for the 3rd year.

Foreign currency amounting to $5,500,000 is to be subloaned by the National Bank at the rate of 12% interest and on the basis of three year deferred payment. Of the local currency amounting to 716 million RP, 500 million RP is to be invested by the government and the remainder is to be furnished by the National Bank at an annual interest rate of 12%.

In view of the fact that the number of fishing boats will be increased every year, the business is expected to be in the red for four years from the 1st year and turn to the black from the 5th year. Losses brought forward are expected to be recovered in the 8th year.

Forecast of Earnings and Expenses (1971 - 1976)

(Unit: 1,000 RP)

	1st Year	2nd Year	3rd Year	4th Year	5th Year	6th Year
Total earnings	127,405	400,415	922,169	1,043,507	1,146,644	1,213,380
Total expenditures	309,856	574,522	1,145,152	1,047,687	1,041,263	1,031,213
Selling expenses	6,370	20,021	46,108	52,175	57,332	60,669
Fishing operation cost	155,602	356,602	727,055	682,199	691,196	695,993
Storage operation cost	18,637	20,408	40,747	40,747	40,747	40.747
Management	61,274	51,970	76,720	49,720	49,720	49,720
Expenses	67,973	125,521	254,522	222,846	202,268	184,084
Profit	182,451	174,107	222,983	4,180	105,381	182,167
(Depreciation)	37,080	88,376	193,532	193,532	193,532	193,532
(Profit before depreciation)	145,371	85,731	29,451	189,352	298,913	375,699

Note: For details of earnings and expenses, see Appendixes 3, 4, 5, 6, 7, 8 and 9.

(6) Repayment Schedule (Yen Credit Fund)

In view of the prevailing financial system of Indonesia, the actual repayment schedule by the operating body, the end user of the fund, will be as follows:

Period of deferment for principal: 3 Years
Period of repayment for principal: 7 Years
} 10 years in total

(Unit: 1,000 RP)

	1974	1975	1976	1977	1978	1979	1980
Repayment of Principal	150,000	250,000	350,000	350,000	350,000	350,000	278,360
Sources of repayment (= profit before depreciation)	189,352	298,913	375,699	400,569	423,867	445,571	449,234

3. Recommendations

For the further expansion of tuna long-line fisheries in Indonesia, the Survey Team strongly feels the need for the aid from the Indonesian Government for the improvement of related facilities as well as the acquisition of foreign technologies on the part of the fishing industry and therefore recommend the followings;

(1) For the operating body, it is necessary to establish a strong corporation with the government investment on the basis of a new concept, different from the existing organization. Also, for the smooth and effective implemention of the project, positive cooperation of government agencies will be required. For this purpose, it is advisable to establish a committee.

(2) As the project requires a vast amount of owned capital for the start of business and a considerable amount of losses is also expected until the project reaches the stage of full operation, a government investment amounting to 500 million RP will be required. Besides, it is necessary to secure 216 million RP in three years following the start of operation as an operating fund.

(3) In order to realize the implementation of the project starting in 1971, it is necessary for the Indonesian Government to hire experts within fiscal 1970 for immediate start of activities for the promotion

of establishment of project organizations, preparation of specifications for facilities to be constructed and placement of orders for required equipment and facilities (See Appendix 10).

(4) Until the project gets on the right track and becomes fully operative it is necessary to invite three foreign experts in the fields of operation, management, fishing operation and refrigeration and cold storage and acquire techniques on the tuna fishing operation and management in a short period of time under the guidance of these experts.

(5) As the training of crew is an important factor in determining the success or failure of the project, it is necessary to invite 18 foreign instructor-crew members for the instruction in the operation for time being. Since the requirement for crew members after 1974 is expected to reach 460 or more, it is necessary for the Indonesian Government to work out a separate plan for the training of crew and implement the plan as early as possible so that the foreign instructor-crew members may be replaced by local fishermen within 3 years.

Sketch of Project Area

Appendices

1. Conditions of Location and State of Port Facilities
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Appendix 1 Conditions of Location and State of Port Facilities

A. Outline of Conditions of Location

1. General Description

	Kendari (Celebes Island)	Benoa (Bali Island)	Kupang (Timor Island)	Sabang (Sumatra-WEH Island)
(1) Location	Southeastern Celebes 4° - 00'S 122° - 30'E	Southern Coast of Bali Island 8° - 50'S 115° - 10'E	Southwestern Timor Island 10° - 15'S 123° - 30'E	WEH Island at the Tip of of North Sumatra 5° - 50'N 90° - 20'E
(2) Province	South-West Sulawesi	Bali	North-east Timor	Atjeh
(3) Population	Province - 995,000 City area - 50,000	Province - 2,500,000 Batang County - 310,000	Province - 2,270,000 City area - 60,000	WEH Island - 14,000
(4) Main Industries	Agriculture, Mining	Tourist Industry, Agriculture	Stock raising, Agriculture	Agriculture, Commerce
(5) Sphere of economical activities	Makassar, Surabaya	Surabaya	Small Sunda Islands group	Sumatra (Atjeh, Medan), Singapore

	Kendari (Celebes Island)	Benoa (Bali Island)	Kupang (Timor Island)	Sabang (Sumatra-WEH Island)
(6) Transportation (Communication)	Transportation is not favorable	Transportation is most favorable	Transportation is not favorable	Trnasportation is not favorable
	Land - Roads are not complete	Land - Communication with Java by ferry boat.	Land - Roads are not complete	Land - Roads on Island are now being improved
	Sea - Mainly sail boats of less than 100 tons used	Sea - Mainly sail boats of less than 100 tons used	Sea - Mainly sail boats of less than 100 tons used	Sea - Ferry services available between Banda and Atjeh
	(Regular service of large cargo passenger boats available)	(Regular service of large cargo passenger boats available)	(Regular service of large cargo passenger boats available)	(Regular service of large cargo passenger boats available)
(7) Regional development	Development is lagging greatly	Development for tourist industry being progressed	Development is lagging greatly	Became a free port in 1970. Related development works being progressed

2. Project Related Conditions

	Kendari (Celebes Island)	Benoa (Bali Island)	Kupang (Timor Island)	Sabang (Sumatra-WEH Island)
(1) Object of Resources	Skipjack	Tuna	Tuna	Tuna
(2) Available fishing grounds	Main fishing grounds - Banda Sea	Main fishing grounds - 100 - 200 miles off the southern coast of Java and Small Sunda Island Group.	Main fishing grounds - 100 - 200 miles off the southern coast of Samll Sunda Island Group	Main fishing grounds - 100 - 200 miles off the shore west of the southern coast of Sumatra Island
	Quality of fishing grounds - Good depending on the season	Quality of fishing grounds - Good throughout the year	Quality of fishing grounds - Good throughout the year	Quality of fishing grounds - Good
	(Not known for Skipjack fishing)			(Rather too far)
(3) State of fishery (Province - 1969)	Main type of fishery - Coastal fishery	Main type of fishery - Coastal fishery	Main type of fishery - Coastal fishery	Main type of fishing - Coastal fishery
	Number of fishermen - 24,500	Number of fishermen - 16,000	Number of fishermen - 22,900	Number of fishermen - 55,000
	Number of fishing boats - 13,000	Number of fishing boats - 8,800	Number of fishing boats - 7,255	Number of fishing boats - 12,000
	Catch - 5,000 tons	Catch - 3,500 ton	Catch - 9,000 ton	Catch - 21,000 ton

	Kendari (Celebes Island)	Benoa (Bali Island)	Kupang (Timor Island)	Sabang (Sumatra-WEH Island)
	Fish catch per fisherman - 210 kg	Fish catch per fisherman - 210 kg	Fish catch per fisherman - 390 kg	Fish catch per fisherman - 380 kg
	Main type of catch (Anchovy milkfish, coralreef fish)	Main type of catch (Skipjack, tuna, mackerel)	Main type of catch (Anchovy coralreef fish, tuna)	Main type of catch (Yellow tail, Milkfish, mackeral)
(4) Fisheries education	One year course for Junior high school graduates	Fisheries school (Junior high school level), (Scheduled to be abolished in near future)	One year course for Junior high school graduates	None
(5) Demands for marine products	Salted dried fish shipped out	Salted dried fish shipped in	Over-supply of fresh fish (small quantity of salted dried fish shipped in)	Fresh fish shipped out.
(6) Marine products distribution and processing facilities	Market - No fish market other than general market	Market - Fish markets in fishing villages	Market - One fish market besides general market	Market - Fish markets in fishing villages

		Kendari (Celebes Island)	Benoa (Bali Island)	Kupang (Timor Island)	Sabang (Sumatra-WEH Island)
		Ice plant - one old plant in use	Processing plant - Tinning works One marine products tinning works in operation Ice plant - 40 ton/day Cold storage - 8 tons	Ice plant - one old plant in operation Daily capacity of 3.5 tons	
(7)	Prices of commodities	Foodstuff: Rice - 1 kg 30 RP Salt - " 30 Salted dried fish (Katakuchi) 1 kg 150 Tune (Kiwada), 1 kg — Daily necessities and sundry goods - Rather - high	Foodstuff: Rice - 1 kg 42 RP Salt - " 30 Salted dried fish (Katakuchi) 1 kg 110 Tuna (Kiwasa) 1 kg 100 Daily necessities and sundry goods - Rather Cheap	Foodstuff: Rice - 1 kg 50 RP Salt - " 30 Salted dried fish (Katakuchi) 1 kg 250 Tuna (Kiwada) 1 kg 140 Daily necessities and sundry goods - Rather high	Foodstuff: Rice - 1 kg 40 RP Salt - " 30 Salted dried fish (Katakuchi) 1 kg 30 Tuna (Kiwada) 1 kg 200 Daily necessities and sundry goods - Very cheap because of free port
(8)	Labor	Labor force: shortage of skilled laborers	Labor force: shortage of skilled laborers	Labor force: shortage of skilled laborers	Labor force: shortage of skilled laborers
		Wages: Skilled labor - 500 - 400 RP/day Laborer - 150 PR/day	Wages: 150 - 400 RP/day	Wages: 150 - 300 RP/day	Wages: 150 - 300 RP/day

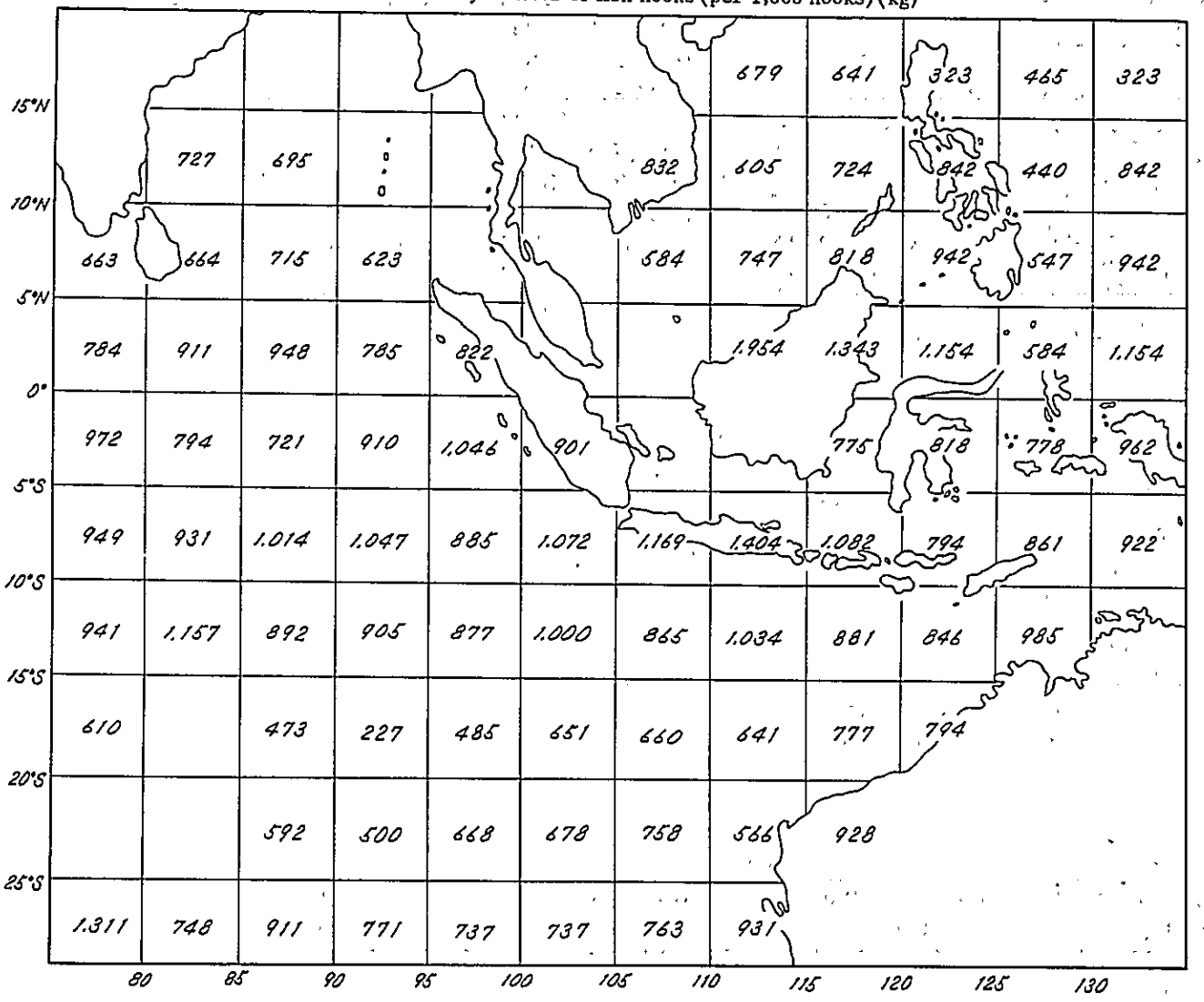
		Kendari (Celebes Island)	Benoa (Bali Island)	Kupang (Timor Island)	Sabang (Sumatra-WEH Island)
(9)	Welfare environments	Sanitation - poor Recreation facilities - None	Sanitation - Satisfactory Recreation facilities - Movie theaters (Tourist resort facilities available)	Sanitation - poor Recreation facilities - Movie theaters	Sanitation - Satisfactory Recreation facilities - Movie theaters (Improvement plans being worked out)
(10)	Cooperation of local government (organizations) for the project	Cooperation setup - Fisheries committee was established within the provincial government Budget - No appropriations made Free use of land space is being considered.			Cooperation setup - Establishment of a committee is being considered by Free Port Authorities and the municipal government of Sabang Budget - Appropriation of some amount is being studied

a. Frequency of operations by Japanese tuna ling-line boats
(Number of operations)

Map of available fishing grounds

Notes: 1. During a period of Jan. - Dec. 1968.
2. Figures in parentheses show operations during a period of Jan. - Dec. 1969.

b. Estimated catch by number of fish hooks (per 1,000 hooks) (kg)



Note: For the period of Jan. - Dec. 1968

B. State of Port Facilities

	Kendari (Celebes Island)	Benoa (Bali Island)	Kupang (Timor Island)	Sabang (Sumatra-WEH Island)
1. Principal port Facilities				
(1) Geography	A sack-shape natural harbor, with narrow entrance and the harbor is less vulnerable to winds and tide.	A sack-shape national harbor. The wharf is on the tip of a 3 km long waterbreak. The entrance is narrow and the harbor is linked with open sea by a 4 km waterway. the harbor is vulnerable to winds and tide.	Because of open sea, the harbor is vulnearable to winds and tide.	Excellent Natural port and is less vulnerable to winds and tide.
(2) Port area	Sufficient port area. The bottom of the sea is composed of sandy silts, below which lies a coral reef.	The harbor has many reefs which appear at low water tide and therefore the width of available berth is only about 200 meters. The bottom of the sea is composed of sandy silts, below which lies a coral-reef.	Port area is vast and the sea bottom is composed of sandy silts.	Harbor is wide and the sea bottom is composed of sandy silts.

	Kendari (Celebes Island)	Benoa (Bali Island)	Kupang (Timor Island)	Sabang (Sumatra-WEH Island)
(3) Jettgs and Quays	There is a 60 m jettg. The sea around the jetty is 7.0 m deep and the jetty can accommodate.	There are one 30 m and two 22.5 m quays The sea is 6.0 deep and the piers can accommodate 6,00 ton class vessels (Achieved)	There is a 55 m jetty. The sea is 8.0 m deep and the jetty can accommodate 5,000 ton class vessels. (Achieved)	Available piers have a total length of 310 m. The sea is 7.5 m deep and the jettys can accommodate 8,000 ton class vessels. (Achieved)
2. Port operating facilities				
(1) Navigational aids	There are no night time navigational aids and the day time navigational aids are not satisfactory, either. Because of expansive reefs off the port and narrow waterways, entry to the port at night is not possible.	There are no nigh time navigational aids. However, the day time facilities are complete to some extent. Because of reefs which make the entrance waterway narrower, and also due to the length of waterway, entry at night is not possible.	Because of open sea, entrance to the port is no problem both in daytime and at night.	Navigational aids are complete for night time navigation and the entrance is no problem both in daytime and at night.

	Kendari (Celebes Island)	Benoa (Bali Island)	Kupang (Timor Island)	Sabang (Sumatra-WEH Island)
(2) Supply facilities				
a. Fuel Supply	No fuel tank.	HSD tnak - 927 ton Kerosene tank - 2,023 ton Gasoline tank - 1,793 ton For loading the ship, tank lorries may be used (300 m in distance)	HSD, Kerosene and gasoline tanks have a capacity of 1,210 tons respectively. Supply lines are complete and direct loading is possible.	HSD, Kerosene and gasoline tanks have a capacity of 1,500 tons respectively. Supply lines are complete and direct loading is possible.
b. Water Supply	Supplying capacity is not adequate. Quality of water is being investigated.	3 inch main and a 200 m^3 tank are available. Quality of water is satisfactory and the existing facilities are available.	3 inch mains are being laid. For the remainign 1,500 m, water pipes are not complete. A 250 m^3 water tank has been completed. Quality of water is being investigated.	Service pipes are provided for every 40 meters. Besides, a 1,000 m^3 water tank is also available. Quality of water is satisfactory and tests are conducted regularly.

		Kendari (Celebes Island)	Benoa (Bali Island)	Kupang (Timor Island)	Sabang (Sumatra-WEH Island)
(3)	Communication facilities	No coastal stations. Telephone communication via Makassar.	There is a coastal station (Only Morse code)	There is a coastal station (Only Morse code)	There is a coastal station (Only Morse code)
(4)	Maintenance facilities	Even minor repairs are not possible. There are no dock facilities and major repairs must depend on Suravaya or Makassar.	There is an auto repair shop in the city, where machining and weldings are performed. Minor repairs are possible in this shop. Dock facilities are available in Suravaya.	Even minor repairs are not possible. Dock facilities are available in Suravaya.	There is a large maintenance shop but it is not in satisfactory condition. Machine tools are complete to some extent, however. Minor repairs are possible. Dock facilities are available in Penang, Singapore and Djakarta.
(5)	Cargo handling facilities	No cargo handling equipment. Coolies are available.	No cargo handling equipment. Coolies are available (300 coolies are constantly available and efficiency is satisfactory)	No cargo handling equipment. Coolies are available.	No cargo handling equipment. Coolies are available (400 coolies are constantly available and their efficiency is satisfactory)

	Kendari (Celebes Island)	Benoa (Bali Island)	Kupang (Timor Island)	Sabang (Sumatra-WEH Island)
(6) Transport facilities	Truck is in extreme shortage.	Trucks are sufficient in number	Trucks are sufficient in number.	Trucks are sufficient in number.
3. Utilization of port facilities under current project				
(1) Supply				
a. Fuel supply	Construction of a fuel tank is needed. Fuel is to be transported from Makassar by barges.	No problem, because there are frequent entries of tankers	No problem, because there are frequent entries of tankers.	No problem, because there are frequent entries of tankers
b. Water supply	Though there are sufficient water sources, lack of capacity of supply lines is causing a chronic water shortage. For cold storage facilities, construction of supply lines of 1,300 long, a tank and a filter tank is necessary.	Quantity and quality are both satisfactory	Though several water sources are available, there is a possibility of water shortages in the dry season.	Quantity and quality are both satisfactory.

	Kendari (Celebes Island)	Benoa (Bali Island)	Kupang (Timor Island)	Sabang (Sumatra-WEH Island)
c. Berth		There is a need for providing new mooring buoys.		
d. Food supply	Self-sufficiency in food supply is not possible. Part of food is supplied from Makassar.	Foods are abundant in quantity and variety.	Somewhat short in supply except the supply of beef.	Self-sufficiency is not possible on the island. Foods are brought in mainly from Banda Atjeh, the opposite shore.
e. Fishing implements and sundry goods.	Not available.	Sundry goods are available but no fishing implements. are available.	Not available	Sundry goods are available but not fishing implements
(2) Availability of construction machinery and workers	No construction machinery nor skilled workers are available. Must depend on Makassar.	Construction machinery are available locally. Skilled workers are also available locally.	No construction machiner nor skilled workers are available.	No construction machinery nor skilled workers are available. Must depend on Banda Atjeh.

	Kendari (Celebes Island)	Benoa (Bali Island)	Kupang (Timor Island)	Sabang (Sumatra-WEH Island)
(3) Power Supply	One 280 kW generator. There is a power shortage and power is supplied only at night. There is a need for its own power facilities.	There are two 288 kW and two 500 kW facilities. Demands are being met to some extent. There is a need for its own power facilities.	Two 250 kW facilities are not adequate to meet demand. There is a need for its own power facilities.	Three 400 kW facilities are in operation and two 1,000 kW facilities are under construction (Completion in 1971). If the project makes progress as expected, there will be no need for its own power facilities.
(4) Medical facilities	Two hospitals with 60 beds and 5 physicians. Capable to operate on appendicitis.	Six hospitals with 700 beds and 36 physicians (in city). Capable to treat all diseases except special cases.	Four hospitals with 270 beds and 9 physicians. Capable to operate appendicitis.	Four hospitals with 120 beds and 3 physicians. Capable to operate on appendicitis.

	Kendari (Celebes Island)	Benoa (Bali Island)	Kupang (Timor Island)	Sabang (Sumatra-WEH Island)
(5) Communication facilities	Telephone and wireless facilities are available, but not in advanced form both in and out of province. Need for the construction of a wireless station for fishing boats.	Being the base of operation in eastern region, communication facilities are satisfactory both in and out of province. Need for the construction of a wireless station for fishing boats.	Communication facilities are not satisfactory both in and out of province. Need for the construction of a wireless station for fishing boats.	Use of the facilities now under construction is expected. Need for the construction of a wireless station for fishing boats.
(6) Project site	A tract of 4,500 m^2 is available in the area adjacent to the coast. However, removal of part of residents is required. Shore protection works and banking are required in part.	Land space is not available close to the pier unless land is reclamed, but there is a tract of 1,800 m^2 at the causeway base of embankment, which requires clearing, grading and banking (about one meter high).	A flat tract of 750 m^2 is available near the existing pier, which requires shore protection works, banking (about 2 meters high) and an access road.	A tract of 2,000 m^2 is available at the point 2,000 m from the existing pier. However, removal of dwellings is required. Banking of 1.5 m high is also needed.

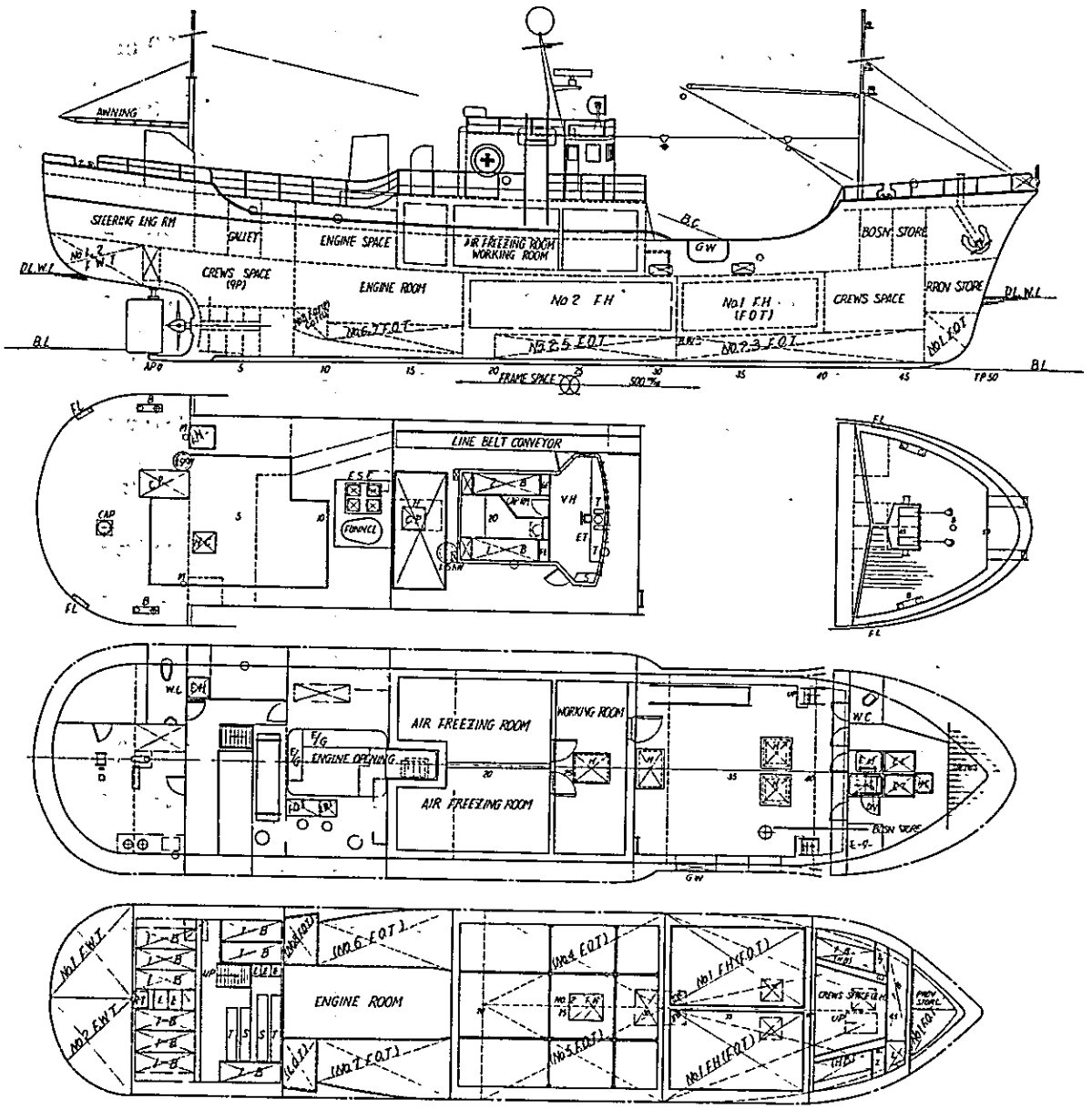
Appendix 2. Outline of Major Facilities

(1) Fishing boat (Capacity: 70 ton tuna long-line boat, 450 HP, loading capacity - 45 ton, freezing capacity - 2 ton)

Gross tonnage	70 ton
Length	29.60 m
Width	5.76 m
Depth	2.50 m
Holding capacity of fish holds (refrigeration room included)	80 m^3 (Approximately 45 ton load)
Refrigeration capacity	2.0 daily
Freezing temperature	-30 ^oC
Main engine	350 PS
Speed	Approximately 10 kt
Navigation period (Fishing operation included)	50 days
Fresh water tank	9 m^3
Water making equipments	1 ton/day
Direction finder	
Radar	
Fish detector	
Wireless telephone	
Number of fishermen aboard	23

(Note) A sketch of similar type fishing boat is attached.

General arrangement of a 70 ton-class tuna long-line fishing boat



(2) Freezing and cold storage facilities

(Capacity: Holding - 900 ton, freezing - 5 t day at -30°C, Ice-making - 5 t/day)

a. Boilding - One-story reinforced concrete building

(One-story steel frame building in part)

Cold storage room		770 m^2
Cold storage preparation room		40 m^2
Freezing room		35 m^2
Disposition room		70 m^2
Ice making room		100 m^2
Ice storage room		50 m^2
Engine room		180 m^2
Office		60 m^2
Employees rest room		60 m^2
Warehouse and others		30 m^2

b. Heat insulation:

Synthetic heat insulating materials		895 m^2
Cold storage room:	175 mm thick	770 m^2
Cold storage preparation room:	100 mm thick	40 m^2
Freezing room:	200 mm thick	35 m^2
Ice storage room:	100 mm thick	50 m^2

c. Refrigeration units

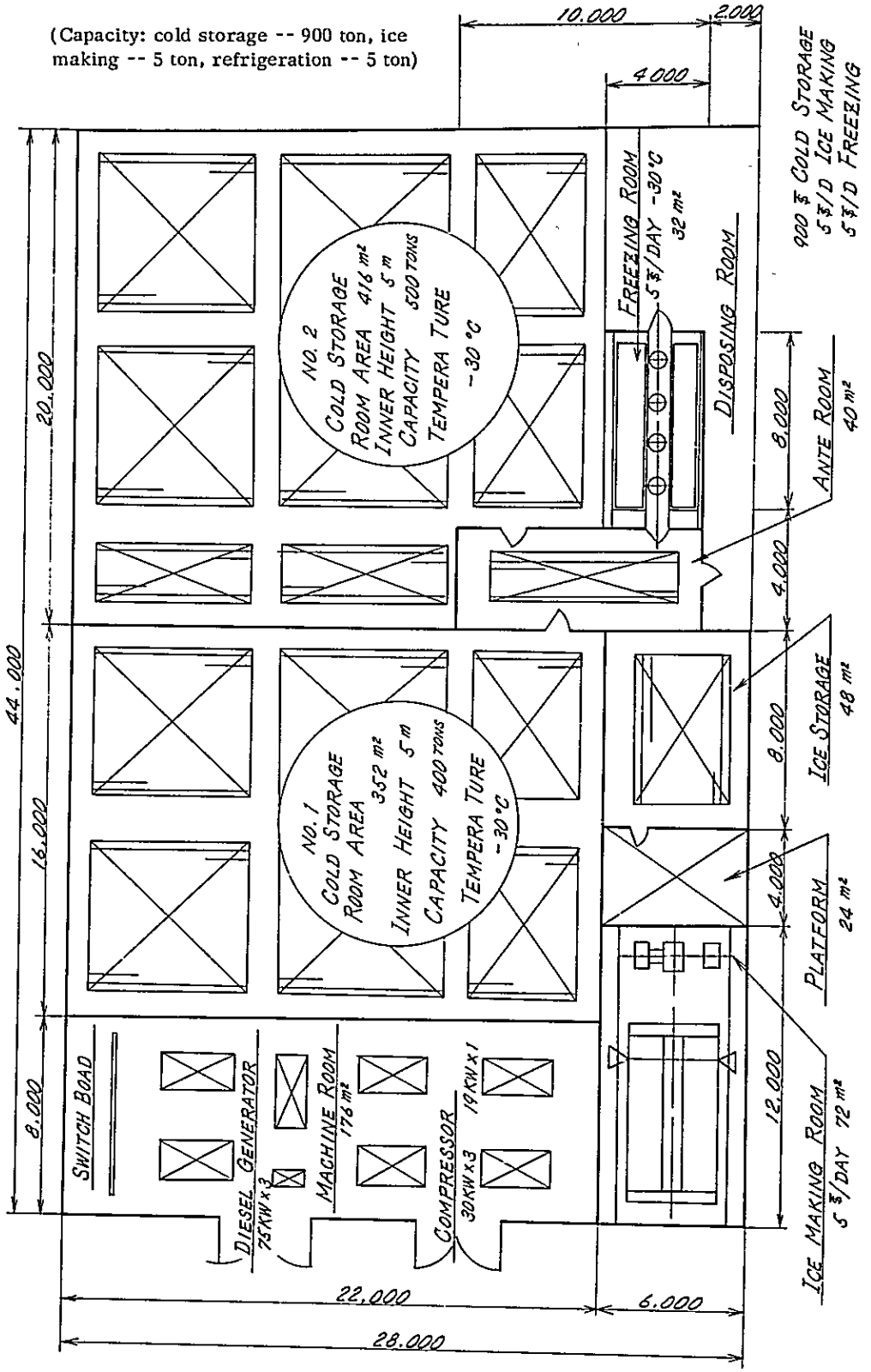
(a) Ammonia refrigerator 4 units

(Reciprocating air compressor)

	2 for cold storage,	motor	30 kW
	1 for refrigeration	"	30 kW
	1 for ice making	"	19 kW
(b)	Cooling water pump and others		14 units
	(Total capacity of motors for all units 30 kW)		
d.	Electric facilities		
(a)	Generator,	75 kW	3 units
	(Diesel generator, 130 HP)		
(b)	Automatic control panel		1 unit
e.	Loading and unloading facilities		
(a)	Loading bogie		5 units
	(Loading capacity - 500 kg)		
(b)	Cargo lift		1 unit
	(Loading capacity - 300 kg)		
f.	Land preparation		
(a)	Banking		1,500 m^3
(b)	Grading		1,000 m^2

Arrangement of refrigeration and cold storage facilities

(Capacity: cold storage -- 900 ton, ice making -- 5 ton, refrigeration -- 5 ton)



Note: Office space is not included.

Appendix 3.

Profit and Loss Statement

	1st year	2nd year	3rd year	4th year	5th year	6th year	7th year	8th year	9th year	10th year	11th year	12th year	Remarks
Number of fishing boats	3	9	20	20	20	20	20	20	20	20	20	20	
Production of fishes (ton)	630	1,980	4,560	5,160	5,670	6,000	6,000	6,000	6,000	6,000	6,000	6,000	
Sales of fishes (FOB)	127,405	400,415	922,169	1,043,507	1,146,644	1,213,380	1,213,380	1,213,380	1,213,380	1,213,380	1,213,380	1,213,380	535 $/t
Selling expenses	6,370	20,021	46,108	52,175	57,332	60,669	60,669	60,669	60,669	60,669	60,669	60,669	1$ = 378 RP. 5% of the sales
Earnings	121,035	380,394	876,061	991,332	1,089,312	1,152,711	1,152,711	1,152,711	1,152,711	1,152,711	1,152,711	1,152,711	
Fishing operation cost	155,602	356,602	627,055	682,199	691,196	695,993	693,090	690,186	687,283	681,999	676,435	671,103	
Refrigeration and cold storage operation cost	18,637	20,408	40,747	40,747	40,747	40,747	40,747	40,747	40,747	40,747	40,747	40,747	
Administration overheads	61,274	51,970	76,720	40,720	49,720	49,720	49,720	49,720	49,720	49,720	49,720	49,720	
Total	235,513	428,980	844,522	772,666	781,663	786,460	783,557	780,653	777,750	772,466	766,902	761,570	
Interest paid													
Operating sector	36,610	93,373	193,948	168,456	150,822	135,042	115,863	97,872	81,860	86,424	115,981	187,215	
Cold storage sector	19,448	18,350	36,697	34,396	32,095	29,794	27,493	25,192	22,891	20,590	18,288	15,987	
Administrative sector	11,915	13,798	23,877	19,994	19,351	19,248	18,761	18,659	18,171	17,529	17,642	16,999	
Total	67,973	125,521	254,522	222,846	202,268	184,084	162,117	141,723	122,922	124,543	151,911	220,201	
(Depreciation)													
(Operating sector)	25,350	76,050	169,000	169,000	169,000	169,000	169,000	169,000	169,000	169,000	169,000	169,000	
(Cold storage sector)	9,588	9,588	19,176	19,176	119,176	19,176	19,176	19,176	19,176	19,176	19,176	19,176	
(Administrative sector)	2,142	2,738	5,356	5,356	5,356	5.356	5.356	5.356	5.356	5.356	5.356	5.356	
Total	37,080	88,376	193,532	193,532	193,532	193,532	193,532	193,532	193,532	193,532	193,532	193,532	
Profit	-192,251	-174,107	-222,983	-4,180	105,381	182,167	207,037	230,335	252,039	255,702	233,898	170,940	
Profit before depreciation	-145,371	-85,731	-29,451	189,352	298,913	375,699	400,569	423,867	445,571	449,234	427,430	364,472	

Note: Calculation was made on the assumption that new fishing boat would be built after the expiration of service life of existing boat.

Appendix 4

Details of Operation Related Costs

		1st Year		2nd Year		3rd Year	
		Cost	basis of calculation	Cost	Basis of calculation	Cost	Basis of calculation
Material cost	Cost of bait	18,883	320 Boats x 5 Pieces x 562 Days x 1.05 x 20 RP.	56,683	320 x 5 x 1,687 x 1.05 x 20 RP.	126,000	320 x 5 x 3,750 x 1.05 x 20 RP.
	Fishing-Nets and impliments	2,248	4,000 RP. x 562.5	6,748	4,000 RP. x 1,687	15,000	4,000 RP. x 3,750
	Fuel	11,494	13,000 RP x 884.2	34,483	13,000 RP. x 2,652.6	76,635	13,000 RP. x 5,895
	Lubricants	1,770	100,000 RP. x 17.7 KL	5,310	100,000 RP. x 53.1 KL	11,179	100,000 RP. x 117.9 KL
	Others	900	1 boat per 300 RP./year	2,700		6,000	
	Supplies	3,600	1 boat per year 1,200 RP.	10,800		24,000	
	Medicines	300	1 boat per year 100 RP.	900		2,000	
	Total	39,195		117,624		261,414	
Habor cost	Salary for foreign employes	56,160	260,000 RP. x 12 x 18 persons	56,160	260,000 RP. x 12 x 18 persons	56,160	260,000 RP. x 12 x 18 persons
	Salary for local employes	14,688	24,000 RP. x 51 x 12	54,432	24,000 RP. x 189 x 12	127,296	24,000 RP. x 442 x 12 persons
	Welfare expenses	181	500,000 RP. x 51 x 0.71%	671	500,000 RP. x 189 x 0.71%	1,569	500,000 RP. x 442 x 0.71%
	Cost of food	3,778	150 RP. x 69 x 365 days	11,333	150 RP. x 207 x 365 days	25,185	150 RP. x 460 x 365 days
	Total	74,807		122,596		210,210	
Operating expenses	Hull insurance	4,355	73,500,000 RP. x 3 x 1,975%	12,629	((66,150,000 x 3) boats + (73,500,000 x 6)) x 1,975	27,291	5,880 x 3 boats x 1,975 6,615 x 6 boats x 1,975 7,350 x 11 boats x 1,975
	Traveling expense	6,420	300,000 RP. x 18 persons 20,000 RP. x 51 persons	9,180	300,000 RP. x 18 persons 200,000 RP. x 189 persons	14,240	300,000 RP. x 18 persons 20,000 RP. x 442 persons
	Transportation costs	450	20,000 RP. x 7.5 Voyage x 3 Boats	1,350	20 x 7.5 x 9	3,000	20 x 7.5 x 20
	Port charges & expenses	225	10,000 RP. x 7.5 Voyage x 3 Boats	675	10 x 7.5 x 9	1,500	1.0 x 7.5 x 20
	Miscellaneous expenses	600	1 boat per year 2,000,000 bil. RP.	1,800		4,000	
	Repair & maintenance	4,200	1,400,000 x 3 boats	14,700	210 x 3	36,400	28.0 x 3 140 x 11
	Total	16,250		40,334		86,431	
Total of operating cost		130,252		280,552		558,055	
Interest paid	(Facilities)	27,648	73,500,000 x 3 x 12% + String	79,902	6,615 x 3 , 7,350 x 3 x 12% + String	172,152	5,880 x 3, 6,615 x 6 x 7,350 x 11 12% + String
	(Operation)	8,962	Operating cost 130,252 x 3 % + foreign salary x 12% x 9/12	13,471	280,552 x 3% + foreign salary x 12% x 9/12	21,796	558,055 x 3% + foreign salary x 12% + 9/12
Total		36,610		93,373		193,948	
Depreciation	(Hull)	22,050		66,150		147,000	
	(Fishing implements)	3.300		9,900		22,000	
Total		25,350		16,050		169,000	

		4th Year		5th Year		6th Year	
		Cost	Basis of calculation	Cost	Basis of calculation	Cost	Basis of calculation
Material cost	Cost of bait	126,000	320 x 5 x 3,750 x 1.05 x 20	126,000		126,000	
	Fishing-Nets and implements	15,000	4,000 RP. x 3,750	150,000		150,000	
	Fuel	76,635	13,000 RP. x 5,895	76,635		76,635	
	Lubricants	11,179	100,000 RP. x 117.9 KL	11,179	Same as for the 4th year	11,179	Same as for the 4th year
	Others	6,000		6,000		6,000	
	Supplies	24,000		24,000		24,000	
	Medicines	2,000		2,000		2,000	
	Total	261,414		261,414		261,414	
Habor cost	Salary for foreign employe	–		–		–	
	Salary for local employes	132,480	24 bil. RP. x 460 x 12	132,480		132,480	
	Welfare expenses	1,633	500 bil. RP. x 460 x 0.71%	1,633	Same as for the 4th year	1,633	Same as for the 4th year
	Cost of food	25,185	150 RP. x 460 x 365 days	25,185		25,185	
	Total	159,298		159,298		159,298	
Operating expenses	Hull insurance	24,387	5,145 x 3 x 1,975 5,880 x 6 x 1,975 6,615 x 11 x 1,975	21,484	4,410 x 3 x 1,975 5,145 x 6 x 1,975 5,880 x 11 x 1,975	18,581	3,675 x 3 x 1,975 4,410 x 6 x 1,975 5,145 x 11 x 1,975
	Traveling expenses	9,200	20 bil. RP. x 460	9,200		9,200	
	Transportation costs	3,000	20 x 7.5 x 20	3,000	Same as for the 4th year	3,000	Same as for the 4th year
	Port charges & expenses	1,500	1.0 x 7.5 x 20	1,500		1,500	
	Miscellaneus expenses	4,000		4,000		4,000	
	Repair & maintenance	50,400	350 x 3 210 x 11 280 x 6	62,300	350 x 9 280 x 11	7,000	350 x 20
	Total	92,487		101,484		106,281	
Total of operating costs		513,199		522,196		526,993	
Interest paid (Facilities)		153,060	5,145 x 3 6,615 x 11 5,880 x 6 12% +	135,156	4,410 x 3 5,880 x 11 5,145 x 6 12%	119,232	
	(Operation)	15,396	513,199 x 3%	15,666	522,196 x 3%	15,810	
Total		168,456		150,822		135,042	
Depreciation (Hull)		147,000		147,000		147,000	
	(Fishing implements)	22,000		22,000		22,000	
Total		169,000		169,000		169,000	

		7th Year		8th Year		9th Year	
		Cost	Basis of calculation	Cost	Basis of calculation	Cost	Basis of calculation
Material cost	Cost of bait	126,000	320 x 5 x 3,750 x 1.05 x 20	126,000		126,000	
	Fishing-Nets and implements	15,000	4,000 RP. x 3,750	15,000		15,000	
	Fuel	76,635	13,000 RP. x 5,895	76,635		76,635	
	Lubricants	11,179	100,000 RP. x 179 KL	11,179	Same as for the 7th year	11,179	Same as for the 7th year
	Others	6,000		6,000		6,000	
	Supplies	24,000		24,000		24,000	
	Medicines	2,000		2,000		2,000	
	Total	261,414		261,414		261,414	
Labor cost	Salary for foreign employes	–		–		–	
	Salary for local employes	132,480	24 bil. RP. x 460 x 12 days	132,480	Same as for the 7th year	132,480	
	Welfare expenses	1,633	500 bil. RP. x 460 x 0.71%	1,633		1,633	
	Cost of food	25,185	150 RP. x 460 x 365 days	25,185		25,185	
	Total	159,298		159,298		159,298	
Operating expenses	Hull insurance	15,678	2,940 x 3 x 1,975	12,774	2,205 x 3 x 1,975	9,871	1,470 x 3 x 1,975
			3,675 x 6 x 1,975		2,940 x 6 x 1,975		2,205 x 6 x 1,975
			4,410 x 11 x 1,975		3,675 x 11 x 1,975		2,940 x 11 x 1,975
	Traveling expenses	9,200	20 bil. RP. x 460	9,200		9,200	
	Transportation costs	3,000	20 x 7.5 x 20	3,000		3,000	
	Port charges & expenses	1,500	1.0 x 7.5 x 20	1,500		1,500	
	Miscellenous expenses	4,000		4,000		4,000	
	Repair & maintenance	70,000	350 x 20	70,000	350 x 20	70,000	350 x 20
	Total	103,378		100,474		97,571	
Total of operating costs		524,090		521,186		518,283	
Interest paid (Facilities)		100,140		82,236		66,312	
(Operation)		15,723		15,636		15,548	
Total		115,863		97,972		81,860	
Depreciation (Hull)		147,000		147,000		147,000	
(Fishing implements)		22,000		22,000		22,000	
Total		169,000		169,000		169,000	

		10th Year		11th Year		12th Year	
		Cost	Basis of calculation	Cost	Basis of calculation	Cost	Basis of calculation
Material cost	Cost of bait	126,000	320 x 5 x 3,750 x 1.05 x 20	126,000		126,000	
	Fishing-Nets & Implements	15,000	4,000 RP. x 3,750	15,000		15,000	
	Fuel	76,635	13,000 RP. x 5,895	76,685		76,685	
	Lubricatants	11,179	100,000 RP. x 1,179 KL	11,179	Same as for the 10th year	11,179	Same as for the 10th year
	Others	6,000		6,000		6,000	
	Supplies	24,000		24,000		24,000	
	Medicines	2,000		2,000		2,000	
	Total	261,414		261,414		261,414	
Labor cost	Salary for foreign employe	–		–		–	
	Salary for local employe	132,480	24 bil. RP. x 460 x 12	132,480	Same as for the 1oth year	132,480	
	Welfare expenses	1,633	500 bil. RP. x 460 x 0.71 %	1,633		1,633	
	Cost of food	25,185	150 RP. x 460 x 365	25,185		25,185	
	Total	159,298		159,298		159,298	
Operating expenses	Hull insurance	10,887	7,350 x 3 x 1,975 1,470 x 6 x 1,975 2,205 x 11 x 1,975	15,823	6,615 x 3 x 1,975 7,350 x 6 x 1,975 1,470 x 11 x 1,975	27,291	5,880 x 3 x 1,975 6,615 x 6 x 1,975 7,350 x 11 x 1,975
	Traveling expenses	9,200	20 bil. RP. x 460	9,200		9,200	
	Transportation costs	3,000	20 x 7.5 x 20	3,000	Same as for the 10th year	3,000	
	Port charges & expenses	1,500	1.0 x 7.5 x 20	1,500		1,500	
	Miscellaneous expenses	4,000		4,000		4,000	
	Repair & maintenance	63,700	140 mil. x 3	53,200	210 mil. x 3 350 mil. x 11 140 mil. x 6	36,400	280 mil. x 3 140 mil. x 11 210 mil. x 6
	Total	92,287		86,723		81,391	
Total of operating costs		512,999		507,435		502,103	
Interest paid	(Facilities)	71,034		100,758		172,152	
	(Operation)	15,390		15,223		15,063	
Total		86,424		115,981		187,215	
Depreciation	(Hull)	147,000		147,000		147,000	
	(Fishing implements)	22,000		22,000		22,000	
Total		169,000		169,000		169,000	

Appendix 5

Detailed Calculation for Fishing Operation

(1) Navigation Plan

	Navigation	Detecting	Operation	In harbor	Total	Spare days for dockage and others	Total	Remarks
	day	day	day	day	day	day	day	
One trip	6	5	25	4	40			
Yearly	45	37.5	187.5	30	300	65	365	7.5 trips a year
1st year (3 boats)	135	112.5	562.5	90	900			
2nd year (9 boats)	405	337.5	1,687.5	270	2,700			
3rd year (20 boats)	900	750	3,750	600	6,000			
4th year	900	750	3,750	600	6,000			
5th year	900	750	3,750	600	6,000			

(2) Quantity of Fish Catch

Year	Number of fishing boats		
1st	3	1.6 tons x 0.7 x 187.5 days x 3 boats	630 M/T
2nd	3 + 6	1.6 tons x 0.8 x 187.5 days x 3 boats 1.6 tons x 0.7 x 187.5 days x 6 boats	1,980 M/T
3rd	3 + 6 + 11	1.6 tons x 0.9 x 187.5 days x 3 boats 1.6 tons x 0.8 x 187.5 days x 6 boats 1.6 tons x 0.7 x 187.5 days x 11 boats	4,560 M/T
4th	3 + 6 + 11 = 20	1.6 tons x 1.0 x 187.5 days x 3 boats 1.6 tons x 0.9 x 187.5 days x 6 boats 1.6 tons x 0.8 x 187.5 days x 11 boats	5,160 M/T
5th	3 + 6 + 11 = 20	1.6 tons x 1.0 x 187.5 days x 9 boats 1.6 tons x 0.9 x 187.5 days x 11 boats	5,670 M/T
6th	3 + 6 + 11 = 20	1.6 tons x 1.0 x 187.5 days x 20 boats	6,000 M/T

(3) International Price of Tuna

(a) Trends of International Prices

Unit: $/ton

	Albacore	Yellow Fin	Big-eye	Rate of increase in the price of yellow fin over previous year	Price indices of yellow fin (1964 = 100)
1964	347	332	229	3.9%	100.0
1965	327	345	238	43.5	103.9
1966	475	495	366	-12.7	149.1
1967	473	432	312	- 6.2	130.1
1968	469	405	279	- 2.0	122.0
1969	508	413	259	37.8	124.4
June 1970	626	569	565		171.4
(Jan - Jun)	(522)	(573)	(442)		

Source: Japanese Government Export Statistics

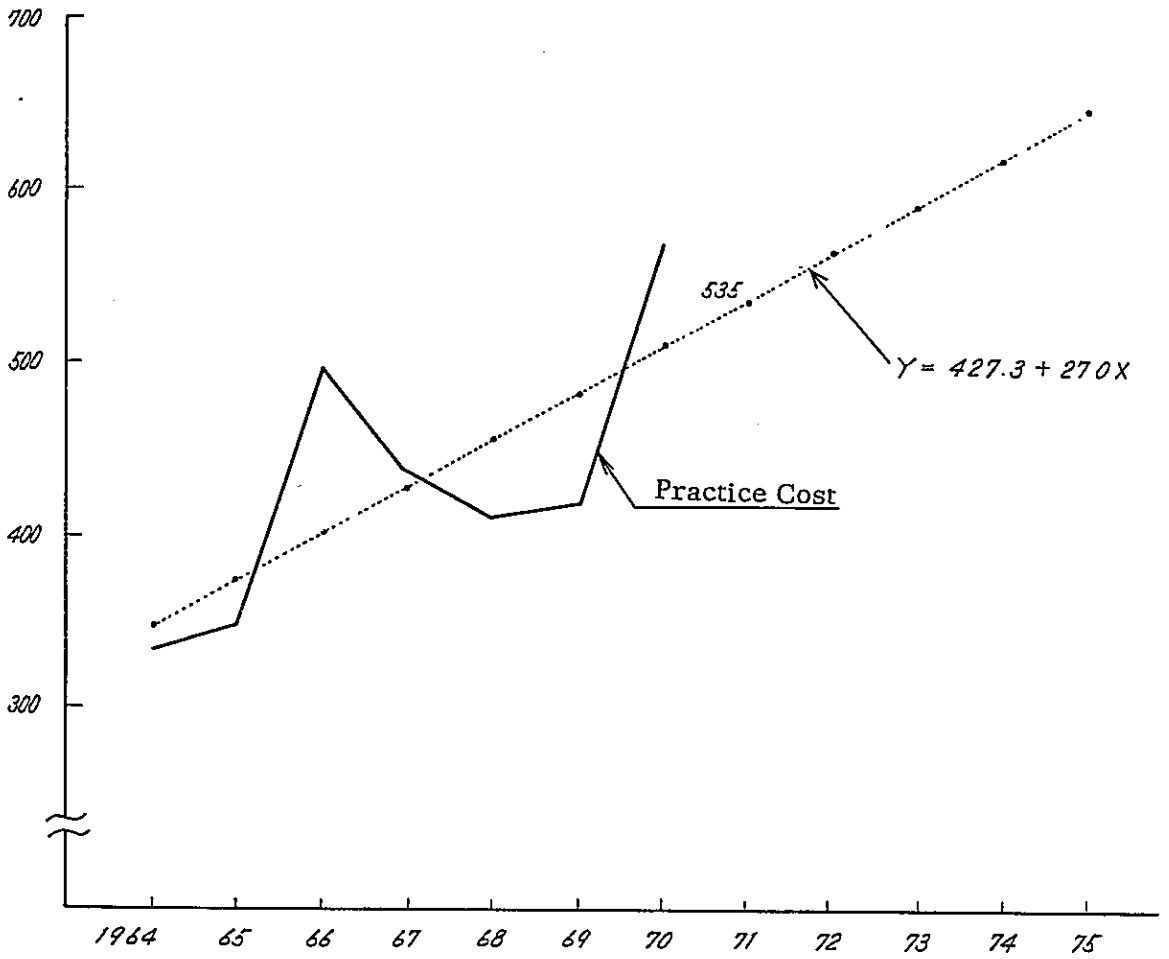
Notes:
1. Since Japan is a major tuna exporting country, the export prices were taken as the International prices.
2. Figures in parentheses indicate average prices in January - June period in 1970.

(b) Prospects of International Prices of Kiwada (Yellow fin)

The total supply of tune in the world as of 1970 is approximately 1.5 million tons and the supply in the past five year has increased at the rate of 5% a year. On the other hand, demands are growing steadily at such a rate as 5 - 6% in US, the major consuming country, about 4% in

Europe and at a much higher rate in Japan. Therefore, if this trend is to continue in the future, the international prices of yellow fin, the main item of export among tuna fish, is expected to increase at the rate of about 5 % a year judging from the past trends of international prices. On this assumption, the price of Kiwada in 1971, the first year of operation, is expected to be $535.

Estimated Export Prices of Kiwada Tuna



(4) Fuel Cost

(350 HP + 100 HP) x 3/4 x 0.185

x 24 r = 1,498.5 ..... Detecting, Navigation (100 %)

0.9 ..... Operation (60 %)

0.075 ..... In harbor (5 %)

Lubricants = Fuel x 2%

	Gass Oil		Lubricants
	1.5 KL x 247.5 =	371.2	
1st Year	0.9 KL x 562.5 =	506.2	
(For 3 boats)	0.075 KL x 90 =	6.8	
	Total	884.2	17.7 KL
	1.5 KL x 742.5 =	1,113.7	
2nd Year	0.9 KL x 1,687.5 =	1,518.7	
(For 9 boats)	0.075 KL x 270 =	20.2	
	Total	2,652.6	53.1 KL
	1.5 KL x 1,650 =	2,475.0	
3rd Year	0.9 KL x 3,750 =	3,375.0	
(For 20 boats)	0.075 KL x 600 =	45.0	
	Total	5,895.0	117.9 KL

(5) Fishing Gear

¥4,000 for one operation (Empirical value) - Making up for lost items and repair and maintenance.

(6) Others

¥300,000 per fishing boat (Empirical value) for miscellaneous oils, gasoline, cleaning oil, etc.

(7) Supplies

Mainly for the maintenace of engines.

2.4 million RP for 400 ton class boat, 2 million RP for 300 ton class boat, an average of 120 million RP.

(8) Medicines

Medicines prescribed by law and ammonia.

(9) Salary for foreign employees

Premium of life insurance is to be borne by individuals. For the crew of deep-sea tuna fishing boats, an average monthly payment of 100,000 RP (1968) and additional 50 % allowance for the voyage in the Atlantic Ocean are prevailing standard. Consideration was given to the inconvenience in the life on small fishing boats. assignments in foreign countries and language barrier.

(10) Salary for local employees

The monthly payment of 24,000 is to be made to each employe. In this case, the percentage contract is to be employed and the fixed wage is to be 10,000 RP (average). The balance is to be paid on the percentage on the catch.

(11) Welfare expenses (Social insurances)

Amount of insurance is to be 500,000 RP per employee. The premium shown in the estimate made by the insurance company.

(12) Cost of food

Charge for board is to be 150 RP a day. The rate is to be the same for foreign employees.

(13) Hull insurance

1,975 % is the estimate made by the insurance company. The object of insurance is to cover total loss and the expense of reseve operation.

(14) Traveling expenses

These are to cover expenses in shifting crews. For Japanese crew, traveling expenses were calculated on the basis of one-year contract.

(15) Transportation cost

Expenses required for the transportation of supplies such as food, fishing implements, etc.

(16) Miscellaneous expenses

Communication expenses, cleaning charge, towage, expense for departure ceremony and other events, tax, etc.

(17) Repair & Maintenance cost

Per ton unit cost is 20 RP (1st year), 30 RP (2nd year), 40 RP, (3rd year) and 50 RP (4th year and after). These are empirical values. Therefore, the cost for a 70 ton class boat will be 1,400 RP, 2,100 RP, 2,800 RP and 3,500 RP, respectively.

(18) Operating cost

The total of the aforementioned cost and expenses (Material cost + labor cost + operating expenses)

(19) Interest paid

(a) Interest on equipment funds was determined to be: Balance at the beginning of a period x 12%. The balance of equipment funds was calculated on the assumption that the depreciation is to be made according to the calculation.

(b) Interest on operating funds was calculated on the assumption that there would be 4 turnovers a year and the rate was 12 %. Calculation was made as follows. Operating cost x 12 % x 3/12.

(20) Depreciation:

Legal service life of fishing boat was estimated at 9 years (Example of Japan)

Legal service life of fishing implements was estimated at 3 years (Example of Japan)

Appendix 6

Details of Costs for Refrigeration and Cold Storage in Operation (1)

Unit: 1,000 RP.

	1st Year	2nd Year	3rd Year	4th Year	5th Year
Working expenses	9,049	10,820	21,571	21,571	21,571
Depreciation	9,588	9,588	19,176	19,176	19,176
Operating Cost	18,637	20,408	40,747	40,747	40,747
Interest Paid	19,448	18,350	36,697	34,396	32,095
Equipment funds	19,176	18,025	36,050	33,747	31,448
Operating funds	272	325	647	647	647

Note: 1. Straight line depreciation was considered for boildings and machinery on the bais of 15 year service life.

2. Interest paid was calculated on the rate of 12% for both equipment funds and operating funds, and the operating funds were estimated to be 1/4 of the working expenses.

3. After the 6th year, the cost and interest are to be the same as for the 5th year.

Details of Costs for Refrigeration and Cold Storage in Operation (2)

	1st Year		2nd Year		3rd Year	
	Cost	Basis of calculation	Cost	Basis of calculation	Cost	Basis of calculation
	1,000 RP		1,000 RP		1,000 RP	
Power and Fuel Cost						
Diesel	2,327	Cold Storage 30ℓ x 360 d x 14 h = 151kl	3,107	30 x 360 x 14 = 151	5,317	30 x 360 x 14 x 2 site
		Refrigeration, Ice Making 30ℓ x 39 d x 24 h = 28 kℓ		30 x 122 x 24 = 88		30 x 147 x 24 x 2 "
		179 kℓ x 13,000 RP = 2,327,000RP		239 x 13,000 = 3,107,000		409 x 13,000 = 5,317,000
Lubricants	138	Cold Storage 0.2 ℓ x 360 d x 14 h = 1,008 ℓ		0.2 x 260 x 14 x 2 each		0.2 x 360 x 14 x 4
		Refrigeration, Ice Making 0.2 ℓ x 39 d x 24h = 374		0.2 x 122 x 24 x 2 "		0.2 x 147 x 24 x 4
		1,382 ℓ x 100 RP = 138,000 RP	318	3,188 x 100 = 318,000	685	6,856 x 100 = 685,000
Sub-total	2,465		3,425		6,002	
Cost of medicine	118	Cold Storage 2,250 kg	118	as above	236	2,250 x 2 site
		Refrigeration, Ice Making 1,250 kg				1,250 x 2 "
		3,500 kg x 0.15 = 525 kg				7,000 x 0.15 = 1,050
		525 kg x 225,000 RP = 118,000 RP				1,050 x 225,000 = 236,000
Water charges	327	Cold Storage 0.3 tons x 14h x 360d = 1,512	373	0.3 x 14 x 360 = 1,512	685	0.3 x 14 x 360 x 2 = 3,024
		Refrigeration 130ton x 1.2 = 156 ton		390 x 1.2 = 468		800 x 1.2 = 960
		Ice Making 115ton x 1.5 = 172 ton		245 x 1.5 = 367		500 x 1.5 = 750
		Both Use 5ton x 360 d = 1,800 ton		5 x 360 = 1,800		4 x 360 x 2 = 2,880
		3,640ton x 90 RP = 327,000 RP		4,147 x 90 = 373,000		7,614 x 90 = 685,000

	1st Year		2nd Year		3rd Year	
	Cost	Basis of calculation	Cost	Basis of calculation	Cost	Basis of calculation
Personnel expenses						
Salary	2,400	1 Person x 20,000 RP x 10 Persons x 12 Months = 2,400,000 RP	2,400	20,000 x 10 x 12 = 2,400,000	4,800	20,000 x 10 x 12 x 2 = 4,800,000
Wages for laborers	315	630 ton x 500 RP = 315,000 RP	1,080	2,160 x 500 = 1,080,000	3,000	6,000 ton x 500 = 3,000,000
Sub-total	2,715		3,480		7,800	
Maintenance Cost	3,196	2% / Construction 159,800,000 x 0.02 = 3,196,000 RP	3,196	as above	6,392	159,800,000 x 0.02 x 2 = 6,392,000
Miscellaneous expenses	228	(Cold Storage Room 770 m^2 + Freezing Room 35 m^2 + Ice Making Room 100 m^2) x 250 RP = 228,000 RP	228	as above	456	(C.S.R. 770 m^2 + F. R. 35 m^2 + I. M. R. 100 m^2) x 250 RP x 2 Site = 456,000 RP
Total	9,049		10,820		21,571	

Note: Calculation was omitted for the 4th year and thereafter on the assumption that they would be the same as for the 3rd year.

Appendix 7

Details of Calculation for Refrigeration and Cold Storage in Operation

(1) Basis of Calculation of Capacity

a. Quality of fish catch in storage

	Number of fishing boats	Annual catch	Required cold storage capacity
1st Year	3	630 ton	250 ton
2nd Year	9	2,160	750
3rd Year	20	5,070	1,600 (800 ton 2 site)
4th Year	20	5,670	1,600 "
5th Year	20	6,000	1,600 "

b. Quality of bait in storage

	Number of fishing boats	Annual catch	Required cold storage capacity
1st Year	3	1 118 ton	40 ton
2nd Year	9	355	120
3rd Year	20	788	200 (100 ton 2site)
4th Year	20	788	200 "

(Note) Annual requirement for bait per boat = 320 hachi x 5
10^{+} x 25 times x 7.5 trips x (kg/8 fish x 1.05 = 39.4 ton

c. Quntity of Bait to be treated

	Annual requirement for bait	Required freezing capacity	Required ice making capacity
1st Year	118 ton	0.8 ton	0.8 ton
2nd Year	355	2.4	1.2
3rd Year	788	5.2	2.6

(Note) The minimum economically justifiable scale of freezing and ice making facilities is 5 tons, respectively

(2) Details of Cost of Construction for Refrigeration and Cold Storage Facilities

Main items	Cost of construction		Basis of calculation
Cold storage facilities	108,000	1,000 RP	900 ton x 120,000 RP
Refrigeration facilities	9,000	1,000 RP	5 ton x 1,800,000 RP
Ice making facilities	9,000	1,000 RP	5 ton x 1,800,000 RP
Generators	16,200	1,000 RP	75 KW x 3 x 60,000 RP
Office room	5,040	1,000 RP	120 m^2 x 42,000 RP
Water supply system	300	1,000 RP	300 m x 1,000 RP
Land preparation	1,000	1,000 RP	1,500 m^2 x 500 RP
Construction management expenses	11,246	1,000 RP	
(Transportation)			150 ton x 12,000 RP
(Insurance)			147,500,000 RP x 3 %
(Personnel expense)			2 x 6 x 360,000 RP
(Traveling expenses)			2 x 350,000 RP
Total	159,786	1,000 RP	

Appendix 8. Details of Management Expenses

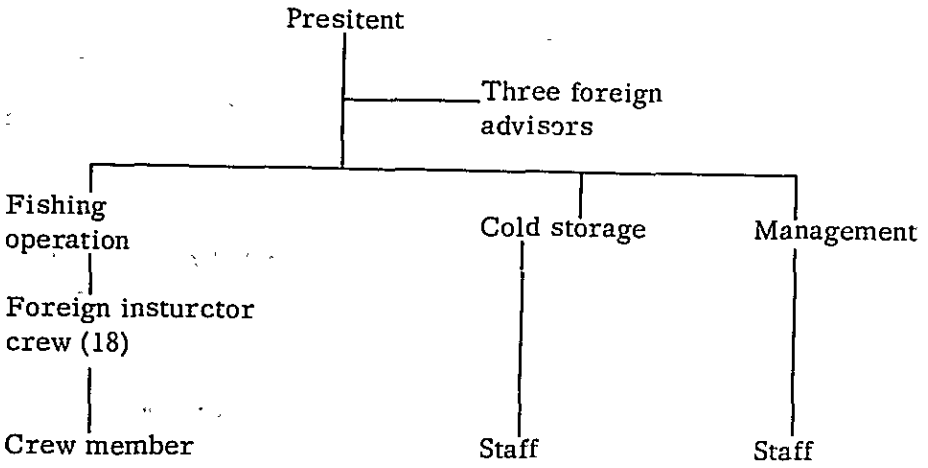
	1st year	2nd year	3rd year	4th year	5th year	6th year	7th year	8th year	9th year	10th year	11th year	12th year
Salaries and wages	31,000	38,800	59,600	41,600	41,600	41,600	41,600	41,600	41,600	41,600	41,600	41,600
Vehicle maintanance cost	600	600	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
Repair & maintenance cost of dormitories	432	732	1,464	1,464	1,464	1,464	1,464	1,464	1,464	1,464	1,464	1,464
Maintenance cost of wireless telephone	100	100	100	100	100	100	100	100	100	100	100	100
Consultant fee	18,000											
Sub-total	50,132	40,232	62,364	44,364	44,364	44,364	44,364	44,364	44,364	44,364	44,364	44,364
Depreciation cost												
Passenger car	216	216	432	432	432	432	432	432	432	432	432	432
Truck	900	900	1,800	1,800	1,800	1,800	1,800	1,800	1,800	1,800	1,800	1,800
Wireless facility	180	180	360	360	360	360	360	360	360	360	360	360
Buoy	120	120	120	120	120	120	120	120	120	120	120	120
Housing	726	1,322	2,644	2,644	2,644	2,644	2,644	2,644	2,644	2,644	2,644	2,644
Sub-total	2,142	2,738	5,356	5,356	5,356	5,356	5,356	5,356	5,356	5,356	5,356	5,356
TOTAL	52,274	42,970	67,720	49,720	49,720	49,720	49,720	49,720	49,720	49,720	49,720	49,720
Interest paid												
(Equipment funds)	6,091	9,809	19,306	18,663	18,020	17,917	17,430	17,328	16,840	16,198	16,311	15,668
(Operating funds)	1,504	1,207	1,871	1,331	1,331	1,331	1,331	1,331	1,331	1,331	1,331	1,331
TOATL	7,595	11,016	21,177	19,994	19,351	19,248	18,761	18,659	18,171	17,529	17,642	16,999

Appendix 9

Details of Calculation for Management Expenses

(1) Organization

a. Organization chart



b. Crew member and staff annual augmentation plan

	Fishing operation	Cold storage	Management	Total
1st Year	3	2	4	13
2nd Year	5	4	6	19
3rd Year	10	8	12	35
4th Year	10	8	12	32

(2) Main office furnishings include desks, chairs, calculators, typewriter, telephone, etc. in the total value of approximately 1,500 RP (Average service life of 5 years).

(3) Office room (rest room, play room included) – 120 m^2 (included in the cost of construction for refrigeration and cold storage facilities)

(4) Estimated administrative expenses per staff

Salary	1,300 RP
Office supplies (5 year service life)	
Office furnishing (Depreciation)	
Communication expenses	
Expense for entertainments	
Sundry expenses	

Note: Details of salaries and wages:

1,300 RP x Number of staffs + 27,000 RP

Number of staffs

- lst year - 10 persons
- 2nd year - 16 persons
- 3rd year - 12 persons

(5) Wireless telephone receiving and transmission facilities

(Antenna included), 100W - Expense required: 2,000 RP (10 year service life)

(6) Mooring buoy - 2 buoys: 2,000 RP (10 year service life)

Expense required: 2,000 RP (15 year service life)

(7) Housing

Housing construction plan by year

	Number of units to be built			(Unit cost) RP	Cost of construction			
	1st year	2nd year	3rd year		1st year RP	2nd year RP	3rd year RP	Total RP
For supervisory	7 (840m^2)		7 (840m^2)	3,600	25,200		25,200	50,400
Personnel for employees	6 (600m^2)	6 (600m^2)	12 (1,200m^2)	2,520	15,120	15,120	30,240	60,480
Dormitory for crew members (60 beds)		1 (400m^2)	1 (400m^2)	18,000		18,000	18,000	36,000

(Note) Repair and maintenance cost:

350 RP per m^2

- Less than 5 years - 151 RP per m^2
- 6 - 10 years - 342 RP "
- 11 - 15 years - 506 RP "
- 16 - 20 years - 587 RP "
- 21 - 30 years - 703 RP "
- 31 - - 521 RP "

Average 350 RP is to be used (50 year service life)

(8) Vehicles

Tow passenger cars : Unit price 720 RP x 2 = 1,440 (1,000 RP)

Two trucks : Unit price 2,500 RP x 2 = 5,000

} 6,440 (1,000RP) x 2 = 12,880 (1,000RP)

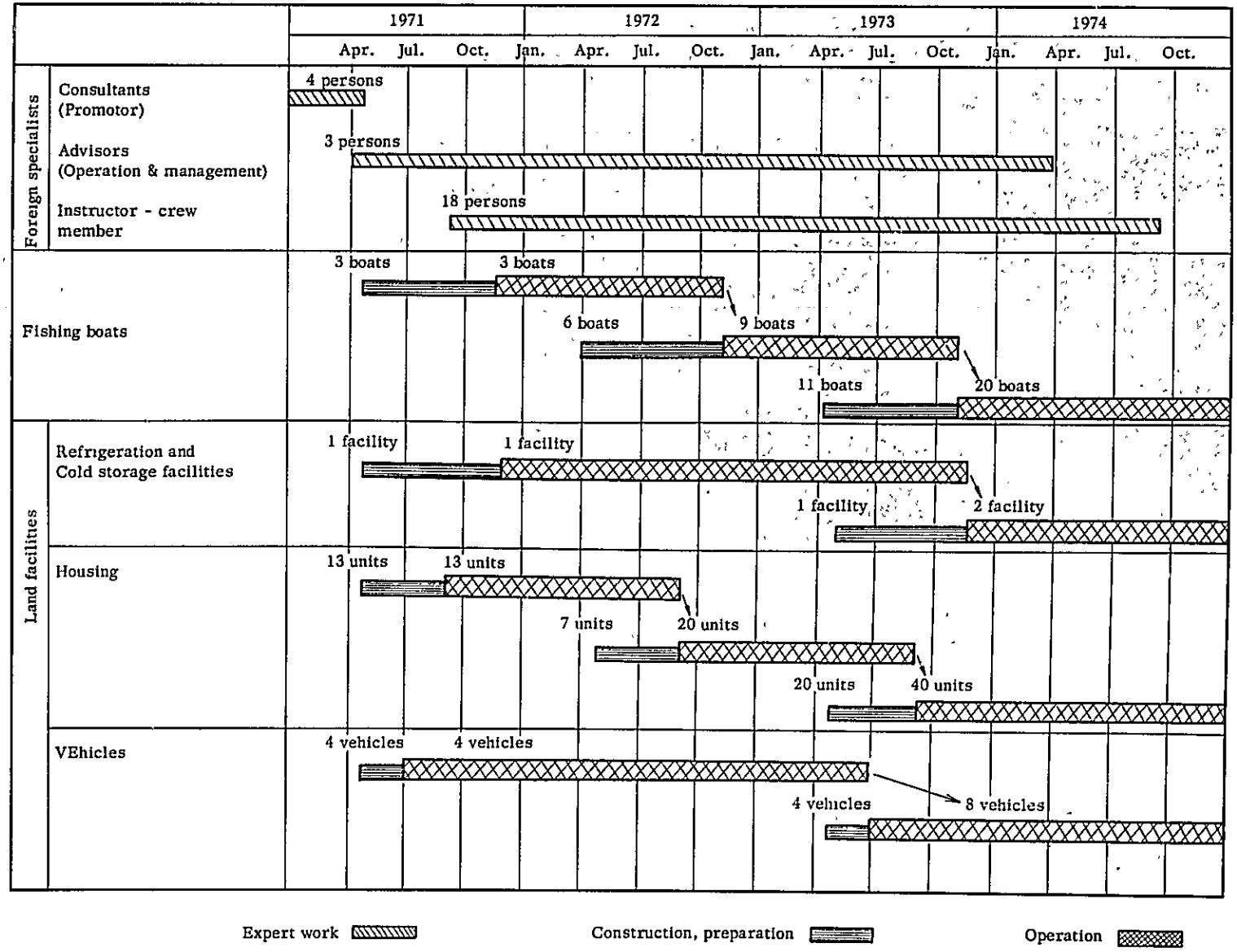
(Service life of passenger car - 6 years
Service life of truck - 5 years)

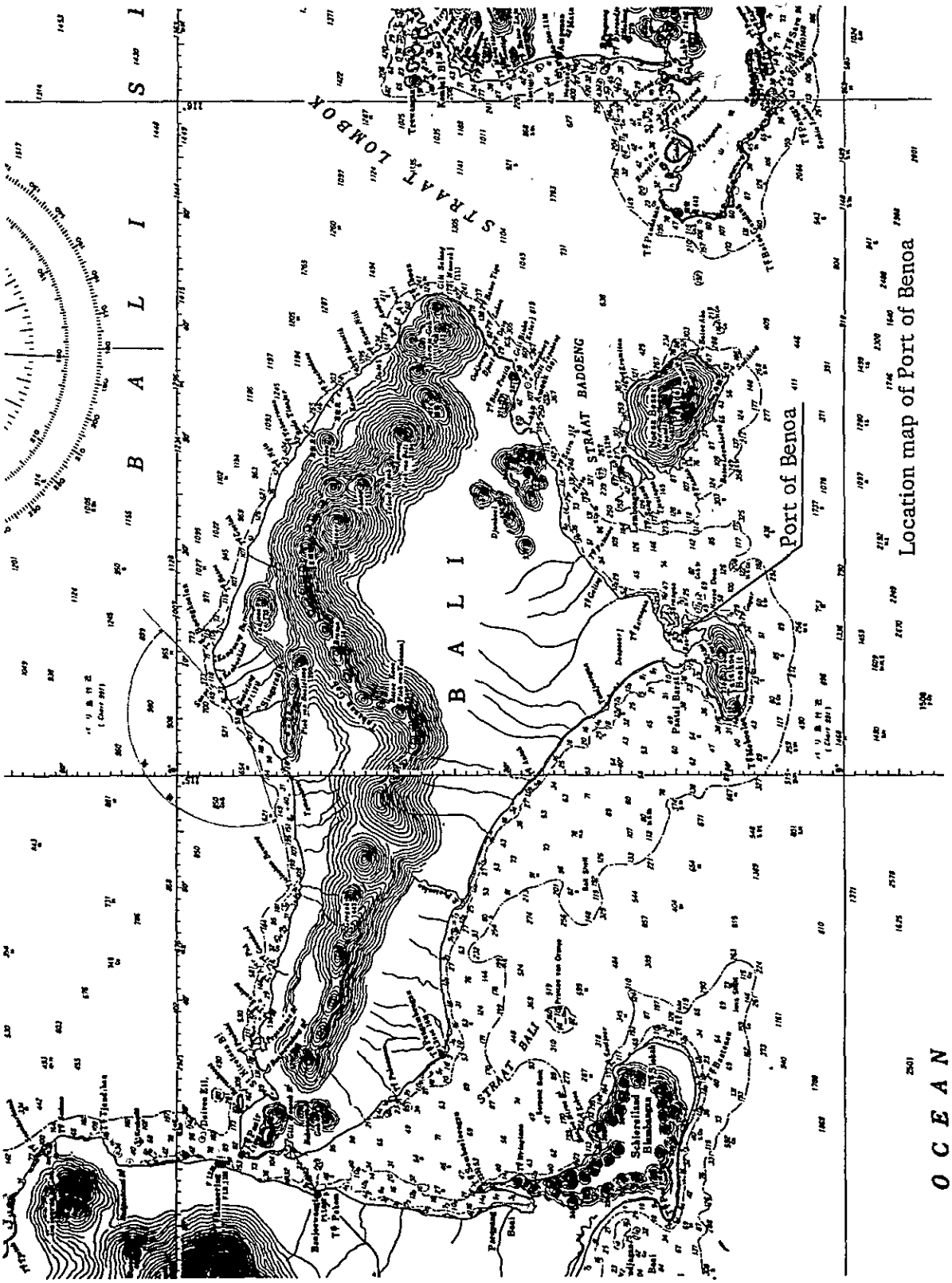
(Note) Maintenance cost - 150 RP a year

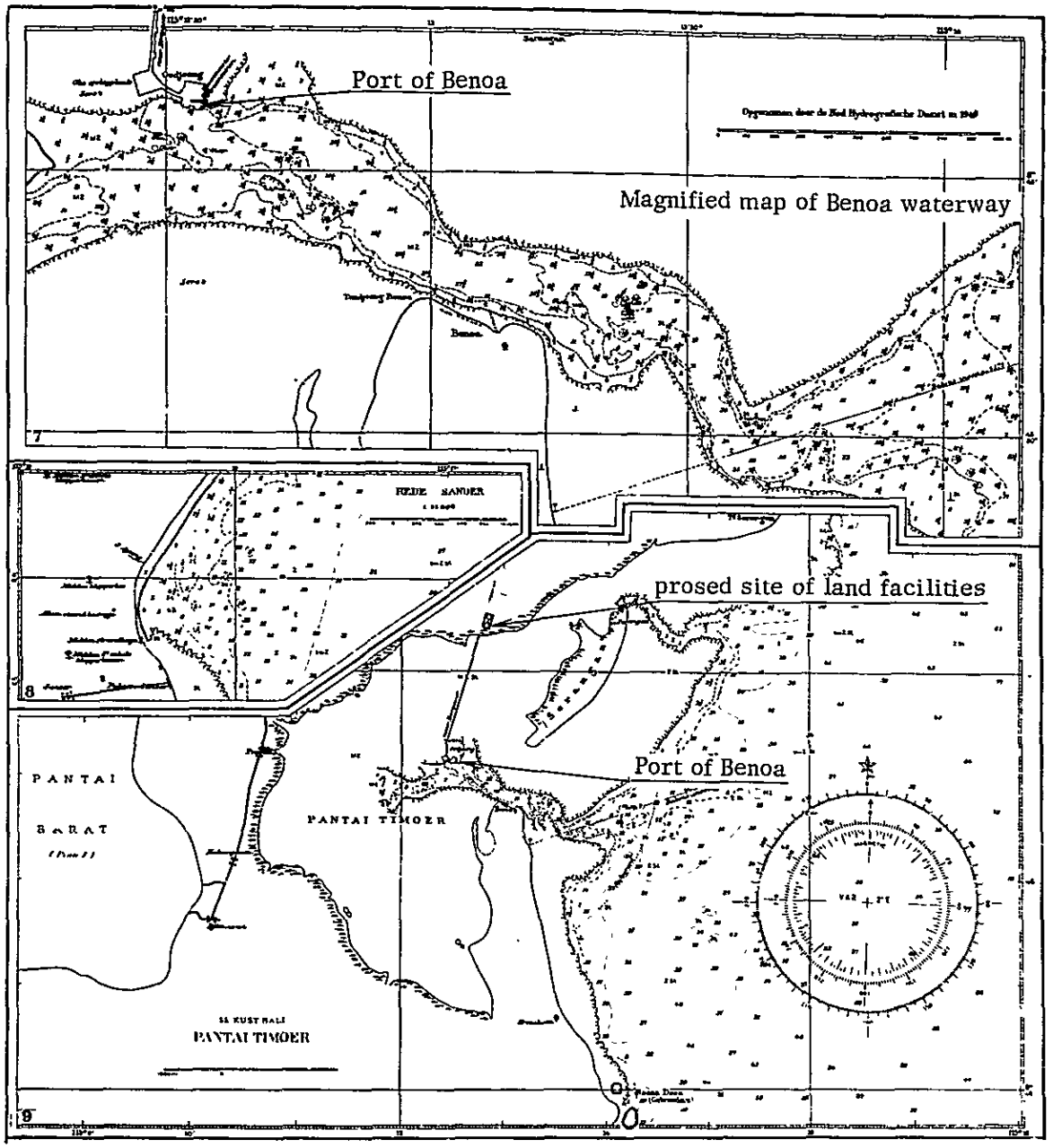
(9) Expense for foreign specialists:

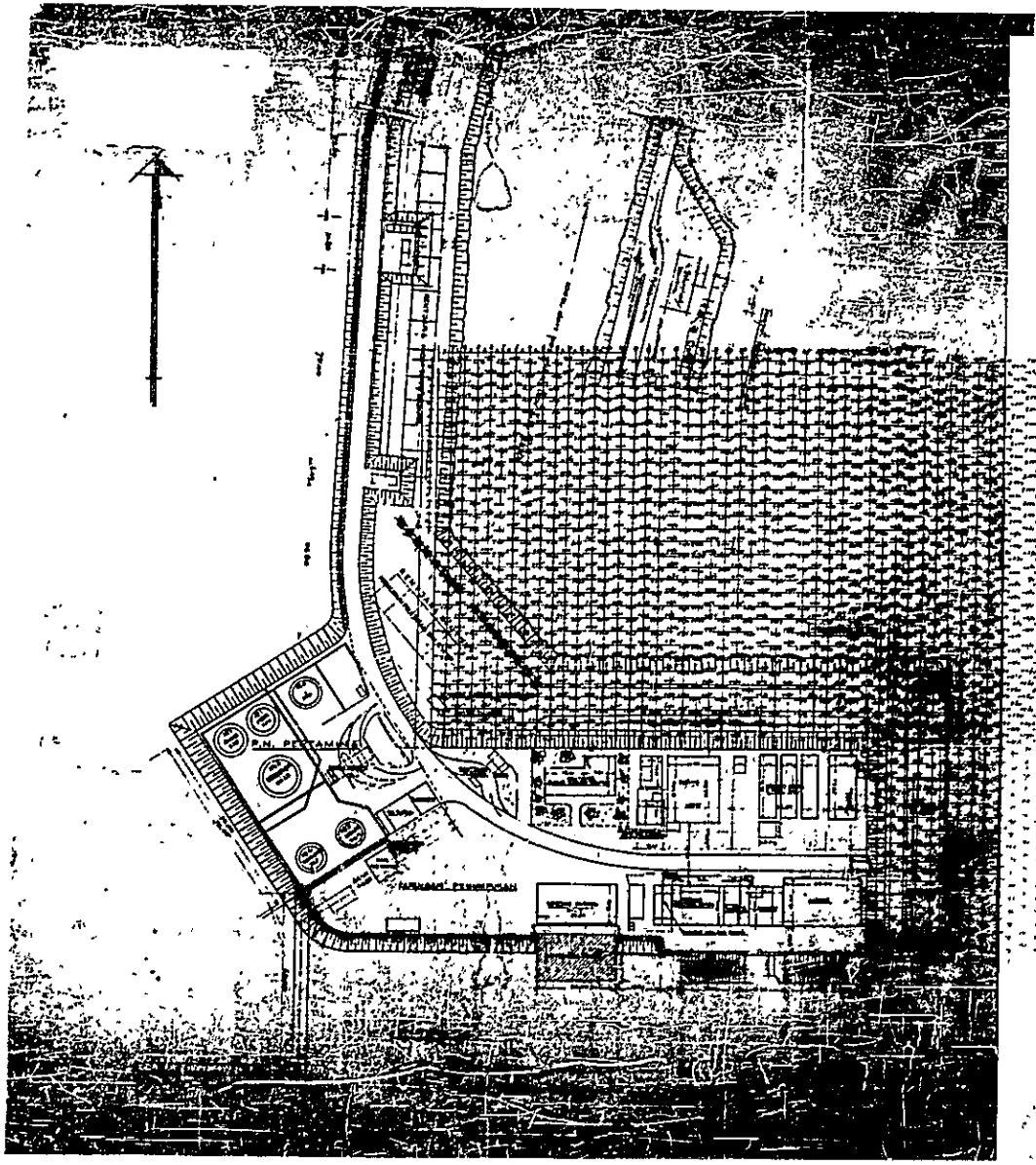
Consultant fee (Promotor): 4 persons - 18,000 (1,000 RP)

Appendix 10. Facility Construction and Operation Schedule

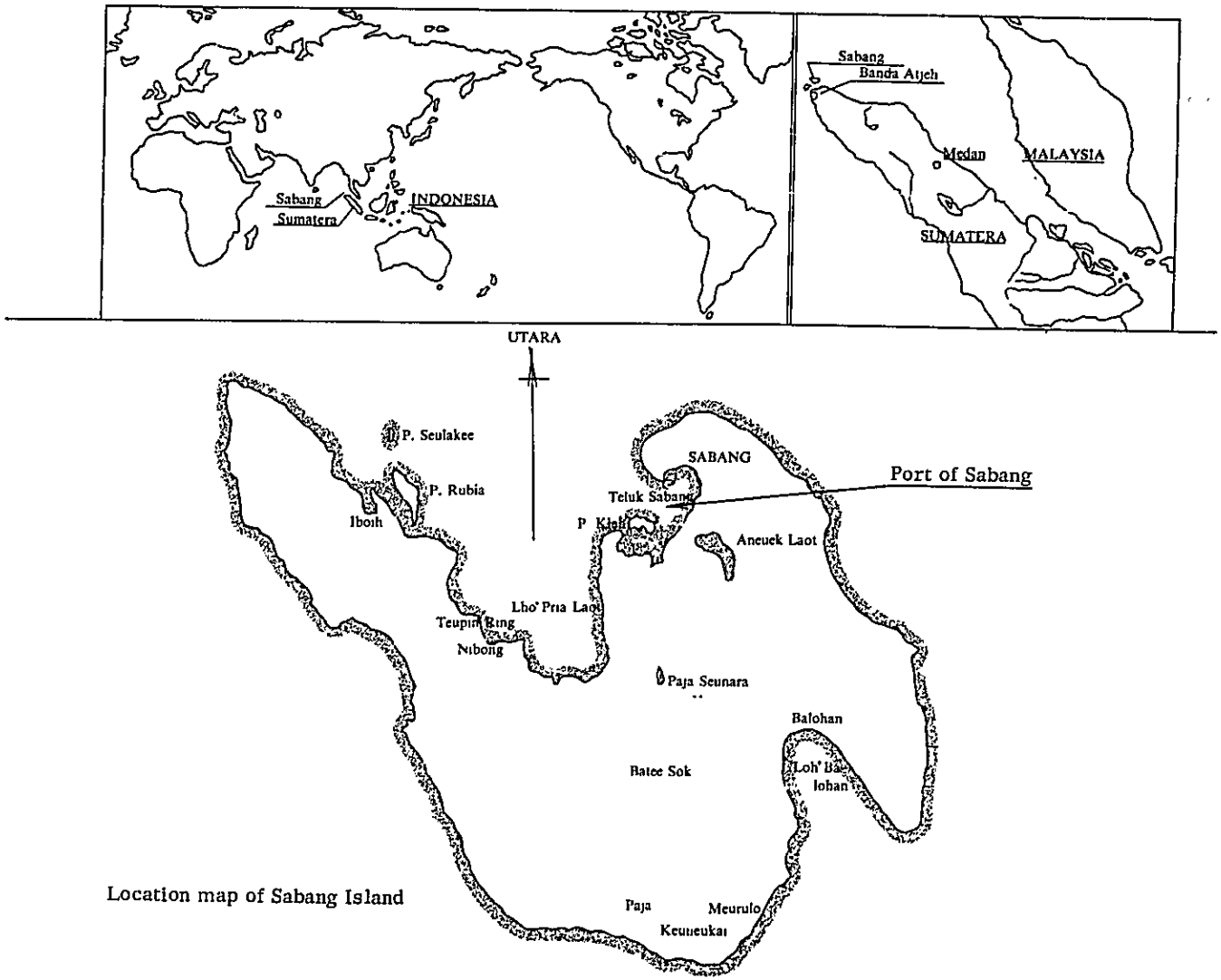



Location map of Port of Benoa
Port of Benoa
B A L I
S T R A A T L O M B O K
STRAAT BADOENG
STRAIT BALI
O C E A N

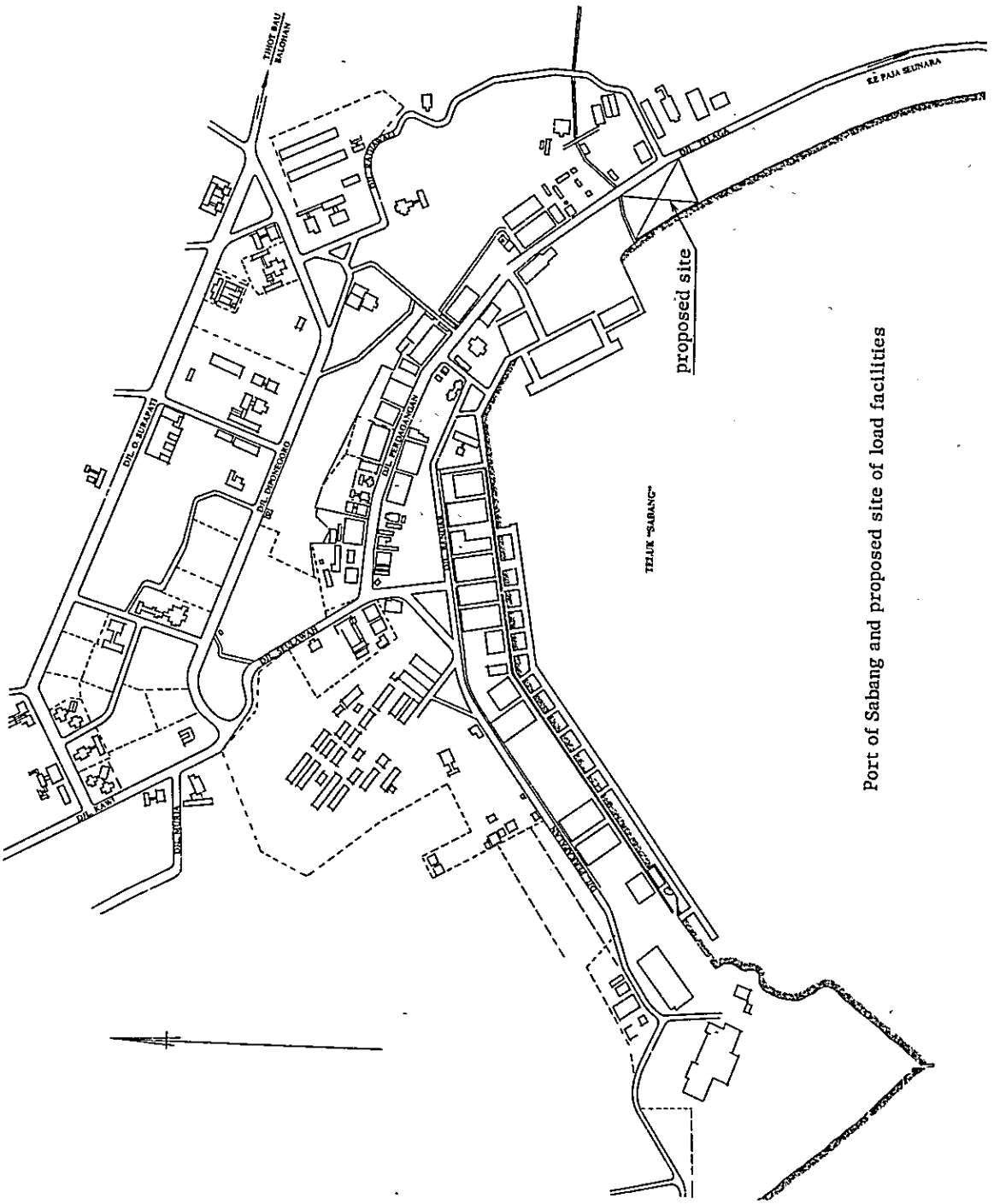

Port of Benoa
Magnified map of Benoa waterway
prosed site of land facilities
Port of Benoa
PANTAI
BARAT
PANTAI TIMOER
PANTAI TIMOER



Details of wharf, port of Benoa



Location map of Sabang Island



Port of Sabang and proposed site of load facilities