

**BASIC DESIGN STUDY REPORT  
ON  
THE PROJECT  
FOR  
REHABILITATION OF THE DOMESTIC  
TUNA FISHERY**

**MARCH, 2005**

**JAPAN INTERNATIONAL COOPERATION AGENCY**

## PREFACE

In response to a request from the Government of Solomon Islands, the Government of Japan decided to conduct a basic design study on the Project for Rehabilitation of the Domestic Tuna Fishery and entrusted the study to the Japan International Cooperation Agency (JICA).

JICA sent to Solomon Islands a study team from September 28 to October 16, 2004.

The team held discussions with the officials concerned of the Government of Solomon Islands, and conducted a field study at the study area. After the team returned to Japan, further studies were made. Then, a mission was sent to Solomon Islands in order to discuss a draft basic design, and as this result, the present report was finalized.

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 Solomon Islands for their close cooperation extended to the teams.

March, 2005

Seiji Kojima  
Vice President  
Japan International Cooperation Agency

March, 2005

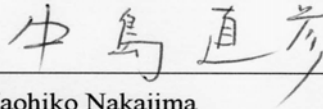
Letter of Transmittal

We are pleased to submit to you the basic design study report on the Project for Rehabilitation of the Domestic Tuna Fishery

This study was conducted by Fisheries Engineering Co., Ltd., under a contract to JICA, during the period from September, 2004 to March, 2005. In conducting the study, we have examined the feasibility and rationale of the project with due consideration to the present situation of Solomon Islands and formulated the most appropriate basic design for the project under Japan's grant aid scheme.

Finally, we hope that this report will contribute to further promotion of the project.

Very truly yours,



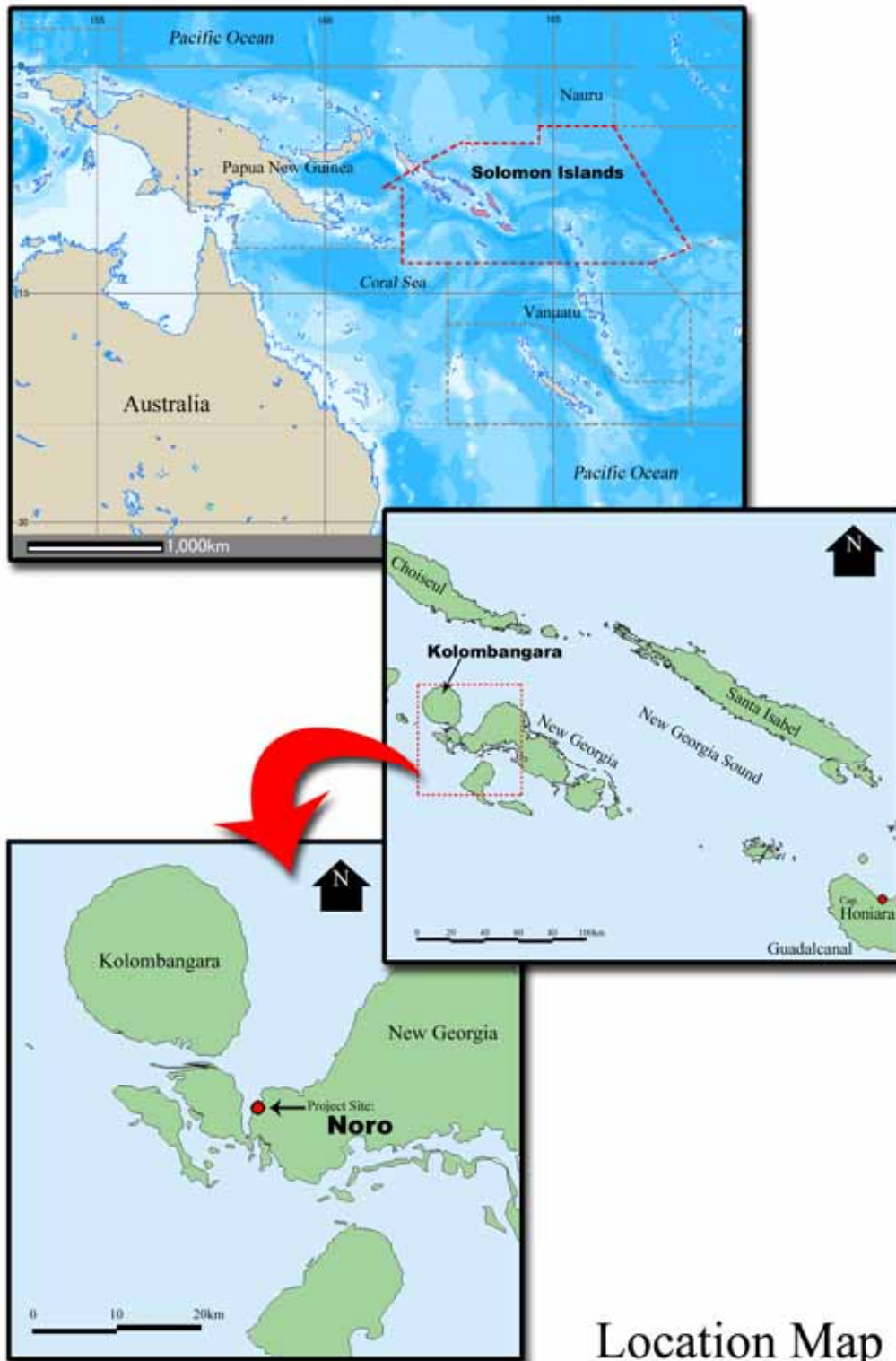
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Naohiko Nakajima

Project manager,

Basic design study team on the Project for  
Rehabilitation of the Domestic Tuna Fishery

Fisheries Engineering Co., Ltd.





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## Abbreviation

B	Breadth molded
D	Depth molded
d	draught
DSC	Digital Selective Calling
EC	European Commission
EEZ	Exclusive Economic Zone
ENSO	El Nino Southern Oscillation
EU	European Union
FAD	Fish Aggregating Device
FAO	Food and Agriculture Organization of the United Nations
FFA	Forum Fisheries Agency
FOT	Fuel Oil Tank
FPP	Fixed Pitch Propeller
FRP	Fibre Reinforced Plastic
FWT	Fresh Water Tank
GDP	Gross Domestic Products
GMDSS	Global Maritime Distress and Safety System
GEOSAT	Geodynamics Experimental Ocean Satellite
GPS	Global Positioning System
HACCP	Hazard Analysis Critical Point
HF	High Frequency
IMO	International Maritime Organization
JICA	Japan International Cooperation Agency
N	Newton (1 kgf = 9.80665 N)
KT	Knot (v = 1,853m/sec)
kW	1 kW = 1.359 PS
LCD	Liquid Crystal Display
Loa	Length over all
LPG	Liquid Petroleum Gas
Lpp	Length Between Perpendiculars
MARPOL	International Convention for the Prevention of Pollution from Ships
MF	Medium Frequency
MGA	Main Group Archipelago
MPa	1kgf/cm <sup>2</sup> = 0.098 Mpa
NK	Nihon Kaiji Kyokai
NFD	National Fisheries Development
NOx	Nitrogen Oxides
PMP	Preventive Maintenance Policy
RAMSI	Regional Assistance to Solomon Islands
SART	Search and Rescue Radar Transponder
SI\$	Solomon Dollar
SFPL	Soltai Fishing and Processing Ltd.
SOLAS	Safety of Life at Sea
SUS	Stainless Steel
SSB	Single Sided Band
STL	Solomon Taiyo Ltd.
TAC	Total Allowable Catch
TOPEX / POSEIDON	Seasat for Geodynamics Experimental Ocean Satellite
VHF	Very High Frequency

## SUMMARY

The Solomon Islands are situated in tropical to sub-tropical waters between 5-13 degrees south latitude and 155-171 degrees east longitude, with an exclusive economic zone (EEZ) covering 1,340,000 km<sup>2</sup> (about 30% of the Japan's EEZ area) and endowed with good fishing grounds for tuna. In addition to local fishing throughout the islands, the following three fishing enterprises are engaged in the tuna fishery:

(1) Soltai Fishing and Processing Ltd. (SFPL):

This is a public fishery corporation established as a joint venture between the Solomon Investment Corporation and the Western Province Government, which runs a fleet of 12 tuna pole & line fishing vessels and further process their catches to loins, canned products, and arabushi.

(2) National Fisheries Development Co. (NFD):

Set up by a multinational distribution group, running a fleet of three tuna purse seiners.

(3) Solgreen:

Set up by Taiwan investors, running a fleet of 11 tuna longliners.

In addition to the above domestic operations, a number of foreign companies fish within the Solomon 200-mile zone, based on bilateral and multilateral treaties with the Solomon Islands Government. In 2003, 189 tuna purse seiners and tuna longliners fished in Solomon Island waters, generating revenue from fishing license fees.

In 1998, social unrest developed in the Solomon Islands, based on ethnic tensions, which caused serious socioeconomic stagnation. However, with assistance also from RAMSI (the Regional Assistance Mission to Solomon Islands), the country was able to recover order and stability, but, in order to restore the living to levels preceding the social upheavals, the government, in November 2003, drew up a "National Economic Recovery, Reform and Development Plan 2003 - 2006" (the so-called Recovery Plan). Agriculture, forestry, and fisheries are the mainstay industries in the Solomon Islands, contributing about 25% of the country's GNP, and became the driving force of economic growth recovery to plus 3.8% in 2003 after four consecutive years negatives (from 1999 - 2002). The fishing industry, as a key part of the agriculture, forestry, and fishery complex, comprises some 5% of GNP, and the section in the Recovery Plan entitled: "Revitalization of the Production Sector and Reconstruction of Related Infrastructure" specifically prioritizes development of the fishery sector.

Although the Recovery Plan is aimed at resuscitating the fishing industry under an effective fishery administration, there have been problems in helping SFPL, the public fishing corporation at the heart of the Plan, to raise its fishery production. SFPL's predecessor company was Solomon Taiyo Ltd. (STL), a joint venture formed in 1973 between the Solomon Islands Government and Japan's Taiyo



Gyogyo KK. While STL had developed a large-scale tuna fishery as well as a processing plant in the Solomon Islands, as a result of the social disturbances in 1998, it terminated operations in August 2000. After withdrawal, the STL fishing fleet, shore facilities, and other assets, along with its talented human resources, were taken over by its successor company, SFPL (a public corporation), which launched operations in January, 2001. Although the new company became heir to the fishing fleet and processing plant, the acquired vessels were already 22-25 years old, and this superannuation led to a sharp decline in vessel operating days as well as a major increase in repair costs. In 2004, two vessels had been laid up due to breakdown, and one had been under extensive repair work for whole year, allowing average operating ratio declined to only 7.1 vessels. As a result of the decline in catch volume and an escalation in repair budgets, it became evident that, by fiscal 2006, the fleet would face serious operational pressures, underscoring the compelling need to revitalize SFPL as a prerequisite for revamping the country’s overall fishing industry.

The average catch volume per vessel is currently estimated at 1,020 tons per annum. On this basis, by retiring two of the most superannuated boats from the 12-vessel fleet while adding two new tuna pole & line vessels, with the resultant savings in repair costs, total catches could be maintained at the 2003 level of 9,000 – 10,000 tons. In addition, as a result of the operating improvements predicated on the introduction of the two vessels, SFPL would have ample opportunity to purchase, with its own funds, second-hand vessels in good condition as replacements for the future retirement of other superannuated vessels. The Solomon Islands Government, accordingly, has requested a grant aid from the Government of Japan for the construction of two new tuna pole & line vessels, along with six bait boats.

In response to this Request, the Government of Japan decided to conduct a Basic Design Survey, asking JICA (Japan International Cooperation Agency), an independent public corporation, to dispatch field survey teams, as follows, to the Solomon Islands:

- Basic Design Survey: September 27 to October 17, 2004
- Consultation on the draft report: December 13 –22, 2004

On the basis of the above field surveys as well as analytical support in Japan, the project was evaluated in terms of Plan background, condition of the existing fleet, maintenance system, and construction and procurement plan, resulting in the following Plan for the appropriate scale and contents, as the most appropriate to Japanese grant aid:

(1) Vessel Specifications

Number of vessels	2
Kind of vessel	Tuna pole & line fishing vessel
Classification	Nippon Kaiji Kyokai

Length overall	37.65 m
Length between perpendiculars	30.00 m
Moulded breadth	6.40 m
Moulded depth	2.80 m
Designed load draft	2.36 m
Gross tonnage (international)	About 194tons (equivalent to Japanese tonnage of 119 tons)
Fish hold	Bait/brind hold 54 m <sup>3</sup> , brine hold 34 m <sup>3</sup> , total 88 m <sup>3</sup>
Fuel oil tank	44 m <sup>3</sup>
Fresh water tank	10 m <sup>3</sup>
Complement	30 persons
Service speed	10.5 knots
Main engine	850 ps (625 kW) x 900 rpm x 1
Propeller	4 blades solid, diameter of 1.90 m
Generator	160 kW x 1200 rpm diesel driven 200 kVA x 2
Refrigeration plant	Compressor 37kW x 1, 18 kW x 1 Brine freezing capacity of 4t/8h Fish hold temperature -20
Navigation and fishing equipment	Steering control and auto pilot, navigation radar, bird radar, gyro compass, magnetic compass, GPS, echo sounder (shallow and deep sea), radio direction finder, air horn, public addressor, etc.
Radio apparatus	MF/HF radio telephone, VHF radio telephone, EPIRB (Emergency Position Indicating Radio Beacon), etc.

(2) Associated equipment

Fishing gear	Fishing rod, hook, line, dip-net, helmet, oilskin, etc.
Bait boat	Length overall: 7.0m or longer, engine power: 30ps, etc. x 4 boats
Engine kit for bait boat	Engine, tail shaft, sterntube, propeller, dynamo, radio telephone, etc.x 2 sets
Fish bin	Stainless steel material, 2 m x 1 m x 0.9 m x total 86 units

On the assumption that the subject Plan will be implemented via a grant aid from the Government of Japan, the construction period, including Implementing Design, will require 12 months.

With respect to project cost breakdown, since Plan construction and equipment procurement will all be done in Japan, the Solomon Islands side will not bear any expenses; the Japan side will defray the entire project budget of 973 million yen.

The following benefits may be anticipated from Plan implementation:

(1) Direct effects

- (i) Increased catches: Based on the introduction of the two Plan vessels, total catch volume in a normal year can be projected to increase by about 25% to some 9,100 tons, while shore processing facilities will satisfy standard production requirements, with revenues increasing proportionately.
  - (ii) Reduction in maintenance costs: Maintenance costs for the new Plan vessels will run only about 1/5 of those required for superannuated vessels. Thus, on an overall basis, the net increase in total maintenance budgets for the 12-vessel fleet, including the two new Plan vessels as well as the 10 existing boats, will be held to a modest 4%.
- (2) Indirect effects
- (i) Improvement in SFPL operating profits: From 2006, when the Plan vessels are to be launched, a highly favorable earnings outlook will result from the synergistic effects of the increase in revenues and decrease in maintenance burdens.
  - (ii) Supply of canned tuna: A steady flow of canned tuna products can be made available as a staple food item for the people of the Solomon Islands.
  - (iii) Contribution to the regional and national economies: SFPL maintains the largest work force in the Western States (directly employing about 1,000 persons) and also ranks among the largest consumers of fuel, provisions, power, water, and other services in that area. Thus, the ability to maintain stable operations at this company will contribute significantly to the regional economy, while the foreign exchange proceeds from increased exports of processed marine products should also bring important benefits to the national economy.

In this way, the introduction of the Plan vessels can be expected to have a long-term stabilizing influence on SFPL's fishing operations and its food supply capabilities, based on the project's growing contributions to both the regional and national economy, particularly a broad diffusion of benefits among the country's 440,000 citizens. It may be concluded, therefore, that there is ample justification for implementing this Plan on the basis of a grant aid.

In order to achieve effective utilization of the new Plan vessels and related equipment so as to further enhance initial project benefits, it is urged that careful consideration be given to the following strategies:

(1) Liquidation of unprofitable fishing vessels

Even after the new Plan vessels enter the fleet, it is anticipated that repair work will continue on disabled superannuated vessels. However, special care should be taken in assessing the cost effectiveness of such repairs and exercising prudent management judgment in liquidating unprofitable vessels

(2) Preparations for purchasing used vessels

Unprofitable superannuated vessels in the SFPL fleet should be replaced on a timely basis by second-hand vessels in good condition. For the purpose, SFPL should build up a replacement fund dedicated to second-hand vessel purchases. Since Japan is the sole source of second-hand tuna pole & line vessels, the company should try and keep informed of the second-hand vessel market so as to be in a position to react speedily and flexibly to sound purchase opportunities.

(3) Coping with management risks

- (i) Establishing the robust financial structure to overcome the market troughs, by taking full advantage of the opportunity of two Plan vessels operation.
- (ii) Circumventing market fluctuations by means of long-term purchase and sale contracts
- (iii) Indoctrinating the company with a pervasive awareness of the vital importance of cost reduction
- (iv) Encouraging human resource talents, including managerial skills

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## **CHAPTER 1 BACKGROUND OF THE PROJECT**

The tuna fishery in the Solomon Islands is conducted by three separate fishing enterprises, each specializing in purse sein, pole & line and longline. Among these fisheries, Soltai Fishing and Processing Ltd. (SFPL) was originally a joint venture between the Solomon Islands Government and a Japanese company, with over 25 years of experience, which was dissolved in August 2000. When it was reorganized in January 2001, SFPL inherited the experience and technical expertise of the former company's staff, along with its pole & line fleet and shore-based processing facilities.

SFPL is now owned 51% by Solomon Investment Corporation, an organ of the Solomon Islands Government, and 49% by the Western Province government.

The new company is operated with a dual outlook. On the one hand, it is strongly imbued with a distinct public service philosophy, intended to maximize the economic benefits of the material and human resources inherited from its predecessor to the Solomon Islands people. At the same time, it is positioned as a commercial enterprise, which must nurture management capabilities to maintain sustained independent operations through the production and marketing of dominant products capable of weathering fierce international competition.

SFPL processes raw fish caught by its fleet of company-owned pole & line vessels, which constitute the prop of its operations. These vessels, however, are already 22-25 years old and thus seriously superannuated. Two of the existing vessels have been forced to cease operations during 2004, with the remaining 10 undergoing constant and large-scale repairs, using proprietary techniques, as a means of extending vessel life as long as possible. However, the actual operating ratio of the fleet has been progressively declining, from 10.5 vessels per month in 2002 to 9.5 in 2003, and 7.1 in 2004, and this trend will be most difficult to reverse in the years ahead.

In order to achieve long-term operational viability, while prolonging the useful life of its vessels through meticulous care, SFPL should add new vessels while reinvesting repair economies in the purchase of second-hand fishing vessels. So as to maintain stable operations over the long-term, and considering the current circumstances, the Solomon Islands Government has requested a grant aid for two new tuna pole & line fishing vessels toward renewing the SFPL fleet.

Based on the field study, the original request items, as confirmed by the Solomon Islands side, as well as those items for which modifications are deemed necessary, have been summarized in the following table.

Table - 1 Original Request and Modifications

Item	Original request	Modifications	Comments
<b>Pole &amp; line fishing vessels</b>			
No. of vessels	2		
Material	Steel		
Length overall	About 36.0 m	36.75 m	To maintain cruising speed
Length between perp's	About 28.5 m	30.0 m	As above
Breadth, molded	5.9 m	6.40 m	To improve stability
Depth, molded	2.65 m	2.80 m	To maintain freeboard
Fish hold capacity	67 m <sup>3</sup>	88 m <sup>3</sup>	Original should read 76m <sup>3</sup>
Crew	About 30 persons	30 persons	
Service speed	10.5 knots	10.5 knots	
Main engine	625 kW (850ps)	625 kW (850ps)	
Fish preservation	Brine freezing / RSW		
<b>Bait boat</b>			
No. of boats	6	4 new boats, and 2 new engine kits to rehabilitate existing boat hulls	Based on field survey, two hulls are confirmed suitable for rehabilitation
Boat material	FRP		
Length overall	4.5 m – 9.0 m	About 7 m	
Width	1.6 m – 2.0 m	About 1.8 m	
Main engine	15-25kW(20-35 ps) (inboard)	22 kW (30 ps) (inboard)	
<b>FAD (Payao)</b>		<b>Additional request</b>	
Vessel equipment		10kN (1t) derrick Deepsea echosounder	To lift FAD To measure FAD depth
FAD		10 kits (rope, buoy, raft, etc.)	FAD deployment trials Fishing ground formation
Fish bin		Additional request 1t capacity container for use in cold storage SUS x 108 units	Storage of catch for new vessel meeting EU HACCP requirements

During the field study, the Solomon Islands side made supplementary requests for (1) Payao construction materials, as equipment for aggregating tuna, which tend to be found on the surface and are also useful in terms of resource management; and for (2) Large containers (e.g., fish bins) to store landed catches, as vital in terms of increasing product value. Study findings relative to the supplementary requests are summarized below.

#### FAD (Payao):

FAD (Fish Aggregating Devices known as Payao) are used as a supplementary catch method, taking advantage of the particular habit of tuna to group on the surface. Under the Tuna Management and Development Plan 2000, license holders are allowed to install Payao in licensed waters, but must register types, locations and markings. Catch data at the installed Payao must be registered in a prescribed format for submission to the authorities. This information is accumulated as basic data for



resource management, and continuously monitored for tuna stock in the 200 mile zone. However, the materials required for Payao are readily obtainable in Solomon Islands and are said to be an expendable item, standing up to 2-3 years of deployment. The assembly and set-up of Payao may be considered a necessary part of SFPL's tuna operations, while their costs can be defrayed from vessel operating budgets. Accordingly, Payao materials have not been included in the subject Plan. On the other hand, since none of the vessels in the existing SFPL fleet are equipped to deploy FAD, it was concluded appropriate to equip the new Plan vessels with derricks for this purpose along with and depth-sounding equipment to search for target Payao areas.

#### Fish Bins:

In order to expand fish supply for the cannery and encourage output of added value products, based on introduction of the two new vessels and the expected increase in catch volume, it is essential that large stainless steel (SUS) containers be employed that meet EU HACCP requirements. The SFPL cannery has been inspected by the EU authority and, in 1998, was certified as meeting EU standards. The tuna pole & line fishing vessels under the Plan will both satisfy EU approval standards, allowing their catches to be supplied to certified EU plants. Since SFPL presently has only about 25 SUS containers, with all other containers made of ordinary steel units, where there is always a risk of rust contamination. Large SUS containers, on the other hand, present absolutely no risk of rusting and are quite durable, and so it was deemed appropriate to include stainless steel fish bins in the Plan from the standpoint of catch quality control. The required number of bins has been determined in Section 2-2-2.

## **CHAPTER 2 PROJECT CONTENTS**

### **2-1 BASIC CONCEPT OF THE PROJECT**

The agriculture, fisheries and forestry sectors are the backbone of the Solomon Islands economy. In terms of the three key areas of employment, foreign exchange earnings, and protein supply, the fishing industry has consistently made major socioeconomic contributions on both the national and regional levels.

In the National Economic Recovery, Reform and Development Plan 2003 - 2006, drafted by the Solomon Islands Government in November, 2003 as a key policy for energizing the fishery sector, which plays so major a role in GNP, top priority has been accorded to development of the country's tuna fishery, based on both domestic and foreign investment. While it is widely recognized that the Solomon Islands are endowed with abundant tuna resources within its 200 mile exclusive economic zone (EEZ), fishing intensity is presently 60-70,000 tons, which is less than half of the total allowable catch (TAC) of 160,000 tons, while local vessels account for only half of current intensity levels. From this standpoint, there is clearly ample leeway for expanding the nation's tuna industry.

STL, who had been played the major role in the Solomon Islands tuna fishery, had to terminate its operation in January 2001 as a result of the social disruption in Solomon Islands, but, in January 2001, newly established company, SFPL, formed by the Solomon Investment Corporation and the Western Province Government, replaced STL.

At present, SFPL operates in the Western Pacific archipelago and is the largest domestically owned tuna fishery producer. For this reason, SFPL has come to play a vital socioeconomic role on the national level.

SFPL activities are concentrated in the following areas:

- (1) Effective mobilization of the assets acquired from the former joint venture with Japan, including tuna pole & line fishing vessels, a cannery, freezer, arabushi plant, workshop, etc.
- (2) Mobilization of its human resources, represented by the skills and experience of its employees over the past 27 years, so as to bring maximum socioeconomic benefits to the nation.
- (3) Processing the animal protein caught within the Solomon Islands 200 mile zone, making canned tuna products available throughout the country at affordable prices.
- (4) Contributing to national economic growth, foreign exchange resources, and employment.

- (5) Demonstrating that, on the basis of selective fishing by the pole & line fishery, sustainable use of the resource is possible.
- (6) Contributing to regional societies through procurement of public services, crew provisions, fuel, and development of employment opportunities, as an enterprise based in Noro, a core hub in the Western States.

Based on the above, SFPL has been positioned as an industrial hub, with a synergistic blend of entrepreneurial and public service spirit, capable of making a multifaceted socioeconomic contribution to the Solomon Islands.

SFDL's operations extend from company catches through processing, to product marketing and distribution. Its sense of social responsibility is heightened by the operation of shore-based facilities, round fish processing, and the production of added value products. At SFPL, there can be no doubt that maintaining a supply structure for round fish, based on its own catches, along with an increased output of processed products, is the basic rationale for independent operations. However, relying excessively on round fish purchases from other companies for purposes of activating its shore facilities can increase management risk. From this standpoint, maintaining catch volume landed by its wholly owned tuna fleet is a major operational challenge.

The ages of all vessels in the company's 12-vessel tuna fleet exceed 22 years, while the decline in operating rates due to superannuation has become a serious handicap. The monthly operating ratio declined from 10.4 vessels in 2002 to 9.5 in 2003, while the actual figure for 2004, reflecting an artificial hiatus in fishing activity at the start of the year, deteriorated still further to only 7.1 vessels.

The historical average catch per vessel, averaging both good and poor fishing years, is estimated at about 1,020 tons. By adding two new Plan vessels and by maintaining the existing fleet so as to forestall a further decline in operating ratios, the company's round fish catches should be recovered to 9,000 – 10,000 tons per year, equivalent to that of 2003. Furthermore, based on the addition of the two new vessels, the repair cost burden for the existing vessels being replaced should be eliminated, making it possible to accumulate fresh capital for the future purchases of second-hand vessels as a means of maintaining the fleet's long-term catch capabilities.

Based, then, on the addition of the two new tuna pole & line fishing vessels under the subject Plan, SFPL will be in a position to establish a viable captive structure for round fish catches. With the resulting increase in processed fish production, the company can then focus on improving its underlying financial structure.

## 2-2 BASIC DESIGN OF THE REQUESTED JAPANESE ASSISTANCE

### 2-2-1 Design Policy

(1) Vessel functions and performance

The Plan Vessels should be designed and constructed, as the vessel operated and managed by the SFPL, taking various vessel performances into consideration, e.g. sailing performance, seaworthiness, fishing system, fish preservation system, livability, durability, maintenance-friendliness, operation economy, environmental protection, food hygiene, etc.

In particular, durability and maintenance-ability of existing SFPL fleet vessels should be studied and the countermeasures against those aged vessels should be reflected on the design and construction of the Plan Vessels.

(2) Sailing performance

Unlike commercial tuna pole & line fishing vessel of Japan, high speed is not required for SFPL tuna vessels, since fishing grounds are in only 10 hours distance at the outside and no deadline of returning port to discharge catch may be considered. The service speed of the Plan Vessel should be about 10.5 knots, same as the speed of existing SFPL vessels, to allow same operation plan as the existing vessels.

The Plan Vessel must navigate in lagoon with sunken reefs for bait operation, thereby the Plan Vessel should be designed to allow good maneuverability with course keeping stability<sup>1</sup> as well as swift steering.

(3) Seaworthiness

The Plan Vessel should be designed to have ample stability and reasonable freeboard. While the existing SFPL pole & line fishing vessels are of design adapting the way of operation in the Japanese offshore seas, the Plan Vessel should be of seaworthiness to adapt SFPL way of operation.

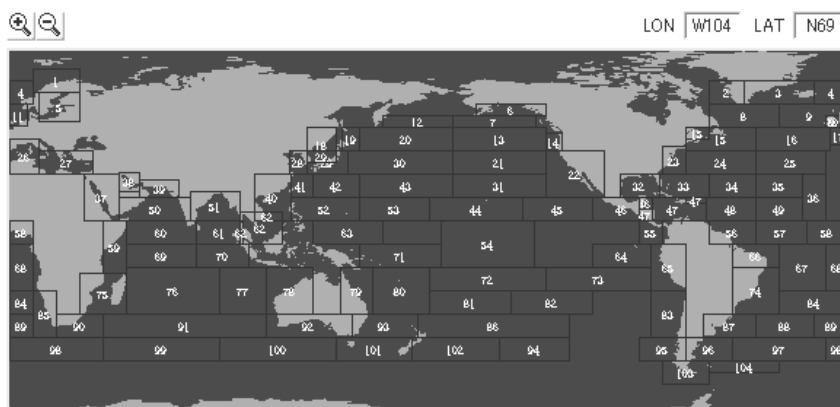
As the criteria for seaworthiness, Japanese safety regulations for stability and freeboard and besides IMO<sup>2</sup> criteria should apply.

Wave height statistics are obtained from the database of National Maritime Research Institute of Japan. The data are measured by the microwave height sensor of satellites GEOSAT and TOPEX/POSEIDON. Data are available for each sea region.

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<sup>1</sup> To run straight steadily, not to change heading freely without helm order.

<sup>2</sup> International Maritime Organization, under UN, dealing with international maritime regulations for safety at sea, sea pollution, etc.



Output					
Area No.	Spg	Smr	Atm	Wtr	All
Wave height	Probability %				
Total					
	Nos. sample				
	Probable significant wave height				

Fig.-1 National Maritime Research Institute Database

Wave height statistics of Solomon Islands waters (A71) and Ogasawara Islands waters (A42) as a sea area where Japanese tuna pole & line fishing vessels are operating are as follows.

Table - 2 Wave statistics

Solomon Islands waters						Ogasawara Islands waters					
A71	Spring	Summer	Autumn	Winter	Annual	A42	Spring	Summer	Autumn	Winter	Annual
19.75-	0.0000	0.0000	0.0000	0.0000	0.0000	19.75-	0.0000	0.0000	0.0000	0.0000	0.0000
18.75-	0.0000	0.0000	0.0000	0.0000	0.0000	18.75-	0.0000	0.0000	0.0000	0.0000	0.0000
17.75-	0.0000	0.0000	0.0000	0.0000	0.0000	17.75-	0.0000	0.0000	0.0000	0.0000	0.0000
16.75-	0.0000	0.0000	0.0000	0.0000	0.0000	16.75-	0.0000	0.0000	0.0000	0.0000	0.0000
15.75-	0.0000	0.0000	0.0000	0.0000	0.0000	15.75-	0.0000	0.0000	0.0000	0.0000	0.0000
14.75-	0.0000	0.0000	0.0000	0.0000	0.0000	14.75-	0.0000	0.0000	0.0000	0.0000	0.0000
13.75-	0.0000	0.0001	0.0000	0.0000	0.0000	13.75-	0.0000	0.0002	0.0000	0.0000	0.0000
12.75-	0.0001	0.0002	0.0000	0.0000	0.0001	12.75-	0.0001	0.0002	0.0000	0.0000	0.0001
11.75-	0.0002	0.0004	0.0001	0.0001	0.0002	11.75-	0.0000	0.0007	0.0003	0.0000	0.0002
10.75-	0.0004	0.0009	0.0003	0.0003	0.0005	10.75-	0.0002	0.0008	0.0005	0.0003	0.0003
9.75-	0.0005	0.0007	0.0006	0.0004	0.0005	9.75-	0.0002	0.0009	0.0006	0.0002	0.0004
8.75-	0.0005	0.0006	0.0004	0.0004	0.0005	8.75-	0.0001	0.0010	0.0006	0.0002	0.0004
7.75-	0.0004	0.0006	0.0002	0.0002	0.0004	7.75-	0.0001	0.0002	0.0004	0.0002	0.0002
6.75-	0.0003	0.0009	0.0003	0.0003	0.0005	6.75-	0.0001	0.0009	0.0004	0.0009	0.0005
5.75-	0.0007	0.0026	0.0006	0.0007	0.0011	5.75-	0.0008	0.0022	0.0009	0.0028	0.0016
4.75-	0.0012	0.0030	0.0011	0.0010	0.0015	4.75-	0.0015	0.0030	0.0015	0.0052	0.0029
3.75-	0.0024	0.0121	0.0018	0.0078	0.0060	3.75-	0.0096	0.0066	0.0049	0.0313	0.0151
2.75-	0.0203	0.0863	0.0264	0.0340	0.0403	2.75-	0.1015	0.0859	0.0637	0.2175	0.1283
1.75-	0.5653	0.4686	0.4062	0.6267	0.5279	1.75-	0.5261	0.3195	0.4605	0.6382	0.5210
0.75-	0.4074	0.4227	0.5576	0.3273	0.4194	0.75-	0.3562	0.5652	0.4569	0.1031	0.3244
0-	0.0003	0.0004	0.0044	0.0007	0.0012	0-	0.0038	0.0127	0.0087	0.0000	0.0047
TOTAL	72572	54835	47867	64300	239574	TOTAL	32806	12485	20571	30631	96493
	1.8823	2.0020	1.7458	1.9527	1.9013		2.0086	1.8272	1.8665	2.4432	2.0971

(4) Fishing

Except otherwise pointed out for necessity of improvement, fishing system of the Plan Vessel should follow SFPL vessels' current system, so that the way of fishing familiarized already on board the existing SFPL vessels can be continued also on board the Plan Vessel.

(5) Fish preservation

To preserve fish on board the Plan Vessel, there are three options: ice, RSW (refrigerated sea water) and brine freezing. These three options are evaluated as the possibility for SFPL vessel, and concluded that brine freezing system be adopted as the system superior in economy,

productivity and quality.

Table - 3 Comparison of options for fish preservation

	Brine freezing	RSW	Ice
Operation	Catches are frozen down to about $-17^{\circ}\text{C}$ in brine, then the brine water is pumped out to other fish hold and the catches are kept cooled at about $-17^{\circ}\text{C}$ by cooling coil in the fish hold.	Catches are cooled down to about $+3^{\circ}\text{C}$ in RSW, then the brine water is pumped out to other fish hold and the catches are kept cooled at ice temperature by cooling coil in the fish hold.	Catches are cooled and stowed in iced seawater. Ice is loaded at wharf every time before departure. Icing is done on board vessels whose refrigeration plant had become out of order.
Refrigeration plant	Compressor for brine x 1 Brine cooler x 1 Compressor for air cooling x 1	Compressor for RSW x 1 RSW cooler x 1 Compressor for air cooling x 1	None
Duration to maintain freshness	Almost unlimited	About 3 days	About 3 days
Plant cost	A little higher than RSW	High	Low
Duration to stay fishing ground	Unlimited. Possible to continue fishing until filling fish hold: high in economy and productivity.	Necessary to discharge first catch within 3 days. Steaming to and from fishing ground is frequent so that fuel oil consumption is high and fishing time is short.	
Reliance on shore freezer	Not relying on shore freezer, brine vessels are economical in entire freezing cost compared with RSW and ice vessels.	All RSW and iced catches must be frozen by shore brine freezing facility, i.e. onboard work and shore work have to be duplicated. Besides, shore brine freezer, the biggest electric consumer in SFPL, uses expensive Solomon electric price, thereby freezing cost by shore freezer is expensive.	
Fish quality	Good quality, frozen immediately after catching.	Excessive duration in raw fish due to long operation leads sub-quality. Even within allowable duration in raw fish, quality of fish frozen several days after catch is always lower than onboard freezing.	
Maintenance of refrigeration plant	Brine plant machinery is generally bigger than that of RSW plant, but composition of plant subject to maintenance is similar, thereby price of machinery parts is higher in brine plant but maintenance workload is similar.		None

Refrigerant should be R717 (Ammonia) not adopting R-22 from consideration of avoiding risk of ozone layer depletion and also considering that the shore plant uses R717 and spare charge is readily available for vessels.

(6) Livability

Accommodation should be designed and outfitted according to the current Japanese

regulations for fishing vessels.

(7) Durability and maintenance-friendliness

Generally, repairing gradually increases as getting older. Corrosion of steel, wearing of machinery parts, dropping of electric parts insulation, etc. accumulate and result in malfunction.

Though aging cannot be completely eliminated, situation can be considerably improved by adopting durable material for equipment, close daily and periodical maintenance, etc. To ensure vessels of Grant-Aid from Japan working as long years as possible, following policy should be considered.

- (i) Effective countermeasures against corrosion in contact with seawater, e.g. plastic coated steel pipes for seawater system in engine room, plastic pipes for seawater and fresh water pipes outside engine room, stainless steel at important parts of hull and outfitting, etc.
- (ii) Ample room around equipment and machinery for dismantling and overhauling to allow maintenance friendliness and to minimize dismantling of neighboring equipment.
- (iii) Preventive Maintenance Policy (PMP), to overhaul machinery along the schedule before malfunction, finally to ensure long life.

(8) Operation economy

High productivity and at same time low production cost should be intended. Fuel economy main diesel engine and diesel auxiliary should be adopted to assist operation economy.

(9) Environment protection

To prevent pollution from the Plan Vessels, rules of MARPOL (International Convention for the Prevention of Pollution from Ships, adopted in IMO) should apply, i.e. oily water treatment system to prevent pollution by oil, toilet discharge collecting system to prevent pollution by sewage and low NOx<sup>3</sup> emission diesel engine to prevent air pollution should be considered.

(10) Food hygiene

Export of yellow fin tuna loin to EU is now the most important product for SFPL, thereby compliance with EU's HACCP<sup>4</sup> standard is the fundamental condition to the SFPL vessels and shore facility.

HACCP standard requires hygiene way of handling foods by crew on board fishing vessels

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<sup>3</sup> Nitrogen oxide emissions (NOx): MARPOL specifies control of NOx emission from newly installed diesel engines.

<sup>4</sup> Hazard Analysis Critical Control Point: Food quality control system in food processing to study possible risk of food contamination cases and to take countermeasures against each risk in the processing equipment, working environment and working system.

and workers in food processing factory. In SFPL, loin/canning factory and three fishing vessels (SOLTAI 5, 6 and 7: all of brine boats) among 12 vessels have license of EU HACCP. Fresh fish fishing vessels (RSW and ice preservation) are not possible to get the license.

The Plan Vessels should be of brine freezing and be outfitted to comply with EU HACCP requirements.

SFPL pole & line fishing vessels are required to meet following specific EU HACCP requirements.

- (i) Fish contact surfaces shall be clean, sanitized, and maintained, and shall be so constructed as to avoid rust, metal and glass fragment sticking in fish. Against the contamination of wooden plank on working deck, the wooden plan should be of construction easy to clean and drain, and against rusting of steel lining inside fish hold, the rusting should be minimized by robust epoxy paint material.
- (ii) Sun awning should be provided over off-loading working deck to minimize effect of the sun.
- (iii) To minimize possibility of contamination of seawater suction used for brine and deck washing by toilet water discharge, position of seawater suction should be well forward of toilet water discharge. In the Plan Vessels, all toilets should be placed at aft part of the vessel and toilet for forward accommodation should not be fitted.
- (iv) Toilet washbasins should be foot operated.
- (v) Fish-bins to stow frozen fish and have access directly into cannery should be of stainless steel material free from rusting.
- (vi) Fish holds temperature indicating device with recorder should be fitted.



## 2-2-2 Basic design

### 2-2-2-1 Hull design

#### (1) Capacity of the hull

Main dimensions of the hull, i.e. length, breadth and depth, are made a little larger than the Request: by 21% larger when compared with length x breadth x depth of the hull. From the result of free rolling test and draft survey, it was realized that seaworthiness of the vessel be improved by increasing stability and freeboard, and breadth and depth are increased. To compensate loss in speed due to wide hull, length is added.

Table - 4 Main particulars of the Plan Vessel and the Request Vessel

	Plan Vessel	Request Vessel (SOLTAI-70)	Difference
Length overall (Loa)	37.65 m	36.15 m	+1.50 m
Length between perpendiculars (Lbp)	28.50 m	30.00 m	+1.50 m
Molded breadth (B)	5.90 m	6.40 m	+0.50 m
Molded depth (D)	2.65 m	2.80 m	+0.15 m
Design draft (d)	2.36 m	2.36 m	0
Cubic dimension (Lpp x B x D)	446	538	+21 %
Fish hold capacity	87 m <sup>3</sup>	76 m <sup>3</sup>	+11 m <sup>3</sup> (+14%)

#### (i) Rolling test and determination of the hull breadth

Result of free rolling test of SOLTAI-70, which is the model of the Request Vessel, is as follows.

$$\frac{\kappa}{B} = \frac{Ts\sqrt{GoM}}{2.01B} = 0.43$$

Measured rolling period is:  $Ts = 9.5 \text{ sec}$ , and Breadth is:  $B = 5.90 \text{ m}$

From above, stability height (metacentric height above center of gravity) is:  $GoM = 0.29 \text{ m}$

Metacentric height above baseline is:  $TKM = 2.91 \text{ m}$

Then, center of gravity above base line is:  $KGo = TKM - GoM = 2.62 \text{ m}$

Whereas, to increase stability to a level:  $GoM \approx 0.50 \text{ m}$ ,  $TKM = KGo + GoM \geq 3.12 \text{ m}$

Accordingly, as  $TKM \propto B$ , the hull breadth should be:  $B = 3.12 \div 2.91 \times 5.9 = 6.33 \text{ m}$

Considering tolerance in the completed condition, the hull breadth should be:  $B = 6.40 \text{ m}$

**(ii) Draft survey and determination of the hull depth**

Result of draft survey showed that SOLTAI-70's draft exceeds design draft considerably.

SOLTAI-70's working deck is placed by 0.15m above steel deck to avoid shipping water on working deck. In the Plan Vessels, this void space should not be provided but steel deck should be raised higher by 0.15m to obtain reasonable freeboard and reserve buoyancy above waterline.

According to above, the hull depth should be:  $D=2.89$  m instead of 2.65m.

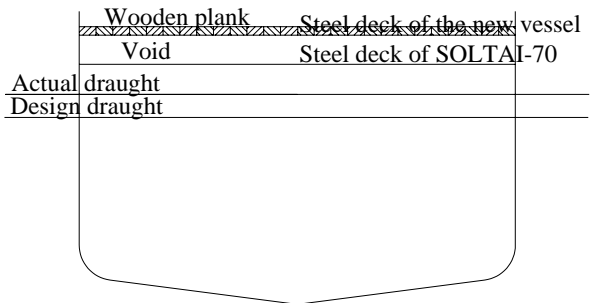
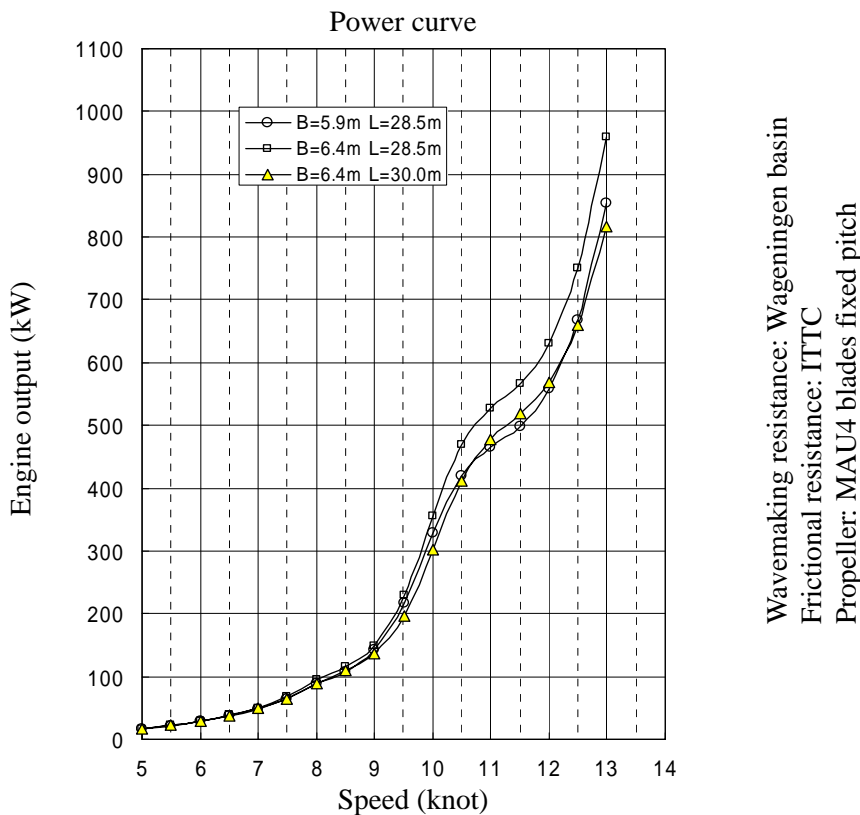


Fig.-2 Deck, draft and freeboard

**(iii) Vessel speed and determination of hull length**

The Plan Vessels should have speed performance equivalent to that of SOLTAI-70, thereby same operation plan can be intended.

Loss in speed due to wider hull should be compensated by longer hull. As shown in the power curves below, the Plan Vessel's speed performance is made equivalent to that of SOLTAI-70 by the hull length of 30.0m.



Wavemaking resistance: Wageningen basin  
 Frictional resistance: ITTC  
 Propeller: MAU4 blades fixed pitch

Fig.-3 Breadth, length vs speed

In the elongated 1.5m hull, 0.5m is given to the engine room for maintenance-friendly layout, and 0.5m is given each to the forward and aft accommodation to improve livability. Length of the fish hold remains same.

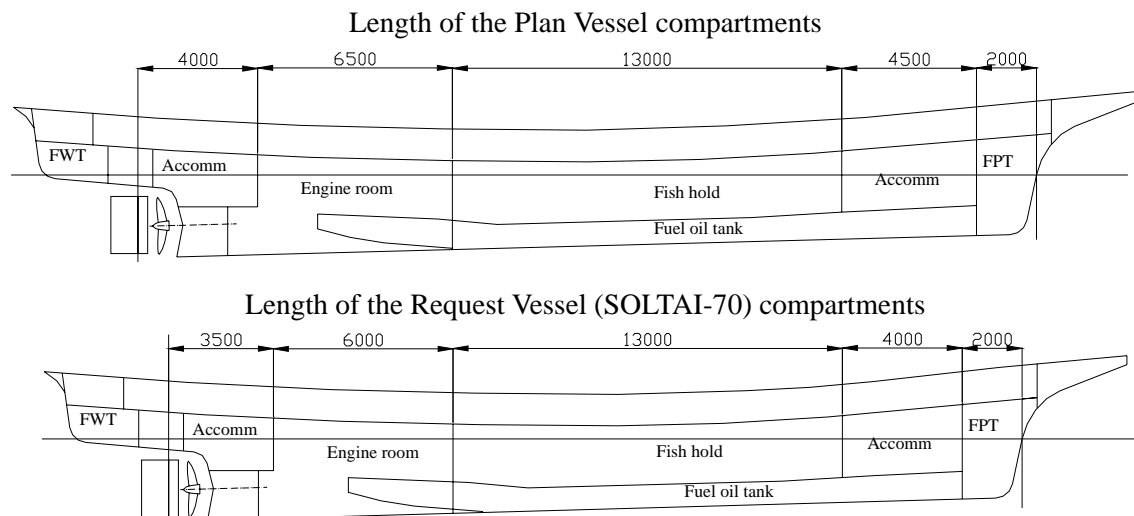


Fig.-4 Compartment length of the plan vessel and existing vessel

**(iv) Draft**

SFPL P&L vessels enters lagoon area at night to catch live bait, In lagoons vessels must navigate carefully avoiding shallow water of sunken reef.

Shallow draft vessels will navigate more freely in lagoons but loading possibility will be limited.

On the other hand, deep draft vessels will carry more fish but navigation in lagoons will be so limited, unable to enter certain lagoon area, that disadvantage in the daily operation will be considerable.

Therefore, it is concluded that the draft of the Plan Vessels should be equivalent to that of current SFPL vessels allowing same possibility to enter lagoons.

**(2) Rules to apply and classification society**

Instruction regarding Rules to apply necessary for registration in Solomon Islands, appointment of classification society and inspection during construction was given by the Principal Marine Surveyor of Marine Department, Ministry of Transport, Infrastructure and Development as follows and Memorandum of Understanding next page.

**(i) Rules to apply**

Whereas international trade vessels are governed by the International Conventions, e.g. SOLAS, domestic service vessels are governed by domestic rules and regulations of the flag state.

It was confirmed that following rules and regulations apply for the Plan Vessels.

- (a) The Shipping Act 1998, Solomon Islands

General shipping law, specifying international convention vessels. Rules for non convention vessel including fishing vessels are not specified leaving the Minister to lay down separate regulation / circular.

(b) NK classification rules

(c) The Shipping (Non-Convention Vessel Safety) Regulations 2003, or alternatively Japanese Maritime Rules and Regulation for fishing vessels.

The Shipping Regulations 2003 are for safety regulations for non-convention vessels, common in the South Pacific Countries, but fishing vessels are generally excluded in the scope to apply. Therefore, it was concluded that either the Shipping Regulations 2003 or Japanese Maritime rules and Regulations should apply.

Finding that the Shipping Regulations 2003 is not suitable for fishing vessels, the Plan Vessels applies Japanese Maritime rules and Regulations.

**(ii) Classification Society**

Classification society as the third party maritime authority will be commissioned to conduct inspection of hull structure and safety rules and regulations, and finally inspection certificate will be obtained. The Marine Department will acknowledge the certificate, and issue provisional national certificate necessary for sailing from Japan to the homeport of Solomon Islands.

Major shipping countries have classification society, e.g. Nippon Kaiji Kyokai (ClassNK) in Japan, Lloyd's Register of Shipping in UK, American Bureau of Shipping in USA, etc. It is confirmed by the Marine Department that ClassNK can be appointed as the classification society for the Plan Vessels. Letter of authorization to inspect and issue certificate on behalf of the Government of Solomon Islands will be issued by the Marine Department to ClassNK.

**(iii) Inspection**

Under the Letter of Authorization, the ClassNK examines design drawings, inspect the Plan Vessels under construction, and issue certificates of compliance.

The Marine Department Surveyor, Solomon Islands Government, visits Japan for inspection when the Plan Vessels is nearly completion and ready for sea trial. The Marine Department Surveyor then issue provisional national certificate after acknowledging ClassNK inspection certificates.

Fig.-5 Memorandum of discussion with Marine Department of Solomon Islands

### MEMORANDUM OF UNDERSTANDING

Date: 01 and 14 October 2004  
Place: Solomon Kitano Mendana Hotel, Honiara  
Presence: Marine Department, Ministry of Transport, Infrastructure and Development  
Mr Batiara Naniseni, Principal Marine Surveyor  
Soltai Fishing & Processing Co Ltd (01.10.2004 only)  
Mr Milton B. Sibisopere, Managing Director  
Mr Asery Kukui, Human Resource & Administration Manager  
Basic Design Study Team  
Mr Naohiko Nakajima, Project Manager, Fisheries Engineering Co Ltd  
Mr Toyonori Watanabe, Fisheries Engineering Co Ltd  
Mr Akio Yamada, Fisheries Engineering Co Ltd  
Mr Takashi Furukatsu, Taiyo A & F Co Ltd  
Subject: Statutory survey of tuna pole & line fishing vessel to be built under the Japan's Grant Aid Project (the Project)

#### Discussions

1. Nippon Kaiji Kyokai (ClassNK) shall be appointed as the classification society, who inspects the Vessel and issue survey report and certificate on behalf of the Government of Solomon Islands. Marine Department shall issue a Letter of Authorization (LOA) to ClassNK for such work. The Owner of the new Vessel shall apply for LOA to the Marine Department, Ministry of Transport, Infrastructure and Development upon the approval of the Project between two Governments.
2. Surveyor of the Marine Department shall visit the Builder of the Vessel in Japan to inspect the completed condition of the Vessel. The Surveyor shall attend the official sea trial of the Vessel, and issue Provisional Certificate of Registry.
3. Following Rules and Regulation shall apply to build the Vessel.
  - (1) The Shipping Act 1998 of Solomon Islands
  - (2) ClassNK Rules
  - (3) Either The Shipping (Non-Convention Vessel Safety) Regulations 2003 or, Maritime Rules and Regulation of Japan, i.e. compliance with Japanese maritime rules and regulations is deemed as equivalent to the compliance with the Solomon Islands maritime rules and regulations.

Confirmed by Mr Batiara Naniseni, Principal Marine Surveyor on 14 October 2004 in Honiara



### (3) Fuel oil tank

Main + auxiliary diesel engine fuel oil consumption

= rated output kW × specific FOC g/kW·h × 24h × output rate % × 10<sup>-6</sup> /specific gravity of fuel

$$=(625+160) \times 195 \times 24 \times 0.70 \times 10^{-6} / 0.86 = 3.0 \text{ kl/day}$$

Maximum catch amount = 88m<sup>3</sup> × 0.61 t/m<sup>3</sup> = 54t

Catch rate per day = about 10 t/day

Length of stay in fishing ground = 54t / 10t/day = 5.4day

Total operation day = about 7 days

Fuel oil consumption = 3.0kl/day × 7days = 21 kl

Accordingly, fuel oil tank capacity necessary for fishing operation as SFPL vessel is about 25 kl adding margin.

However, double bottom of the hull has a capacity well exceeding 50 m<sup>3</sup>, which covers necessary fuel oil for sailing from Japan to Solomon Islands. Therefore, double bottom should not be left as void space but should be all piped as fuel oil tank. The Plan Vessels can sail direct from Japan to Solomon Islands without refueling.

Mileage from Japan to Solomon Islands (Noro) = about 3,360nautical miles

Speed = about 9.5knots

Sailing days = 3,360n.m. / 9.5knots / 24h = 14.7days, say 15days

Fuel oil consumption = 3.0kl/day × 15days = 45 kl

### (4) Fresh water tank

Current SFPL vessels consumes fresh water of about 5 m<sup>3</sup> in 3 – 4 days by about 30 crew.

Accordingly, specific consumption rate is 42 – 55 liter/pers/day.

Generally following standards for fresh water consumption are referred to:

- (a) Japanese regulation for fishing vessels: 20 liter/p/d for potable and washing water but shower water is not specified.
- (b) UK regulation: 4.5 lit/p/d for potable water, 45.5 liter/p/d for washing and shower water, totaling 50 liter/p/d
- (c) USA regulation: all in total 110 liter/p/d

Considering above, fresh water consumption rate of 50 liter/p/d is considered reasonable.

Accordingly, fresh water tank capacity necessary for the Plan Vessels should be:

$$7\text{days} \times 30\text{pers} \times 50\text{lit/p/d} \times 10^{-3} = 10.5 \text{ m}^3 \text{ or greater.}$$

### (5) FAD (Payao) handling

Before 2000, STL fleet had a function to set and maintain FAD and were using about 300 sets of FAD, but now SFPL is without any function to set and maintain FAD, and uses FAD of 107

sets (no. as of 2004) installed by NFD as shown on next FAD map around New Georgia Island.

Purse seiners of NFD are, however, to move from coastal area to the outside offshore according to the national fisheries plan. When NFD vessels have disappeared from the coastal fishing ground, SFPL must manage FAD. FAD raft part being lost at every 2 – 3 years as an average by storm, maintenance of FAD raft part, about 30 – 50 sets in a year and also dropping new FADs at new fishing spots, about 20 sets in a year becomes important standing job for SFPL fleet.

Vessel functions for FAD setting and maintenance are (1) crane (derrick) of about 10 kN (1 tf) capacity to lift, drop or retrieve FAD material, and (2) echo sounder suitable to measure sea depth up to about 3,000m to find accurate sea depth where FAD is placed. On board the Plan Vessels, these equipment should be installed to add function of FAD handling which present SFPL fleet vessels don't have.

Transducer sensor on the hull bottom for deep sea echo sounder should be independent from the sensor of fish finder, but indication part of the two echo sounder should be of common equipment and installed in the navigation bridge.

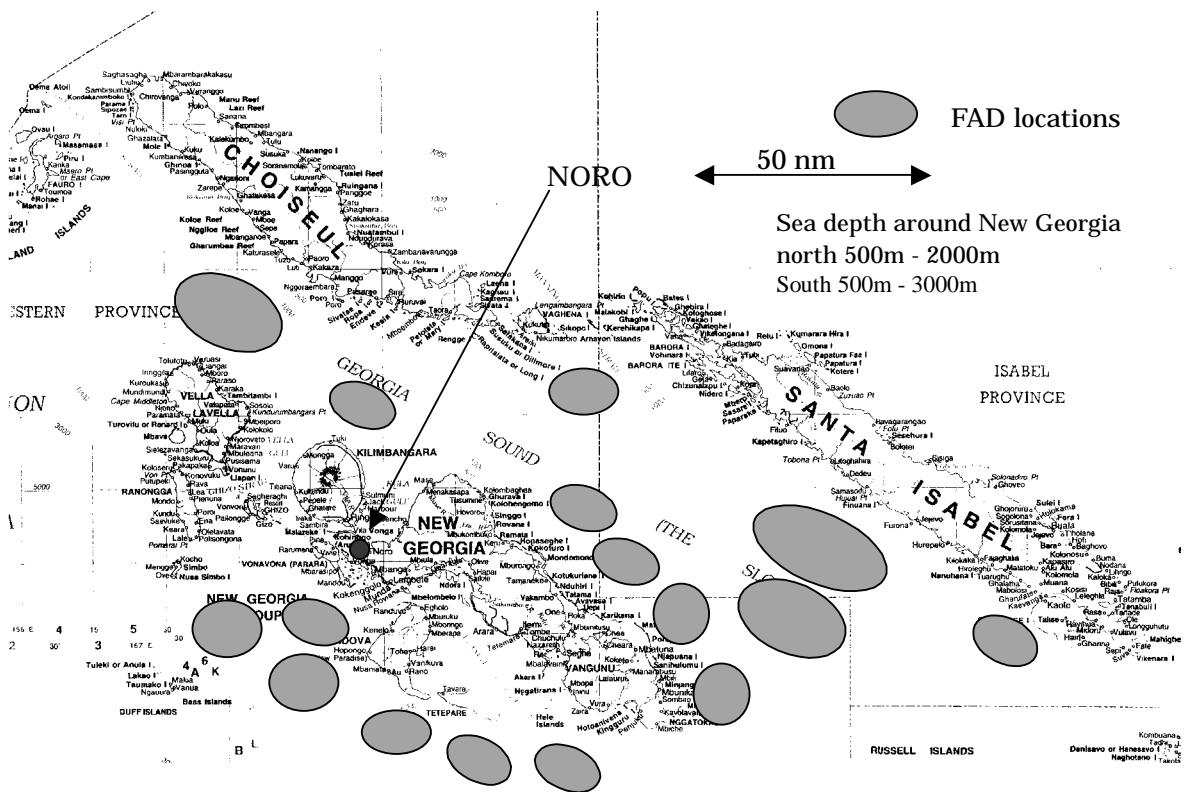


Fig.-6 FAD around New Georgia Island 107 sets (2004)

**(6) Fish preservation**

On board the Plan Vessels, 10 fish holds each of capacity to stow about 5 tons of tuna are arranged. Catches are frozen and kept cooled as following procedure.

- (a) Saturated salt brine is half filled in 2 – 4 brine holds, and cooled down to about  $-17^{\circ}\text{C}$  by running brine refrigeration compressor.
- (b) Catches are soaked in brine for about 8 hours and frozen to the core of fish. Brine refrigeration compressor keep working to cool brine liquid warmed by fish temperature.
- (c) Brine liquid is pumped out from the fish hold where freezing is completed to other empty hold.
- (d) Keep-cooling compressor starts to work to maintain frozen temperature by the work of grid coil around fish hold.
- (e) Above operation is repeated for every fish hold, and fish holds are one by one filled.

Fundamental design conditions of the refrigeration plant should be as following.

Brine temperature  $-17^{\circ}\text{C}$

Maintaining temperature  $-20^{\circ}\text{C}$

Brine cooling capacity 4 t / 8 h

1 – R717 (Ammonia) compressor, about 37 kW, for brine cooling

1 – R717 (Ammonia) compressor, about 18 kW, for keep-cooling

1 – Condenser (for two compressors)

1 – Brine cooler

1 – Receiver

1set – Oil filter, oil separator, expansion valves, etc.

## **(7) Main engine**

As mentioned in (1) Capacity of the hull, the Plan Vessel's water resistance is maintained at about same level with current SFPL vessels and main engine horsepower is also maintained at 625 kW (850 ps), thus same speed performance as current SFPL vessels is obtained.

Even by same horsepower engine, fuel oil consumption of present engine is by about 10 – 15% better than the engine of 1980s. Diesel engine should be selected evaluating fuel economy and operation-friendliness.

## **(8) Electric generators**

Electric genset of the Request Vessel (SOLTAI 70) are of capacity 160kVA x 2 sets, running at a load of about 110kW when brine compressor is working, which is high load on single running genset (86% load), thereby two gensets are always running in parallel. When two gensets are running, generator cannot be overhauled.

In the Plan Vessels, electric consumers will increase by about 10 kW due to fish hold refrigeration plant and air conditioning system, and thereby total electric demand will be about 120kW. Assuming reasonable load at 75% by single running genset, the new genset capacity should be:

Electric demand / load rate / power factor =  $120\text{kW} / 0.75 / 0.80 = 200\text{kVA}$



As single genset can cater all electric requirements, two gensets will be run alternately every week allowing time to overhaul one genset in standby.

Alternate current frequency should be 60Hz, same as current SFPL vessels, allowing electric parts supply in same frequency.

**(9) Navigation aids and fishing electronics**

Navigation aids and fishing electronics shall be of simple formation but following equipment should be specially considered.

**(i) Bird radar**

Whereas X-band radar (3cm wave length), normally adopted as navigation radar, is easily interfered by rainfall, S-band radar (10cm wave length) is less interfered by rainfall. Besides, S-band radar is found useful to find echo of seagull flying over fish school. On board most of tuna P&L vessels and tuna purse seiners, S-band radar is now installed in addition to X-band radar. Finding S-band radar as the important tool, SFPL has been investing on S-band radar, but number of vessels with S-band radar is still limited (only three vessel now).

The Plan Vessels should be fitted with two radars, one X-band and one S-band.

**(ii) Deepsea echo sounder**

The deepsea echo sounder should be installed to find the accurate sea depth where to drop FAD (Payao). As the deepsea echo sounder and ordinary fish finder will not be used at same time, processor and display part of the two echo sounders should be made common by fitting change-over switch. Transducer sensor on the bottom hull should be installed independently.

**2-2-2-2 Equipment procurement**

**(1) Fish bin**

Landings discharged from fishing vessel are stowed in fish bins and carried to the cold store. Fresh fish landings first go to brine freezer shop then carried to the cold store. Frozen fishes are taken out to the cannery or arabushi shop several days later.

All fish bins are of same size to allow stowing neatly in the cold store: inside dimensions of 2.0m x 1.0m x 0.9m to carry 1,000kg.

According to the standard operation plan<sup>5</sup>, each Plan Vessel is expected to bring 43 tons of frozen tuna at every voyage. Therefore, 43 fish bins should be supplied as the equipment for each Plan Vessel, i.e. 86 fish bins for two Vessels.

The Plan Vessels with high productivity are required to comply with the EU HACCP requirements, thereby their products must be stowed in fish bins without risk of contamination. Present fish bins are of galvanized steel: easy to rust and difficult to use as the container stowing food for EU. Therefore, fish bins to supply should be of stainless steel.

Fish bins should be shipped on board the Plan Vessels in a form of 5 pieces kit. The kits should be welded and completed by the SFPL workshop after arrival.

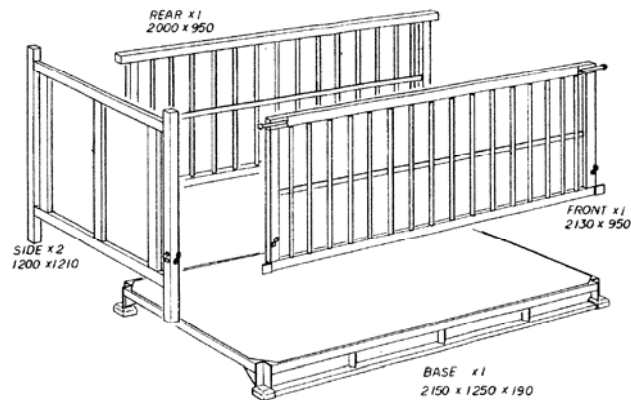
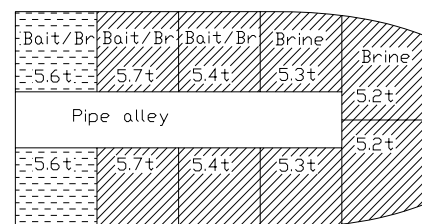


Fig.-7 Fish bin (5 pieces kit)

<sup>5</sup> 10 fish holds are arranged, and fishes are filled from fish hold in the forward. Finally, forward 8 fish holds are filled leaving aftermost two fish hold occupied by live bait. Catches in 8 fish hold is in total 43 tons.



(2) **Bait boat**

Tuna P&L fishing vessels in Solomon Islands go to lagoon every night to catch live bait by stick-held dip net operation. The live bait is kept in the P&L vessel's live bait hold, and in the tuna fishing ground live baits are scattered to excite tuna.

Bait operation in lagoon is as shown on the sketch right:

Three bait boats belong to one tuna P&L vessel, and wait for the tuna P&L vessel at different positions in lagoon. At night, bait boat collects bait fish by underwater lure lamp, then tuna P&L vessel approaches near the boat and bait fish school is shifted from bait boat to the tuna P&L vessel by moving lure lamp. The bait fish school is then caught by the vessel's stick-held dip net.

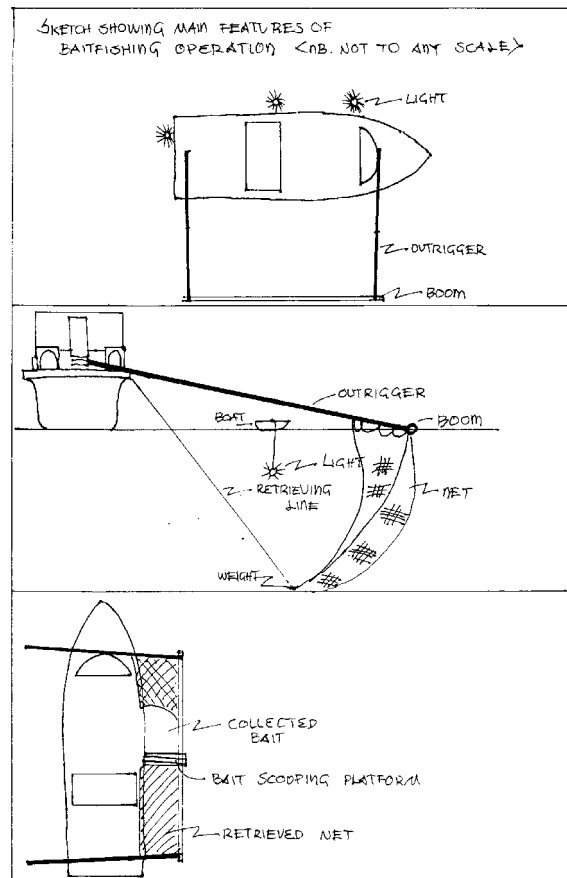


Fig.-8 Bait operation

Six bait boats (3 boats x 2 gangs) were originally requested. However, among many bait boats, which had been given up, condition of plastic hull of two boats was found suitable for rehabilitation by installing new engine and outfits.

Therefore, following way of procurement should be taken.

- (i) Four bait boats: Hull, engine and outfitting are completed in Japan and shipped on board the Plan Vessels.
- (ii) Two bait boats: Engine and outfitting kit (comprising engine, propeller shaft, propeller, dynamo, radio telephone, signal light, lure lamp, etc.) are shipped on board the Plan Vessels and the kits are installed on board the existing hull by SFPL workshop.



Fig.-9 Workboat given up due to engine breakdown

### 2-2-3 Vessel and equipment particulars

Numbers appearing the following particulars denote the number required for the one vessel.

Item	Specification
<b>Principal particulars</b>	
Kind of the vessel	Tuna pole & line fishing vessel
Navigation area	Within EEZ of Solomon Islands
Flag	Solomon Islands
Classification	Nippon Kaiji Kyokai (ClassNK) ClassNK to issue classification certificate and inspection report, as necessary for the registration in Solomon Islands.
Rules to apply	The Shipping Act 1998, Solomons
	Classification Rule
	Japanese Maritime Rules as applicable to the fishing vessel
Length overall	37.65 m
Length between perp.	30.00 m
Breadth, molded	6.40 m
Depth, molded	2.80 m
Design draft, molded	2.36 m
Gross tonnage	About 194 tons (International admeasurement)
Bait/brine hold	6 holds, total 54 m <sup>3</sup> (bale)
Brine hold	4 holds, total 34 m <sup>3</sup> (bale)
Fuel oil tank	44 m <sup>3</sup>
Fresh water tank	10 m <sup>3</sup>
Complement	Fishing master x 1 Captain x 1 Chief engineer x 1 Crew x 27 Total 30 persons
Sea speed	Fully loaded service 10.5 knot
<b>Accommodation</b>	
Captain's room	2 x double bunk
Chief Eng's room	1 x double bunk
Crew's room	Fore section: 10 bunk room x 1 Aft/low section: 10 bunk room x 1 Aft/upper section 4 bunk room x 1
Sanitary room	Toilet with WC and shower x 1 Toilet with WC only x 1 Outside shower x 3
Washing machine	1, outside

Item	Specification
Mess room	1, table and benches
Galley	Cooking range with two burners (LPG) x 1 Fridge x 2 (1 in wheelhouse) Sink x 1 Rice cooker (LPG) x 1 Cupboard x 1 LPG bottle, 45 kg x 2
Provision store	Dry provision store, about 1.5 m <sup>2</sup>
<b>Deck machinery and deck outfit</b>	
Steering gear	Electro hydraulic x 1
Rudder	Streamlined balance rudder, 35 deg helm
Anchor	Japanese type stockless x 2 One on dropping seat at bow, and one stowed as spare. To use synthetic rope handled by capstan at bow
Capstan	15 kN x 13 m/min x 3.7 kW Fore x 1, Aft x 1
Derrick	9 kN capacity, port and stb sides aft. Lifting by capstan aft For payao handling and general use Topping and slewing by manpower
Hoist	5 kN x 1, at bridge front
Portable jet pump	1.5 kW x 4 , to discharge bilge from deck
FRP dinghy	FRP, abt. 3.5 m, with oars
Deck awning	Over upper deck fish hold: Canvas on steel wire rope Over compass deck: Plastic plate on stainless steel pipe frame
Back net	Erected at poop deck aft end, made of steel pipe and bars
Span stays over fish hatch	1 for bait light cable 1 for jet pump cable 1 for 3-eye lifting plate
<b>Ventilation</b>	
Engine room	Mechanical supply 1.5 kW x 2
Ref. Machine space	Mechanical exhaust 1.5 kW x 1
Fore accommodation	Mechanical supply 0.75 kW x 1
Aft accommodation	Mechanical supply 0.75 kW x 1
Galley	Mechanical exhaust 0.4 kW x 1
Wheelhouse	Mechanical supply 0.4 kW x 1
Toilet	Mechanical exhaust pipe fan x 2
Air conditioning	Chilled water system

Item	Specification
	NH3 compressor 5.5 kW x 1 Condenser cooling by GS pump FW circulation pump 0.75 kW x 1 Cabin unit x 10 (fore cabin, aft/low cabin, aft cabins, mess room, wheelhouse and F/M cabin)
<b>Fish preservation</b>	
Refrigerating compressor	For brine cooling abt.37 kW x 1 For fish hold cooling abt. 18 kW x 1 Brine freezing capacity 4 t/8 hr Brine freezing temperature -17oC Dry cooling temperature -20oC NH3 refrigerant
Auxiliaries	Condenser cool seawater pump abt.3.7kW x 1 Brine circulation pump abt.5.5kW x 1 Condenser x 1 Accumulator x 1
Fish hold thermometer	For every fish hold, with recorder
<b>Engine room machinery</b>	
Main engine	850 ps (625 kW) x 900 rpm x 1 180 mm Bore x 280 mm Stroke x 6 cylinder, air motor start
Clutch	Reduction / reverse gearbox, i = 2.74
Propeller	4 blade fixed pitch, Dia. = 1.90 m
Stern tube bearing	Rubber
Sterntube seal	Lip seal
Generator	160 kW x 1,200 rpm diesel driven 130 mm Bore x 165 mm Stroke x 6 cylinder Air motor start 200 kVA x 225 V x 3 ph x 60 Hz x 2
Main air compressor	Air cooled x 2
Aux. Air compressor	Hand operated x 1
Air reservoir	Main x 2, Aux. x 1
M/E cool SWP	Centr. 5.5 kW x 35m <sup>3</sup> /h x 18m x 1
M/E standby LOP	Gear, 3.7 kW x 11m <sup>3</sup> /h x 0.47MPa x 1
Gearbox standby LOP	Gear, 5.5 kW x 4m <sup>3</sup> /h x 2.16MPa x 1
FO transfer pump	Gear 1.5 kW x 6m <sup>3</sup> /h x 0.2MPa x 1
Bilge pump	Centr. 1.5 kW x 10m <sup>3</sup> /h x 15m x 1
Fresh water pump	Home pump 0.4 kW x 2m <sup>3</sup> /h x 23m x 2
Seawater central pump	Centr. 11 kW x 80m <sup>3</sup> /h x 23m x 4

Item	Specification		
	Four pumps to be attached to a header, which delivers: General service; Fire hydrant; Sprinkler; and Bait hold circulation		
Sewage discharge pump	Centr., 1.5 kW x 2m <sup>3</sup> /h x 20m x 1		
FO flow meter	1		
Electric distribution			
Main switchboard	Generator panels and distribution panels		
Electric distribution	220V/3ph/AC, 220V/1ph/AC, 100V/1ph/AC and 24V/DC		
Transformer	15 kVA, 225V/105V		
Charge/disch. board	1		
Storage battery	200Ah x 2		
Shore connection	220V, 3ph		
Lighting			
Search light	500 W incandescent x 1, at bow crow's nest		
Floodlight	500 W mercury x 8		
Bait hold light	100 W incandescent x 6, with light control slide transformer		
Bait luring light	2 kW mercury light x 3, one with light control slide transformer and two on/off only. To be lowered from shipside		
Onboard lights	As necessary		
Navigation light	According to the international regulation		
Navigation and fishing electronics			
Auto pilot	1 incorporating gyro compass		Bridge
	1 auxiliary steering stand		Upper bridge
Engine remote control	1 main maneuvering stand		Bridge
	1 auxiliary stand		Upper bridge
Radar	1 Navigation radar 15" LCD, 96 mile		Bridge
	1 Birds finding radar 17" LCD, 96 mile		Bridge
Gyro compass	1 combined in steering stand		Bridge
Magnetic compass	1 desktop type		Bridge
GPS plotter	10" LCD		Bridge
Fish finder	1 sounder for 500 m	1 common display 10"	Bridge
	1 sounder for 3,000 m	1 repeater display 10"	Upper bridge
Radio direction finder	1		Bridge
Radio buoy	4		Outside

Item	Specification	
Air horn	1	
Clear view screen	2	Bridge
Engine telegraph	1	Bridge/engine side
Public addressor	1 Amplifier, mic and speakers	Bridge
	1 Auxiliary mic	Upper bridge
Seawater thermometer	1	
Radio equipment (GMDSS range of A1 + A2)		
MF/HF SSB radio	150 W x 1, with GMDSS DSC	Bridge
VHF radio	1 with GMDSS DSC	Bridge
EPIRB	1	Bridge
Two way VHF radio	2	Bridge
SART	1	Bridge
Lifesaving appliance and fire extinguisher		
Life raft	20 person x 2	
Life buoy	4	
Life jacket	30 + 10 spare, solid type	
Distress signal	1 set	
Hydrant	3 locations (deck x 2, engine room x 1) with hose and nozzle	
Fire extinguisher	1 set	
Hull preservation		
Hull bottom	Epoxy A/C and tin-free A/F at 2 years life	
Hull topside	Modified epoxy and chlorinated rubber finish	
Superstructure	Modified epoxy plus chlorinated rubber finish	
Deck	Modified epoxy plus chlorinated rubber finish	
Non slip deck paint	Fishing platform top and compass deck top	
Fish hold	Epoxy	
Engine room bottom	Epoxy	
Internal hull	Alkyd resin	
Fresh water tank	Epoxy	
Void	Modified epoxy	
Oil tank	Mineral oil wiped	
Cathodic protection	Zinc anode at 2.5 years life	
Material note		
Stainless steel	50 mmD SUS pipe along stb fishing platform top where net slides	



Item	Specification
	Manhole bolt Deck fitting bolt and nut WT door dogs Overflow duct from bait hold Frame for compass deck top awning
Aluminum alloy	Fish hold hatch covers
Wooden plank	50 mmT Oregon pine, caulked and pitched on f'cle deck, upper deck, aft deck and poop deck
Engine room SW pipe	Plastic lined in/outside including brine pipe
PVC pipe	Bait hold circulation pipe in pipe alley and bait hold Brine pipe in pipe alley and bait hold Seawater pipes and fresh water pipes in accommodation
<b>Fishing tool</b>	
Pole & line fishing	3 different type poles x 40 sets 3 different type luring hooks x 40 sets Lines
Stick-held dip net baiting	Net: 55m x 50 m, 0.6 mm string, 6 mm mesh x 2 sets Boom: Plastic, abt. 30 m x 1 Outrigger: Bamboo abt. 30 m x 4 Retrieving line, etc.: 1 set
Bait tub	FRP x 2, fore and aft, seawater piped
Sprinkler	Fore to midship at every 0.5 m Midship to aft end at every 1 m After end at every 0.5 m Stb side fore anchor to aft end: not fitted
<b>Spare parts</b>	
Main engine parts	To include: 1/2 ship set x Cylinder head assembly 1 x Piston and connecting rod assembly with crankpin metal 1 engine set x Piston ring 1 x Cylinder liner assembly 1 ship set x Main and thrust bearing metal, crankpin bearing 1/2 ship set x Fuel injection pump complete 1 ship set x Fuel injection valve 1 ship set x Nozzle complete 1 ship set x Suction/exhaust valve set and valve guide 1 ship set x Valve rotator 1 x Governor 1 x Turbocharger

Item	Specification
	1 ship set x Attached pump complete 2 x Gasket sets for special survey overhaul 6 ship set x LO/FO paper filter element 1 ship set x Washable metal filter element 1 ship set x Thermometer, tachometer and pressure gauge
Shafting	1 Propeller (one vessel only) 1 Propeller shaft (one vessel only) 1 Propeller shaft bearing (one vessel only)
Generator diesel	To be prepared at same standard as the main engine's
Zinc anodes	1 ship set for hull, piping and engine parts
Others	Classification and Maker's standard
Fish bin for one vessel	
Capacity	1,000 kg, internal dimension 2.00m x 1.00m x 0.90m
Material	Stainless steel
Number	43
Bait boats for one vessel	
Boat complete	2
Hull material	FRP
Length overall	Abt. 7 m
Breadth	Abt. 1.8 m
Main engine	Inboard, 22 kW (30 ps) x 3,000 rpm x 1
Fuel oil tank	150 lit
Dynamo	5 kVA AC, belt drive at engine front
Fish luring lamp	2 kW metal halide x 1
Crew	1 person (with berthing facility)
Outfitting	
Bait boat engine and outfitting kit	1 set For re-engine on board existing hull in Solomons. To comprise main engine, shafting, stern tube, propeller, dynamo, navigation light, VHF handheld radio telephone, DC handheld signal light, lifejacket, lifebuoy, distress signal

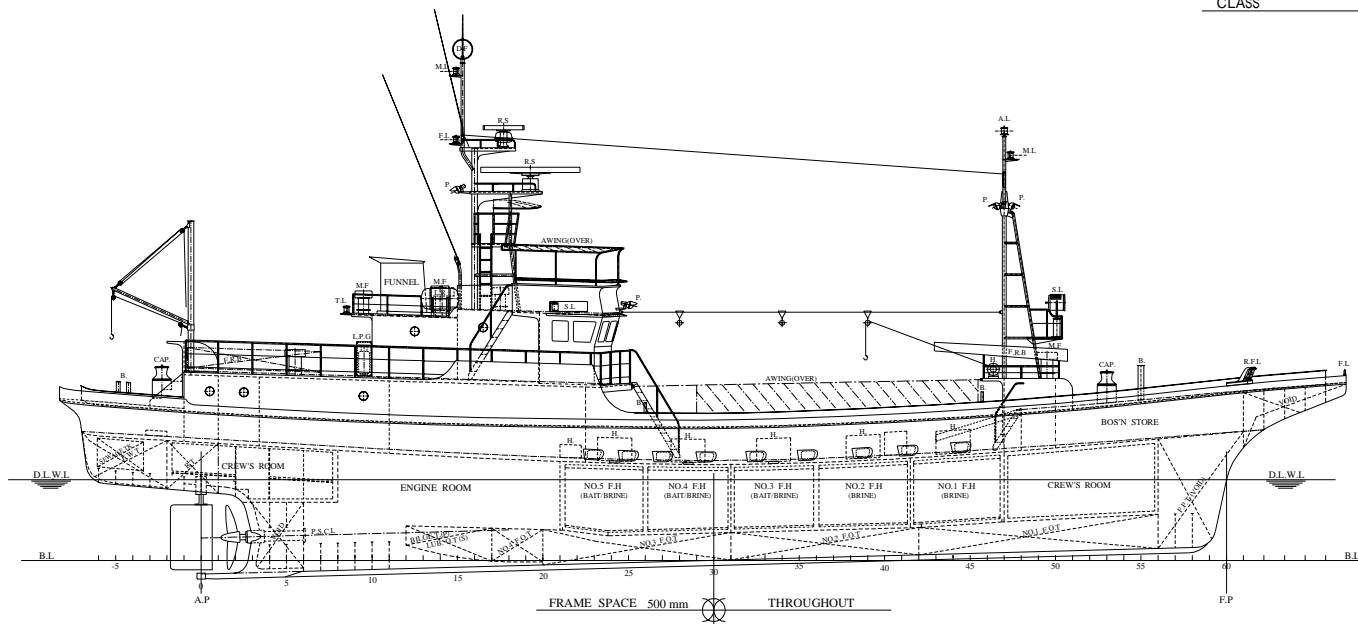
2-3 DESIGN DRAWINGS

Fig.-10 General arrangement plan

# TUNA POLE & LINE FISHING VESSEL FOR SOLOMON ISLANDS GENERAL ARRANGEMENT

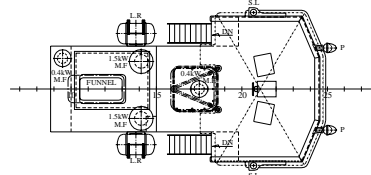
PRINCIPAL PARTICULARS

LENGTH (OVERALL)	37.65 M
LENGTH (BET P.P)	30.00 M
BREADTH (MOULDED)	6.40 M
DEPTH (MOULDED)	2.80 M
DESIGN DRAFT (MOULDED)	2.36 M
GROSS TONNAGE (INTERNATIONAL)	194 GT
MAIN ENGINE (850 PS)	625 KW
SPEED (FULLY LOADED SERVICE)	10.5 KT
CAPACITY :	
FISH HOLD (BALE)	88 M <sup>3</sup>
FUEL OIL	69 M <sup>3</sup>
FRESH WATER	12 M <sup>3</sup>
COMPLEMENT	30 P
CLASS	NK

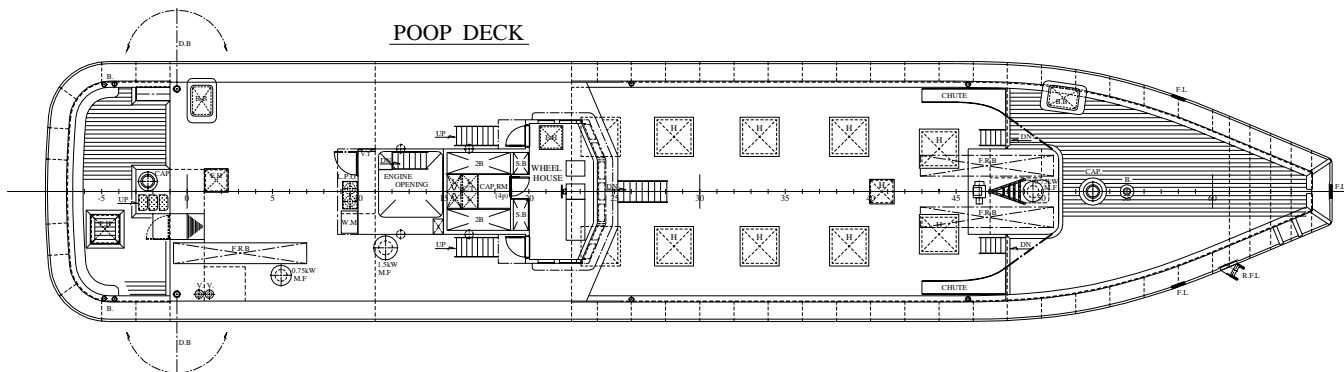


PROFILE

COMPASS DECK

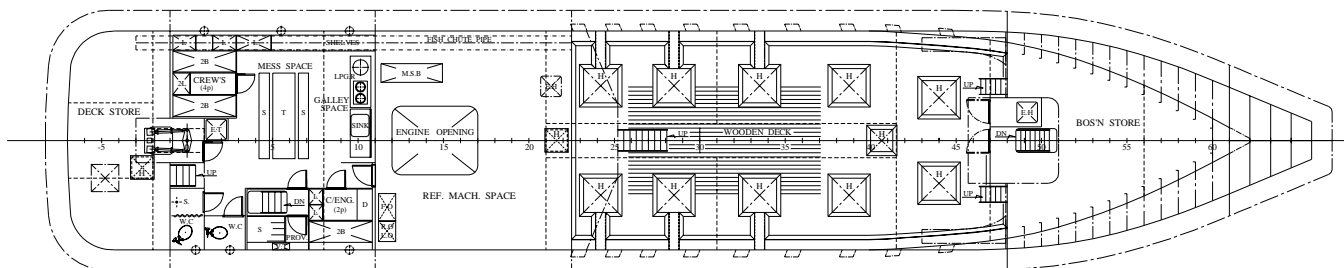


POOP DECK

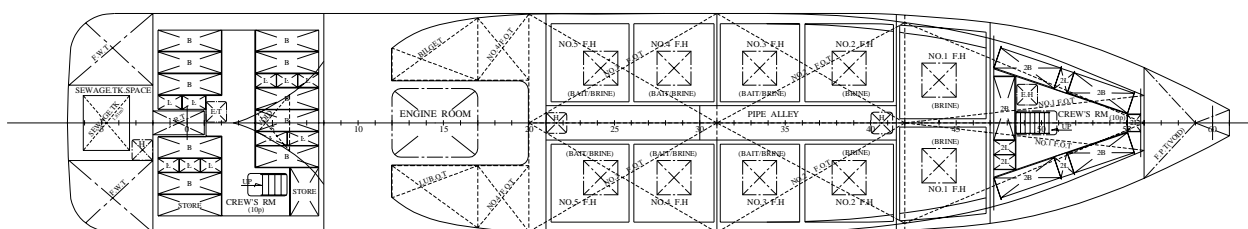


FORECASTLE DECK

UPPER DECK



HOLD PLAN



0 2 4 6 8 10 METERS

Fig.-11 Midship section plan

## TUNA POLE & LINE FISHING VESSEL FOR SOLOMON ISLANDS MIDSHIP SECTION PLAN

PRINCIPAL PARTICULARS		
LENGTH (P.P)		30.00 m
LENGTH (96% OF L.W.L)		31.83 m
BREADTH (MLD)		6.40 m
DEPTH (MLD)		2.80 m
DRAUGHT (MLD)		2.36 m
DRAUGHT (MLD) (FOR SCANTLING)		2.50 m
FRAME SPACE (THROUGHOUT)		0.50 m
CLASS	NK NS* MNS*	

MATERIAL NOTE: MATERIAL TO BE IN ACCORDANCE WITH NK		
MARKS	MATERIAL	NOTE
NO MARK	KA	
(B)	KB	

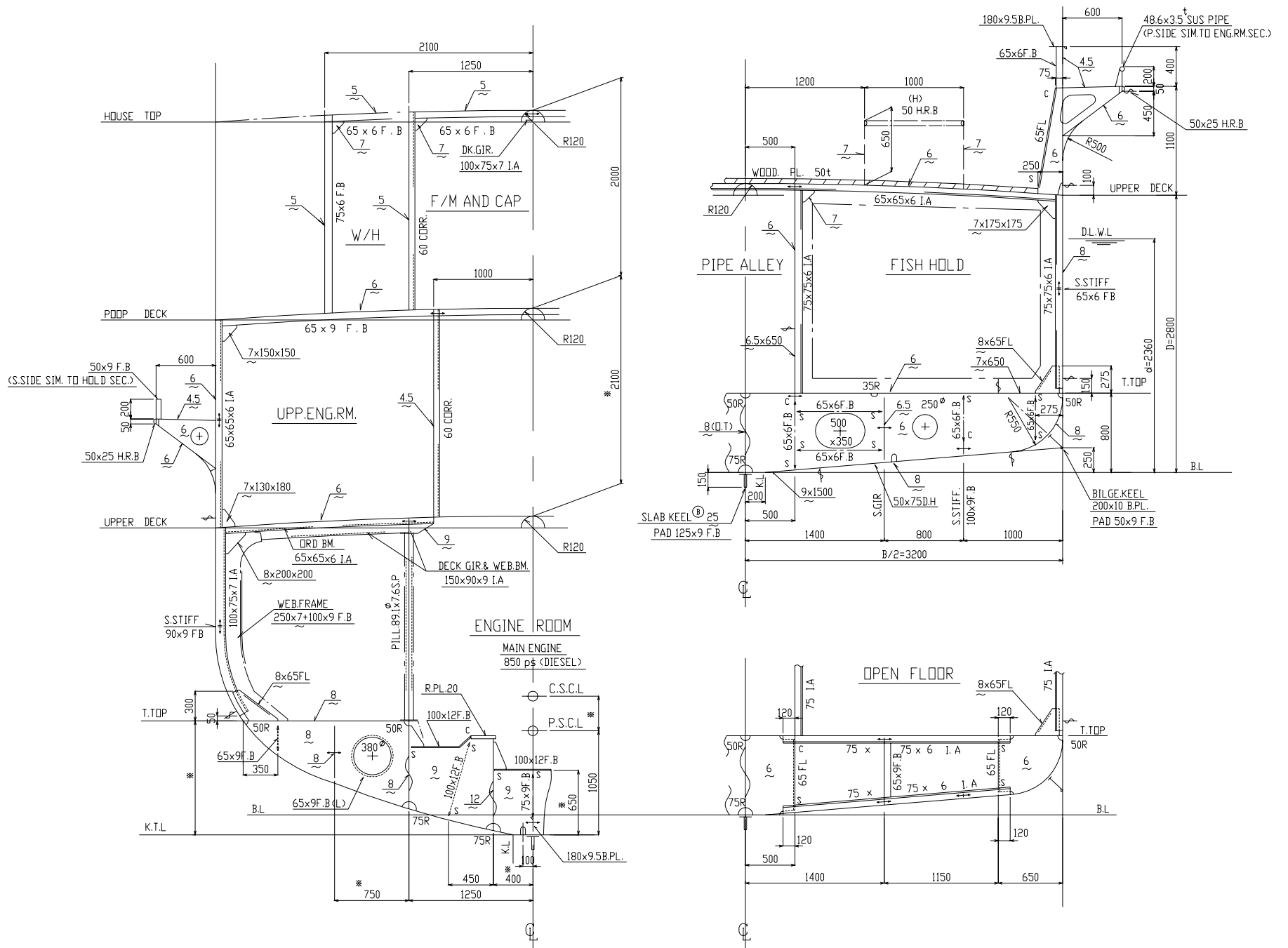
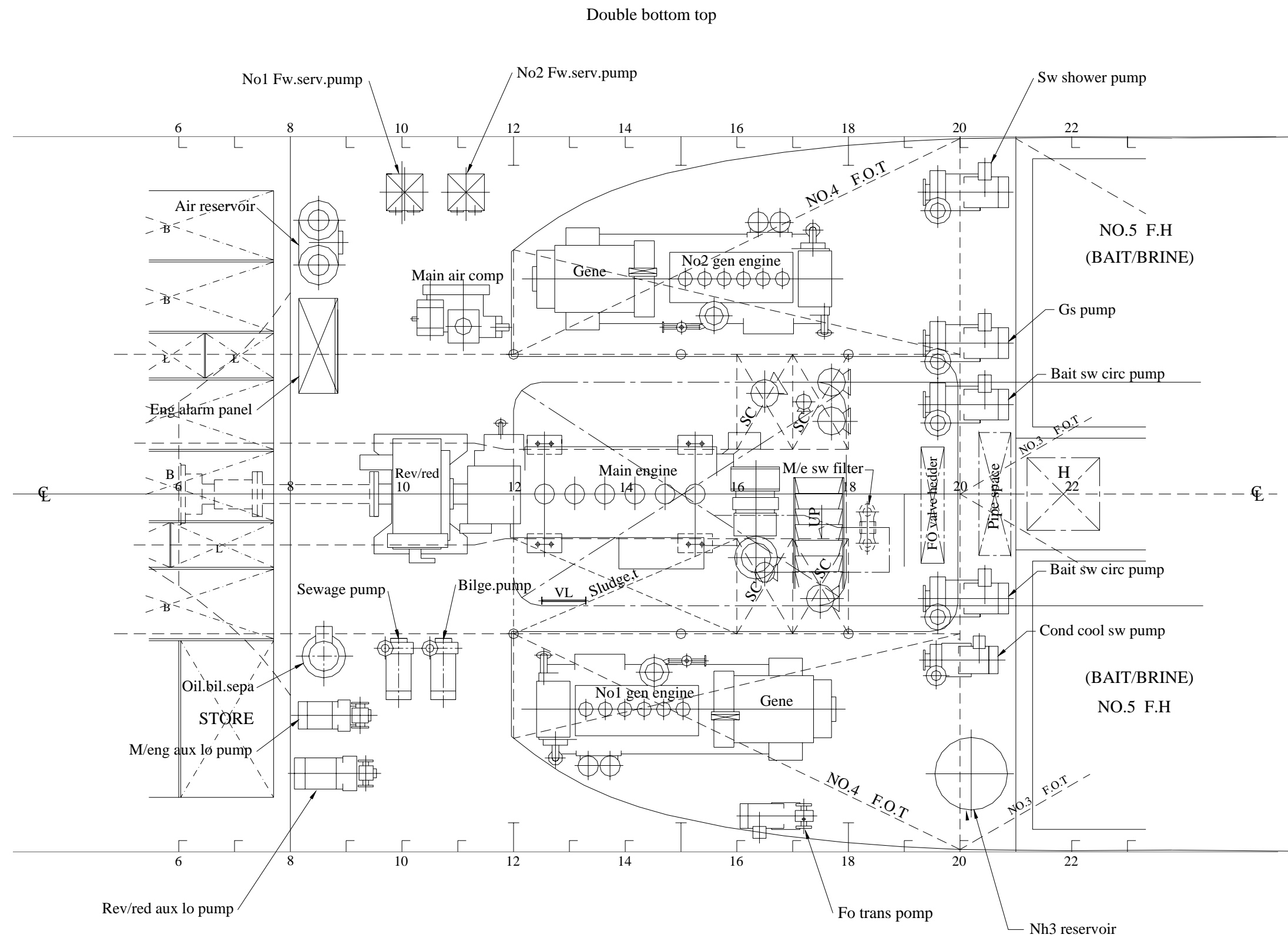
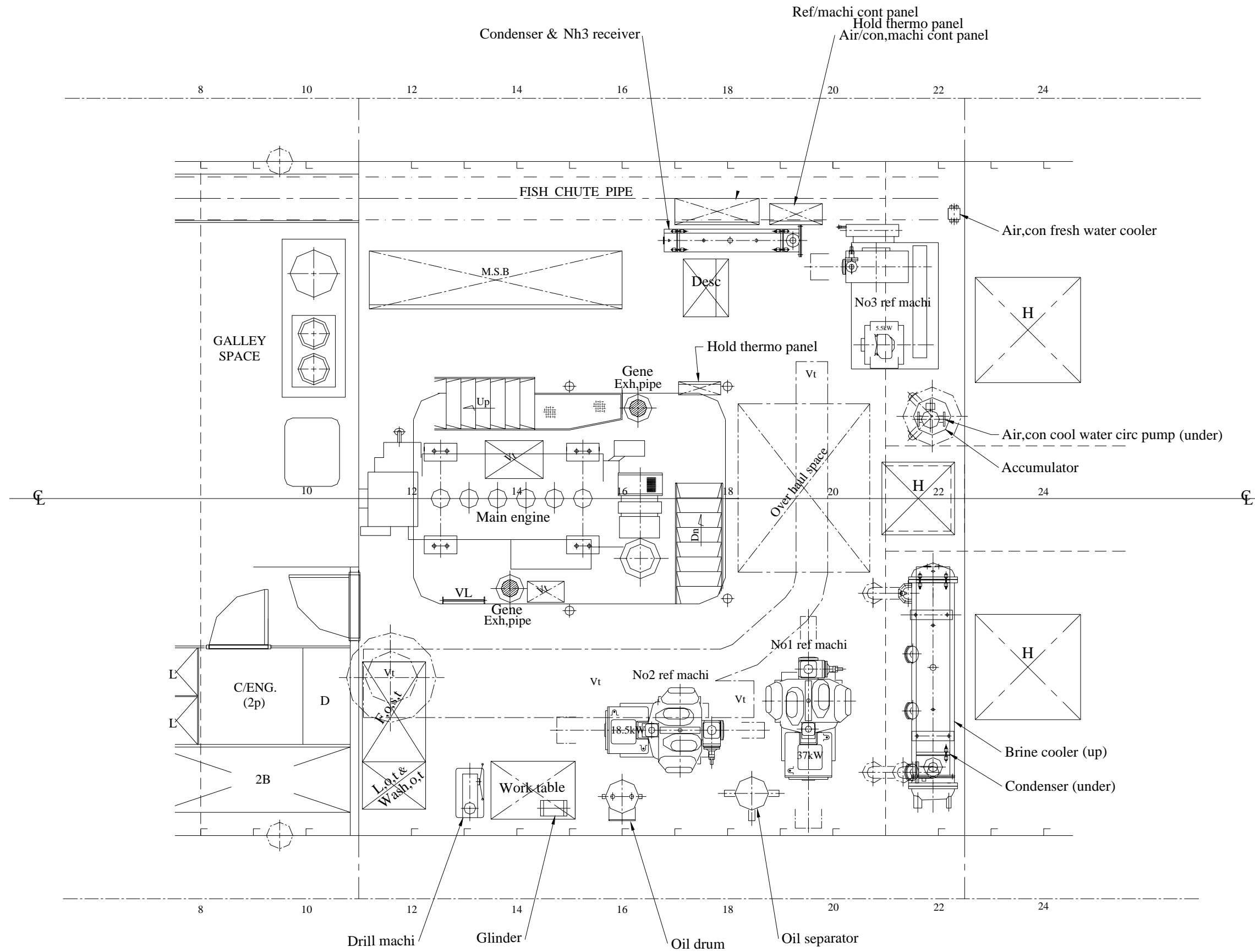


Fig.-12 Engine room arrangement



Upper deck



## **2-3-1 Construction and Procurement Plans**

### **2-3-1-1 Construction and Procurement Policy**

This Plan is to be implemented under the Grant-Aid program of the Government of Japan. Construction of the Plan Vessels will proceed in accordance with the following procedures:

- (1) Exchange of Notes between the Governments of Japan and the Solomon Islands.
- (2) Conclusion of a Consultant Agreement between a Consultant recommended by JICA and the Government of Solomon Islands or its designated authority.
- (3) Verification of the Consultant Agreement by the Government of Japan.
- (4) The Consultant will undertake the Detail Design, prepare draft tender documents, and obtain approval from the Solomon Islands Government. These will include methods of pre-qualification, technical specifications, general arrangement plan, project cost estimates, and (a) draft shipbuilding contract(s).
- (5) Based on the approved Tender Qualification procedure, the Consultant will conduct Tender qualification examination, obtain the approval of the Solomon Islands Government, and select the applicants, who must be Japanese nationals.
- (6) The Consultant will call for the Tender(s) in the presence of the Solomon Islands Government, and examine the Tender documents submitted by the applicants. Based on the evaluation result of the submitted Tender, the Consultant will recommend the contractor to the Solomon Islands Government.
- (7) The Consultant will assist in contract negotiations between the Government of Solomon Islands and successful tenderer(s) and witness the Contract(s).
- (8) Verification of the Contract(s) by the Government of Japan.
- (9) Based on the Contract(s), the Contractor(s) will build, conduct sea trial runs for, and deliver the Plan Vessel and the Equipment. The Consultant will, in accordance with the Consultant Agreement, provide supervision of construction and procurement, conduct tests, and be present at the hand-over of the Vessel and the Equipment.
- (10) The Contractor of the Plan Vessel takes charge of transportation of the Plan Vessel delivered, from the shipyard to the wharf designated by the government of Solomon Islands.

## **2-3-1-2 Basic Guidelines for Project Procedures**

The basic guidelines governing grant-aid projects are outlined below:

### **(1) Project Implementing Body**

The agency responsible for the Project is the Solomon Islands Government, while the implementing agency is SFPL, a government owned fishery and processing company. With respect to project implementation, SFPL, with the assistance of the Government of Solomon Islands, will examine and approve applicants' credentials, tender documents, technical specifications and contract documents and drawings; will receive monthly reports on construction supervision; and will take delivery of the Plan Vessels and Equipment. SFPL will also serve as the liaison point with concerned agencies of the Solomon Islands Government, including issuance of a provisional certificate of nationality and import procedures.

### **(2) The Consultant**

Following the Exchange of Notes, a Consultant Agreement will be concluded between the Consultant company, recommended recommended by the Government of Japan, and the Government of Solomon Islands. As the proxy for the Government of Solomon Islands, the Consultant will prepare tender documents including technical specifications, and assist, as required in the bidding and contractual phases, while also providing inspection of the construction process. For purposes of carrying out this supervisory function, the Consultant will dispatch responsible engineers and outfitting experts to the shipyard, as required during the construction process.

### **(3) The Contractor**

The Contractr will be selected in accordance with the following process:

After evaluating the tender qualifications of Japanese nationals responding to the Tender Notice(s), competitive bids will be invited, based on bidding and contractual procedures established in advance. The successful bidder(s) under this process will sign (a) Building/Procurement Contract(s) with the Solomon Islands Government. The Contractor(s) will then build the Plan Vessels, conduct trial runs, transport the vessels to the Solomon Islands for turnover, and procure the necessary Equipment.

### **(4) Construction Plan**

In connection with construction of the two Plan vessels (identical design), the Contractor as the Ship Builder will, based on the Contract and related specifications, design the hull and outfitting in a manner corresponding to the conditions of the shipyard facilities. Following preparation of the construction design by the Ship Builder, the Plan vessels will be built in accordance with the following construction stages: hull construction, outfitting work (deck work, machinery work and electrical work), all tests, and transportation to the Solomon Islands. The following areas must be given careful consideration when examining the



## Construction Plan.

- (i) As this Plan is being implemented via a Grant-Aid from the Government of Japan, scrupulous adherence to the construction schedule will be a major premise. The building plan must be prepared so as to fulfill all contract conditions within the term validity stipulated in the Exchange of Notes.
- (ii) With respect to the delivery deadlines for engines and other equipment, careful consideration must be given to preventing disruption of the construction work flow by maintaining close control of the equipment procurement and linking the hull and outfitting stages to the delivery schedules for the related equipment.
- (iii) Various tests must be performed, as determined by the Classification Society, maritime regulations in the Solomon Islands, and maritime requirements in Japan. The required sea trial must be performed upon completion of the construction phase to certify vessel performance.
- (iv) During the final stage of construction, engineers appointed to the Plan Vessel senior officers will be invited from SFPL to be present during the sea trial and turnover inspections. These engineers will travel aboard the new vessels back to the Solomon Islands, receiving guidance en route to help them acquire competence in and familiarity with vessel operations.
- (v) After receiving the Provisional Certificate of Nationality from the Solomon Islands Government, the Ship Builder as the Contractor will transport the Plan Vessels, at his own responsibility, from the Ship Builder to the SFPL Noro Base in the Solomon Islands. After arrival at Noro, they will immediately reconfirm the main points of vessel performance before turning the vessels over to the Solomon Islands Government.

## **(5) Procurement Plan**

Fishing gears, FRP bait boats, bait boat engine kits and stainless steel fish bins, as the Equipment related to the Plan Vessel, will be procured under the responsibility of the Contractor, pursuant to the Contract and the attached technical specifications, and delivered to the Plan Vessel at the Ship Builder's yard.

## **(6) Dispatching engineers**

After handing over the vessels, two engineers will be dispatched by the Contractor to Solomon Islands for half a month to provide ongoing guidance on operation of machinery and system and maintenance. Prior to that, it will be necessary for the Implementing Agency to

procure crew and fuel and complete other operational requirements.

### **2-3-1-3 Special Considerations with regard to Construction and Procurement**

#### **(1) Vessel Construction**

- (i) With respect to construction, the Solomon Islands apply their Shipping Act 1998, but, when the Shipping Act do not sufficiently cover safety requirements, Japan's Maritime Safety rules will be applied so as to insure the safety of vessel and crew. It is necessary that the shipping Act be carefully studied from the outset, and thoroughly understood when building the vessel.
- (ii) Considering the short time between the signing of the Construction Contract and the start of the construction phase, when the contract shipyard prepares the building design, the Consultant, based on advance discussions with the Solomon Islands Marine Department and the Classification Society, should carefully guide the shipyard and seek to expedite the approval of plans by these offices in an effort to shorten the construction design phase.

Including the above considerations, it is essential that the construction stages for the two Plan Vessels be minutely planned and executed so that the hull work, outfitting of accommodation quarters, engine room outfitting including refrigeration plant, working deck outfitting and the fish hold outfitting progress according to plan and are completed within the stipulated time period.

#### **(2) Procurement of Related Equipment**

The equipment that must be provided for the two new Vessels includes onboard fishing gear, bait boats, and fish bins for storing catches in the freezer. The following standards will be used:

- (i) Fishing gear: Specifications equivalent to those for the existing vessels
- (ii) Bait boats: Specifications equivalent to those for the existing bait boats  
Length 7.0 –8.5 m, width 1.8-2.1 m, FRP hull, preferably of standard product of boat maker
- (iii) Engine kits for bait boats: Engines, propelle shafts, propellers, and associatd outfitting on board existing bait boat hulls of good condition
- (iv) Fish bins: Dimensions and capacity same as the existing fish bins, but material being of stainless steel satisfying EU HACCP requirements instead of galvanized steel and main column

being strengthened

The delivery period for related Equipment will be approximately six months. Following completion of the Plan vessels at the shipyard, the related equipment will be loaded on board, reaching the Solomon Islands after a 2-week cruise.

#### **2-3-1-4 Consultant Supervision**

The Consultant will verify that the construction and procurement schedules are in accordance with grant-aid cooperation guidelines. Based on this, the Consultant will prepare a construction and procurement supervisory plan and establish that the drawings, specifications and quantities specified in the Contract documents are strictly adhered to in the construction work.

The basic guidelines for construction/procurement supervision will be as follows:

##### **(1) Guidelines for Construction/Procurement Supervision**

The Consultant will verify that the construction/procurement phases have been developed in accordance with the provisions of grant-aid cooperation and will prepare the supervisory plan accordingly, confirming that the drawings, specifications, and quantities adhere to those specified in the contract. These guidelines are as outlined below:

##### **(i) Approval of Drawings and Specifications**

In connection with the check to insure that the construction plan, schedule, construction design, and specifications tally with the contract provisions, the Consultant will promptly approve or give instructions to correct them. With respect to any questions from the builder, as well, the Consultant will pay special attention to prompt replies so as to prevent disruption in the project schedules.

##### **(ii) Supervision of project schedule**

The Consultant will confirm regularly progress of the construction work, taking whatever steps are necessary to ensure on-time completion.

##### **(iii) Qualify inspections**

Along with production progress, the supervisor(s) in charge of outfitting and equipment will be dispatched for necessary periods to workshops and the shipyard to check on construction accuracy, and establish that the machinery and outfitting work are in accordance with the contract plans, specifications, and approval documents. The supervisor(s) will conduct inspections of the equipment and outfitting work, based on the approved test procedure and the Contractor's in-house standards.

##### **(iv) Turnover**

After transporting the vessel to Noro, the Consultant will be present at all inspections at the SFPL wharf and issue the certification documents required for local turnover.

##### **(v) Construction reports**

The Consultant will make monthly reports on construction progress and scheduled work for the succeeding month, appending factory photos. These reports will be submitted to both the Solomon Islands Government and the Government of Japan.

**(2) Supervisory arrangements**

The Consultant will establish a project team consisting of project manager, naval architect, outfitting staff, machinery staff, electric staff, deck/fishing machinery staff, and fishing gear staff, and prepare implementing design and exercise supervision over the construction and procurement activities.

**2-3-1-5 Procurement Plan for Materials and Related Equipment**

**(1) Main Outfitting Items**

Since the required items are not produced in the Solomon Islands, it was decided to use Japanese products for machinery, switchboards and other electrical apparatus, in the interest of quality and stable supply and prices.

The principal items to be procured under this Plan are as shown as follows.

**Table - 5 Procurement of major outfitting items**

Main Procurement Categories	Source
Main engine	Japan
Generator engine and generator	Japan
Radio apparatus and navigation aids	Japan
Refrigeration plant	Japan
Paint	Japan
Other outfitting equipment and materials	Japan

**(2) Bait boats**

Three bait boats will be provided for each of the two pole and line fishing vessels. They will be scattered around the wide lagoon while awaiting the pole and line fishing vessels as the mother vessel. At night, the bait boat attracts bait species with a lure lamp. The fish schools around the lamp are attracted, and the stick-held-dip-net operations start.

Six bait boats are required for the two Plan Vessels. Two of these will be provided by the method described in (3) to rehabilitate existing boat by re-engine using new engine kits, and other four boats with new hull, new engine and equipment will be procured in Japan since it is difficult to manufacture the entire new boat in the Solomon Islands.

**(3) Engine kits for bait boats**

At the SFPL Noro base, there are a considerable number of FRP bait boats which have had to be beached because of broken main engines. On two of these boats, whose hulls are in reasonably good condition, diesel marine engines will be provided from Japan which SFPL can adjust and mount, bringing the boats back to life as bait boats.

The principal items to be provided are marine diesel engines, propeller shafts, propellers, stern

tubes, and other outfittings, as bait boats need, navigation equipment, etc.

**(4) Fish Bins**

The Plan vessels, which are intended to offer a high level of fishing productivity, have to comply with EU HACCP requirements. Frozen fish must be stored in fish bins with low risk of contamination. Present fish bins are of galvanized steel, where corrosion is unavoidable. Since it is difficult to maintain galvanized steel fish bin in a satisfactory condition for long years suitable to stow fish material bound for the EU, the bins for this project will be made of stainless steel. 43 fish bins (for one pole & line vessel) will be shipped as unassembled flat kits aboard the Plan Vessel. Upon arrival, SFPL will weld and assemble these kits in their workshop.

**(5) Other**

With respect to vessel maintenance and control, a Preventive Maintenance Policy (PMP) will be established. This system periodically confirms the operating condition of machinery and overhaul machinery to maintain machinery in top working order. To this end, it will be necessary to assemble stocks of spare parts from the outset. In order to develop a smooth PMP system for this Plan, it will be essential to furnish replacement parts for the following Plan items.

- (i) Spare parts to be removed and exchanged with a replacement part according to the PMP program. The removed parts will be cleaned and adjusted for next replacement.
- (ii) Indicators in which a sudden breakdown would impair safe and continuous operations.

### **2-3-1-6 Implementation Schedule**

In designing the building schedule for the two Plan Vessels of identical types, components in the building work were classified into three different cases, i.e. those that must be completed ahead of time, those which can be done simultaneously, and those that can proceed independently, and then adding consideration on equipment/machinery/material procurement, construction time, construction cost, etc., optimum construction program were drawn up. In the program, it is assumed to procure all outfitting equipment and machinery in Japan.

Building work is classified into following.

**(1) Hull construction**

As a structural element, the hull must maintain a suitable level of buoyancy while providing strength and resistance against wave action. The process generally involves assembly of various blocks and final assembly of these blocks on the slipway.

**(2) Outfitting work**

This work is performed after completion of the hull work. It comprises mooring arrangements, steering system, galley, sanitary facilities and other accommodation work, lifesaving and fire

fighting equipment, work deck facilities, and fish hold outfitting, and associated work

**(3) Machinery work**

This phase consists of installation, piping and associated work of main engine, genset, pumps, refrigeration plant, etc.

**(4) Electrical work**

This work is for installation of control panels and electric cables, etc. to supply electric power source to control electric equipment installed by the outfitting and machinery work.

**(5) Quay test and sea trial**

In course of construction and outfitting work, various tests are performed as required by the Classification Society and other regulations. Hull structure strength test, stability test, speed test, maneuvering test, etc are conducted in the quay tests or in the sea trial.

**(6) Transportation**

After completion of the construction work at the shipyard and prescribed tests, the Plan Vessels will be delivered to the Solomon Islands Government. Transportation of the vessels to the Solomon Islands is carried out under the responsibility of the Contractor as one of the provisions in his Contract.

Two engineers who had been dispatched from the Solomon Islands are to return to Solomon Islands on board the Plan Vessel sailing from Japan to Solomon Islands for the purpose of familiarization with the maneuvering of the new vessel.

The projected building schedule of the Plan Vessels is as shown on the following.

Detail Design Stage		1	2	3	4	5	6	7	8	9	10	11	12
Detail Design													
	Technical Discussion	■											
	Detail Design	■	■										
	Cost Estimate		■										
	Preparation of Tender Document		■										
	Approval of Tender Document			■									
Tendering													
	Notice for Pre-Qualification		▼										
	Tender Invitation			▼									
	Tendering				▼								
	Evaluation of Tender					■							
	Contract												

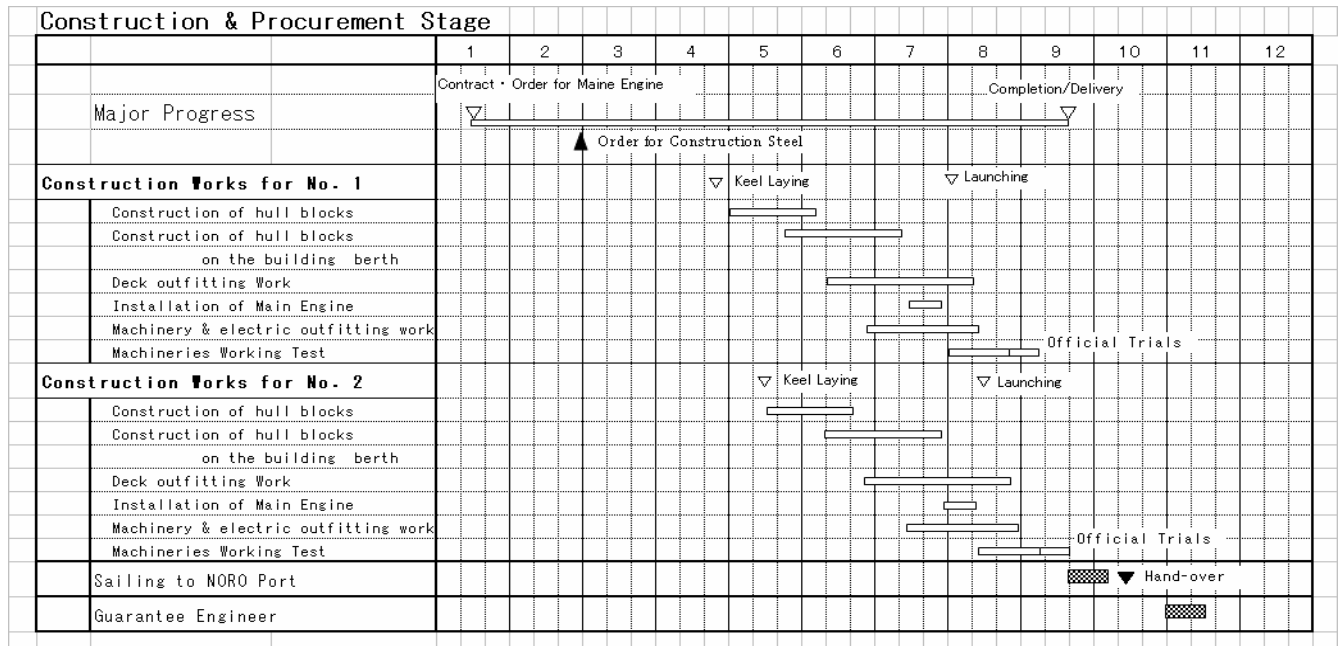


Fig.-13 Building schedule

Implementing Design, including detailed designs including tender preparation from Exchange of Notes, will require 3.5 months.

The construction period, from contract signing through preparation of the mold loft and the hull sub-assembly for Vessel No. 1 (block construction) will require 3.5 months; from the start of major hull assembly (on the slipway) 4.5 months; from the start of hull block assembly to the sea trials for the first vessel, 3 months. The timetable for the second vessel will be roughly similar. Thus, a total of 8 months will be required from signing of the contract through trial runs for the second vessel. Delivery of related equipment will require about six months.

Upon completion of the construction work on the two vessels at the shipyard, related equipment will be loaded on board for the trip to the Solomon Islands, which is expected to consume another half-month.

## 2-4 OBLIGATIONS OF THE SOLOMON ISLANDS GOVERNMENT

Assuming that the subject Plan is implemented on the basis of Japan's Grant-Aid procedures, the obligations of the Solomon Islands Government will be as outlined below.

- (1) Provision and maintenance of base facilities, harbor channels, and mooring facilities, as required for operation of the Plan Vessels.
- (2) Issuance of the necessary permits and licenses in the Solomon Islands, in connection with construction and sailing of the new vessels, including a provisional certificate of nationality.
- (3) Duty exemptions and prompt customs clearance in connection with importation of the Plan

Vessels and all related equipment and materials into Solomon Islands during project implementation.

- (4) Exempting Japanese nationals from all taxes and surcharges when rendering project-related services in the Solomon Islands.
- (5) Making banking arrangements with a Japanese bank, issuing payment authorizations in connection with project-related contracts verified by the Government of Japan, and bearing bank commission fee.
- (6) In connection with the engines for the two restored bait boats, the marine diesel engines procured in Japan will be shipped on board the Plan vessels and, after arrival, the SFPC Workshop will perform the necessary outfitting work for installing these engines on its existing boats.
- (7) With respect to the assembling of 86 fish bins, these units are to be shipped on board the Plan vessels as flat kits. After arrival, the SFPL Workshop will weld and assemble the bins.
- (8) Any other items that are required for Project implementation but not specifically included in the areas of responsibility assumed by the Government of Japan.

## **2-5 PROJECT OPERATION AND MAINTENANCE PLAN**

### **2-5-1 Operation plan**

#### **2-5-1-1 Operating Organ**

The two tuna pole & line fishing vessels to be provided under this Plan will be exclusively operated by SFPL, on the same basis as existing vessels, as part of the company's fleet. These SFPL vessels will be operated and supervised by its Fleet Department (responsible for operation of fishing vessels and freezing plant). As of September 2004, this Department has a staff of 345, over 70% of whom have acquired experience and technical skills in fishing operations and technology while working for SFPL's predecessor joint venture (STL).

SFPL's facilities, including fishing vessels and freezers, are repaired and maintained by its Engineering Department. As of September, 2004, the Department has a staff of 70, 90% of whom have moved to SFPL from STL.

These experienced crews and shore staffs support operation of fishing vessels. The Plan Vessels should be operated in the same management system as existing SFPL vessels.



### **2-5-1-2 Operating Structure**

As of September 2004, the tuna pole & line fleet was comprised of nine vessels. SFPL actually owns 12 boats but two of these (Soltai No. 2 and Soltai No. 58) have already ceased operations, while another (Soltai No. 60) is currently engaged in company repair and maintenance work and will resume fishing operations upon completion of these assignments.

In point of fact, Soltai No. 60 is considered next in line to follow the two vessels that have already been retired as a result of superannuation. However, the company has decided to perform large-scale repairs on this vessel, using its proprietary technology to reactivate this vessel. This would restore the fleet to the former 12 vessels – i.e., 10 existing vessels plus the two new Plan vessels.

### **2-5-1-3 Maintenance Plan**

For efficient operation of vessels, establishment of the shore support system is important. In SFPL, workshops of Engineering Department, e.g. iron works, machinery, electric, carpentry, FRP, etc. support operation of SFPL fishing vessels.

The Plan Vessels will be registered under the ownership of the Government of Solomon Islands and SFPL exclusively operate the Vessels. Therefore, SFPL will have obligation to maintain the Plan Vessel at SFPL's expense same as existing SFPL vessels.

For the Plan Vessels, the way of maintenance should be based on the long life policy from the beginning, adopting Preventive Maintenance Policy (PMP), which urges scheduled overhaul and maintenance irrespective of abnormality or malfunction. Machinery long life and parts long life are expected by PMP.

Necessary to conduct PMP are: (1) workshop, (2) spare parts to exchange, (3) PMP program and (4) implementing staff.

SFPL has sufficient workshop facility and implementing staffs. SFPL Engineering Department should establish weekly, monthly, quarterly, annual and long term PMP program with the aid of the Consultant. Spare parts necessary for PMP should be prepared by the Project.

For instance, PMP will need cylinder heads assembly for diesel engines (complete with exhaust valve, suction valve, fuel injection valve, etc.), which will be used as following sketch.

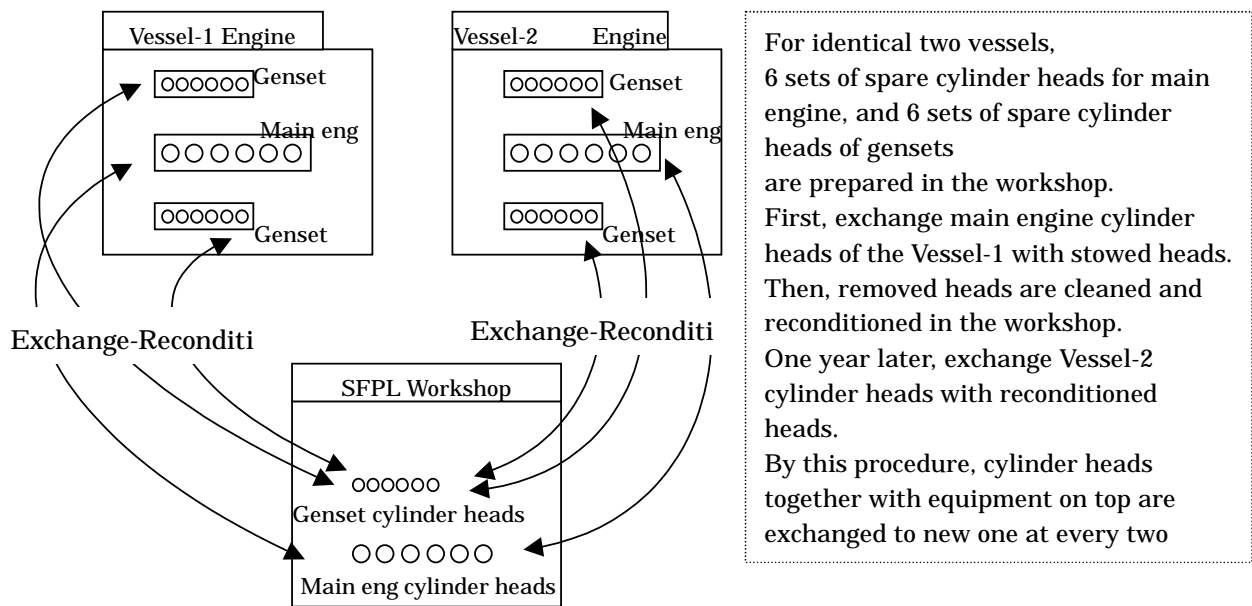


Fig.-14 Maintenance of cylinder heads on PMP

The PMP program will be prepared by the Consultant. In a PMP setup, taking cylinder heads as an example (including exhaust, air/intake, and fuel injection vales), as shown in the following Chart (Cylinder Head Adjustment under PMP), these components are exchanged at regular intervals, with the cylinder heads adjusted on a preventive basis.

## 2-6 PROJECT BUDGET ESTIMATES

### 2-6-1 Budget Estimate

Budget necessary to implement the subject project under the grant-aid of Japan is estimated Japanese yen 973.6 million and entirely borne by the Government of Japan.

Breakdown of the budget and conditions of estimate are as follows.

#### (1) Budget breakdown (all borne by the Government of Japan)

Classification	Cost (Mill. Yen)
(1) Vessel building cost	854.2
1) Direct building cost (material cost, labor cost, etc.)	629.1
2) Indirect cost (indirect labor, factory charges, etc.)	118.7
3) General charges	82.8
4) Transportation fee and engineer dispatch fee	23.6
(2) Equipment procurement cost (fishing gear, bait boats, boat engine kits and fish bins)	57.6
(3) Consultant design and supervision fee	61.8
Total budget	973.6

(2) **Condition of estimate**

- (i) Time of estimate                      October, 2004
- (ii) Exchange rate                        SI \$ 1.00 = Yen 14.98
- (iii) Implementing schedule            To be on a schedule implemented within single fiscal year.  
Schedule of working design, building and transportation is as shown on the building schedule.
- (iv) Other                                    This Project is to be implemented according to the Grant-Aid system of the Japanese Government.

**2-6-2 Operation and Maintenance Costs**

Table below shows SFPL actual and estimate maintenance cost. Shown maintenance cost is the sum of the work of SFPL workshop and hull bottom work by Sasape Marine Dock. Large-scale repairs shares considerable parts in the record of these aged vessels.

In general, repair cost of new vessels is extremely modest at least in 5 years, mainly involving bottom paint cost, thereby repair cost of about SI\$ 75 thousand per annum is estimated for one vessel. Total repair budgets after commissioning increase very slowly. Thus, as productivity of the new vessels rises, it is presumed that such minor costs can be readily handled by SFPL.

The table provides figures on both actual and projected expenditures. Improvements in operating results can be expected to show steady improvement, based on the synergistic effect between increased revenues and controls on repair costs following introduction of the new vessels.

**Table - 6 SFPL repair cost and account**

Year	Nos. vessels		Revenue (mill SI\$)	Expense (mill SI\$)	Ordinary profit (Mill SI\$)	Repair cost (1,000 SI\$)			
	Existing vessel	New vessel				Existing vessel	New vessel	Total	
Actual	2003	12	0	114.0	127.8	-13.8	5,312	-	5,312
	2004	10	0	179.3	180.5	-1.2	3,732	-	3,732
Estimate	2005	10	0	193.7	202.0	-8.3	3,732	-	3,732
	2006	10	2	202.4	201.7	+0.7	3,732	112*	3,844
	Ave. 2007 – 2009	10	2	236.5	230.7	+5.8	3,732	150	3,844

Exchange rate: SI\$ 1.00 = JY 14.73 (Jul. 2004 – Dec. 2004)

\* New vessels commission being from April 2006, SI\$ 150,000 as annual repair cost of two new vessels are proportionally added.

## **2-7 SPECIAL CONSIDERATIONS IN IMPLEMENTING THE PROJECT**

### **(1) Approvals from the Administration of the Solomon Islands**

Unless radio station license, call sign, and provisional certificate of nationality, etc. for the Plan vessels are issued at the appointed times, as called for in the ship construction schedule, serious disruptions could develop in the construction schedule as well as in vessel departure from Japan. Accordingly, to assure prompt delivery of these key documents from the Marine Department as the relevant Administration, the Japanese side should file the necessary applications, through the Consultant and Contractor. On the Solomon Islands side, SFPL will be obliged to expedite these procedures with the Marine Department.

### **(2) Supervisory Structure for Vessel Maintenance**

A PMP (Preventive Maintenance Policy) for scheduled maintenance will be applied to the Plan Vessels. Before commissioning the new Vessels, SFPL should be prepared for the PMP system on a weekly, monthly, seasonal, and annual basis in coordination with the Engineering Department, which is responsible for vessel maintenance. This will require the lineup of spare parts in the workshop and management of the Vessel operation schedule to allow scheduled maintenance in cooperation with the Fleet Department, which is responsible for vessel operations, while also preparing a system for applying PMP to other vessels as well.

## CHAPTER 3 PROJECT EVALUATION AND RECOMMENDATIONS

### 3-1 PROJECT EFFECT

#### 3-1-1 Direct Effects

##### (1) Increase in Catches

SFPL's total catch volume in 2004 came to 6,825 tons, which was landed by an average operating ratio of 7.1 vessels per month for the existing fleet. That is to say, the catch worked out to 80 tons per one vessel month operation. This compares with 82.8 tons in 2002 and 94.6 tons for 2003, indicating that 2003 was a good fishing year while 2004 was a poor year. In this analysis, assuming an average year, even based on conservative estimates, it is reasonable to anticipate a catch of 85 tons/vessel month.

As both of the Plan tuna pole and line fishing vessels will be new, they are expected to operate 11 months per year. On this basis, the increase in catch volume for the two vessels combined may be projected at:

$$2 \text{ vessels} \times 11 \text{ mos.} \times 85 \text{ tons} = 1,870 \text{ tons/year}$$

Table - 7 Projected Annual Catches

Year	Annual catch (ton)
2004	6,825
Normal Year*(prior to Plan implementation)	7,242
2007 (following Plan implementation)	9,112 (7,242 t** +1,870t)

\* Assuming a normal year expectation of 85 tons/month/vessel

\*\* Assuming that hypothetical catches can be maintained at the same level as that attained with an operating ratio of 7.1 vessels/month for the existing fleet

This means that, looking ahead to 2007, even if the operating ratio for existing vessels were to fall, as a result of progression superannuation, from the present 7.1 vessel/month level, accompanied by a decline in overall catches from these older vessels, the net incremental contribution from the two new vessels can still be maintained at a projected 1,870 tons per year.

##### (2) Reduction in Vessel Maintenance Costs

In 2004, the maintenance budget for the SFPL fishing fleet totaled SI\$ 385,000 . In that year, two of the 12-vessel fleet were forced to terminate operations, meaning that the repair budget covered just 10 vessels. In other words, the average repair cost per vessel ran SI\$38,500. The maintenance budget for the two new vessels to be added under this Plan is projected at SI\$150,000 per year over the first five years of vessel operations. Thus, the combined maintenance budget for the existing 10 vessels plus the 2 new Plan vessels becomes:

$$(\text{SI} \$385,00 \times 10 \text{ vessels}) + \text{SI} \$150,000 = \text{SI} \$ 4,000,000.$$

Repair costs per vessels, therefore, will be reduced from the present SI\$385,000 to SI\$333,000 (SI\$4 million /12 vessels).

Table - 8 Projected repair costs per vessel

Year	Repairs per Vessel (in SI\$)
2004 (prior to Plan implementation)	385,000
2007 (following Plan implementation)	333,000

### 3-1-2 Indirect Project Effects

#### (1) Strengthening operating structure via an increase in revenues and a catch cost reduction.

The anticipated net gain in annual catch volume, based on Plan implementation, is 1,870 tons. Converting this on the basis of the average tuna prices on SFPL exports in 2004, the sales increase can be projected at SI\$ 11,130,000. This would mean an annual revenue increment of at least SI\$11,130,000. Since the company's total sales in 2004 are estimated at about SI\$167 million, the projected gain would be equivalent to 6.7% of total sales. In point of fact, however, the actual allocation of exports among the catch, canned goods, and arabushi materials will be determined on the basis of the prevailing market environment. Thus, the actual profit contribution is likely to be considerably higher than if exports were confined solely to raw fish form. The resulting benefits from an optimum mix will further enhance profit margins, thereby contributing to a strengthening of SFPL's operating base.

#### (2) Supply of Canned Products to the Domestic Market

Operations by SFPL's predecessor company (the joint venture between the Solomon Islands Government and a Japanese enterprise) were terminated in 2000, which meant, of course, a simultaneous cessation of canned tuna supplies for the domestic market, with the subsequent supply void filled by imports of similar canned products.

The company's canning operations resumed in 2003, with 2004 production rising to about 260,000 cases (though the figure is actual production volume, not converted to standard cases of 48/180 g cans). Along with the reopening of domestic canned supplies, the company has found that the influx of imported canned products, which had temporarily substituted for domestic supply, has been quickly phased out, reflecting the strong preference of the consumers in Solomon Islands on the domestic canned fish as well as the obvious appeal of the bland to the domestic consumers.

Domestic demand for canned tuna, in terms of standard cases, is estimated at about 300,000-350,000 cases annually. Canned fish capable of long-term storage at normal temperature has become a staple and irreplaceable source of animal protein for the Solomon Islands people, particularly those living in outlying areas. There is, accordingly, considerable significance, in terms of the national economy, in providing a continuing source of animal protein that meets the taste requirements of the general population in the canned form required by the bulk of consumers, using raw material caught within the country's 200 mile zone.

**(3) Contributions to the Regional Economy in Western Province, and to the National Economy via foreign exchange earnings**

SFPL is the largest private employer in the Western Province as well as its largest consumer of fuel, provisions, electric power, and water. Continuing and stable operations, therefore, will constitute a major contribution to the regional economy. In addition, through exports of added value products, such as loins and arabushi, the company will also strengthen the national economy through increased foreign exchange earnings.

**3-2 RECOMMENDATIONS**

There is no doubt that, based on the introduction of the two new tuna pole & line fishing vessels under the subject Plan, SFPL will be able to boost its catch capacity. However, as the superannuation of existing vessels continues, at some point in time, vessels will inevitably emerge for which the marginal repair costs will exceed expected profits. In order to maintain independent operations, based on sustaining company catch levels and production of higher-value products, we recommend that SFPL implement the following strategies:

**(1) Expedite Preparations for Purchasing Second-hand Vessels**

As of December, 2004, the age distribution of the present active fleet (10 vessels) was: over 22 years (2 vessels), over 23 (3), over 24 (2), and over 25 (3). Although the relationship between vessel age and functional deterioration is not necessarily proportional, from a medium to long-term perspective, unless these aging vessels are replaced, catch capabilities must inevitably decline. In its 2005-1010 operating plan, SFPL plans to purchase, with its own funds, 2 used vessels by 2010 in an effort to maintain catch capabilities. It is understood that the company is studying the merits of reinvesting a fixed portion of the catch revenues generated by this project in a reserve fund for the purchase of second-hand fishing vessels in an effort to establish a sound financial practice for this purpose. It is urged that such a program be speedily established and reflected in future financial planning.

It should however, be noted in this connection that the number of second-hand pole & line tuna fishing vessels on the market in Japan – the most likely source of supply – is steadily declining. Thus, time is not on the company's side, and it is expected that procurement difficulties can only intensify in the years ahead. Second-hand tuna pole & line fishing vessels are normally not a staple resale item on the used market, and so it is vital that preparations be initiated speedily, on both the financial and technical levels, to maintain a close and continuing pulse on the second-hand market, regardless of vessel hull material, so that SFPL can respond flexibly when an attractive vessel becomes available.

**(2) Liquidation of Idle Vessels**

As of December, 2004, two of the SFPL's present 12-vessel tuna fleet have already been forced to

discontinue operations, while in the case of vessels for which the marginal cost burden (repairs, wages, and fuel) can be expected to exceed expected earnings, it is certainly desirable that such vessels be promptly replaced. Clearly, the goal should be to attain catch targets using the necessary but fewest number of fishing vessels. Accordingly, marginal vessels should be sold while they still retain some value which, in turn, would minimize the financial pressure of bad assets. At the same time, the company should screen its inventories of repair parts and materials that have been inherited from its predecessor joint venture company to expedite the liquidation or elimination of items whose retention value is virtually nil.

### **(3) Coping with Future Operating Risks**

Various latent risks are associated with the catch, processing and sale of tuna products, and it would be no exaggeration to say that the continuance of SFPL operations will depend in large part on how these hidden risks can be avoided. With respect to company catches from January- June, 2004, a massive crisis threatened from the failure to anticipate a 60% decrease in catches from the same period of the previous year, but SFPL readied appropriate defenses against such external developments. As a result, the company succeeded in posting financial results for the full year 2004 that showed a major improvement over the dire initial projections.

Among the risk factors threatening the independence and continuity of future operations, the following may be cited:

- (i) Long-term declines in catch levels based on vicissitudes in the state of the marine environment, along with declines in the operating rates of processing facilities due to a shortage of raw fish supply.
- (ii) A sharp drop in international tuna prices as well as a sluggish loin market.
- (iii) A major rise in production costs based on an abnormal escalation of fuel prices as well as a decline in price competitiveness.
- (iv) Deterioration in the supply or quality of the human resources responsible for the company's core operations.

Conventional wisdom may suggest that such short-term changes in fishery management can ordinarily be avoided by minimizing the impact of changes in the resource or market prices. However, in terms of establishing sound fishery operations on a medium to long-term basis, the following defenses may prove to be vital.

- (i) Establishing the robust financial structure to overcome the market troughs, by taking full advantage of the opportunity of two Plan vessels operation.
- (ii) Circumventing market fluctuations by means of long-term purchase and sale contracts
- (iii) Indoctrinating the company with a pervasive awareness of the vital importance of cost reduction.



(iv) Encouraging human resource talents, including managerial skills

## **APPENDIX**

- 1 . MEMBER LIST OF THE SURVEY TEAM
- 2 . SURVEY ITINERARY
- 3 . LIST OF DISCUSSANT
- 4 . MINUTES OF DISCUSSIONS

## APPENDIX – 1 MEMBER LIST OF THE SURVEY TEAM

### 1-1 Member List (Field Survey)

<u>FUNCTION</u>	<u>NAME</u>	<u>ORGANIZATION</u>
Team Leader	Mr. Norihiro Ikeda	Grant Aid Management Department JICA
Technical Adviser	Mr. Kenji Takeuchi	Resources Enhancement Promotion Dept., Fisheries Agency
Chief Consultant / Fishery Distribution Planning / Administration Planning	Mr. Naohiko Nakajima	Fisheries Engineering Co., Ltd.
Vessel Design	Mr. Toyonori Watanabe	Fisheries Engineering Co., Ltd.
Outfitting and Equipment Planning	Mr. Akio Yamada	Fisheries Engineering Co., Ltd.
Construction Planning / Estimate	Mr. Takashi Furukatsu	Fisheries Engineering Co., Ltd.

### 1-2 Member List (Consultation of Draft Report)

<u>FUNCTION</u>	<u>NAME</u>	<u>ORGANIZATION</u>
Team Leader	Mr. Norihiro Ikeda	Grant Aid Management Department JICA
Technical Adviser	Mr. Kenji Takeuchi	Resources Enhancement Promotion Dept., Fisheries Agency
Chief Consultant / Fishery Distribution Planning / Administration Planning	Mr. Naohiko Nakajima	Fisheries Engineering Co., Ltd.
Vessel Design	Mr. Toyonori Watanabe	Fisheries Engineering Co., Ltd.
Outfitting and Equipment Planning	Mr. Akio Yamada	Fisheries Engineering Co., Ltd.

## APPENDIX - 2 SURVEY ITINERARY

### 2-1 Survey Schedule (Field Survey)

Day	Date	Movement	Activities	
1	Sep.27 (Mon)	Lv. Tokyo		
2	28 (Tue)	(Ar. Brisbane) (Lv. Brisbane) Ar. Honiara ETA 21:00		
3	29 (Wed)		Courtesy call to the Embassy of Japan Courtesy call to the JICA Office Explanation / discussion about contents of the Inception Report, Questionnaire and Tentative Schedule, to the Ministry of Fisheries and Marine Resources (MF&MR), and SFPL	
4	30 (Thu)		Discussion on the Minutes of Discussions at MF&MR and SFPL	
5	Oct. 1 (Fri)	Mr. Ikeda and Mr. Takeuchi to leave Honiara ETD 18:00	Signing of the Minutes of Discussions Report to the Embassy of Japan and JICA	
6	2 (Sat)		Survey of fish market in Honiara	
7	3 (Sun)	Consultants (4) to move to Noro		
			Mr. Nakajima and Mr. Furukatsu	Mr. Watanabe and Mr. Yamada
8	4 (Mon)		Discussion with SFPL and collect data. Survey of previous grant aid installations	Survey of tuna pole & line fishing vessels
9	5 (Tue)			
10	6 (Wed)			
11	7 (Thu)		Survey of tuna pole & line vessels, and evaluate their conditions.	
12	8 (Fri)		Survey of SFPL's Noro vessel maintenance facility.	
13	9 (Sat)		Survey of bait boats.	
14	10 (Sun)		Data analysis.	
15	11 (Mon)		Discussion with SFPL Noro works.	
16	12 (Tue)	Consultants (4) to move to Honiara	Discussion with government in charge of maritime matters and collect information on maritime rules. To collect fisheries and meteorological information.	
			Mr. Nakajima and Mr. Furukatsu	Mr. Watanabe and Mr. Yamada
17	13 (Wed)	Mr. Watanabe and Mr. Yamada to make one-day trip to Tulagi.	Collection of information on other donors' assistance in fisheries sector. Collection of fisheries statistics, etc.	Survey of Sasape slipway in Tulagi.
18	14 (Thu)		Checking agents for marine engines, equipment, supplies. Survey of fish processing facilities, etc.	
19	15 (Fri)		Discussion with MF&MR. Report to the Embassy of Japan and JICA	
20	16 (Sat)	Consultants (4) to leave Solomon islands Honiara ETD 20:00 (Ar. Brisbane)		
21	17 (Sun)	(Lv. Brisbane) Tokyo ETA 17:00		

## 2-2 Survey Schedule (Consultation of Draft Report)

Day	Date	Movement	Activities	
1	Dec.13 (Mon)	Lv. Tokyo		
2	14 (Tue)	(Ar. Brisbane) (Lv. Brisbane) Ar. Honiara ETA 14:00	Courtesy call to the Embassy of Japan Courtesy call to the JICA Office	
3	15 (Wed)		Explanation / discussion about contents of the Draft Report and Tentative Schedule, to SFPL	
			Mr. Ikeda, Mr. Takeuchi and Mr. Nakajima	Mr. Watanabe and Mr. Yamada
4	16 (Thu)	Mr. Watanabe and Mr. Yamada to move to Noro	Discussion on the Minutes of Discussions at MF&MR	Explanation / discussion about contents of the Draft Report to Noro Works
5	17 (Fri)		Signing of the Minutes of Discussions	Discussion with SFPL Engineering Section
6	18 (Sat)	Mr. Ikeda and Mr. Takeuchi to leave Honiara ETD 18:20	Mr. Nakajima Collection data	Collection data
7	19 (Sun)	Mr. Watanabe and Mr. Yamada to move to Honiara	Data analysis. Discussion within the survey team	
8	20 (Mon)		Report to the Embassy of Japan and JICA	
9	21 (Tue)	Consultants (3) to leave Solomon islands Honiara ETD 15:00 (Ar. Brisbane)		
10	22 (Wed)	(Lv. Brisbane) Tokyo ETA 17:20		

## APPENDIX - 3 LIST OF DISCUSSANT

### 3-1 Field Survey

	<u>NAME</u>	<u>FUNCTION</u>
<MFMR>	(Ministry of Fisheries and Marine Resources)	
	Hon. Paul Maenu'u	Minister
	Mr. Tione Bugotu	Permanent Secretary
	Mr. Sylvester Diake	Under Secretary
<MTID>	(Ministry of Transport, Infrastructure and Development)	
	Mr. Batiara Naniseni	Principal Marine Surveyor, Marine Department
<SFPL >	(Soltai Fishing and Processing Ltd.)	
	Mr. Danny Philip	Board Chairman
	Mr. Milton B. Sibisopere	Managing Director, <del>SFPL</del>
	Mr. Asery Kukui	Human Resource & Administration Manager
	Mr. Clarence Vangalo	Finance Manager
	Mr. John Teri Matangi	Fleet Manager
	Mr. David Byrom	Cannery Manager
	Mr. Leslie Osimae	Engineering Manager
	Mr. Alfredo Sevillejo	Finance Adviser
	Mr. Yutaka Miyauchi	Engineering Technical Advisor
	Mr. Koichi Okamura	Cannery Technical Advisor
	Mr. Yasuhiko Nakamura	ARABUSHI Factory, Advisor
	Ms. Mary Baura	Secretary, Honiara Office
	<SEL>	(Solgreen Enterprises Ltd.)
Mr. Kazuo Nagasawa		General Manager
<NFD>	(National Fisheries Developments Ltd.)	
	Mr. Tony Sarcich	Port Engineer/Operation Manager
<SML>	(Sasape Marine Ltd.)	
	Mr. Fruncis Pitabelama	General Manager
<FFA >	(Forum Fisheries Agency)	
	Mr. Minoru Honda	Tuna Industry Advisor
< Embassy of JAPAN >		
	Mr. Katsuhiko Kubo	Charge d'Affairs
< JICA Office >		
	Mr. Hiromi Fujita	Resident Representative, JICA Solomon Islands Office
	Ms. Yoko Asano	Secretary, JICA Solomon Islands Office

### 3-2 Consultation Draft Report

	<u>NAME</u>	<u>FUNCTION</u>
<MFMR>	(Ministry of Fisheries and Marine Resources)	
	Hon. Paul Maenu'u	Minister
	Mr. Tione Bugotu	Permanent Secretary
< SFPL >	(Soltai Fishing and Processing Ltd.)	
	Mr. Danny Philip	Board Chairman
	Mr. Aquila Talasasa	Board Deputy Chairman
	Mr. Leslie Teama	Director
	Mr. Milton B. Sibisopere	Managing Director, SFPL
	Mr. Asery Kukui	Human Resource & Administration Manager
	Mr. David Byrom	Cannery Manager
	Mr. Leslie Osimae	Engineering Manager
	Mr. Alfredo Sevillejo	Finance Adviser
	Mr. Lawrence Panda	Quality Control Supervisor
	Mr. Yutaka Miyauchi	Engineering Technical Advisor
	Mr. Koichi Okamura	Cannery Technical Advisor
	Ms. Mary Baura	Secretary, Honiara Office
< FFA >	(Forum Fisheries Agency)	
	Mr. Minoru Honda	Tuna Industry Advisor
< Embassy of JAPAN >		
	Mr. Katsuhiko Kubo	Charge d'Affairs
	Mr. Hiroaki Fujiwara	First Secretary
< JICA Office >		
	Ms. Yoko Asano	Secretary, JICA Solomon Islands Office

## APPENDIX - 4 MINUTES OF DISCUSSIONS

### 4-1 Field Survey

MINUTES OF DISCUSSIONS  
ON THE BASIC DESIGN STUDY  
ON the Project for Rehabilitation of Basic Bonito Fishery  
IN Solomon Islands

In response to a request from the Government of Solomon Islands ( hereinafter referred to as "the Solomons"), the Government of Japan decided to conduct a Basic Design Study on the Project for Rehabilitation of Basic Bonito Fishery in Solomon Islands (hereinafter referred to as "the Project" ) and entrusted the study to the Japan International Cooperation Agency (hereinafter referred to as "JICA").

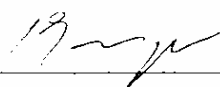
JICA sent to the Solomons the Basic Design Study Team (hereinafter referred to as "the Team" ), which is headed by Norihiro Ikeda, Team Director, Fisheries and Vocational Training Team, JICA, and is scheduled to stay in the country from September 28<sup>th</sup> to October th

The Team held discussions with officials of the Solomons and conducted a field survey at the study area.

In the course of discussions and field survey, both parties confirmed the main items described on the attached sheets. The Team will proceed to undertake further tasks and prepare the Basic Design Study Report.

Honiara, September 30th, 2004

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Norihiro Ikeda  
Leader  
Basic Design Study Team  
Japan International Cooperation Agency

Tione Bugotu  
Permanent Secretary  
Department of Fisheries and Marine Resources  
The Government of Solomon Islands



## ATTACHMENT

### 1.Objective of the Project

The objective of the Project is upgrading the tuna products industry in the Solomon through provision of Tuna pole & Line fishing vessels and boat boats to SOLTAI Fishing & Processing Limited.

### 2.Project site

The site of the Project is Noro.

### 3.Responsible and Implementing Agency

3-1.The Responsible Agency is Department of Fisheries and Marine Resources.

3-2.The Implementing Agency is SOLTAI Fishing & Processing Limited.

### 4.Items requested by the Solomons

After discussions with the Team, the items described in Annex- 1 were finally requested by the Solomon side. JICA will assess the appropriateness of the request and will recommend to the Government of Japan for approval.

### 5.Japan's Grant Aid Scheme

5-1. The Solomons understands the Japan's Grant Aid Scheme explained by the Team , as described in ANNEX- 2.

5-2. The Solomons will take the necessary measures, as described in Annex- 3. for smooth implementation of the Project, as a condition for the Japanese Grant Aid to be implemented.

### 6.Schedule of the Study

6-1. The consultants will proceed to further studies in the Solomon until October 16.

6-2. JICA will prepare the draft report in English and dispatch a mission in order to explain its contents in (or around) January 2005 .

6-3. In the case that the contents of the report is accepted in principle by the Government of the Solomon, JICA will complete the final report and send it to the Government of the Solomon by the end of March 2005.

### 7.Other relevant issues

7-1 The Solomons explained that there should not be any possibility at all of the privatization of SOLTAI Fishing & Processing Limited and promised to make every effort to be profitable as a state own company.

7-2 The Solomons agreed to submit answers to questionnaires until October 10<sup>th</sup>.

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## Annex – 1

### Outline of the items requested by the Government of Solomon Islands

#### (1) Tuna pole & line fishing vessel

Number of vessels	two
Vessel material	Steel
Length overall	Approx. 36.0 m
Length between perpendiculars	Approx. 28.5 m
Breadth, moulded	Approx. 5.9 m
Depth, moulded	Approx. 2.65 m
Fish hold capacity	Approx. 67 m <sup>3</sup>
Complement	Approx. 30 crew
Cruising speed	Approx. 10.5 knot
Main engine	Approx. 625 kW (850 ps)
Fish preservation	Brine freezing and chilled seawater

#### (2) Bait boat

Number of boats	six
Boat material	FRP
Length overall	4.5 m – 9.0 m
Breadth	1.6 m – 2.0 m
Main engine	15 kW – 25 kW (20 ps – 35 ps) inboard engine

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JAPAN'S GRANT AID SCHEME

1. Grant Aid Procedure
  - 1) Japan's Grant Aid Program is executed through the following procedures.
    - Application (Request made by a recipient country)
    - Study (Basic Design Study conducted by JICA)
    - Appraisal & Approval (Appraisal by the Government of Japan and Approval by Cabinet)
    - Determination of Implementation (The Notes exchanged between the Governments of Japan and the recipient country)
  - 2) Firstly, the application or request for a Grant Aid project submitted by a recipient country is examined by the Government of Japan (the Ministry of Foreign Affairs) to determine whether or not it is eligible for Grant Aid. If the request is deemed appropriate, the Government of Japan assigns JICA to conduct a study on the request. If necessary, JICA send a Preliminary Study Team to the recipient country to confirm the contents of the request.

Secondly, JICA conducts the study (Basic Design Study), using Japanese consulting firms.

Thirdly, the Government of Japan appraises the project to see whether or not it is suitable for Japan's Grant Aid Programme, based on the Basic Design Study report prepared by JICA, and the results are then submitted to Cabinet for approval.

Fourthly, the project, once approved by the Cabinet, becomes official with the Exchange of Notes signed by the Governments of Japan and the recipient country.

Finally, for the implementation of the project, JICA assists the recipient country in such matters as preparing tenders, contracts and so on.
2. Basic Design Study
  - 1) Contents of the Study

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The aim of the Basic Design Study (hereinafter referred to as "the Study"), conducted by JICA on the requested project (hereinafter referred to as "the Project"), is to provide a basic document necessary for the appraisal of the Project by the Government of Japan. The contents of the Study are as follows:

- a) confirmation of the background, objectives and benefits of the Project and also institutional capacity of agencies concerned of the recipient country necessary for the Project's implementation;
- b) evaluation of the appropriateness of the Project to be implemented under the Grant Aid Scheme from the technical, social and economic points of view;
- c) confirmation of items agreed on by both parties concerning the basic concept of the Project;
- d) preparation of a basic design of the Project; and
- e) estimation of costs of the Project.

The contents of the original request are not necessarily approved in their initial form as the contents of the Grant Aid project. The Basic Design of the Project is confirmed considering the guidelines of Japan's Grant Aid Scheme.

The Government of Japan requests the Government of the recipient country to take whatever measures are necessary to ensure its self-reliance in the implementation of the Project. Such measures must be guaranteed even through they may fall outside of the jurisdiction of the organization in the recipient country actually implementing the Project. Therefore, the implementation of the Project is confirmed by all relevant organizations of the recipient country through the Minutes of Discussions.

2) Selection of Consultants

For the smooth implementation of the Study, JICA uses a consulting firm selected through its own procedure (competitive proposal). The selected firm participates the Study and prepares a report based upon the terms of reference set by JICA.

At the beginning of implementation after the Exchange of Notes, for the services of the Detailed Design and Construction Supervision of the Project, JICA recommends the same consulting firm which participated in the Study to the recipient country, in order to maintain the technical consistency between the Basic Design and Detailed Design as well as to avoid any undue delay caused by the selection of a new consulting firm.

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3. Japan's Grant Aid Scheme

1) What is Grant Aid?

The Grant Aid Program provides a recipient country with non-reimbursable funds to procure the facilities, equipment and services (engineering services and transportation of the products, etc.) for economic and social development of the country under principles in accordance with the relevant laws and regulations of Japan. Grant Aid is not supplied through the donation of materials as such.

2) Exchange of Notes (E/N)

Japan's Grant Aid is extended in accordance with the Notes exchanged by the two Governments concerned, in which the objectives of the project, period of execution, conditions and amount of the Grant Aid, etc., are confirmed.

3) "The period of the Grant" means the one fiscal year which the Cabinet approves the project for. Within the fiscal year, all procedure such as exchanging of the Notes, concluding contracts with consulting firms and contractors and final payment to them must be completed.

However, in case of delays in delivery, installation or construction due to unforeseen factors such as weather, the period of the Grant Aid can be further extended for a maximum of one fiscal year at most by mutual agreement between the two Governments.

4) Under the Grant, in principle, Japanese products and services including transport or those of the recipient country are to be purchased.

When the two Governments deem it necessary, the Grant Aid may be used for the purchase of the products or services of a third country.

However, the prime contractors, namely consulting, contracting and procurement firms, are limited to "Japanese nationals". (The term "Japanese nationals" means persons of Japanese nationality or Japanese corporations controlled by persons of Japanese nationality.)

5) Necessity of "Verification"

The Government of the recipient country or its designated authority will conclude contracts denominated in Japanese yen with Japanese nationals. Those contracts shall be verified by the Government of Japan. This "Verification" is deemed necessary to secure accountability



of Japanese taxpayers.

- 6) Undertakings required to the Government of the recipient country
  - a) to secure a lot of land necessary for the construction of the Project and to clear the site;
  - b) to provide facilities for distribution of electricity, water supply and drainage and other incidental facilities outside the site;
  - c) to ensure prompt unloading and customs clearance at ports of disembarkation in the recipient country and internal transportation therein of the products purchased under the Grant Aid;
  - d) to exempt Japanese nationals involved in the Project from customs duties, internal taxes and fiscal levies which may be imposed in the recipient country with respect to the supply of the products and services under the verified contracts;
  - e) to accord Japanese nationals whose services may be required in connection with the supply of the products and services under the verified contracts such as facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work;
  - f) to ensure that the facilities constructed and products purchased under the Grant Aid be maintained and used properly and effectively for the Project; and
  - g) to bear all the expenses, other than those covered by the Grant Aid, necessary for the Project.
- 7) "Proper Use"

The recipient country is required to maintain and use the facilities constructed and equipment purchased under the Grant Aid properly and effectively and to assign the necessary staff for operation and maintenance of them as well as to bear all the expenses other than those covered by the Grant Aid.
- 8) "Re-export"

The products purchased under the Grant Aid shall not be re-exported from the recipient country.
- 9) Banking Arrangement (B/A)
  - a) The Government of the recipient country or its designated authority should open an account in the name of the Government of the recipient country in an authorized foreign exchange bank in Japan (hereinafter referred to as "the Bank"). The Government of Japan will execute the Grant Aid by making payments in Japanese yen to cover the obligations

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incurred by the Government of the recipient country or its designated authority under the verified contracts.

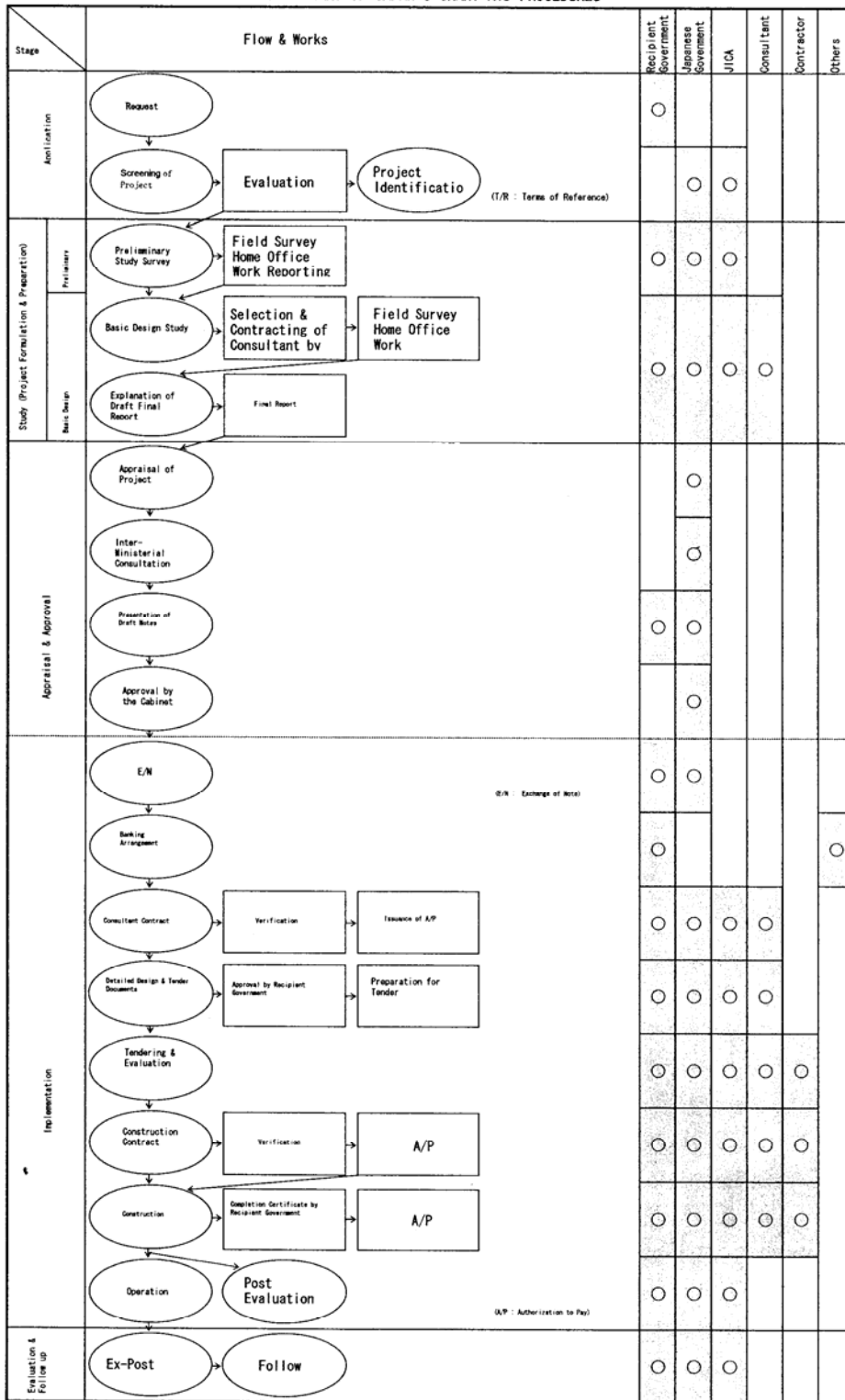
b) The payments will be made when payment requests are presented by the Bank to the Government of Japan under an Authorization to Pay (A/P) issued by the Government of recipient country or its designated authority.

9) Authorization to Pay (A/P)

The Government of the recipient country should bear an advising commission of an Authorization to Pay and payment commissions to the Bank.

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FLOW CHART OF JAPAN'S GRANT AID PROCEDURES



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## Major Undertakings to be taken by Each Government

Annex-3

No.	Items	To be covered by Grant Aid	To be covered by Recipient Side
1	To secure land		•
2	To clear level and reclaim the site when needed		•
3	To construct gates and fences in and around the site		•
4	To construct the parking lot	•	
5	To construct roads		
	1) Within the site	•	
	2) Outside the site		•
6	To construct the building	•	
7	To provide facilities for the distribution of electricity , water supply , drainage and other incidental facilities		
	1) Electricity		
	a) The distributing line to the site		•
	b) The drop wiring and internal wiring within the site	•	
	c) The main circuit breaker and transformer	•	
	2) Water Supply		
	a) The city water distribution main to the site		•
	b) The supply system within the site (receiving and elevated tanks)	•	
	3) Drainage		
	a) The city drainage main(for storm sewer and others to the site)		•
	b) The drainage system (for toilet sewer, ordinary waste, storm drainage and others) within the site	•	
	4) Gas Supply		
	a) The city gas main to the site		•
	b) The gas supply system within the site	•	
	5) Telephone System		
	a)The telephone trunk line to the main distribution frame/panel (MDF) of the building		•
	b) The MDF and the extension after the frame/panel	•	
	6) Furniture and Equipment		
	a) General furniture		•
	b) Project equipment	•	
8	To bear the following commissions to the Japanese foreign exchange banking services based upon the B/A		
	1) Advising commission of A/P		•
	2) Payment commission		•
9	To ensure unloading and customs clearance at port of disembarkation in recipient country		
	1) Marine (Air) transportation of the products from Japan to the recipient country	•	
	2) Tax exemption and custom clearance of the products at the port of disembarkation		•
	3) Internal transportation from the port of disembarkation to the project site		•
10	To accord Japanese nationals whose services may be required in connection with the supply of the products and the services under the verified contact such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of the their work		•

11	To exempt Japanese nationals involved in the Project from customs duties, internal taxes and other fiscal levies which may be imposed in the recipient country with respect to the supply of the products and services under the verified contracts		•
12	To maintain and use properly and effectively the facilities contracted and equipment provided under the Grant		•
13	To bear all the expenses, other than those to be borne by the Grant, necessary for construction of the facilities as well as for the transportation and installation of the equipment		•

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## 4-2 Consultation Draft Report

MINUTES OF DISCUSSIONS  
ON THE BASIC DESIGN STUDY ON THE PROJECT FOR  
REHABILITATION OF THE DOMESTIC TUNA FISHERY  
IN SOLOMON ISLANDS  
(EXPLANATION OF DRAFT REPORT)

In September 2004, the Japan International Cooperation Agency (hereinafter referred to as "JICA") dispatched a Basic Design Study Team on the Project for Rehabilitation of the Domestic Tuna Fishery in Solomon Islands (hereinafter referred to as "the Project") and through discussion, field survey and technical examination of the results in Japan, JICA prepared a draft report of the study.

In order to explain and to consult Solomon Islands on the components of the draft report, JICA sent to Solomon Islands the Draft Report Explanation Team (hereinafter referred to as "the Team"), which is headed by Norihiro Ikeda, Team Director, Fisheries and Vocational Training Team, JICA, from December 14<sup>th</sup> to 21<sup>st</sup>.

As a result of discussions, both parties confirmed the main items described on the attached sheets.

Honiara, December 17, 2004

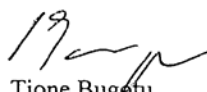
池田 剛宏

Norihiro Ikeda

Leader

Basic Design Study Team

Japan International Cooperation Agency



Tione Bugotu

Permanent Secretary

Department of Fisheries and Marine Resources

The Government of Solomon Islands

## ATTACHMENT

### 1.Components of the Draft Report

The Government of Solomon Islands agreed and accepted in principle the components of the draft report explained by the Team.

### 2.Japan's Grant Aid Scheme

The Government of Solomon Islands understands the Japan's Grant Aid Scheme and the necessary measures to be taken by the Government of Solomon Islands as explained by the Team and described in Annex-2 and 3 and Annex -2 of the Minutes of Discussions signed by both parties on September 30<sup>th</sup> 2004.

### 3.Schedule of the Study

3-1.The consultants will proceed to further examination of the study results in Japan until January 2005.

3-2.Based on the results of discussions of the draft report, JICA will complete the final report and send it to Solomon Islands by March 31<sup>st</sup> 2005.

### 4.Other relevant issues

4-1 The Government of Solomon Islands explained that there are not any possibility of privatization of SOLTAI Fishing & Processing Limited to any other party.

4-2 The Government of Solomon Islands explained that Ministry of Finance will own the equipment granted by the Government of Japan and SOLTAI Fishing & Processing Limited will exclusively operate the vessels free from any other encumbrances and financial obligation..

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## Annex – 1

Components of the Project are as follows.

(1) Tuna pole & line fishing vessel

Number of vessels	Two (2)
Vessel material	Steel
Length overall	37.65 m
Length between perpendiculars	30.00 m
Breadth, moulded	6.40 m
Depth, moulded	2.80 m
Gross tonnage, international	194 tons
Fish hold capacity	87 m <sup>3</sup>
Complement	30 crew
Cruising speed	10.5 knot
Main engine	625 kW (850 ps)
Fish preservation	Brine freezing

(2) Bait boat complete

Number of boats	Four (4)
Boat material	Fiberglass Reinforced Plastic
Length overall	About 7 m
Breadth	About 1.8 m
Main engine	22 kW (30 ps) inboard engine

(3) Bait boat engine kit

Number of kits	Two (2)
Engine power	22 kW (same as the engine on board bait boat complete)
Accessories	Shafting, stern tube, propeller, dynamo, and outfitting

(4) Fish bin

Number of fish bins	Eighty-six (86)
Capacity	1,000 kg
Material	Stainless steel

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