

Appendix

Appendix - 1 : Member List of the Survey Team

Appendix - 2 : Survey Schedule

Appendix - 3 : List of Party Concerned

Appendix - 4 : Minutes of Discussion

Appendix -5 : Other Relevant Data

Appendix -5- 1 : Fuel Oil Consumption of Plan Vessel

Appendix -5- 2 : Salary Structure for Plan Vessel

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	Kenji MATSUMOTO	Research and Technological Guidance Division, Fisheries Agency
Project Coordinator	Ryutaro MUROTANI	Fourth Project Management Division, Grant Aid Management Department, Japan International Cooperation Agency(JICA)
Project Manager / Construction Planning	Toyonori WATANABE	Fisheries Engineering Co., Ltd.
Facility and Engine Planning	Akio YAMADA	Fisheries Engineering Co., Ltd.
Operation and Transportation Planning	Naohiko NAKAJIMA	Fisheries Engineering Co., Ltd.
Construction Planning / Cost Estimation	Yoshihisa AOKI	Fisheries Engineering Co., Ltd.

1-2 Member List (Consultation of Draft Report)

<u>FUNCTION</u>	<u>NAME</u>	<u>ORGANIZATION</u>
Team Leader	Kenji MATSUMOTO	Research and Technological Guidance Division, Fisheries Agency
Project Manager / Construction Planning	Toyonori WATANABE	Fisheries Engineering Co., Ltd.
Facility and Engine Planning	Akio YAMADA	Fisheries Engineering Co., Ltd.

Appendix - 2 : Survey Schedule

2-1 Survey Schedule (Field Survey)

DAY	DATE	ACTIVITIES		
1	Aug. 1 (Tue)	Lv. Tokyo		
2	2 (Wed)	Ar. Nadi		
3	3 (Thu)	Lv. Nadi Suva Ar. Funafuti		
4	4 (Fri)	Visit to MNRE, MWEC, 1 st Discussion with Task Force		
5	5 (Sat)	Survey about Funafuti Port and unloading of container ship		
6	6 (Sun)	Discussion within the survey team		
7	7 (Mon)	Mr. Matsumoto, Mr. Murotani (Ar. Funafuti) Survey about Funafuti Port		
8	8 (Tue)	2 nd Discussion with Task Force		
9	9 (Wed)	Survey on charter vessel from Fiji, 3 rd Discussion with Task Force		
10	10 (Thu)	4 th Discussion with Task Force		
11	11 (Fri)	Drafting and Signing of Minutes of Discussion		
12	12 (Sat)	Survey about Tuvalu Maritime School		
13	13 (Sun)	Discussion within the survey team		
		Mr. Watanabe, Mr. Nakajima	Mr. Yamada	Mr. Matsumoto, Mr. Murotani, Mr. Aoki
14	14 (Mon)	Discussion with MNRE Visit to Tuvalu Workshop	Lv. Funafuti Suva Ar. Nadi	Lv. Funafuti Suva Ar. Nadi
15	15 (Tue)	Discussion with MWEC Discussion with NAFICOT	Lv. Nadi Ar. Auckland Survey on Nivaga	Lv. Nadi Ar. Tokyo
16	16 (Wed)	Discussion with TCS Discussion with Communication Center	Survey on Nivaga Lv. Auckland Ar. Nadi	
17	17 (Thu)	Information and data collection of Weather Dep., Electric Dep. and Workshop of MWEC Discussion with person from Nanumea Island	Lv. Nadi Suva Ar. Funafuti	
		Mr. Watanabe, Mr. Yamada, Mr. Nakajima		
18	18 (Fri)	5 th Discussion with Task Force		
19	19 (Sat)	Final discussion with Task Force		
20	20 (Sun)	Data analysis		
21	21 (Mon)	Information and data collection from MWEC		
22	22 (Tue)	Discussion with MWEC, data collection from TCS		
23	23 (Wed)	Visit to MWEC, MNRE		
24	24 (Thu)	Lv. Funafuti Ar. Suva, Report to Embassy of Japan and JICA Office		
25	25 (Fri)	Survey about shipyard in Suva		
26	26 (Sat)	Data analysis, Waited M/V Nivaga in Suva Port		
27	27 (Sun)	Survey on Nivaga , Lv. Suva Ar. Nadi		
28	28 (Mon)	Lv. Nadi Ar. Tokyo		

MNRE : Ministry of Natural Resources & Environment

MWEC : Ministry of Works, Energy & Communication

NAFICOT : National Fishing Company of Tuvalu, Ltd.

TCS : Tuvalu Cooperative Society

2-2 Survey Schedule (Consultation of Draft Report)

DAY	DATE	ACTIVITIES
1	Oct.21 (Sat)	Lv. Nagoya
2	22 (Sun)	Nadi Ar. Suva
3	23 (Mon)	Lv. Suva Ar. Funafuti
4	24 (Tue)	Visit to MNRE, MWEC
5	25 (Wed)	Discussion with Task Force
6	26 (Thu)	Discussion with Task Force
7	27 (Fri)	Discussion with Task Force
8	28 (Sat)	Drafting and Signing of Minutes of Discussion
9	29 (Sun)	Discussion within the survey team
10	30 (Mon)	Lv. Funafuti Ar. Suva, Report to Embassy of Japan and JICA Office Lv. Suva Ar. Nadi
11	31 (Tue)	Lv. Nadi Ar. Sydney, Lv. Sydney
12	Nov. 1 (Wed)	Ar. Tokyo

Appendix - 3 : List of Party Concerned

3-1 Field Survey

<u>NAME</u>	<u>FUNCTION</u>
Hon. Faimalaga Luka	Acting Prime Minister Minister, Ministry of Natural Resources & Environment (MNRE)
Hon. Samuelu Penitala Teo	Minister, Ministry of Works, Energy and Communications(MWEC)
Mr. Elisala Pita	Permanent Secretary, MNRE
Mr. Paani K. Laupepa	Assistant Secretary, MNRE
Mr. Sautia Maluofenua	Director of Fisheries, Fisheries Department, MNRE
Mr. Melton Tauetia	Senior Aerology Officer, Meteorology Division, MNRE
Mr. Lotoala Metia	Secretary, MWEC
Mr. Uale Sinatati	Assistant Manager, Marine and Ports Services, MWEC
Mr. Loto Pasefika	Marine Manager, Marine and Ports Services, MWEC
Mr. Kanae Sakkua	Shipping & Port Officer, Marine and Ports Services, MWEC
Mr. Petaia Meauma	Planning Officer, Ministry of Finance & Economic Planning ¹
Mr. Monise Laafai	General Manager, Tuvalu Co-operative Society
Mr. Mika Elisala	Officer, National Coordinating Center
Mr. Tomas Tafia	General Manager, Tuvalu Electricity Corporation
Mr. Tito Tapungao	Capt., Chief Executive Officer, Tuvalu Maritime School (TMS)
Mr. Jione T. Inia	Chief Officer, TMS
Mr. Tiliga Puluisi	Director of Health, Princess Margaret Hospital
Mr. Satalaka Petaia	General Manager, National Fisheries Corporation
Mr. Yukifumi IKKI	Second Secretary, Embassy of Japan
Mr. Tadanori SUZUKI	Resident Representative, JICA
Mr. Takahiro ISHIZAKI	Assistant Resident Representative, JICA
Dr. Shigeru SHIMURA	JICA Expert, Fisheries Development Advisor

3-2 Consultation Draft Report

<u>NAME</u>	<u>FUNCTION</u>
Hon. Faimalaga Luka	Acting Prime Minister
	Minister, Ministry of Natural Resources & Environment (MNRE)
Hon. Samuelu Penitala Teo	Minister, Ministry of Works, Energy and Communications(MWEC)
Hon. Tom.M.Sione	Speaker of Parliament
Mr. Elisala Pita	Permanent Secretary, MNRE
Mr. Paani K. Laupepa	Assistant Secretary, MNRE
Mr. Samuelu Telii	Acting Fisheries Officer, MNRE
Mr. Samelu Laconiu	Assistant Secretary, MWEC
Mr. Uale Sinatati	Assistant Manager, Marine and Ports Services, MWEC
Mr. Loto Pasefika	Marine Manager, Marine and Ports Services, MWEC
Mr. Tine Leuelu	Deputy Secretary to Government, Office of Prime Minister
Mr. Petaia Meauma	Planning Officer, Ministry of Finance & Economic Planning11
Mr. Monise Laafai	General Manager, Tuvalu Co-operative Society
Mr. Tito Tapungao	Capt., Chief Executive Officer, Tuvalu Maritime School
Mr. Satalaka Petaia	General Manager, National Fisheries Corporation
Mr. Yukifumi IKKI	Second Secretary, Embassy of Japan
Mr. Tadanori SUZUKI	Resident Representative, JICA
Mr. Takahiro ISHIZAKI	Assistant Resident Representative, JICA
Dr. Shigeru SHIMURA	JICA Expert, Fisheries Development Advisor

MINUTES OF DISCUSSIONS
ON
THE BASIC DESIGN STUDY
ON THE PROJECT FOR
CONSTRUCTION OF THE INTER-ISLAND VESSEL
FOR
OUTER ISLAND FISHERIES DEVELOPMENT
IN TUVALU

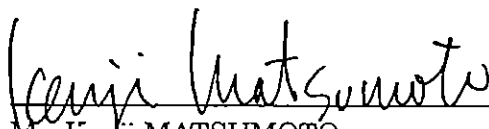
In response to a request from the Government of Tuvalu (hereinafter referred to as "GOT"), the Government of Japan decided to conduct a Basic Design Study on the Project for Construction of the Inter-Island Vessel for Outer Island Fisheries Development (hereinafter referred to as "the Project") and entrusted the study to the Japan International Cooperation Agency (hereinafter referred to as "JICA").

JICA sent to Tuvalu the Basic Design Study Team (hereinafter referred to as "the Team"), which is headed by Mr. Kenji MATSUMOTO, Research and Technological Guidance Division, Fisheries Agency, and is scheduled to stay in the country from 3rd to 24th August, 2000.

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

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

Funafuti, 11th August, 2000



Mr. Kenji MATSUMOTO
Leader
Basic Design Study Team
JICA



Mr. Elisala PITA
Permanent Secretary
Ministry of Natural Resources and
Environment
Government of Tuvalu

ATTACHMENT

1. Objective of the Project

The objective of the Project is to promote the development of fisheries in the outer-islands by constructing an inter-island passenger/cargo vessel to transport people, food including marine products, medical supplies, fuel and other necessity of life.

2. Project Site

The site of the Project, where the vessel will be at anchor, is located in Funafuti, as shown in ANNEX-1.

3. Responsible and Implementing Agency

3-1. The Responsible Agency is the Ministry of Natural Resources and Environment.

3-2. The Implementing Agency is the Ministry of Works, Energy and Communication under the plan of the Inter-Island Vessel Task Force shown in ANNEX-2.

4. Items requested by GOT

After discussions with the Team, the items described in ANNEX-3 were finally requested by GOT. JICA will assess the appropriateness of the request and will recommend to the Government of Japan for approval.

5. Japan's Grant Aid System

5-1. The GOT Inter-Island Vessel Task Force understands the Japan's Grant Aid Scheme explained by the Team, as described in ANNEX-4.

5-2. The GOT will take the necessary measures, as described in ANNEX-5, for the smooth implementation of the Project, as a condition for the Japan's Grant Aid to be implemented.

6. Further Schedule of the Study

6-1. The consultants will proceed to further studies in Tuvalu until 24th August, 2000.

6-2. JICA will prepare the draft report in English and dispatch a mission in order to explain its contents around October, 2000.

6-3. In case that the contents of the report are accepted in principle by GOT, JICA will complete the final report and send it to the GOT by January, 2001.

7. Other Relevant Issues

- 7-1. If the Project is implemented, the existing inter-island vessel "Nivaga II" will be used in international shipping service between Funafuti and Suva and it will also be used for inter-island service while the planned inter-island vessel is under repair or during the peak passenger season.
- 7-2. GOT Inter-Island Vessel Task Force understood that GOT is responsible for the management, administration, finance and personnel matters for the said two vessels.
- 7-3. As a condition for the Project to be implemented, GOT will allocate enough budget to operate and maintain the planned inter-island vessel and the existing Nivaga II and to cover the deficits which may be caused by operating the said two vessels.
- 7-4. If the Project is implemented, GOT will take necessary measures to obtain a captain and crews for the planned vessel.
- 7-5. For the sake of the technology transfer on sustainable operation and maintenance of the inter-island vessel, GOT Task Force pointed out the need for the dispatch of Japanese experts as well as technical training of counterpart personnel in Japan. They also understood that another official request on technical cooperation should be submitted through diplomatic channels such as the Embassy of Japan and/or the JICA Office in Fiji.
- 7-6. Although the Project was named "Outer-Islands Fisheries Development Project" in the application, both sides agreed to rename it as "Project for Construction of the Inter-Island Vessel for Outer-Islands Fisheries Development."

ANNEX-2

Inter-Island Vessel Task Force of the GOT

	Name	Department
1	Elisala Pita (Chairman of the Taskforce)	Permanent Secretary, MNRE
2	Paani Laupepa	Assistant Secretary, MNRE
3	Tine Leuelu	Deputy Secretary to Government, Office of Prime Minister
4	Panapasi Nelesone	Secretary, Ministry of Foreign Affairs
5	Uale Sinapati	Assistant Manager, Marine and Ports Services, MWEC
6	Loto Pasefika	Marine Manager, Marine and Ports Services, MWEC
7	Petaia Meauma	Planning Officer, Economic Research and Planning Dept.
8	Tito Tapungao	Capt. Superintendent, Tuvalu Maritime School
9	Monise Laafai	General Manager, TCS (Tuvalu Co-op.Society Ltd.)
10	Namoto Kelisiano	Private (Marine Engineer)
11	Melton Tauetia	Senior Aerology Officer, Meteorological Station
12	Sautia Maluofenua	Chief Fisheries Officer, MNRE

ANNEX-3

Design Criteria of the Vessel Requested by the GOT

1. Area of Service

The vessel shall engage in the inter-island shipping service within Tuvalu waters.

2. Port of Registration

The port of registration of the vessel shall be Funafuti.

3. Vessel Type

The vessel shall be a passenger/cargo vessel capable of transport of passenger and cargo including fish, vegetables and other foodstuff in fresh or frozen form.

4. Rules to Apply

Following rules to be applied to the vessel.

- Tuvalu Maritime Shipping Amendment Act 1991
- Classification society's rule
- Japanese Maritime Rules

5. Particulars of Projected Vessel

The vessel shall be fitted out as follows;

- Navigation equipment excluding fish finder and current observation unit
- Deck machineries
- Engine room machineries with propulsion system of twin engine twin propeller configuration
- Electric system
- Life saving apparatus
- Fire extinguishing equipment
- Computers for the ship documentation and cargo statistics and calculation

Details of the above items will be determined in the course of the analysis of the Project by the Team and provision of the items is still subject to change.

JAPAN'S GRANT AID PROGRAM**1. Japan's Grant Aid Procedures**

- (1) Japan's Grant Aid Program is executed by the following procedures.

Application (Request made by a recipient country)

Study (Preparatory Study / Basic Design Study conducted by JICA)

Appraisal & Approval (Appraisal by the Government of Japan and Approval by the Cabinet of Japan)

Determination of Implementation (The Exchange of Notes between the both Governments)

Implementation (Implementation of the Project)

- (2) Firstly, an application or a request for a project made by a recipient country is examined by the Government of Japan (the Ministry of Foreign Affairs) to see whether or not it is suitable for Japan's Grant Aid. If the request is deemed suitable, the Government of Japan entrusts a study to JICA (Japan International Cooperation Agency).

Secondly, JICA conducts the study (Basic Design Study), using a Japanese consulting firm. If the background and objective of the requested project are not clear, a Preparatory Study is conducted prior to a Basic Design Study.

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

Fourthly, the Project approved by the Cabinet becomes official when pledged by the Exchange of Notes signed by the both Governments.

Finally, for the implementation of the Project, JICA assists the recipient country in preparing contracts and so on.

2. Contents of the Study

- (1) Contents of the Study

The purpose of the Study(Preparatory Study / Basic Design Study) conducted by JICA on a project requested is to provide basic document necessary for the appraisal of the project by the Government of Japan. The contents of the study are as follows:

- a) to confirm the background, objectives and benefits of the project and also institutional capacity of the agencies concerned of the recipient country necessary for the project implementation;
- b) to evaluate the appropriateness of the project for the Grant Aid Scheme from a technical, social and economical point of view;
- c) to confirm items agreed on by both parties concerning the basic concept of the project;
- d) to prepare a basic design of the project, and
- e) to estimate cost involved in the project.

Final project components are subject to approval by the Government of Japan and therefore may differ from an original request.

Implementing the project, the Government of Japan requests the recipient country to take necessary measures involved which are itemized on the Exchange of Notes.

(2) Selecting (a) Consulting Firm(s)

For the smooth implementation of the study, JICA selects (a) consulting firm(s) registered. JICA selects (a) firm(s) through proposals submitted by firms which are interested. The firm(s) selected carry(ies) out a Basic Design Study and prepare(s) a report, based upon terms of reference made by JICA.

The consulting firm(s) used for the study is (are) recommended by JICA to a recipient country after Exchange of Notes, in order to maintain technical consistency and to ensure smooth implementation of the Project within the period.

(3) Status of a Preparatory Study in the Grant Aid Program

A Preparatory Study is conducted during the second step of a project formulation and preparation as mentioned above.

A result of the study will be utilized in Japan to decide if the Project is to be suitable for a Basic Design Study.

Based on the result of the Basic Design Study, the Government would proceed to the stage of decision making process (appraisal and approval).

It is important to notice that at the stage of Preparatory Study, no commitment is made by the Japanese side concerning the realization of the Project in the scheme of Grant Aid Program.

3. Japan's Grant Aid Scheme

(1) What is Grant Aid?

The Grant Aid Program provides a recipient country with non-reimbursable funds needed to procure facilities, equipment and services for economic and social development of the country under the following principles in accordance with the relevant laws and regulations of Japan. The Grant Aid is not in a form of donation or such.

(2) Exchange of Notes (E/N)

Japan's Grant Aid is extended in accordance with the Exchange of Notes by both Governments, 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 Aid

"The period of the Grant Aid" means one Japanese fiscal year which the Cabinet approves the project for. Within the fiscal year, all procedure such as Exchange of Notes, concluding a contract with (a) consulting firm(s) and (a) contractor(s) and a final payment to them must be completed.

(4) Purchase of Products and Services

Under the Grant, in principle, products and services of origins of Japan or the recipient country are to be purchased.

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

However, the prime contractors, namely, consulting, contractor and procurement firms, are limited to "Japanese nationals". (The term "Japanese nationals" means Japanese physical persons or Japanese juridical persons controlled by Japanese physical persons.)

(5) Necessity of Verification

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

(6) Undertakings required to the Government of the recipient country

In the implementation of the Grant Aid, the recipient country is required to undertake necessary measures such as the following:

- a) to secure land necessary for the site of the project and to clear and level the land prior to commencement of the construction work;
- b) to provide facilities for distribution of electricity, water supply and drainage and other incidental facilities outside the sites;
- c) to secure buildings prior to the installation work in case the project is providing equipment;
- d) to ensure all the expenses and prompt execution for unloading, customs clearance at the port of disembarkation and internal transportation of the products purchased under the Grant Aid;
- e) to exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which will be imposed in the recipient country with respect to the supply of the products and services under the Verified Contracts, and
- f) to accord Japanese nationals whose services may be required in connection with the supply of the products and services under the Verified Contracts, such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their works

(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 staff necessary for their operation and maintenance as well as to bear all the expenses other than those to be borne 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 shall open an account in the name of the Government of the recipient country in a bank of 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 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 issued by the Government of the recipient country or its designated authority.

K.M .



Major Undertaking to be taken by Each Government

No.	Items	To be covered by Grant Aid	To be covered by Recipient Side
1	To bear the following commissions to the Japanese bank for the banking services based upon the B/A		
	1) Advising commission of A/P		●
	2) Payment commission		●
2	To ensure prompt 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	-	-
3	To accord Japanese nationals whose services may be required in connection with the supply the products and the services under the verified contract such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work.		●
4	To exempt Japanese nationals 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.		●
5	To maintain and use properly and effectively the facilities constructed and equipment provided under the Grant.		●
6	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.		●

K.M.

**MINUTES OF DISCUSSIONS
ON
THE PROJECT
FOR
CONSTRUCTION OF THE INTER-ISLAND VESSEL
FOR OUTER ISLAND FISHERIES DEVELOPMENT
IN TUVALU**

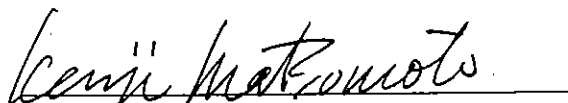
(CONSULTATION ON DRAFT REPORT)

In August 2000, the Japan International Cooperation Agency (JICA) dispatched a Basic Design Study Team on the project for Construction of the Inter-Island Vessel for Outer Island Fisheries Development (hereinafter referred to as "the Project") to Tuvalu, and through discussions, site surveys, and technical examination of the results in Japan, JICA prepared the draft report of the study.

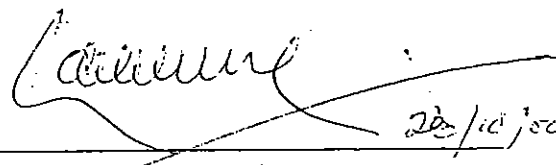
In order to explain and to consult the Tuvalu side on the components of the draft report, JICA sent to Tuvalu the Draft Report Explanation Team (hereinafter referred to as "the Team"), which is headed by Mr. Kenji MATSUMOTO, Research and Technological Guidance Division, Fisheries Agency, from October 23 to 30, 2000.

As a result of discussion, both sides have confirmed the main items described on the attached sheets.

Funafuti, 28 October, 2000



Mr. Kenji MATSUMOTO
Leader
Draft Report Explanation Team


28/10/00

Mr. Paani K. LAUPEPA
Permanent Secretary (Acting)
Ministry of Natural Resources and
Environment

ATTACHMENT

1. Components of the Draft Report

The Government of Tuvalu agrees and accepts in principle the components of the draft report as explained by the Team.

2. Japan's Grant Aid System

Tuvalu side understands the Japan's Grant Aid Scheme and the necessary measures to be taken by the Government of Tuvalu as explained by the Team and described in Annex 4 and 5 of the Minutes of Discussions signed by both parties on 11th August, 2000.

3. Schedule of the Study

JICA will complete the final report in accordance with the confirmed items and send it to the Government of Tuvalu around January, 2001.

4. Other Relevant Issues

- 4-1. Tuvalu side agreed to allocate enough budget to operate and maintain properly the project.
- 4-2. Both sides agreed that Tuvalu side was responsible for the management, administration, finance and personnel matters for the Project.
- 4-3. Installation of radio telephone in each outer island to allow close communication between ship and each outer island is requested by the Tuvalu side. The request will be evaluated further in Japan for final decision.

B.M.

AK

Appendix –5 : Other Relevant Data

Appendix 5-1 Fuel Oil Consumption of Plan Vessel

The Plan vessel will equip with two main engines, two generator engines and one harbour generator. The table below indicates fuel oil consumption rate of each plant.

Fuel Oil Consumption by Plant

	Output	Output Rate	Consumption Rate	Consumption per hour
Main engine	368 kW (500ps)	0.8	209 g/kW• Hr.	73.2 Lit.
Generator engine	155 kW (210ps)	0.8	217 g/kW• Hr.	32.0 Lit.
Harbour generator	55 kW (75ps)	0.8	258 g/kW• Hr.	13.5 Lit.

Total cruising range of the Plan vessel is estimated as shown below, on the assumption that the vessel makes 56 navigations per year according to the planned operation schedule shown in Table 2.2-2

Northern Route	15 times x 525n.m.	=	7,875n.m.
Central Route	17 times x 321n.m.	=	5,457n.m.
Vaitupu only	11 times x 148n.m.	=	1,628n.m.
<u>Southern Route</u>	<u>13 times x 292n.m.</u>	=	<u>3,796n.m.</u>
Total			18,756n.m.

The total output of two main engines comes to 738kW(1,000ps) and cruising speed is 12.6kt, thus the running hours of the engines totals to;

$$18,756\text{n.m.}/12.6\text{kt} = 1,489\text{hrs/yr}$$

Adding to the above running hours for domestic service, 102 hours for the round trip to Suva for dry docking will be necessary, which sums the total running hours at 1,591 hours per year. Fuel oil consumption per hour is 146.4lit. with two engines. Consequently, the annual fuel oil consumption comes to;

$$1,591\text{hrs} \times 146.4\text{lit} = 233\text{kl}$$

The generator engine will have to be run continuously during the whole voyage including stopover time at each island. Total running hours of the generator engine arrives at 4,608 hours as shown below, based on the 192 days voyage per year.

$$192\text{ days} \times 24\text{hrs} = 4,608\text{hrs}$$

Thus, the annual fuel oil consumption totals at;

$$4,608\text{hrs} \times 32.0\text{lit.} = 147\text{kl}$$

The harbour generator operates on 163 days, which are the total of mooring days at Funafuti port plus regular maintenance period. Annual fuel oil consumption is thus calculated as;

$$163\text{days} \times 24\text{hrs} \times 13.5\text{lit.} = 52\text{kl}$$

From the above calculations, the Plan vessel will consume fuel oil of 432kl per year, including the main engines, generator engines and harbour generator. Calculated at the fuel oil price in Tuvalu of A\$790/kl, and by estimating the lubricant oil cost at 2.5% of the fuel oil price, the total fuel oil cost comes to;

Diesel oil 432kl x A\$790	= A\$341,280
<u>Lub. oil</u>	<u>= A\$8,530</u>
Total	= A\$349,810

Appendix 5-2 Salary Structure for the Plan Vessel

The salary structure for officers and ratings of the Plan vessel has been derived from the 2000 Budget Book of the Tuvalu Government.

Qualification	Salary(per year in A\$)	Number	Total (A\$)
Captain	16,353	1	16,353
First Officer	15,044	1	15,044
Second Officer	10,039	1	10,039
Boatswain	7,293	1	7,293
Chief Engineer	13,270	1	13,270
Second Engineer	11,583	1	11,583
No. 1 Oiler	6,349	1	6,349
Chief Steward	7,293	1	7,293
Writer	8,551	1	8,551
Chief Cook	7,293	1	7,293
Other Crew	4,433	8	35,464
Total		18	138,532

The National Provident Fund of 10% and various allowances of 30% of the net salary are allocated for the annual salary of the Plan vessel, as derived from the actual expenditure of the Nivaga II in 1999.