

(5) Reduction of manual labor for landing canoes

At present, the majority of fishermen pull up their canoes onto sandy beaches manually. Introducing landing winches will reduce the manual strain and promote safety.

(6) Effectual outboard motor and fishing net repairs and fish catch statistics collection

The motorcycles designated for this Project will be used by personnel at the Fisheries Department's local offices in inland areas. They will be used to allow the personnel to travel to villages and give guidance on the repair of outboard motors and fishing nets. The motorcycles will also be used to collect fish catch statistics. With the country's lack of transportation, the motorcycles will play a major role in the development of the Gambia's artisanal fisheries. A positive impact is therefore expected.

CHAPTER 8 CONCLUSIONS AND RECOMMENDATIONS

CHAPTER 8 CONCLUSIONS AND RECOMMENDATIONS

8-1 Conclusions

As part of the 5-year Economic and Social Development Plan, the Fishing Development Project has been given top priority by the Government of the Gambia. The objectives of this Project are to vitalize the promising field of artisanal fishing to increase fish catches, raise the population's nutritional standards, and gain foreign currency income. Also, by increasing the fishermen's incomes, the income disparity between the rural and urban populations will be reduced.

The Project seeks the construction of a workshop building for mechanical and fishing gear training and repair; and the acquisition of FRP fishing vessels, outboard motors, and other equipment for the development of artisanal fishing.

The workshop building is to be built on the property of the Fisheries Department. The workshop will serve as the Gambia's fishermen education and training institution, offering systematic instruction and training on mechanics and fishing gear. The workshop will therefore have great significance and will play a major role in the development of the Gambia's artisanal fisheries.

Regarding equipment, that essential for the development of artisanal fisheries include: FRP fishing vessels and outboard motors for fishing vessel modernization, fishing nets and other gear to replace traditional fishing gear and methods, a refrigerator truck to reform the distribution system, winches to land fishing vessels easily, and motorcycles to facilitate outdoor motor and fishing net repairs and fisheries statistics collection. These essential items will have a major impact on the development of the Gambia's fisheries.

Since there will be no problems with the maintenance and management of the above facilities and equipment, grant aid from the Japanese government for the implementation of this Project is judged to be valid.

8-2 Recommendations

The following recommendations have been made for the effective use of the workshop and equipment, and for the promotion of the Gambia's fisheries henceforth.

(1) Enhancing the impact of workshop training

- i. Fishermen completing training are to be employed according to plan. Training sessions should be scheduled one right after the other. There should be no significant breaks inbetween. A time efficient training program schedule for the year must be made.
- ii. The training curriculum is to be developed in detail by the Fisheries Department. It should be an ideal curriculum with significant content.
- iii. For fishing gear training, there should be reading materials on the coastal fishing of major fishing countries. The fishing methods of various countries must be studied for the development of the Gambia's artisanal fishing.
- iv. It is expected that about 80% of the trainees will come from distant areas and most will stay at the workshop dormitory. Except for the hours of training and instruction, the trainees will have much free time. Thus, there should be as many books and reference materials as possible in the training materials room. The trainees can then spend their free time studying on their own.

(2) Equipment maintenance and management

For effective equipment usage, the following is recommended:

- i. A Japanese account (revolving loan) will be set up in the fisheries development account managed by the Fisheries Department. The Japanese account will be funded by the money received from fishermen for equipment purchases. The money in this account will be used to procure spare parts for equipment (mainly for outboard

motors). The rate of equipment operation will thereby increase. Until the revolving loan operation becomes well established, the Gambian government will be responsible for procuring spare parts. Adequate attention must also be given to proper equipment maintenance and operation.

- ii. There are few fishing cooperatives in the Gambia. More cooperatives should be established systematically. It would then be desirable for the Fisheries Department to lease or sell equipment to the fishing cooperative, who in turn is to lease or sell the equipment to the individual fisherman.
- iii. To gauge the current status of equipment, equipment surveys must be continued even for an FRP fishing vessel whose loan repayment has been completed by the purchasing fisherman.

(3) Distribution reform

Due to the lack of ice plants, there is a deficient supply of ice to the fishing villages and not enough ice for the transportation of fresh fish from the fishing villages to the areas of consumption. Since the construction of ice plants near the fishing villages is difficult financially, refrigerator trucks will be necessary to transport ice and to reform the distribution of fresh fish.

It would be desirable for the 5-ton refrigerator truck to be effectively used for preserving the freshness of fish and for reforming the distribution system.

(4) Fostering the younger generation

The fisheries industry should be made attractive to the younger generation. To enhance the promotion of the fisheries industry, it will be important to expose the younger generation to the fisheries industry and to educate them.

It will be necessary to establish further extensions of the workshop, such as a fisheries training center, to educate those who will later take over jobs in the fisheries industry.

ATTACHMENT

ATTACHMENT

1. Basic Design Study

(1) Minutes of Discussions

MINUTES OF DISCUSSIONS
OF
THE BASIC DESIGN STUDY
ON
THE PROJECT FOR DEVELOPMENT OF
ARTISANAL FISHERIES
IN
THE REPUBLIC OF THE GAMBIA

In response to the request of the Government of the Republic of the Gambia (hereinafter referred to as The Gambia) for assistance in the Development of Artisanal Fisheries (hereinafter referred to as "the Project"), the Government of Japan has sent, through the Japan International Cooperation Agency (hereinafter referred to as "JICA"), a team headed by Mr. Shuji ISHIDA, Deputy Director, Long-Distance Fisheries Division, Ocean Fisheries Department, Fisheries Agency, Ministry of Agriculture, Forestry and Fisheries, to conduct the Basic Design Study for a period of 25 days from January 30th to February 23rd, 1989.

The team had a series of discussion and exchanged views with the officials concerned of the Government of the Gambia, headed by Mr. Cherno O. JOOF, Director, Department of Fisheries, Ministry of Water Resources, Forestry and Fisheries. Field surveys were conducted in Banjul and the proposed project sites.

Following the results of the discussions and surveys, both parties have agreed to recommend to their respective Governments that the major points of understanding reached between them, attached herewith, should be examined towards the realization of the Project.

Banjul, February 8, 1989

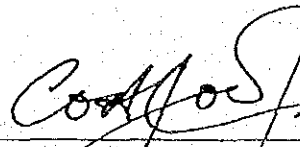
石田 周雨

Shuji ISHIDA

Team Leader,

Basic Design Study Team

JICA

 8/2/89

Cherno O. JOOF

Director,

Department of Fisheries,

Ministry of Water

Resources, Forestry and

Fisheries of the Gambia

ATTACHMENT

1 Objective of the Project

The objective of the Project is to help in the development of the artisanal fisheries of the Gambia by providing proper fishing gears, related equipment, fishing crafts, and facilities.

2 Executing Agency

The Department of Fisheries of the Gambia is responsible for management of the Project.

3 Request of the Government of the Gambia

The team will convey the request of the Government of the Gambia to the Government of Japan that the latter will take necessary measures to cooperate by providing the facilities and the equipment listed in ANNEX I within the scope of the Japan's Grant Aid Program.

4 Necessary Measures to be taken by the Government of the Gambia

The Government of the Gambia will take necessary measures listed in ANNEX II on the condition that Grant Aid of the Government of Japan is utilized properly to assist the artisanal fishermen of the Gambia.

5 System of the Japan's Grant Aid Program

The Government of the Gambia has understood the system of the Japan's Grant Aid, explained by the Team, which includes a principle of the use of Japanese consultants and a Japanese general contractor for the implementation of the Program.

6 Assurance of Necessary Budget

The Government of the Gambia assured the visiting Team that the necessary budget for effective operation and maintenance of the facilities and equipment, in line with the adequate number of Gambian personnel with sufficient knowledge, technique and experience, on condition that the Grant Aid of the Government of Japan is extended to the Project.

7 Alteration or Adaptation of Requested Items

It was mutually agreed that the items mentioned in ANNEX I are subject to alteration and/or adaptation at a later date to meet the budgetary allocation provided by the Government of Japan.

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ANNEX-1

1 Workshop

(1) Major Facilities

Two workshops for fishing gear and mechanics, including two lecture rooms, two stores, two managing offices, one instructor's room, two lodging rooms for trainees and lavatory.

(2) Workshop Equipment

Appropriate numbers of equipment for the workshops and related facilities mentioned in subsection (1).

2 FRP Fishing Boats

(1) Utility boat with approximate size of;

L 4.7m x B 1.4m x D 0.6m Max. 100 vessels

(2) Utility boat with approximate size of;

L 7.1m x B 1.7m x D 0.7m Max. 30 vessels

(3) Utility boat with approximate size of;

L 12.8m x B 2.0m x D 1.1m for out-board engine
Max. 10 vessels

(4) Utility boat with approximate size of;

L 12.8m x B 2.0m x D 1.1m for Diesel engine
Max. 2 vessels

(5) Spare parts 20% for each

3 Out-board engine

(1) Petrol 4HP Max. 50 sets

(2) Petrol 8HP Max. 120 sets

(3) Petrol 40HP Max. 50 sets

(4) Diesel 27HP Max. 30 sets

(5) Spare parts 20% for each

4 Fishing gears

Appropriate numbers of fishing gears for bottom gill net, surrounding gill net, purse seine net for canoe (hand operation type) and stow net.

5 Ships chandries

Appropriate numbers of ships chandries for artisanal fishermen.

6 Others

(1) A refrigerator truck with loading capacity 5 tons;

(2) Landing winch for canoe (hand operation type);

Max. 20 sets

(3) Motor cycle, 175cc, off road type;

Max. 12 sets

(4) Appropriate number of FRP Repair kit, A set.

9

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ANNEX- II

The necessary measures to be taken by the Government of the Gambia are:

1. To ensure prompt unloading, tax exemption and custom clearance at Banjul in the Gambia and prompt internal transportation of the construction materials, FRP boats and equipment provided under the Grant Aid.
2. To secure, with respect to the supply of the FRP boats, workshop and equipment and services under the verified contracts, that Japanese nationals shall not be subject to any customs duties, internal taxes and other fiscal levies which may be in force in the Gambia in accordance with the laws and regulations of the Gambia.
3. To accord Japanese nationals whose services may be required in connection with the supply of the FRP boats, products and the services under the verified contracts, such facilities as may be necessary for their entry into the Gambia and stay therein for the performance of their work.
4. To maintain and use properly and effectively the FRP boats, facilities constructed and equipment provided through the Grant Aid.
5. To bear all the expenses other than those to be borne by the Grant Aid, necessary for the FRP boats, construction materials and equipment.

6 To provide necessary personnel with sufficient knowledge, technique and experience for the managements of the Project.

7 Department of Fisheries of the Government of the Gambia shall manage the refrigerator truck provided under the Grant Aid as their own property.

8 Other major responsibilities to be undertaken by the Government of the Gambia

- To secure enough space for the construction of the workshop.
- To clear and level the site.
- To provide facilities such as distribution of electricity, fresh water, drainage, and telephone line upto project site.
- To construct the gates and fences in and around the site.

9 When the equipment provided under the Project mentioned in ANNEX I, section 2, 3, 4 and 5 is sold or leased to the fishermen involved in the Project, the Government of the Gambia shall take necessary measures to ensure that;

- (1) The eligible fishermen participating in the Project are identified.
- (2) The equipment is sold or leased at reasonable prices.
- (3) The money from such a sale or lease is deposited in a special revolving fund in an account of the Government of the Gambia.
- (4) The above-mentioned fund is utilized for the purpose of developing fisheries and the maintenance of the equipment provided under the Japan's Grant Aid.
- (5) The way in which the fund is utilized will be reported to the Government of Japan in advance.

9

Contd.

(2) Member list of study team

Responsibility	Name	Position
Team leader	Shuji Ishida	Deputy Director, Long-Distance Fisheries Division, Ocean Fisheries Department, Fisheries Agency, Ministry of Agriculture, Forestry and Fisheries
Fisheries development	Kenji Kaburagi	International Affairs Division, Ocean Fisheries Department, Fisheries Agency, Ministry of Agriculture, Forestry and Fisheries
Fisheries promotion plan	Kiyohide Horiuchi	Nichiro Gyogyo Kaisha, Ltd.
Architectural design	Yuji Koh	Nichiro Gyogyo Kaisha, Ltd.
Fishing boat and gear	Hideo Okada	Nichiro Gyogyo Kaisha, Ltd.
Calculation	Yuichi Natsume	Nichiro Gyogyo Kaisha, Ltd.

(3) List of counterparts

Name	Post
MINISTRY OF WATER RESOURCES, FORESTRY AND FISHERIES	
1. Mr. O.A. Jallow 2. Mr. O.A.K. Njie	Minister Permanent Secretary
FISHERIES DEPARTMENT	
1. Mr. C.O. Joof 2. Mr. O.K.L. Drammeh 3. Mr. F. Dampha 4. Mr. A.J. Jonee 5. Mr. M. Suwareh 6. Mr. S. Manjang	Director of Fisheries Senior Officer Acting Senior Officer Fisheries Officer Fisheries Officer Inland (Mansa Konko) Senior Mechanical Foreman (Gunjur)
MINISTRY OF EXTERNAL AFFAIRS	
1. Mr. O.A. Sey 2. Mr. O.Y. Njie	Minister Under Secretary
MINISTRY OF ECONOMIC PLANNING AND INDUSTRIAL DEVELOPMENT	
1. Mr. A.M. Ngum 2. Mr. B. Somp-Ceesay	Permanent Secretary Principal Planner
CENTRAL STATISTICS DEPARTMENT	
1. Mr. A. N'dow 2. Mr. Ali D.K Ceesay	Director
DEPARTMENT OF HOUSING AND BUILDING CONTROL SERVICES	
1. Mr. R.A.F. Thomas	Deputy Chief Building Control Officer
LABOUR OFFICE	
1. Mr. M.A.R. Jow 2. Mr. E.A.M. Ndoeye	Commissioner of Labour Employment Officer
TECHNICAL DEPARTMENT	
1. Mr. M.L. Sanneh	Director of Technical Dep't

Name	Post
GAMBIA PORT AUTHORITY	
1. Mr. R.D. Packin	Harbour Master
GAMBIA UTILITIES CORPORATION	
1. Mr. S.T. Gaye 2. Mr. H.P.B. Baldeh 3. Mr. Shola Joiner 4. Mr. A. Jarjusey	Chief of Protocol, Public Relation Officer AG. Technical Planning Engineer Manager Sewerage Division AG. Manager Water Division
GAMBIA DOCKYARD	
1. Mr. Kevin Douglas 2. Mr. Nick Blell	Director
JICA EXPERTS	
1. Koichi Tsuyama 2. Shinshichi Arima	Engine Fishing Technology

(4) Survey schedule

Day No.	Date	Day	Schedule
1	1/30/89	Mon	Lv. Narita 12:50 (AF 275) Ar. Paris 19:10
2	1/31/89	Tue	Lv. Paris 13:15 (AF 303) Ar. Dakar 19:40
3	2/1/89	Wed	Meeting with Japanese Embassy in Dakar Lv. Dakar 18:30 (GO 004) Ar. Bajul 19:00
4	2/2/89	Thr	Morning: Courtesy call to Director of the Department of Fisheries, meeting for discussion schedule Courtesy call to Deputy Minister of the Ministry of Water Resources, Forestry and Fisheries Courtesy call to Minister of the Ministry of Water Resources, Forestry and Fisheries Afternoon: Courtesy call to Minister of Foreign Affairs Meeting on workshop facilities and tools
5	2/3/89	Fri	Morning: Courtesy call to Deputy Minister of the Ministry of Economic Planning Discussion with the Department of Fisheries (explanation on Japan's grant aid system) Afternoon: Discussion with the Department of Fisheries
6	2/4/89	Sat	Survey on site (fishing village)
7	2/5/89	Sun	Team meeting on equipment and materials
8	2/6/89	Mon	Morning: Discussion with the Department of Fisheries on the contents of the request Afternoon: President and governmental members: Discussion with Deputy Minister of the Ministry of Water Resources, Forestry and Fisheries, Consultant: Visit to Printing corporation for collecting materials and team meeting
9	2/7/89	Tue	Morning: Courtesy call to Vice President suspended because of his illness. Discussion with the Department of Fisheries on the contents of the request Afternoon: Discussion with the Department of Fisheries on Minutes of Discussion Visit to fish market and fishing ports (for confirming condition of boats furnished for the second grant aid)
10	2/8/89	Wed	Morning: Confirmation of matters discussed, signature of Minutes Afternoon: Team meeting

Day No.	Date	Day	Schedule
11	2/9/89	Thr	1) President Mr. Ishida and Member Mr. Kaburagi Lv. Banjul 09:15 Ar. Dakar 10:15 Discussion with Japanese Embassy in Dakar 2) Consultant: Discussion with the Department of Fisheries 3) Consultant: Meeting for material collection
12	2/10/89	Fri	Morning: Discussion with the Department of Fisheries on survey schedule Afternoon: Study materials
13	2/11/89	Sat	Study materials
14	2/12/89	Sun	Study materials, soil survey of site, electricity receiving (panel) survey
15	2/13/89	Mon	Horiuchi and Okada: Discussion with the Department of Fisheries Koh and Natsume: Visit to the Department of Construction, Department of Labor and Port and Harbor Office
16	2/14/89	Tue	Horiuchi: Confirmation of questionnaires with the Department of Fisheries Koh and Natsume: Visit to Ministry of Construction and Public Facilities Corporation General construction, electricity and water supply survey Okada: Survey on ice plant of the second grant aid at Mansa-Konko
17	2/15/89	Wed	Morning: Discussion with the Department of Fisheries on implementation plan, visit to Public Facilities Corporation for water supply and sewerage related survey Afternoon: Team meeting
18	2/16/89	Thr	Morning: Confirmation of materials with the Department of Fisheries, visit to Public Facilities Corporation for water supply and sewerage related survey Afternoon: Visit to the Department of Statistics related survey, study materials, formulation of plan
19	2/17/89	Fri	Discussion on implementation plan and work expenses to be borne by the Gambia Water sampling at Bulfut and Tanje, team meeting
20	2/18/89	Sat	Team meeting
21	2/19/89	Sun	Fishing port survey, river water sampling, survey on boats furnished on the second grant aid

Day No.	Date	Day	Schedule
22	2/20/89	Mon	Greetings to related organizations, visit to the Department of Statistics and Banjul dock Lv. Banjul 17:25 Ar. Dakar 17:55 Visit to Japanese Embassy for report
23	2/21/89	Tue	Lv. Dakar 00:50 Ar. London 10:40 (via Madrid)
24	2/22/89	Wed	Lv. London 15:30
25	2/23/89	Thr	Ar. Narita 11:45

ATTACHMENT

2. Explanation of Draft Final Report

(1) Minutes of Discussions

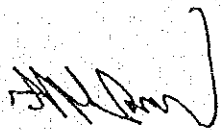
MINUTES OF DISCUSSIONS
OF
THE BASIC DESIGN STUDY
ON
THE PROJECT FOR DEVELOPMENT OF
ARTISANAL FISHERIES
IN
THE REPUBLIC OF THE GAMBIA

In response to the request of the Government of the Gambia for Grant Aid to develop Artisanal Fisheries (hereinafter referred to as "The Project"). The Government of Japan decided to conduct a basic design study on the Project and entrusted the study to the Japan International Co-operation Agency (hereinafter referred to as "JICA").

JICA sent to The Gambia a study Team headed by Mr. Shuji Ishida, Deputy Director, Long-Distance Fisheries Division, Ocean Fisheries Department, Fisheries Agency, Ministry of Agriculture, Forestry and Fisheries, from January 30 to February 23, 1989.

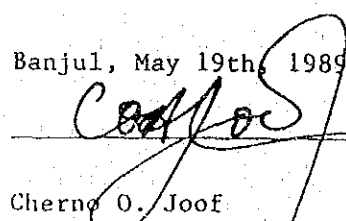
As a result of the study, JICA prepared a draft report and dispatched to Gambia a team headed by Mr. Mitsunori Oi, Planning Officer, Office of Overseas Fisheries Co-operation, International Affairs Division, Ocean Fisheries Department, Fisheries Agency, Ministry of Agriculture, Forestry and Fisheries, to explain the Draft Final Report from May 11 to May 25, 1989.

Both parties had a series of discussions on the draft report and agreed to recommend to their respective Governments that the major points of understanding reached between them, attached herewith, are to proceed towards the realisation of the Project.



Mitsunori Oi
Leader, Draft Final Report
Explanation Team
Japan International
Co-operation Agency (JICA)

Banjul, May 19th, 1989



Cherno O. Joof
Director
Department of Fisheries
Ministry of Water Resources,
Forestry and Fisheries of
The Gambia.

ATTACHMENT

1. The Gambia side has agreed in principle on the basic design proposed in the Draft Final Report with minor but appropriate alteration as shown in Annex to be incorporated in the Final Report.
2. The Gambia side has understood Japan's Grant Aid System and confirmed that ... necessary measures will be taken by the Gambia side as shown in ANNEX II of the Minutes of Discussions on the Project signed on February 8, 1989, on condition that the Grant Aid by the Government of Japan be extended to the Project.
3. The Gambia side ensured the Provision of the necessary budget for the effective operation and maintenance of the equipment in line with the adequate number of Gambia personnel with sufficient knowledge, technique and experience.
4. The Final Report (10 copies in English) on the Project will be submitted to the Gambia side by the end of August, 1989.

ANNEX I

1. WORKSHOP

(1) Major Facilities

Two workshops for fishing gear and mechanics, including a lecture rooms, two stores, a managing office, a instructor's room, two lodging rooms for trainees and lavatory.

(2) Workshop Equipment

Appropriate number of equipment for the workshops and related facilities mentioned in subsection(1)

2. FRP FISHING BOATS

(1) Utility boat with approximate size of:

L 4.7m x B 1.4 x D 0.6

50 vessels

(2) Utility boat with approximate size of

L 7.1m x B 1.7m x D 0.7

15 vessels

(3) Utility boat with approximate size of:

L 12/8m x B 2.0m x D 1.1m for out-board engine

3 vessels

Spare parts

20% for each

3. OUT-BOARD MOTORS

(1) Petrol 8Hp

53 sets

(2) Diesel 27Hp

22 sets

Spare parts

20% for each

4. FISHING GEAR

Appropriate numbers of fishing gears for bottom gill net. Surrounding gill net, purse seine net for canoe (hand operation type) and stow net.

5. SHIPS CHANDRIES

Appropriate numbers of ships chandries for artisanal fishermen.

6.

GIFTS

- | | | |
|-----|--|---------|
| (1) | A refrigerator truck with loading capacity 5 tons: | 1 set |
| (2) | Landing winch for canoe (hand operation type) | 16 sets |
| (3) | Motor cycle, 175cc of road type: | 12 sets |
| (4) | Appropriate number of FRP repair kit | 1 set |

ANNEX II

1. The Government of the Gambia assured the DFR Team that all moneys realised from the sale or lease of the equipment and materials provided under the Japanese Grant Aid would be deposited in a special fund in an account of the Government of the Gambia, distinct from all other project accounts. The above-mentioned fund shall be utilized only for the purpose of developing artisanal fisheries. The utilization of this fund shall be effected in prior consultation with the Government of Japan.
2. The Government of the Gambia assured the DFR Team that the necessary budget for effective operation and maintenance of the workshop, the equipment and materials, as well as the provision of the adequate number of personnel, will be made available.
3. As for the motor-bikes which will be provided under the Japanese Grant Aid this time, the Government of the Gambia assured the DFR Team that the additional personnel would have been assigned to nine inland bases not of twelve not later than July 1990, when this item of the equipment is scheduled to be delivered to the Gambia, so that twelve inland bases will be fully covered. Both parties confirmed that the above-mentioned motor-bikes should be utilized only for the purpose of repair trips of the out-board motors and fishing gear.
4. As regards the ice-making plant which was provided in Pakalinding in 1982, under the Japanese Grant Aid, the Government of the Gambia assured the Team to make every endeavour in repairing and operating it as soon as possible. In this connection the Government of the Gambia requested for the Technical cooperation of the Government of Japan.

5. The Government of the Gambia assured the Team that a 5 ton refrigerator truck which is to be provided under the Japanese Grant Aid this time, should be managed and operated by the Department of Fisheries under the supervision of JICA Experts and utilized effectively only for the purpose of improvement of the distribution of fisheries product, for a period of at least three years.

(2) Member list of study team

Responsibility	Name	Position
Team leader	Mitsunori Oi	Planning Officer, Office of Overseas Fisheries Cooperation, International Affairs Division, Ocean Fisheries Department, Fisheries Agency Ministry of Agriculture, Forestry and Fisheries
Fisheries Promotion Plan	Kiyohide Horiuchi	Nichiro Gyogyo Kaisha, Ltd.
Architectural design	Yuji Koh	Nichiro Gyogyo Kaisha, Ltd.

(3) List of Counterparts

Name	Position/Post
MINISTRY OF WATER RESOURCES FORESTRY AND FISHERIES	
1. Mr. Sajo Touray 2. Mr. O.A.K. Njie 3. Mr. Charles W. Thomas	Minister Permanent Secretary Under Secretary
FISHERIES DEPARTMENT	
1. Mr. C.O. Joof 2. Mr. F. Dampha 3. Mr. Austin 4. Mr. Carlos	Director of Fisheries Acting Senior Officer
MINISTRY OF FINANCE AND TRADE	
1. Mr. Mamour Jagne	Permanent Secretary
MINISTRY OF ECONOMIC PLANNING AND INDUSTRIAL DEVELOPMENT	
1. Mr. Baboucar Somp-Ceesay	Principal Planner
CENTRAL STATISTICS DEPARTMENT	
1. Mr. Klieu N'dow	Director
MINISTRY OF EXTERNAL AFFAIRS	
1. Mr. Bolong Sonko 2. Mr. O.Y. Njie	Deputy Permanent Secretary Under Secretary
DEPARTMENT OF HOUSING AND BUILDING CONTROL SERVICES	
1. Mr. Baly	Chief B.C. Officer
MINISTRY OF WORKS AND COMMUNICATIONS	
1. Mr. Namin Bojang	Chief Executive Engineer
GAMBIA PORT AUTHORITY	
1. Capt. R.D. Paekin	Harbour Master
CENTRAL BANK OF THE GAMBIA	
1. Mr. Herbert M.V. Carr	Foreign Department Officer
JICA EXPERTS	
1. Koichi Tsuyama 2. Shinshichi Arima	Engine Fishing Technology

(4) Survey Schedule

Day No.	Date	Day	Schedule
1	5/11/89	Thu	Lv. Narita 13:30 (BA 008) Ar. London 18:00
2	5/12	Fri	Lv. London 22:30 (BA 083)
3	5/13	Sat	Ar. Banjul 03:25 Informal discussion with the Fisheries Department Director.
4	5/14	Sun	Team meeting.
5	5/15	Mon	Courtesy call on the Ministry of Water Resources, Forestry, and Fisheries. Explanation of DFR.
6	5/16	Tue	Courtesy call on the Ministry of Economic Planning. DFR explanation and discussion.
7	5/17	Wed	Explanation of DFR. Construction materials survey.
8	5/18	Thu	Courtesy call on the Minister of Water Resources, Forestry, and Fisheries and on the Ministry of Finance and Trade. Explanation of DFR.
9	5/19	Fri	Signing of the minutes. Surveys on construction materials, equipment delivery, etc.
10	5/20	Sat	Survey on the ice plant acquired by the '87 grant aid. Survey on inland fishing. Supplemental construction-related surveys.
11	5/21	Sun	Team meeting. Compilation of documents.
12	5/22	Mon	Supplemental survey on marine fishing. Supplemental workshop-related surveys.
13	5/23	Tue	Farewell greetings to the Minister of Water Resources, Forestry, and Fisheries. Final discussions with the Fisheries Department. Supplemental workshop-related surveys.
14	5/24	Wed	Lv. Banjul 03:20 (BA082) Ar. London 10:00 Lve London 16:30 (BA 007)
15	5/25	Thu	Ar. Narita 12:30

3. Analyzed Results of Survey Data

(1) Study of the allowable ground bearing strength

Cone Penetrometer Soil Survey Results and the Study of Allowable
Ground Bearing Strength

1. Average calibration coefficient of the cone penetrometer

Since the average calibration coefficient varies depending on the measuring instrument, the penetrometer's average calibration coefficient was calculated by the enclosed Strength Measurement Table (see Table 1).

Load (kgf)	Dial gauge reading	
0	0	
10	23.1	Average calibration
20	47.0	coefficient
30	71.4	390
40	95.5	———— = 0.416 kg/1/100mm
50	119.5	936.7
60	144.0	
80	193.2	
100	243.0	0.416
Total 390	Total 936.7	———— = 0.129 kg/cm ² /1/100mm
		3.23

2. Calculation of cone support strength and allowable ground bearing strength.

When the dial gauge reading obtained during the measurement is multiplied with the average calibration coefficient calculated above, the cone support strength of q_c kg/cm² can be obtained. The allowable ground bearing strength can also be calculated with the following formula:

$$q_a = a \frac{Q}{A}$$

q_a : Converted allowable ground bearing strength kg/cm² (Value when the safety ratio is 3.)

Q : Minimum penetration resistance of cone kg

A : Maximum cross-sectional area of cone (3.23 cm²)

a : Allowable ground bearing strength conversion factor (0.15)

Items (1) and (2) in Table 2 show the calculations of the cone support strength and the allowable ground bearing strength. If the foundation is to be driven in about 30 cm deep, the allowable ground bearing strength would be 29 t/m² to 48 t/m², which is an adequate bearing strength.

Ground preparation should include the removal of organic matter such as tree roots.

Strength Measurement Table

Instrument No.	9800	Dial Gauge No.	97401
Max. Capacity	100 kg	Min. Range	10 kg
Measurement Date	1/14/89	Room Temperature	13°C

Load Indication

Load (ton/kg)	Dial Gauge Reading
0	0
10	23.1
20	47.0
30	71.4
40	95.5
50	119.5
60	144.0
80	193.2
100	243.0

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Table 2 (1) Cone support strength and allowable ground bearing strength

Depth (cm)	Ground Location 1			Ground Location 2		
	Gauge	qc (kg/cm ²)	qa (kg/cm ²)	Gauge	qc (kg/cm ²)	qa (kg/cm ²)
10	40	5.16	0.74	35	4.52	0.677
20	125	16.13	2.419	93	12.00	1.800
30	250	32.25	4.838	195	25.16	3.773
40	280	36.12	5.412			
50	260	33.54	5.031			
60	255	23.90	4.934			
70	280	36.12	5.418			
80	300	38.70	5.805			
90						
100						

Depth (cm)	Ground Location 3			Ground Location 4		
	Gauge	qc (kg/cm ²)	qa (kg/cm ²)	Gauge	qc (kg/cm ²)	qa (kg/cm ²)
10	85	10.97	1.645	70	9.03	1.355
20	150	19.35	2.903	160	20.64	3.096
30	250	32.25	4.838	215	27.74	4.160
40	230	29.67	4.451	245	31.61	4.741
50	260	33.54	5.031	300	38.70	5.805
60	---	-----	-----			
70	290	37.41	5.612			
80						
90						
100						

Table 2 (2) Cone support strength and allowable ground bearing strength

Depth (cm)	Ground Location 5			Ground Location 6		
	Gauge	qc (kg/cm ²)	qa (kg/cm ²)	Gauge	qc (kg/cm ²)	qa (kg/cm ²)
10	100	12.90	1.935	85	10.97	1.645
20	---	-----	-----	135	17.42	2.612
30	150	19.35	2.903	170	21.93	3.290
40	178	22.96	3.444	180	23.22	3.483
50	160	20.64	3.096	210	27.09	4.064
60	200	25.80	3.870	215	27.74	4.160
70	198	25.54	3.831	225	29.03	4.354
80	240	30.96	4.644	240	30.96	4.644
90	295	38.06	5.708	270	34.83	5.225
100	260	33.54	5.031	250	32.25	4.838
110	230	29.67	4.451	245	31.61	4.741
120	190	24.51	3.677	105	13.55	2.032
130	145	18.71	2.806	150	19.35	2.903
140	135	17.42	2.612	150	19.35	2.903
150	195	25.16	3.773	210	27.09	4.064
160	235	30.32	4.547	240	30.96	4.644
170	---	-----	-----	320	41.28	6.192
180	300	38.70	5.805	350	45.15	6.773
190						
200						

(2) Water quality analysis report

Water Quality Analysis Report

May 16, 1989

Central Research Laboratory, Nichiro Fisheries Co., Ltd.

Testing objective: Analysis of Gambia's water quality

Test items: pH, salinity, evaporation residue, Ca, Mg, total hardness

Test particulars and results:

1. Test locations

- | | |
|-------------------------|------------------------|
| 1) Brufut (well water) | 2) Bunjil (tap water) |
| 3) Gambia (river water) | 3) Tanji (river water) |

2. Testing methods

- | | |
|-----------------|---------------------------|
| 1) Salinity: | AOAC method was used. |
| 2) Ca, Mg: | Atomic absorption method. |
| 3) Other items: | Normal methods were used. |

3. Results

Item	Location	BRUFUT	BUNJIL	GAMBIA	TANJI
pH		6.00	7.60	7.80	8.00
Salinity (%)				3.30	3.40
Evaporation residue (%)		0.03	0.06	3.79	3.99
Ca (ppm)		9.30	10.30		
Mg (ppm)		2.40	13.90		
Total hardness (ppm)		33.30	83.80		

4. List of reference materials

Field	Title of information and material	Published by	Date of Issue	Nature Summary
General	Africa Yearbook 1987/88	African Society	06, 1988	Original
General	International Statistics Survey 1988	Statistics Bureau, General Affairs Agency	11, 1988	Original
General	The Gambia	Delroisse		Original
National Plan	Five year plan for Economic and Social Development 1981/82 - 1985/86	Ministry of Economic Planning and Industrial Development	04, 1982	Original
Finance	Estimates of Recurrent Revenue and Expenditure 1988/89 with Estimates of Development Expenditure	The Government of Republic of the Gambia	1988	Original
Fisheries	Yearbook of Fisheries Statistics the Gambia 1983	Fisheries Department	1983	Copy
Census	Population and housing Census 1983 General Report Vol. 1: Administrative and Analytical Procedures	The Central Statistics Department Ministry of Economic Planning and Industrial Development	10, 1987	Copy
Employment	Survey of Employment, Earning and Hours of Work	Ministry of Economic Planning and Industrial Development	11, 1987	Copy

Field	Title of information and material	Published by	Date of Issue	Nature Summary
Equipment and Material	Outline of Standard Machinery Design	Kyoritsu Shuppan Co., Ltd.	12, 1972	Original
Equipment and Material	List of Japanese Standard Machine Tools	Japan Machine Tool Dealers Association	1, 1985	Original
Equipment and Material	Comprehensive Catalog of Industrial Equipment and Machinery	Nakayamakiko Co. Ltd.	1, 1989	Original
Equipment and Material	Comprehensive Catalog of Product transport Management	Nakayamakiko Co. Ltd.	1, 1989	Original

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