

添付資料

合同委員会ミニッツ
実施計画（英文）

A

**MINUTES OF DISCUSSIONS BETWEEN
THE TRINIDAD AND TOBAGO TEAM & THE JAPANESE TEAM
ON IMPLEMENTATION OF
THE REGIONAL FISHERIES TRAINING PROJECT
AUGUST 28 - SEPTEMBER 02, 1996**

HELD AT

**THE CARIBBEAN FISHERIES TRAINING & DEVELOPMENT
INSTITUTE
CHAGUARAMAS
TRINIDAD AND TOBAGO**

SEPTEMBER 02, 1996

Minutes of Discussions Between the Trinidad & Tobago Team and the Japanese Team on Implementation of the Regional Fisheries Training Project held at the Caribbean Fisheries Training & Development Institute, Chaguaramas from August 28 - September 02, 1996.

1. The Meeting between the Trinidad & Tobago Team and the Japanese Consultation Team & Long-term Experts to evaluate the Progress on the Implementation of the Regional Fisheries Training Project was convened at the Caribbean Fisheries Training & Development Institute, Chaguaramas on Wednesday 28 August, 1996 at 9:30 a.m.

2. **PARTICIPANTS**

The participants representing the Trinidad & Tobago Team and the Japanese Team are listed in Appendix I.

3. **AGENDA**

The approved Agenda is at Appendix II, however the following changes to the Tentative Agenda were noted:

- 3.1 The Record of Discussion was excluded from the Agenda because it was agreed that it was not necessary to discuss it again since approval had already been granted on December 04, 1995.
- 3.2 The inclusion of two (2) items - A Report on the Progress of the Project Implementation in Japan was included as item 3, and changes to the Implementation Plan as item 4.
- 3.3 Changes to the order of discussions of the three (3) Reports. The first Report to be discussed will be the Progress Report, followed by the Implementation Plan, and the Survey Report.



4. PROJECT IMPLEMENTATION IN JAPAN

4.1 Equipment will be donated in the three (3) areas of technical assistance - Fishing Technology, Marine Engineering and Fish Processing. Some equipment will be purchased in Trinidad & Tobago with the funds being made available by JICA at the end of October, 1996. Other equipment will be purchased in Japan, by the end of the Japanese fiscal year (i.e. the end of March, 1997). These will be transferred to Trinidad on a date to be determined.

4.2 The provision of short term experts in 1996 has also received approval by JICA. These are Trolling Line Specialist, Outboard Motor Specialist and Food Processing Specialist.

A1 forms are still to be submitted from the Technical Co-operation Unit to JICA through the Embassy of Japan.

4.3 Counterpart training in Japan in 1996 has been approved by JICA. Two (2) persons will receive training in Japan in the areas of Fisheries Management and Fisheries Education.

A2 and A3 forms are still to be submitted from the Technical Co-operation Unit to JICA through the Embassy of Japan.

4.4 The training vessel approved by JICA in 1995 for donation to Trinidad & Tobago will be built by the end of October, 1996 and is scheduled to be delivered by December, 1996.

5. ISSUES RAISED BY "THE MISSION"

5.1 Counterparts: The importance of allocating two (2) counterparts per Expert was emphasised. If possible, attention should be given to the recruitment of young persons as counterparts, in order to facilitate effective transfer of technology after the conclusion of the Project.



- 5.2 Sustainable Development: Emphasis should be placed on the issues of sustainable development and conservation of marine resources as important elements of the Project.
- 5.3 Linkages Among Between the Three (3) Areas: The importance of linkages among the three (3) areas was noted. These linkages will be considered through all the stages of Project Implementation.
- 5.4 Changes in the Implementation Schedule: It was suggested that the following items in the Implementation Schedule be extended for the 5-year duration of the Project
- i. Developing Textbooks
 - ii. Improving Course Curriculum

In the field of Marine Engineering "FRP Fishing Boat" should be changed to read "FRP Fishing Boat Maintenance".

6.0 RESPONSE BY TRINIDAD & TOBAGO TEAM:

- 6.1 The suggestion to extend the duration of the activities "Developing Textbooks and Improving Course Curriculum" was viewed as being reasonable and accepted.
- 6.2 Counterpart: The provision of counterparts has been engaging the attention of the management of the Project and the Chairman of the Joint Co-ordinating Committee. More information should be made available by the Chairman at the next meeting of the Joint Co-ordinating Committee.
- 6.3 The concept of Sustainable Development has also been considered by the Managers of the Project. Trinidad & Tobago is in the process of formulating its Fisheries Management Plans, and that concept forms an integral part. Close interaction with the Marine Fisheries Resource Unit, ensures that information gathered is passed on to this Unit.



- 6.4 It was agreed that establishing linkages among the three (3) areas of expertise were necessary in order that the Project be seen as a integrated one.

7. REPORTS

7.1 Progress Report (April 01 - June 30, 1996)

The Progress Report records activities over the period stated above.

The Report was evaluated by the 'Mission' in conjunction with the Long-term Experts.

The following changes were suggested and accepted:

- i. The activities "Developing Textbooks" and "Improving Course Curriculum" (Appendix III-1 to Appendix III-3) were extended from two (2) years to the duration of the Project, five (5) years.
- ii. On page 2 Appendix III-3, No. 4, the period in brackets was deleted.

These changes will be made available to the Joint Co-ordinating Committee on Tuesday 03 September.

7.2 Implementation Plan (1996 - 2001)

The Plan details long-term activities for the implementation of the Project.

The Implementation Plan therefore requires close collaboration between the Experts and counterparts and must be monitored by the Joint Co-ordinating Committee.

The following changes were made to the Implementation Plan:

- i. Extension of the following activities from two (2) years to five (5) years:
 - Developing Textbooks
 - Improving Course Curriculum,



- ii. "FRP Fishing Boat" (Page 3 and Appendix I-3 of the Plan) shall be changed to read "FRP Fishing Boat Maintenance".

7.3 Survey Report

The Survey Report was tabled and approved.

8. OTHER MATTERS

8.1 Staff for Training Vessel

The Mission requested an update on the Progress made in recruiting the staff for the vessel to be donated by JICA.

The Trinidad & Tobago Team reported that a formal request for the recruitment of a Skipper, an Engineer, a Mate and a Cook/Fisherman was submitted to the Permanent Secretary. He was also provided with details of cost involved and advised that the recruitment process should be completed at least one month before the arrival of the vessel in December, 1996.

8.2 Counterpart in the Area of Fishing Technology.

The 'Mission' expressed its concern about the inappropriateness of the available counterpart. The counterpart's knowledge of fishing technology was viewed as being limited and below the standard expected of someone of his professional status. As such it may be necessary to replace the individual. The decision however is one to be taken by Caribbean Fisheries Training & Development Institute. The Mission would like to be informed of whatever final decision is taken.

It was recommended that the counterparts should be younger than age 35, in order to facilitate effective transfer of technology during the years following the conclusion of the Project.

The Trinidad & Tobago Team responded that this issue has engaged the attention of the C.F.T.D.I. Managers as well as the Joint Co-ordinating Committee. While the question of age was relevant, more attention was paid



to the attitude, commitment and the ability of the individual to interact and communicate effectively. The Counterpart has not demonstrated these qualities.

This was brought to the attention of the Permanent Secretary, Ministry of Agriculture, Land & Marine Resources since it would impact negatively on the progress of the Project. It was noted that it was a sensitive issue which one had to approach with caution and which would be discussed again at the next meeting of the Joint Co-ordinating Committee.

Measures, including discussions with the Tobago House of Assembly, are being taken to source the second Counterpart for each Expert.

9. AGENDA FOR NEXT MEETING OF THE JOINT CO-ORDINATING COMMITTEE

The Agenda agreed on for the next meeting of the Joint Co-ordinating Committee to be held on Tuesday 03 September, 1996 is at Appendix III.

On the request of the Mission the local budget plan for the Project will be discussed at this meeting.

10. MEETINGS OF JOINT CO-ORDINATING COMMITTEE

It was suggested that the Committee meet quarterly in order to effectively monitor the Project.

August 29, 1996



LIST OF PARTICIPANTS

Trinidad & Tobago Team:

- | | | |
|----|--------------------------------|--|
| 1. | Mervyn La Croix | Director of Fisheries, Ministry of Agriculture, Land & Marine Resources. |
| 2. | Mr. Carlisle Jordan | Co-ordinator, Caribbean Fisheries Training & Development Institute. |
| 3. | Ms. Jennifer Yearwood | Asst. Director Programmes & Projects, Planning Division, Ministry of Agriculture, Land & Marine Resources. |
| 4. | Ms. Laura-Marie West | Foreign Services Officer III, Ministry of Foreign Affairs. |
| 5. | Mr. Selwyn Brooks | Training Officer/Vice Principal, Caribbean Fisheries Training & Development Institute. |
| 6. | Ms. Anne-Marie Francis Charles | Planning Officer, Agriculture Planning Division, Ministry of Agriculture, Land & Marine Resources. |

Mission Team:

- | | | |
|----|----------------------|-----------------------|
| 1. | Dr. Masato Hamaguchi | Mission Leader. |
| 2. | Dr. Tatsuro Matsuoka | Fishing Technology. |
| 3. | Mr. Yasuaki Sato | Marine Engineering |
| 4. | Dr. Haruka Iida | Fish Processing. |
| 5. | Mr. Masaru Honda | Mission Co-ordinator. |




Japanese Long-term Experts:

- | | | |
|----|------------------------|-----------------------|
| 1. | Mr. Jo Fukui | Team Leader. |
| 2. | Mr. Kazuo Senga | Fishing Technology. |
| 3. | Mr. Hideo Kimura | Marine Engineering. |
| 4. | Mr. Fusao Takigami | Fish Processing. |
| 5. | Mr. Kazuhisa Takahashi | Project Co-ordinator. |



REGIONAL FISHERIES TRAINING PROJECT

Meeting & Discussions Between the Trinidad and Tobago Team and the Japanese Team - August 28 - September 02, 1996 at the Caribbean Fisheries Training & Development Institute, Chaguaramas.

Approved Agenda

1. Opening Statement by Leader of the Trinidad and Tobago Team.
2. Opening Statement by the Leader of the Japanese Team.
3. Progress by the Japan International Cooperation Agency (JICA) in the Implementation of the Regional Fisheries Training Project.
4. Request for changes in the Implementation Plan by the Japanese Team.
5. Progress Report April 01 - June 30, 1996 on Implementation of the Regional Fisheries Training Project.
6. Implementation Plan (1996 - 2001) of the Regional Fisheries Training Project.
7. Survey Report
8. Other Matters.
 - 8.1 Training Vessel to be donated by the Government of Japan and allocation of Crew.
 - 8.2 Counterparting in relation to Fishing Technology.



Second Meeting of the Joint Co-ordinating Committee of the Regional Fisheries Training Project between the Government of Trinidad and Tobago and the Government of Japan to be held on Tuesday 03, September 1996 at 10:00 am at the Caribbean Fisheries Training and Development Institute, Chaguaramas.

DRAFT AGENDA

- 1.0 Opening Statement by the Chairman, Permanent Secretary, Ministry of Agriculture, Land and Marine Resources
- 2.0 Opening Statement by Leader of the Japanese Consultation Mission.
- 3.0 Minutes of the First Meeting of the Joint Co-ordinating Committee held on August 20, 1996.
- 4.0 Consideration of the Minutes of Discussion held from August 25, 1996 - September 02, 1996 between Representatives of the Government of Trinidad and Tobago and the Japanese Consultation Mission on Implementation of the Regional Fisheries Training Project.
- 5.0 Adoption of the following Reports.
 - 5.1 Progress Report for the period April 01 to June 30, 1996 on the Implementation of the Regional Fisheries Training Project.
 - 5.2 Implementation Plan (1996 - 2001), the Regional Fisheries Training Project.
 - 5.3 Survey Report on the Fishing Industry of Trinidad and Tobago by Japanese Experts and National Counterparts.
- 6.0 Report on Progress by Japan International Cooperation Agency on Implementation of the Regional Fisheries Training Project.



- 6.1 Training Vessel donated by the Government of Japan (1995).
- 6.2 Equipment for the Project donated by the Government of Japan (1996).
- 6.3 Dispatch of Short Term Experts by the Government of Japan (1996)
- 6.4 Counterpart Training in Japan (1996).
- 7.0 Provision of Counterparts.
 - 7.1 Counterparting in General.
 - 7.2 Counterparting in relation to Fishing Technology
- 8.0 Linkages in the three (3) sub-sectors of the Project in Fishing Technology, Marine Engineering and Fish Processing.
- 9.0 Staff Allocation to the Training Vessel donated by the Government of Japan.
- 10.0 Local Budget for operation of the Regional Fisheries Training Project.
- 11.0 Sustainable Fisheries Development in relation to the Regional Fisheries Training Project.
- 12.0 Other Matters



B

MINUTES OF THE SECOND MEETING OF THE JOINT
COORDINATING COMMITTEE CONCERNING TECHNICAL
COOPERATION FOR THE REGIONAL FISHERIES TRAINING
PROJECT HELD ON TUESDAY, SEPTEMBER 03, 1996

HELD AT

THE CARIBBEAN FISHERIES TRAINING & DEVELOPMENT
INSTITUTE
CHAGUARAMAS
TRINIDAD AND TOBAGO

SEPTEMBER 03, 1996

MINUTES OF THE SECOND MEETING OF THE JOINT COORDINATING
COMMITTEE CONCERNING TECHNICAL COOPERATION FOR THE
REGIONAL FISHERIES TRAINING PROJECT HELD ON TUESDAY,
SEPTEMBER 3, 1996

1. The Second meeting of the Joint Coordinating Committee for the Regional Fisheries Project was convened at the Caribbean Fisheries Training and Development Institute, Chaguaramas, on Tuesday 3 September, 1996 at 10:00 a.m.

2. ATTENDANCE

The List of Attendants is attached at Appendix I.

3. AGENDA

The approved Agenda is at Appendix II.

The following is a record of the discussions of the items contained therein.

4. MINUTES OF THE FIRST MEETING OF THE JOINT COORDINATING COMMITTEE

The minutes of the first meeting were tabled. The issues contained therein coincided with the items discussed between the Trinidad and Tobago Team and the Japanese Consultation Team on the implementation of the Regional Fisheries Training Project which was held at CFTDI over the period from August 28 to September 02, 1996.



5. CONSIDERATION OF THE MINUTES OF DISCUSSIONS BETWEEN REPRESENTATIVES OF THE GOVERNMENT OF TRINIDAD & TOBAGO AND JAPANESE CONSULTATION MISSION (AUGUST 28, 1996 - SEPTEMBER 02, 1996)

The Minutes of Discussions were reviewed.

6. REPORTS

The three (3) reports:- The Progress Report, the Implementation Schedule and the Survey Report were tabled.

The changes made to page 3, 5:4, and page 4, 7:1, 7:2 of the Minutes of Discussions from August 28, 1996 to September 2, 1996 were noted and the meeting agreed on the adoption of the Reports.

7. PROGRESS OF PROJECT IMPLEMENTATION BY JAPAN INTERNATIONAL COOPERATION AGENCY

7.1 TRAINING VESSEL

The time of arrival of the vessel was confirmed as the end of December, 1996.

7.2 ARRIVAL OF EQUIPMENT

The Permanent Secretary, as Chairman of the Joint Coordinating Committee ensured that the necessary arrangements are being put in place with the Comptroller of Customs, to provide for the clearance of the vessel and equipment that will be arriving from Japan.



7.3 SHORT TERM EXPERTS

The relevant A1 forms have been dispatched from the Technical Cooperation Unit to the Japanese Embassy.

7.4 COUNTERPART TRAINING IN JAPAN

Cabinet has granted approval for the two (2) participants. The A2 and A3 forms will be submitted to the Japanese Embassy in one week's time.

8. PROVISION OF COUNTERPARTS

The importance of both allocating two (2) Counterparts per Expert and ensuring the appropriateness of these counterparts was again emphasized.

This issue is of extreme importance, in order that the effective transfer of technology should occur, during and following the completion of the Project.

Particular attention was also given to the Fishing Technology Counterpart.

9. LINKAGES IN THE TREE (3) SUB-SECTORS OF THE PROJECT

It was noted that the concept of linkages among the three (3) areas, Fishing Technology, Marine Engineering and Fish Processing is very important, and the Permanent Secretary strongly supported the view that these should form an integrated part in the implementation of the Project.



10. STAFF ALLOCATION TO THE TRAINING VESSEL

The process for recruitment of the crew has already begun, so that they will be on board before the arrival of the vessel.

11. LOCAL BUDGET

The Ministry's Operational Budget for the period September - December 1996 will be adjusted to take into account additional expenses to be incurred as a result of the Ministry's commitments to the Project.

The Budget for 1997 has also been submitted to the Ministry of Finance. That has taken into consideration the major activities of the Work Plan for which the Ministry of Agriculture, Land & Marine Resources has responsibility.

12. SUSTAINABLE FISHERIES DEVELOPMENT

The Ministry's commitment to sustainable fisheries development was reiterated. The concept should also be viewed as an integral element of the Project for an overall development of human life.



13. OTHER MATTERS

13.1 REQUESTS FOR 1997

Reference was made to the following which are listed in the Implementation Schedule:

- Counterpart Training in Japan
- Short Term Experts
- Equipment

The Ministry must take the necessary arrangements related to the provision of the facilities to ensure that the Project remains on target.

13.2 REGIONAL TRAINING

The Coordinator, Mr. Jordan raised the issue of a Regional Training Course to be conducted by CFTDI.

Involvement of participants from the Region was viewed as important. Mechanisms to address that issue, would be discussed further with the Long Term Experts of the Project.



LIST OF PARTICIPANTS

Trinidad & Tobago Team

- | | | |
|----|--------------------------------|--|
| 1. | Dr. V.G. Moe | Permanent Secretary, Ministry of Agriculture, Land and Marine Resources.
(Chairman) |
| 2. | Mr. Mervyn La Croix | Director of Fisheries, Ministry of Agriculture, Land & Marine Resources. |
| 3. | Mr. Carlisle Jordan | Co-ordinator, Caribbean Fisheries Training & Development Institute. |
| 4. | Ms. Jennifer Yearwood | Asst. Director Programmes & Projects, Planning Division, Ministry of Agriculture, Land & Marine Resources. |
| 5. | Ms. Laura-Marie West | Foreign Services Officer III, Ministry of Foreign Affairs. |
| 6. | Ms. Anne-Marie Francis Charles | Planning Officer, Agriculture Planning Division, Ministry of Agriculture, Land & Marine Resources. |
| 7. | Ms. Johanne Daniel | Ag. AOIV Technical Cooperation Unit.
Ministry of Public Administration and Information. |
| 8. | Ms. Glenda McCrae | Ag. AOII Technical Cooperation Unit.
Ministry of Public Administration and Information. |

Mission Team:

- | | | |
|----|----------------------|-----------------------|
| 1. | Dr. Masato Hamaguchi | Mission Leader. |
| 2. | Dr. Tatsuro Matsuoka | Fishing Technology. |
| 3. | Mr. Yasuaki Sato | Marine Engineer. |
| 4. | Dr. Haruka Iida | Fish Processing. |
| 5. | Mr. Masaru Honda | Mission Co-ordinator. |

Japanese Long-term Experts:

- | | | |
|----|------------------------|-----------------------|
| 1. | Mr. Jo Fukui | Team Leader. |
| 2. | Mr. Kazuo Senga | Fishing Technology. |
| 3. | Mr. Hideo Kimura | Marine Engineering. |
| 4. | Mr. Fusao Takigami | Fish Processing. |
| 5. | Mr. Kazuhisa Takahashi | Project Co-ordinator. |

Representatives from the Japanese Embassy

Mr. Yutaka Okano	Councillor.
Mr. Fumiaki Sekine	Second Secretary.



SECOND MEETING OF THE JOINT CO-ORDINATING COMMITTEE OF THE REGIONAL FISHERIES TRAINING PROJECT BETWEEN THE GOVERNMENT OF TRINIDAD AND TOBAGO AND THE GOVERNMENT OF JAPAN TO THE HELD ON TUESDAY, SEPTEMBER 03, 1996 AT 10:00 A.M AT THE CARIBBEAN FISHERIES TRAINING AND DEVELOPMENT INSTITUTE, CHAGUARAMAS.

AGENDA

- 1.0 Opening Statement by the Chairman, Permanent Secretary, Ministry of Agriculture, Land and Marine Resources.
- 2.0 Opening Statement by Leader of the Japanese Consultation Mission.
- 3.0 Minutes of the First Meeting of the Joint Co-ordinating Committee held on August 20, 1996.
- 4.0 Consideration of the Minutes of Discussion held from August 25, 1996 to September 02, 1996 between Representatives of the Government of Trinidad and Tobago and the Japanese Consultation Mission on Implementation of the Regional Fisheries Training Project.
- 5.0 Adoption of the following Reports:
 - 5.1 Progress Report for the period April 01 to June 30, 1996 on the implementation of the Regional Fisheries Training Project.



- 5.2 Implementation Plan (1996 - 2001) the Regional Fisheries Training Project.
- 5.3 Survey Report on the Fishing Industry of Trinidad and Tobago by Japanese Experts and National Counterparts.
- 6.0 Report Progress by Japan International Cooperation Agency on implementation of the Regional Fisheries Training Project.
 - 6.1 Training Vessel donated by the Government of Japan (1995).
 - 6.2 Equipment for the Project donated by the Government of Japan (1996).
 - 6.3 Dispatch of Short Term Experts by the Government of Japan (1996).
 - 6.4 Counterpart Training in Japan (1996).
- 7.0 Provision of Counterparts.
 - 7.1 Counterparting in General.
 - 7.2 Counterparting in relation of Fishing Technology.
- 8.0 Linkages in the three (3) sub-sectors of the Project in Fishing Technology, Marine Engineering of Fish Proceeding.
- 9.0 Staff Allocation to the Training Vessel donated by the Government of Japan.
- 10.0 Local Budget fro operation of the Regional Fisheries Training Project.
- 11.0 Sustainable Fisheries Development in relation to he Regional Fisheries Training Project.
- 12.0 Other Matters.



C

**REGIONAL FISHERIES TRAINING PROJECT
A TECHNICAL COOPERATION PROJECT
BETWEEN
THE GOVERNMENT OF TRINIDAD AND
TOBAGO
AND THE GOVERNMENT OF JAPAN**

"Progress Report"
April 01, 1996 - June 30, 1996

Executing Agencies:

Ministry of Agriculture, Land & Marine Resources
(Caribbean Fisheries Training & Development Institute)

Japan International Cooperation Agency

Duration:

April 01, 1996 - March 31, 2001

Project Site:

Caribbean Fisheries Training & Development Institute
Chaguaramas, Trinidad and Tobago

July 1996

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PROGRESS REPORT
TECHNICAL COOPERATION FOR THE REGIONAL
FISHERIES TRAINING PROJECT

Duration of Project: April 01, 1996 - March 31, 2001

Reporting Period: April 01, 1996 - June 30, 1996

1 INTRODUCTION

1-1 Background

The economy of Trinidad and Tobago is still largely dependent on oil and natural gas for its revenues. However with the continued decline of oil production and world oil prices, the desire of the Government to attract foreign investors to boost the national economy is not materializing as quickly as was hoped. Diversification and examination of alternate strategies for economic development are a real option that the Government must pursue and two primary areas Agriculture & Fisheries are important targets.

The development of both industries would greatly improve the food supply of the nations that are now greatly dependent on imported food products. To serve less costly fresh protein, it is necessary to improve capacity of both sectors by way of technical and human resource development.

This approach to economic development is in support of the Food and Agriculture Policy of the Ministry of Agriculture, Land & Marine Resources.

The fishing industry of Trinidad and Tobago and the Caribbean region is traditionally small scale and inshore. However with the ratification of the 1982 International Convention of the Law of the Sea and the availability of additional marine space with an extended EEZ the trend of the industry is being directed to offshore and deep sea fishing to boost production. As a



consequence of this factor, there is a demand for a change in fishing methods such as from "inshore artisanal line fishing," to "offshore longlining," from "net fishing," e.g "Shrimp trawling" and "gill netting" to "set net fishing", methods of which would conserve the marine resources of inshore waters while at the same time exploiting the offshore resources.

The Government of Trinidad and Tobago had decided, in the light of this purpose, to the re-establishment of the Caribbean Fisheries Training and Development Institute (CFTDI) within the framework of adequate legislation, personnel and infrastructure to provide the required training in the Fisheries and Maritime Industry.

At the present time there is a shortage of trained personnel to move the fishing industry of the Caribbean forward as envisioned in the exploitation of the EEZ of the various states. Such shortage has been identified in the areas of Fishing Gear Technology and Fishing Method, Marine Engine Repair and Maintenance, Marine Safety, Navigation and Seamanship, Fishing Vessel Operation and Maintenance, Seafood Handling, Processing and Preservation.

In 1993, the Government of Trinidad and Tobago made a request to the Government of Japan for technical assistance in the form of a Technical Cooperation Project. This project was designed to enhance the human resources of the Caribbean Fisheries Training and Development Institute and supply some necessary equipment while at the same time providing the necessary back up support for training and developing the human resources of the fisheries sub-sector in particular areas.

In response to this request the Government of Japan through Japan International Cooperation Agency (JICA) dispatched a Preliminary Survey Team in December 1994 which held discussions with officials of the Ministry of Agriculture, Land and Marine Resources on the request. This was followed by a Long Term Survey Team which visited Trinidad and Tobago in July - August 1995 to undertake a detailed survey and preparatory arrangements

with the Government of Trinidad and Tobago (Ministry of Agriculture, Land and Marine Resources) based on the report of the Preliminary Survey Team.

The Japanese Implementation Survey Team visited Trinidad and Tobago from November - December 1995 during which time a final agreement on the Project was arrived at with the Government of Trinidad and Tobago. The Record of Discussions (R/D) on the implementation of the Project and the Tentative Schedule of Implementation (T.S.I) were signed on December 04, 1995 by Mr. W. Ruthven Rudder, Permanent Secretary of the Ministry of Agriculture, Land and Marine Resources and Mr. Tomofumi Kume, Director, Fisheries Cooperation Division, JICA.

The details of the Project which has been designated the Five Year Regional Fisheries Training Project are as follows:

- 1-2 Project Site
Caribbean Fisheries Training and Development Institute (CFTDI)
Chaguaramas, Port-of-Spain
- 1-3 Duration of Project
April 01 - March 31 2001 (Five Years)
- 1-4 Master Plan
 - 1-4-1 Objectives of the project
 - (1) Overall Goal
To enhance the technical standard of training personnel and other people concerned with the fisheries sector in the Republic of Trinidad and Tobago and other regional countries.
 - (2) Project Purpose
To enhance the content of the training program at CFTDI.



1-4-2 Outputs and Activities of the Project

- (1) Fishing techniques suitable and extendable for the regional fishery are to be accumulated and the expertise of the training personnel of CFTDI is to be strengthened in the field of fishing technology through the following activities:
 - i. survey of coastal fishing gear and methods
 - ii. introducing appropriate coastal fishing technology, and
 - iii. conducting theoretical and practical training for the training personnel of CFTDI on coastal fishing technology

- (2) Engine maintenance techniques suitable and extendable for the regional fishery are to be accumulated and the expertise of the training personnel of CFTDI is to be strengthened in the field of marine engineering through the following activities:
 - i. survey of hull and engine of coastal fishing vessel, and
 - ii. conducting theoretical and practical training for the training personnel of CFTDI on operation and maintenance of marine engines (including refrigerator)

- (3) Processing and quality control techniques suitable and extendable for the regional fishery are to be accumulated and the expertise of the training personnel of CFTDI is to be strengthened in the field of fish processing and quality control through the following activities:
 - i. survey of fish handling, fish processing and quality control
 - ii. conducting theoretical and practical training for the training personnel of CFTDI on basic fish handling, processing and quality control of fishery products, and
 - iii. introducing appropriate fish handling, fish processing and quality control of fishery products

(4) The training programs of CFTDI in the fields mentioned above are to be reinforced through the following activities:

- i. developing and improving the CFTDI training curriculum and textbooks, and
- ii. conducting training courses at CFTDI in the fields mentioned above

It has been defined in the Tentative Schedule of Implementation (TSI), signed simultaneously with the R/D which included the Master Plan.

2. PROJECT IMPLEMENTATION

The project was implemented on April 01, 1996 with the arrival of four (4) Japanese Experts to join one (1) who was already on site. At the same time the Government of Trinidad and Tobago identified counterparts to these experts as required by the Records of Discussion and the Tentative Schedule of Implementation.

2.1 The Japanese Experts and Counterparts are as follows:

JAPANESE EXPERT	DURATION	COUNTERPART
1. Mr. Jo Fukui Team Leader	01.04.96 - 30.03.98	Mr. Mervyn La Croix Director of Fisheries
2. Mr. Kazuhisa Takahashi Co-ordinator	01.04.96 - 30.03.98	Mr. Carlisle Jordan Co-ordinator CFTDI
3. Mr. Kazuo Senga Fishing Technology	01.04.96 - 30.03.98	Mr. Ronald Chan-A-Shing Fishing Gear Technologist



JAPANESE EXPERT	DURATION	COUNTERPART
4. Mr. Fusao Takigami Fish Processing	01.04.96 - 30.03.98	Mr. Charles Nurse Technical Instructor Fish Processing
5. Mr. Hideo Kimura Marine Engineering	01.04.96 - 30.03.98	Not yet appointed

The Japanese Experts were provided with office accommodation and associate facilities in accordance with the project guidelines.

2.2 Plan for Provision of Machinery and Equipment

The Government of Japan provide the following machinery and equipment in project year 1 under the 1996 and 1997 fiscal year budget of Japan. The total investment cost of the machinery and equipment including freight and insurance is approximately 829,455 US\$. Delivery time of local purchase and foreign purchase (in Japan) are in August 1996 and in January 1997, respectively.

The cost of individual items for the project year 1 is presented in Table 1 divided into local and foreign purchase.

GH

PH

TABLE 1. CAPITAL COST OF MACHINERY AND EQUIPMENT FOR THE PROJECT YEAR 1

TECHNICAL FIELD	INDIVIDUAL ITEMS AND COST	
	Local Purchase	Foreign purchase (in Japan)
Mutual equipment	Pickup truck (1), UPS (3), Loud speaker (1), Wireless communication system (1), VCR (1), TV monitor (2), OHP system (1), Camcorder (1), Desktop computer (2), etc. Sub total: 38,000 US\$	Printer for computer (1), Camera (1), Underwater camera (1), Projector (1), etc. Sub total: 8,700 US\$
For Fishing Technology	Vertical longline equipment (1), Tuna longline equipment (1), Bottom longline equipment (1), Trolling line equipment (1), Fish handling equipment (1), Deep freezer (1), etc. Sub total: 71,690 US\$	40ft. FRP training vessel (1), Gill net fishing equipment (1), Squid angling equipment (1), GPS (3), Digital deep sea thermometer (1), etc. Sub total: 537,690 US\$
For Marine Engineering	Welding machine (1), Gasoline OBM (4), Diesel engine, Tool set (1), etc. Sub total: 77,110 US\$	Diesel OBM (2), Measuring equipment set (1), Engine adjustment equipment set (1), etc. Sub total: 58,315 US\$
For Fish Processing	Air blast freezer (1), Ice making machine (1), Freshness checker system (1), Meat saw (1), etc. Sub total: 32,710 US\$	Vacuum packing machine (1) Sub total: 5,240 US\$
TOTAL	829,455 US\$	

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2.3 Structure of Project

The organizational structure of the project is outlined in Appendix I. In the area of Trinidad and Tobago Counterparts note is taken of the following:

1. Marine Engineer

The professional counterpart to the Marine Engineer is yet to be appointed, however, proposal have been forwarded to the Ministry of Agriculture, Land and Marine Resources to recruit the appropriate personnel.

2. Number of Counterparts

The Project requires that there be two (2) counterparts per Japanese Expert and it is expected that this would be achieved in the full re-organization and re-establishment of the CFTDI which is now being undertaken.

3. **OUTLINE OF ACTIVITIES**

The Japanese Experts assumed their work place at the Caribbean Fisheries Training and Development Institute on April 04, 1996 to commence their two year period of technological transfer to counterparts. Activities has started from the end of May. Experts and counterparts were engaged in field survey of fishing condition in Trinidad and Tobago, visiting two sites a week, under arrangement of counterparts. These field survey will continued until the middle of July. During these field survey, experts and counterparts could have hold a same idea for the fisheries condition in Trinidad and Tobago. As they visited many fishing villages and fish processing plant, this project has been introduced to may peoples and the project has became widely known in Trinidad and Tobago. On the other hand, experts and counterparts has collected information and quotations for the materials which will be purchased from local market. These quotations were send to JICA for approval.



3.1 Activities made in the field of Fishing Technology

1. Employed in field survey on fishing condition in Trinidad and Tobago and still being continued.
2. Prepared application for the approval of the material and equipment list to be provided under the 1996 fiscal year budget and submitted to JICA.
3. Planned activity of the new training vessel.
4. Had a lecture and discussion to the small scale tuna longline fisheries in private sector.

3.2 Marine Engineering

1. Employed in field survey on fishing condition in Trinidad and Tobago and still being continued.
2. Collected information and quotation for engine parts, and investigated the possibility of local purchase.
3. Prepared hand out for mobile training.
4. Assisted mobile training in several fishing villages organized by counterpart.

3.3 Fish Processing

1. Employed in field survey on fishing condition in Trinidad and Tobago and still being continued.
2. Prepared application for the approval of the materials and equipment to be provided under the 1996 fiscal year, will be purchased in Japan or local respectively.
3. Reviewed and corrected the Tentative Detailed Schedule of Implementation.
4. Prepared and planned the short-term expert to be dispatched in 1996 fiscal year.



4. MEETINGS BETWEEN JAPANESE EXPERTS AND COUNTERPARTS

During the reporting period April 1st to June 30th 1996, five (5) meetings were held between the Japanese Experts and the Counterparts under the Chairmanship of the Director of Fisheries. These meetings addressed various issues associated with the Project including:

- Establishment of the Japanese Experts in relation to office accommodation and associated facilities; arrival and clearance of equipment and personal effects and arrangements for visas
- Implementation of the Project with respect to Counterpart support and, training and work plan for the period 1996 - 1998.

5. SURVEY OF THE FISHING INDUSTRY OF TRINIDAD AND TOBAGO

It was agreed that a survey of the Fishing Industry of Trinidad and Tobago be undertaken as a means of obtaining information and data for the preparation of the Work Plan for the period 1996 - 1998. This survey which concentrated on Fishing Technology, Fish Processing and Marine Engineering aspects was scheduled for May - July 1996 throughout Trinidad and Tobago and was conducted jointly by Japanese Experts and Counterparts. Appendix II outlines the visits and the activities undertaken. The report of this survey and recommendations will be submitted later.

6. WORK PLAN 1996 - 1998

A preliminary Work Plan for the period 1996 - 1998 is at Appendix III-I - III-3.

7. JOINT CO-ORDINATING COMMITTEE

The establishment of the Joint Co-ordinating Committee was initiated in May 1996 through the issue of letters by the Permanent Secretary, Ministry of

Agriculture, Land and Marine Resources for nominations by the representative organization. To date the following members have been nominated to the Committee.

Trinidad and Tobago Members

- | | | |
|---------------------|---|--|
| Dr. Vincent Moe | - | Permanent Secretary, Ministry of Agriculture, Land and Marine Resources - Chairman |
| Mr. Mervyn La Croix | - | Director of Fisheries, Ministry of Agriculture, Land and Marine Resources |
| Mr. Carlisle Jordan | - | Principal/Co-ordinator - CFTDI |
| Ms. Kay Rudder | - | Director, Technical Cooperation Unit, Office of the Prime Minister |
| Ms. Laura West | - | Foreign Services Officer, Ministry of Foreign Affairs |

Japanese Members

- | | | |
|------------------------|---|----------------------------|
| Mr. Jo Fukui | - | Team Leader |
| Mr. Kazuhisa Takahashi | - | Project Co-ordinator |
| Mr. Kazuo Senga | - | Expert, Fishing Technology |
| Mr. Fusao Takigami | - | Expert, Fish Processing |
| Mr. Hideo Kimura | - | Expert, Marine Engineering |



8. COUNTERPART TRAINING IN JAPAN

Recommendations have been made for counterpart visits to Japan in the area of Fisheries Administrators and Fisheries Education, Mr. Carlisle Jordan, Coordinator/Principal of CFTDI has been recommended for a visit of three (3) weeks in October 1996 while Mr. Selwyn Brooks, Training Officer/Vice Principal has been recommended for a three (3) week visit in March 1997.

9. CONSTRAINTS

During the period under review, Two major constraints which were identified are:

i. Staffing

There is the need to recruit the following staff in order to enhance the work of the Project.

- | | |
|------------------------|--|
| - Marine Engineer | - Counterpart to Marine Engineering Expert |
| - Accounting Assistant | - Support Staff |
| - Clerk I | - Support Staff |
| - Safety Instructor | - Support Staff |

Proposals have been advanced to the Ministry of Agriculture, Land and Marine Resources on this matter.

ii. Office Accommodation

The implementation of the project and the proposed re-organization and re-establishment of the Institute have indicated the need for addition office accommodation.

Request for funds has been made in the 1997 Estimates of Expenditure for the Provision of additional office space.

STRUCTURE OF PROJECT (as of 30 June 1996)

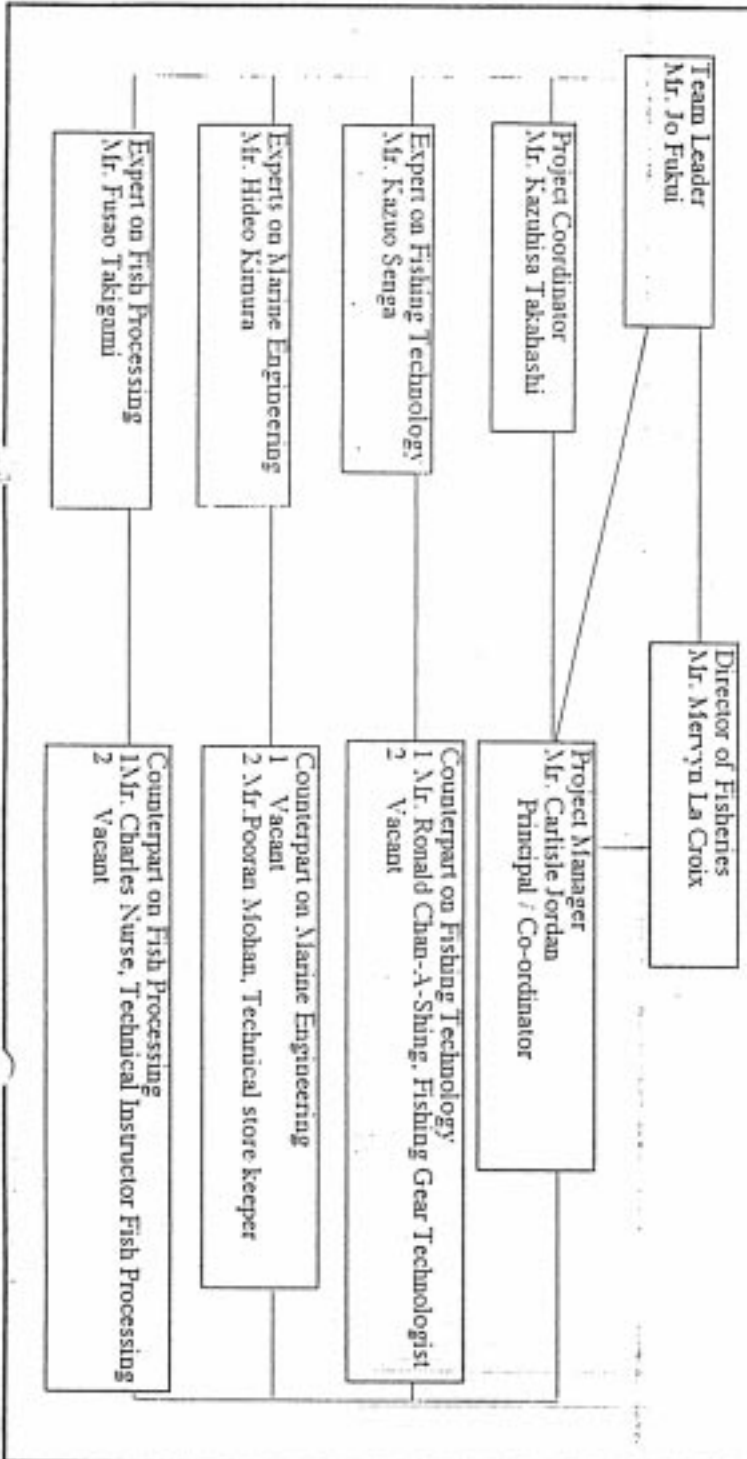
APPENDIX I

Project Director
P.S. Ministry of Agriculture Land
and Marine Resources
Dr. Vincent Moe

Joint Coordinating Committee
Chairman: P.S. Ministry of Agriculture Land and Marine Resources
Japanese Members:
Team Leader, Coordinator, Experts
Other personnel dispatched from JICA
Observer (s) from the Embassy of Japan

Trinidad & Tobago Members:
Director of Fisheries
Principal / Co-ordinator
Representative of the Technical Cooperation Unit
Representative of the Ministry of Foreign Affairs
Other personnel concerned with the Project

Project at the Site (Location: CFIDD)
Japanese Section (Long-term Experts of JICA) Trinidad & Tobago Section



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**CARIBBEAN FISHERIES TRAINING & DEVELOPMENT
INSTITUTE**

SCHEDULE OF SURVEY

- OBJECTIVES:**
- *Appreciation of the Fish Handling & Processing capabilities in Trinidad & Tobago.
 - *Overview of Fish and Fishery Products that are locally produced.
 - *Appraisal of the major fishing methods of Trinidad & Tobago.
 - *Appraisal of the fishing conditions that exists in the various areas.
 - *Appraisal of the vessels, gear and equipment in use in the various fisheries.
 - *Facilities associated with the marketing of the catch.

DATE	PERSONNEL	TIME	ACTIVITY
1996:05:28	Joint Team	0500 hrs.	Visit to Port of Spain Wholesale & Retail Fish Market. Appreciation of species range. Appreciation of wholesale marketing system (fish auction).
		1600 hrs.	Visit to fish landing sites. Chaguaramas landing site (fish for export market).
		1300 - 1500 hrs.	Chaguaramas and Cocorite. Overview of multipurpose fishing vessels. Live bait line and pot fishery.

DATE	PERSONNEL	TIME	ACTIVITY
1996:06:04	Joint Team	1100 - 1700 hrs	Visit to North Coast fishing points. Live bait and line fishery. Gill net fishery. Evaluation of the quality of the catch.
1996:06:05	Fishing Technology		Visit to North East Coast (Balandra, Toco and Sans Souci). Line fishing and gill net fishery and agri fishing communities.
1996:06:11	Processing Team	0900 - 1100 hrs.	Fish Plant visit. Barataria - Fresh fish handling, frozen and salted fish production.
		1300 - 1800 hrs.	Visit to fish handling sites and fish markets (Brickfield, Orange Valley, . Otaheiti). Overview of the trawl and gill net fishery. Appreciation of fish marketing system. Evaluation of the quality and variety of the catch.

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APPENDIX II

DATE	PERSONNEL	TIME	ACTIVITY
1996:06:13 - 14			Tobago visit Visit to Flying Fish Processing Plant. Visit to fish landing site (pot fishery) Pigeon Point & Buccoo. Visit wet fish processor (snappers for export) Visit to fish landing site (beach seine operations). Visit to fish curing plants. Visit to cold store (NIPDEC). Visit to fish port - Scarborough. Visit to Charlotteville - pelagic fishery.
1996:06:20	Joint Team	0900 - 1200 hrs	Visit to Fish Port (off shore long liners and shrimp trawlers). Bunkering and dockside facilities. Transshipment operations. Cost storage of fish (NFC).
	Processing Team	1300 - 1800 hrs.	East West Corridor Overview of the retail marketing system. Fish shops, itinerant vendors, supermarkets. Visit to fish plant - Sangre Grande.
1996:06:25	Joint Team		Shell fish processing landing sites and plants (San Fernando, Cedros, Icacos).
1996:06:27 - 28			Gill net and beach seine (Manazanilla, Mayaro, Guayaguayare).
1996:07:02	Fishing Technology		Handling and gill net fishery - south east coast.
1996:07:04	Fishing Technology		Gill nets - south coast.

**ANNUAL WORK PLAN
IN THE FIELD OF FISHING TECHNOLOGY
FOR THE PROJECT YEAR 1 AND 2
(FROM APRIL 1996 TO MARCH 1998)**

The Japanese expert and the counterpart had a series of discussions and have agreed upon the Tentative Detailed Schedule of Implementation which describes the activities to be carried out in the field of coastal fishing technology of the project.

For the purpose of reducing expenses, when operating the training/research vessel, it is recommendable to programme more than one fishing method in each fishing trip where possible.

With reference to the fishing ground survey and the exploratory fishing, these will be addressed in another paragraph. However, because the transfer of technology to the counterpart will be started in this stage, it will be included in the paragraph related to the transfer of technology.

1. Transfer of Technology to the Counterpart

1-1. Survey on present situation of fisheries in Trinidad and Tobago. (from May to July 1996)

1-2. Vertical Longline Fishing (from July 1996 to October 1998)

1-2-1. Preparation for fishing ground survey, exploratory fishing and other activities.

1-2-2. Fishing ground survey and exploratory fishing.

1-2-3. Intensive training of the counterpart.(the training will be conducted by means of lecture, gear construction practice and practical fishing at sea.)

1-2-4. Workshop for fishermen by the counterpart. (the workshop will be conducted by means of lecture, gear construction practice and practical fishing at sea.)

1-2-5. Data analysis of fishing ground survey and exploratory fishing.
Evaluation of the workshop.

1-2-6. Repair of fishing gear.

1-3. Trolling (from October 1996 to January 1997)

1-3-1. Preparation for fishing ground survey, exploratory fishing and other activities.

1-3-2. On board observation on fishing operation by local fishermen.

1-3-3. Fishing ground survey and exploratory fishing.

1-3-4. Intensive training of the counterpart.(the training will be conducted by means of lecture, gear construction practice and practical fishing at sea.)

1-3-5. Workshop for fishermen by the counterpart. (the workshop will be conducted by means of lecture, gear construction practice and practical fishing at sea.)

1-3-6. Construction of fish aggregating device (PAYAU).

1-3-7. Data analysis of fishing ground survey and exploratory fishing.
Evaluation of the workshop.

1-3-8. Repair of fishing gear.

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**ANNUAL WORK PLAN
IN THE FIELD OF MARINE ENGINEERING
FOR THE PROJECT YEAR 1 AND 2
(FROM APRIL 1996 TO MARCH 1998)**

The Japanese expert and the counterpart had a series of discussions and have agreed upon the Tentative Detailed Schedule of Implementation which describes the activities to be carried out in the field of Marine Engineering of the project.

1. Transfer of Technology of the Counterpart
 - 1-1. Survey on present situation of fisheries in Trinidad and Tobago.
(From May to August 1996)
Survey on present situation of fisheries in the region
(OECS and CARICOM)
 - 1-2. Skills Training - Counterpart and General Staff
 - 1-2-1. Outboard Motor (from September 1996 to March 1997)
 - 1-2-2. Diesel Engine (from October 1997 to March 1998)
 - 1-3. Mobile Training for fishermen by the counterpart.
 - 1-3-1. Outboard Motor (from September 1996 to February 1997)
 - 1-3-2. Diesel Engine (from October 1997 to March 1998)
 - 1-4. Workshop / Training course at CFTDI
 - 1-4-1. Outboard Motor Maintenance Course (November 1996 and March 1997)
 - 1-4-2. Diesel Engine Maintenance Course (December 1997 and March 1998)
2. Upgrading of Engineering Unit
 - 2-1. Outboard Motor (Japanese Fiscal Year 1996)
 - 2-2. Diesel Engine (Japanese Fiscal Year 1997)
 - 2-3. Organization of Engineering Workshop
3. Counterpart Training in Japan
 - 3-1. From May to July 1996.
 - 3-2. From May to July 1997.
4. Other Activities
 - 4-1. Preparation of a textbook (hand outs) on Marine Engineering.
(Outboard Motor / Diesel Engine / FRP)
 - 4-2. Preparation of course curriculum.
 - 4-3. Evaluation of course curriculum and Training course.
5. Dispatch of short term expert.
 - 5-1. From January to March, 1997 (Outboard Motor)
 - 5-2. From September to November, 1997 (Diesel Engine)

1-4. Tuna Longline Fishing (from December 1996 to August 1998)

- 1-4-1. Preparation for fishing ground survey, exploratory fishing and other activities.
- 1-4-2. Fishing ground survey and exploratory fishing.
- 1-4-3. Intensive training of the counterpart.(the training will be conducted by means of lecture, gear construction practice and practical fishing at sea.)
- 1-4-4. Workshop for fishermen by the counterpart.(the workshop will be conducted by means of lecture, gear construction practice and practical fishing at sea.)
- 1-4-5. Data analysis of fishing ground survey and exploratory fishing.
Evaluation of the workshop.
- 1-4-6. Repair of fishing gear.

1-5. Bottom Longline Fishing (from January 1997 to March 1998)

- 1-5-1. Preparation for fishing ground survey, exploratory fishing and other activities.
- 1-5-2. On board observation on fishing operation by local fishermen.
- 1-5-3. Fishing ground survey and exploratory fishing.
- 1-5-4. Intensive training of the counterpart.(the training will be conducted by means of lecture, gear construction practice and practical fishing at sea.)
- 1-5-5. Workshop for fishermen by the counterpart.(the workshop will be conducted by means of lecture, gear construction practice and practical fishing at sea.)
- 1-5-6. Data analysis of fishing ground survey and exploratory fishing.
Evaluation of the workshop.
- 1-5-7. Repair of fishing gear.

1-6. Survey on the present situation of fisheries in the region.

The survey will be carried out in OECS and CARICOM regions with special focus on the following fisheries facilities and activities:

- 1) Net fishing in Suriname.
- 2) Activities of Fisheries Cooperative Associations in Guyana.
- 3) Tuna longline fishing in Grenada.
- 4) Marketing of marine products at New Kingstown Fish Market and activities of OECS Fisheries Unit in St. Vincent and the Grenadines.
- 5) Fisheries facilities implemented under the Japan's Grant Aid in St. Lucia.
- 6) Roles and activities of CFRAMP in Belize.

2. Counterparts Training in Japan (three months during April 1997 to October 1997 and 1998 as required)

3. Dispatch of Short-term Experts (for periods of three months in 1997 and in 1998)

4. Other Activities

- 4-1. Preparation of a textbook on coastal fishing technology.
- 4-2. Preparation of course curriculum.
- 4-3. Evaluation of course curriculum.

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ANNUAL WORK PLAN

From April 1996 to March 1998

FIELD: Fishing technology

YEAR PROJECT YEAR ACTIVITIES	1996				1997				1998
	Project year 1 Apr.96-Mar.97				Project year 2 Apr.97-Mar.98				
	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st
1 Survey of coastal fishing gear & methods									
1.1 Field survey in TT	←→								
1.2 Field survey in CARICOM countries								←→	
2 Introducing appropriate coastal fishing technology									
2.1 Vertical longline									
1) Fishing ground survey & exploratory fishing		←→	←→	←→	←→	←→	←→		
2) Intensive training of the counterpart (theory & practice)		←→	←→	←→	←→	←→	←→		
3) Workshop for local fishermen		←→	←→	←→	←→	←→	←→		
4) Data analysis of survey					◆			◆	
2.2 Trolling line									
1) Fishing ground survey & exploratory fishing			←→	←→	←→	←→	←→		
2) Intensive training of the counterpart (theory & practice)			←→	←→	←→	←→	←→		
3) Workshop for local fishermen			←→	←→	←→	←→	←→		
4) Data analysis of survey					◆			◆	
2.3 Pelagic longline									
1) Fishing ground survey & exploratory fishing			←→	←→	←→	←→	←→		
2) Intensive training of the counterpart (theory & practice)			←→	←→	←→	←→	←→		
3) Workshop for local fishermen			←→	←→	←→	←→	←→		
4) Data analysis of survey						◆			
2.4 Bottom longline									
1) Fishing ground survey & exploratory fishing				←→	←→	←→	←→	←→	
2) Intensive training of the counterpart (theory & practice)				←→	←→	←→	←→	←→	
3) Workshop for fishermen				←→	←→	←→	←→	←→	
4) Data analysis of survey						◆		◆	
3 Conducting theoretical and practical training for the training personnel of CFTDI	←→								
4 Developing and improving the CFTDI training curriculum & textbooks									
4.1 Developing textbooks	←→								
4.2 Improving course curriculum	←→								
5 Conducting training courses			◆	◆	◆	◆			
6 Short-term expert									
6.1 Trolling line specialist			←→						
6.2 Tuna longline specialist							←→		

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ANNUAL WORK PLAN
From April 1996 to March 1998

FIELD: Marine engineering

YEAR PROJECT YEAR ACTIVITIES	1996				1997				1998	
	Project year 1 Apl.96-Mar.97				Project year 2 Apl.97-Mar.98					
	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	
1 Survey of marine engineering										
1.1 Field survey in TT	←→									
1.2 Field survey in CARICOM countries								←→		
2 Introducing appropriate marine engineering										
2.1 Outboard engine maintenance										
1) Basic knowledge of OBM		←→								
2) Disassembly & assembly techniques			←→							
3) Maintenance techniques				←→						
2.2 Diesel engine maintenance										
1) Basic knowledge of Diesel engine					←→					
2) Disassembly & assembly techniques						←→				
3) Maintenance techniques						←→				
2.3 Hydraulic equipment										
1) Basic knowledge of oil								←→		
2) Disassembly & assembly techniques								←→		
3) Maintenance techniques								←→		
3 Conducting theoretical and practical training for the training personnel of CFTDI	←→									
4 Developing and improving the CFTDI training curriculum & textbooks										
4.1 Developing textbooks	←→									
4.2 Improving course curriculum	←→									
5 Conducting training courses										
5.1 Mobile training in Tobago		◆					◆			
5.2 Mobile training in Trinidad			←→							
5.3 Training course in CFTDI			◆	◆				◆	◆	
6 Short-term expert										
6.1 Outboard motor specialist				←→						
6.2 Diesel engine specialist						←→				

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ANNUAL WORK PLAN

From April 1996 to March 1998

FIELD: Fish processing

YEAR PROJECT YEAR ACTIVITIES	1996				1997				1998
	Project year 1 Apl.96-Mar.97				Project year 2 Apl.97-Mar.98				
	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st
1 Survey of fish processing & quality control									
1.1 Field survey in TT	←→								
2 Introducing appropriate fish handling, fish processing and quality control									
2.1 Fish handling techniques									
1) Fish handling on board		←→							
2) Fish handling on ground		←→							
3) Grading techniques						←→			
2.2 Processing techniques									
1) Freezing & curing techniques							←→		
2) Comminuted products technology							←→		
3) Fermented products technology									←
2.3 Quality control technology									
1) HACCP for processors						←→			
2) Preservation techniques							←→		
3 Conducting theoretical and practical training for the training personnel of CFTDI	←	→	→	→	→	→	→	→	→
4 Developing and improving the CFTDI training curriculum & textbooks									
4.1 Developing textbooks	←	→	→	→	→	→	→	→	→
4.2 Improving course curriculum	←	→	→	→	→	→	→	→	→
5 Conducting training courses			◆	◆		◆	◆		
6 Short-term expert									
6.1 Fish handling & processing specialist				←→					
6.2 HACCP specialist						←→			

NOTE: Field survey in CARICOM Countries will be conducted in project year 3.

**ANNUAL WORK PLAN
IN THE FIELD OF FISH PROCESSING
FOR THE PROJECT YEAR 1 AND 2
(FROM APRIL 1996 TO MARCH 1998)**

The Japanese expert and the counterpart had a series of discussions and have agreed upon the Tentative Detailed Schedule of Implementation which describes the activities to be carried out in the field of Fisheries Processing of the project.

1. Transfer of technology to the counterpart

- 1-1. Market & products survey in T.T. (from Apr. to Jun. 1996)
- 1-2. Handling methods (from Aug. to Sept. 1996 and from Jan. to Feb. 1997)
 - 1-2-1. Coastal pelagic and demersal
 - 1-2-2. Oceanic pelagic on board
 - 1-2-3. Crustacea and mollusca
- 1-3. Training course (Jul. 1996, from Oct. to Dec. 1996 and from Mar. to Apr. 1997)
 - 1-3-1. Training course for teachers of home economics
 - 1-3-2. Training course of seafood technology
- 1-4. Processing techniques (from May to Jul. 1997)
 - 1-4-1. Finfish
 - 1-4-2. Shellfish
- 1-5. Techniques of grading and evaluation (from Jul. to Sept. 1997)
 - 1-5-1. Fish and shellfish
- 1-6. HACCP (From Sept. to Nov. 1997)
 - 1-6-1. For fish and shellfish processors
- 1-7. Preservation techniques for fish and shellfish (from Nov. 1997 to Jan. 1998)
 - 1-7-1. Freezing
 - 1-7-2. Curing
- 1-8. Comminuted product (from Dec. 1997 to Mar. 1998)
 - 1-8-1. Technology
 - 1-8-2. Heat processing

2. Counterpart training in Japan

- 2-1. Quality assurance of marine food: From Aug. to Oct. 1997

3. Dispatch of short-term expert

3-1. Fish handling (Fish handling & fish processing specialist)

from Jan. to Mar. 1997

3-2. Quality control (HACCP specialist)

from Aug. to Oct. 1997

4. Others

4-1. Developing textbook

4-2. Improving course curriculum



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**REGIONAL FISHERIES TRAINING PROJECT
A TECHNICAL COOPERATION PROJECT
BETWEEN
THE GOVERNMENT OF TRINIDAD AND
TOBAGO
AND THE GOVERNMENT OF JAPAN**

"Implementation Plan"
1996 - 2001

Executing Agencies:

Ministry of Agriculture, Land & Marine Resources
(Caribbean Fisheries Training & Development Institute)

Japan International Cooperation Agency

Duration:

April 01, 1996 - March 31, 2001

Project Site:

Caribbean Fisheries Training & Development Institute
Chaguaramas, Trinidad and Tobago

July 1996

**IMPLEMENTATION PLAN OF TECHNICAL COOPERATION
FOR
THE REGIONAL FISHERIES TRAINING PROJECT**

Duration of Project : 1 April 1996 - 31 March 2001

The Technical Cooperation Project in Regional Fisheries Training was implemented on April 01, 1996 based on the Record of Discussion which were signed by representatives from both the Japan International Cooperation Agency (JICA) and official of the Government of Trinidad and Tobago on December 04, 1995.

The Project aims to enhance the technical standard of training persons at the CFTDI and other persons associated with the fisheries sector of the Republic of Trinidad and Tobago and other Caribbean Regional countries. The duration of the Project is for five years April 01, 1996 - March 31, 2001.

In the Tentative Schedule of Implementation of the Project which was signed simultaneously with the Record of Discussion on December 04, 1995. The following areas of technical cooperation were identified.

- Fishing Technology
- Marine Engineering
- Fish Processing
- Reinforcement of the Training Program

The measures taken by JICA and the Government of Trinidad and Tobago to implement the Project are comprised of the following components:

1. Dispatch of Japanese Experts for both short and long term by JICA
2. Provision of Machinery and Equipment by JICA for implementation of Project activities
3. Provision of counterpart staff to the Japanese Experts by the Government of Trinidad and Tobago
4. Provision of office accommodation and other amenities by the Government of Trinidad and Tobago
5. Training of Trinidad and Tobago personnel in Japan

The Japanese experts and Trinidad and Tobago Counterparts held a series of discussions towards development of a Work Plan and Schedule of Activities within the framework of the Project for the five (5) year life of the Project 1996 - 2001 (Appendix I-1~I-4) including a survey of Fishing Activities in Trinidad and Tobago.

The five year Work Plan and Schedule of Activities include the following:

1. Activity Plan in General

1. Long-term expert
2. Short-term expert in the relevant fields will be dispatched when necessity arises.
3. Counterpart training in Japan



- 3.1 Fisheries administration
- 3.2 Fisheries education
- 3.3 Coastal fishing gear & method
- 3.4 Marine engine maintenance
- 3.5 Quality assurance of marine food
- 3.6 Relevant fields of the project
- 4. Provision of machinery and equipment
 - 4.1 Local purchase
 - 4.2 Foreign purchase (in Japan)
- 5. Mission for project management & evaluation
 - 5.1 Consultation mission
 - 5.2 Mid-term evaluation mission
 - 5.3 Final evaluation mission
- 6. Joint coordinating committee

II. Activity Plan in the Field of Fishing technology

- 1. Survey of coastal fishing gear & methods
 - 1.1 Field survey in T.T.
 - 1.2 Field survey in CARICOM countries
- 2. Introducing appropriate coastal fishing technology (theory & practice)
 - 2.1 Vertical longline
 - 2.2 Trolling
 - 2.3 Pelagic longline
 - 2.4 Bottom longline
 - 2.5 IAD
 - 2.6 Pot fishing
 - 2.7 Squid angling
 - 2.8 Set net
- 3. Conducting theoretical and practical training for the training personnel of CFTDI
- 4. Developing and improving the CFTDI training curriculum & textbooks
 - 4.1 Developing textbooks
 - 4.2 Improving course curriculum
- 5. Conducting training courses
- 6. Short term expert




III. Activity Plan in the Field of Marine Engineering

1. Survey of marine engineering
 - 1.1 Field survey in TT
 - 1.2 Field survey in CARICOM countries
2. Introducing appropriate marine engineering
 - 2.1 Outboard engine maintenance
 - 2.2 Diesel engine maintenance
 - 2.3 Hydraulic equipment
 - 2.4 Diesel outboard engine
 - 2.5 Electrical equipment
 - 2.6 Refrigeration equipment
 - 2.7 FRP fishing boat maintenance
3. Conducting theoretical and practical training for the training personnel in CFTDI
4. Developing and improving the CFTDI training curriculum & textbooks
 - 4.1 Developing textbooks
 - 4.2 Improving course curriculum
5. Conducting training courses
 - 5.1 Mobile training in Tobago
 - 5.2 Mobile training in Trinidad
 - 5.3 Training course in CFTDI
6. Short-term expert

IV. Activity Plan in the Field of Fish Processing

1. Survey of fish processing & quality control
 - 1.1 Field survey in T.T.
 - 1.2 Field survey in CARICOM countries
2. Introducing appropriate fish handling , fish processing and quality control
 - 2.1 Fish handling techniques
 - 2.2 Processing techniques
 - 2.3 Quality control technology
3. Conducting theoretical and practical training for the training personnel in CFTDI
4. Developing and improving the CFTDI training curriculum & textbooks
 - 4.1 Developing textbooks
 - 4.2 Improving course curriculum
5. Conducting training course
6. Short-term expert



THE REGIONAL FISHERIES TRAINING PROJECT

FIVE YEAR IMPLEMENTATION PLAN
GENERAL SCHEDULE

YEAR PROJECT YEAR ACTIVITIES	1996				1997				1998				1999				2000				2001
	Project year 1 Apr.96-Mar.97				Project year 2 Apr.97-Mar.98				Project year 3 Apr.98-Mar.99				Project year 4 Apr.99-Mar.2000				Project year 5 Apr.2000-Mar.01				
	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th	
1 Long-term expert																					
1.1 Team leader	←	←	←	←	←	←	←	←	←	←	←	←	←	←	←	←	←	←	←	←	←
1.2 Project coordinator	←	←	←	←	←	←	←	←	←	←	←	←	←	←	←	←	←	←	←	←	←
1.3 Fishing technology	←	←	←	←	←	←	←	←	←	←	←	←	←	←	←	←	←	←	←	←	←
1.4 Marine engineering	←	←	←	←	←	←	←	←	←	←	←	←	←	←	←	←	←	←	←	←	←
1.5 Fish processing	←	←	←	←	←	←	←	←	←	←	←	←	←	←	←	←	←	←	←	←	←
2 Short-term expert	Short-term experts in the relevant fields will be dispatched when necessity arises.																				
3 Counterpart Training in Japan																					
3.1 Fisheries administration			◆																		
3.2 Fisheries education				◆																	
3.3 Coastal fishing gear & methods						↔	↔														
3.4 Marine engine maintenance						↔	↔														
3.5 Quality assurance of marine food							↔	↔													
3.6 Relevant fields of the project	JICA will receive approx. nine(9) participants during project year 3 to 5.																				
4 Provision of machinery and equipment																					
4.1 Local purchase		↔	↔			↔	↔				↔	↔				↔	↔				
4.2 Foreign purchase (in JAPAN)						↔	↔				↔	↔				↔	↔				↔
5 Project management & evaluation	JICA will be dispatched the following mission.																				
5.1 Consultation mission			◆																		
5.2 Mid-term evaluation mission												◆									
5.3 Final evaluation mission																				◆	
6 Joint coordinating committee		◆				◆				◆				◆				◆			◆

FIVE YEAR IMPLEMENTATION PLAN

FIELD: Fishing technology

YEAR PROJECT YEAR ACTIVITIES	1996				1997				1998				1999				2000				2001
	Project year 1 Apl.96-Mar.97				Project year 2 Apl.97-Mar.98				Project year 3 Apl.98-Mar.99				Project year 4 Apl.99-Mar.2000				Project year 5 Apl.2000-Mar.01				
	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th	
1 Survey of coastal fishing gear & methods																					
1.1 Field survey in TT	↔																				
1.2 Field survey in CARICOM Countries								↔													
2 Introducing appropriate coastal fishing technology (theory & practice)																					
2.1 Vertical longline		←	→																		
2.2 Trolling line		←	→																		
2.3 Pelagic longline			←	→																	
2.4 Bottom longline			←	→																	
2.5 Fish aggregation devices (FAD's)									←	→											
2.6 Pot fishing										←	→										
2.7 Squid angling										←	→										
2.8 Set net															←	→					
3 Conducting theoretical and practical training for the training personnel of CFTDI	←	→																			
4 Developing and improving the CFTDI raining curriculum & textbooks																					
4.1 Developing textbooks	←	→																			
4.2 Improving course curriculum	←	→																			
5 Conducting training courses	←	→	Training courses will be conducted at least twice a year.																		
6 Short-term expert	←	Short-term experts in the relevant fields will be dispatched when necessity arises.																			

JH

FIVE YEAR IMPLEMENTATION PLAN

FIELD: Marine engineering

YEAR PROJECT YEAR ACTIVITIES	1996				1997				1998				1999				2000				2001
	Project year 1 Apl.96-Mar.97				Project year 2 Apl.97-Mar.98				Project year 3 Apl.98-Mar.99				Project year 4 Apl.99-Mar.2000				Project year 5 Apl.2000-Mar.01				
	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th	
1 Survey of marine engineering																					
1.1 Field survey in TT	←	→																			
1.2 Field survey in CARICOM countries								←	→												
2 Introducing appropriate marine engineering																					
2.1 Outboard engine maintenance		←	→																		
2.2 Diesel engine maintenance					←	→															
2.3 Hydraulic equipment								←	→												
2.4 Diesel outboard motor maintenance										←	→										
2.5 Electric equipment												←	→								
2.6 Refrigeration equipment													←	→							
2.7 FRP fishing boat maintenance																				←	→
3 Conducting theoretical and practical training for the training personnel of CFTDI	←	→																			→
4 Developing and improving the CFTDI training curriculum & textbooks																					
4.1 Developing textbooks	←	→																			→
4.2 Improving course curriculum	←	→																			→
5 Conducting training courses																					
5.1 Mobile training in Tobago		◆				◆			◆			◆			◆						
5.2 Mobile training in Trinidad			←	→						←	→										
5.3 Training course in CFTDI	←	→	Training courses will be conducted at least twice a year.																		
6 Short-term expert	← Short-term experts in the relevant fields will be dispatched when necessity arises. →																				

JH

FIVE YEAR IMPLEMENTATION PLAN

FIELD: Fish processing

YEAR PROJECT YEAR ACTIVITIES	1996				1997				1998				1999				2000				2001
	Project year 1 Apr.96-Mar.97				Project year 2 Apr.97-Mar.98				Project year 3 Apr.98-Mar.99				Project year 4 Apr.99-Mar.2000				Project year 5 Apr.2000-Mar.01				
	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th	
1 Survey of fish processing & quality control																					
1.1 Field survey in TT	↔																				
1.2 Field survey in CARIBBEAN Countries												↔									
2 Introducing appropriate fish handling, fish processing and quality control																					
2.1 Fish handling techniques		←	→																		
2.2 Processing techniques						←	→														
2.3 Quality control technology						↔								←	→						
3 Conducting theoretical and practical training for the training personnel of CFTDI	←	→																			→
4 Developing and improving the CFTDI training curriculum & textbooks																					
4.1 Developing textbooks	←	→																			→
4.2 Improving course curriculum	←	→																			→
5 Conducting training courses	←	→																			→
6 Short-term expert	←	→																			→

E

**REGIONAL FISHERIES TRAINING PROJECT
A TECHNICAL COOPERATION PROJECT BETWEEN THE
GOVERNMENT OF TRINIDAD AND TOBAGO AND THE
GOVERNMENT OF JAPAN**

Survey Report on the Present Situation of the Fishing Industry
of
Trinidad and Tobago

Conducted May 28 - July 17, 1996

by

Mr. Kazuo Senga	-	Japanese Expert, Fishing Technology
Mr. Ronald Chan-A-Shing	-	Fishing Gear Technologist, CFTDI
Mr. Hideo Kimura	-	Japanese Expert, Marine Engineering
Mr. Fusao Takigami	-	Japanese Expert, Fish Processing
Mr. Charles Nurse	-	Technical Instructor, Fish Processing, CFTDI

August 1996

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- ANNEX I - Field Survey Report - Fishing Technology - Mr. K. Senga, Fishing Technology Expert
- ANNEX II - Field Survey Report - Survey of the Present Fishing Situation of Trinidad and Tobago - Mr. Ronald Chan-A-Shing, Fishing Gear Technologist/Counterpart to Japanese Expert in Fishing Technology
- ANNEX III - Survey Report - Mr. Hideo Kimura, Japanese Expert in Marine Engineering
- ANNEX IV - A Preliminary Survey of Fish Landing Sites, Fish Processing Establishments and Fishing Products in Trinidad and Tobago - Mr. Fusao Takigami, Japanese Expert in Fish Processing and Mr. Charles Nurse, Technical Instructor - Fish Processing/Counterpart to Japanese Expert in Fish Processing

REGIONAL FISHERIES TRAINING PROJECT - GOVERNMENT OF TRINIDAD &
TOBAGO AND GOVERNMENT OF JAPAN

SURVEY OF THE PRESENT SITUATION OF THE FISHING INDUSTRY OF
TRINIDAD & TOBAGO - SUMMARY

1. Introduction

A survey of the present situation of the Fishing Industry of Trinidad & Tobago was conducted as a joint exercise between the Japanese Experts and National Counterparts between May 28 - July 17, 1996 and includes over fifty (50) Beaches, Landing Sites, Fish Processing Facilities and Fish Markets.

The major aim of this Survey was to provide background information and data to determine specific activities to be undertaken under the Implementation Plan of the Regional Fisheries Training Project for the period 1996 - 2001.

The survey which encompassed the three (3) areas targeted for Technical Assistance by the Government of Japan through the Japan International Co operation Agency (JICA) were:

- Fishing Technology
- Fish Processing
- Marine Engineering

The objectives of the survey were:

- Appreciation of the Fish Handling and Processing Capabilities in Trinidad & Tobago.
- Overview of Fish and Fishery Products that are Produced Locally.
- Appraisal of the Major Fishing Methods of Trinidad & Tobago.
- Appraisal of the Fishing Conditions that exist in the various areas.
- Appraisal of the vessel, gear and equipment in use in the various fisheries.



4.4 THE PRODUCTS

Survey of the marketing outlets indicated a wide range of fishery products are available to the consumer.

4.4.1 METHODOLOGY

The survey was conducted among the larger groceries in a particular area for example Economart in Sangre Grande; Uncle Beddoes in Santa Cruz, Tru Valu's and HiLo's. The various fish marts were also surveyed. Indicators used in the survey were; Form of presentation, packaging form, brand name etc. details of these can be observed on the attached sample form (Appendix 3).

4.4.2 OBSERVATION AND COMMENTS

The results indicated that the local products consisted of frozen processed fish and shrimp and salt dried fish of a variety of brands and to a small extent these were comminuted products such as crab backs and fish fingers. In addition to locally produced salted fish there was the imported salted products in a variety of forms and brands as well as smoked fish.

The canned products varied from the traditional canned imports such as Sardine and Tuna in a variety of styles and sauces to canned crab meat, clams and fish sauces.

The Delis such as Captain Lee and Malabar Deli as well as those in Hilo also carried chilled fish in a variety of processed forms and in the case of Hilo already seasoned chilled fish products. The display in these establishments indicate some appreciation of quality concepts this was however not the case in the supermarkets where storage under abusive conditions; poor packaging and inadequate information was observed.



This was a complaint that was also made by some of the processors we visited and perhaps it may be necessary to consider mounting programmes for supermarket operators.

Product evaluation was only conducted in the case of the comminuted products received from the processors, it may however be necessary to withdraw products from the marketing outlet and evaluate them from a quality stand point.

The survey indicated that the frozen fish and shellfish market is dominated by local species most of which are sold in supermarkets and the deli tends to sell more chilled and delicatessen fishery products that the quantum of cured fish being offered for sale may be in the ratio of 60:40 imported/local.

PM



5.0 RECOMMENDATIONS

- (i) Undoubtedly there is a need for the authorities who are responsible for ensuring food safety and wholesomeness to become involved and enforce acceptable practices for the processing and marketing of fish. There is therefore a need for a National Fish Inspection Authority which would register and license fish processing establishments and inspect fishery products.
- (ii) There is a need to increase the availability of trained personnel in this aspect of the industry. Plant owners should be encouraged to seek training for their employees and as well appoint a person(s) to be responsible for certain aspects of controlling and retaining quality.
- (iii) There is need to address the packaging and storage procedures for exported chilled fish. There seems to be the tendency to use less ice in order to reduce freight charges and the belief that superchilling of the product would compensate over and above the expected.
- (iv) Attention should be given to the icing of the flying fish catch at the point of capture.
- (v) It is necessary to examine the capture and processing of flying fish with a view to enhance quality. The present situation of un-iced deliveries and poorly designed and equipped plants does not lend for Quality Assurance.
- (vi) Consideration must be given to plant layout too many plants have a disorganized layout an the storage of non fish raw material such as boxes. The need to protect those stores from the activity of vermin is evident. Plant owners should be encouraged to carry out refurbishing of their premises so as to assure a quality product.

- (vii) The activities of the establishments which are engaged in the production of comminuted products indicates there are opportunities for small establishments wishing to go this way and some consideration should be given within the project to this technology and its applicability to small enterprises.
- (viii) The manner of storing and packaging frozen products in the supermarket suggest that a short programme which addresses these aspects would be desirable. The lack of expiry and best before dates were also most apparent.
- (ix) There is the need to withdraw products from the supermarket shelves and evaluate them from a sensory and laboratory stand point would be desirable.
- (x) Regular workshops and seminars should be conducted during the life of the project which would address the export handling of seafoods. The institutes should seek to obtain information from the Tourism Development Corporation pertaining to the status of our Fish Exports.
- (xi) The tendency for Fish Processing Establishments to be annexes to residence should be actively discourage especially where such establishments are involved in the production of fishery products that require little or no further cooking.

PM



Landing Sites
Survey of Fish Plants, Markets
Outlets and Fishery Products

CFTDI Personnel Involved

Mr. Ronald Chan-A-Shing	-	Gear Technologist
Mr. Charles Nurse	-	Technical Instructor, Fish Processing
Ms. Muriel Quamina	-	Master Tradesman, Fish Processing

Tobago House of Assembly

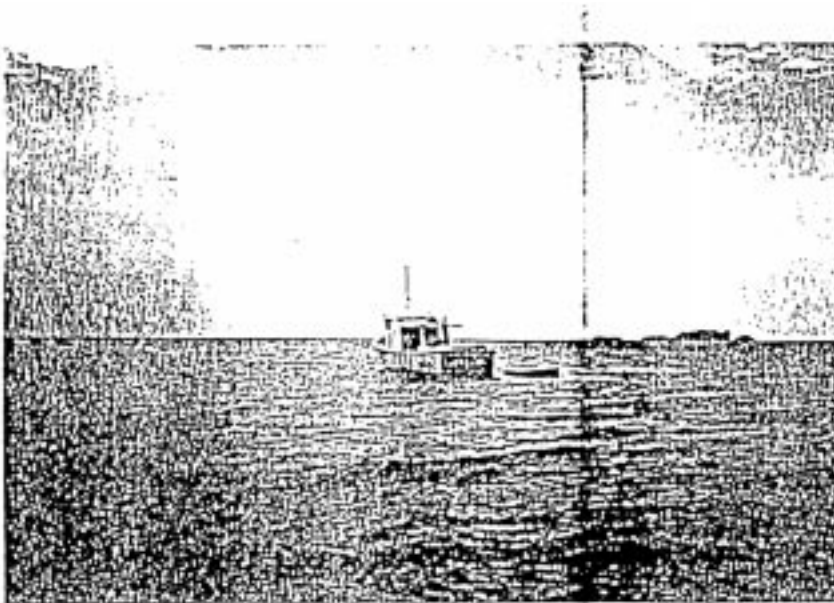
Mr. Erol Caesar	-	Fisheries Officer, Marine Affairs Division
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JICA Personnel

Mr. Jo Fukui	-	Team Leader
Mr. Kazuo Senga	-	Fish Technology Expert
Mr. Fusao Takigami	-	Fish Processing Expert
Mr. Hideo Kimura	-	Marine Engineering Expert

GM

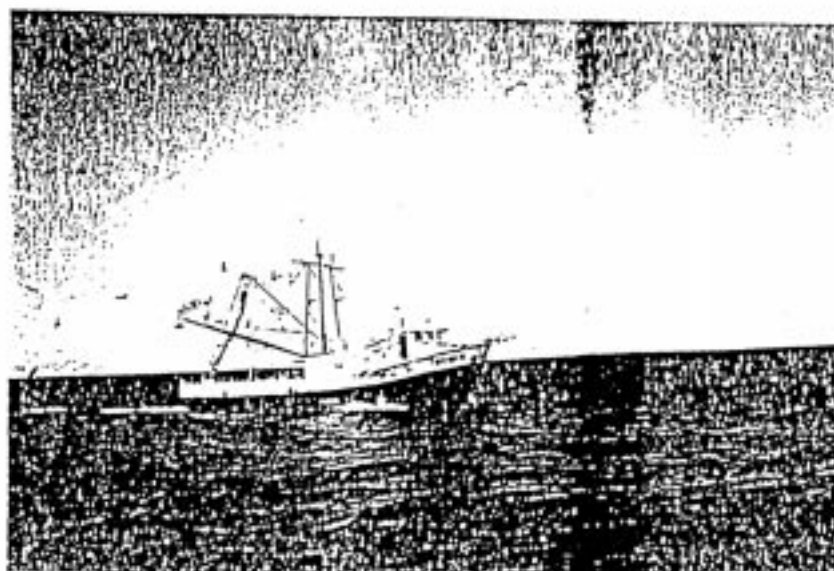




7) Multipurpose Boat
14 ~ 23m
Fiberglass
Diesel Engine 130HP ~150HP



8) Pot Fishing Boat
(Wood)
Inboard Engine Outdrive



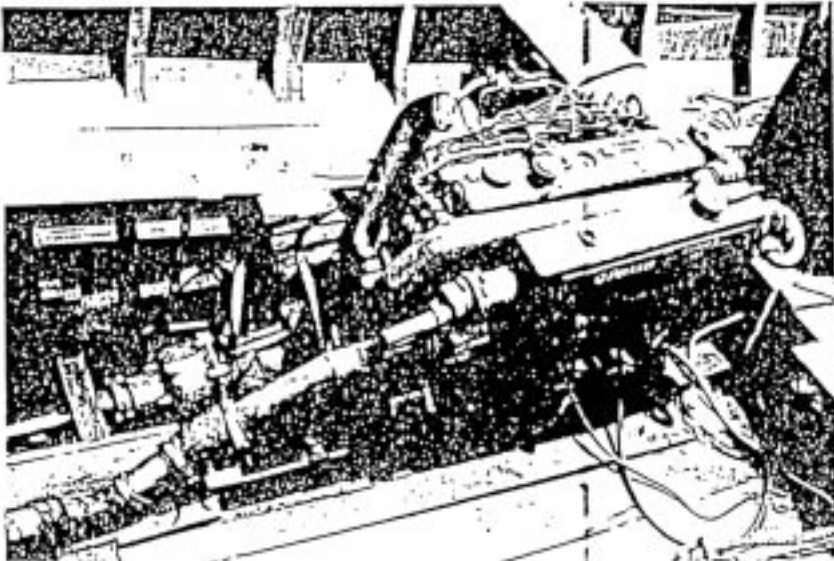
9) Type-4 Shrimp Trawl Fleet
(Steel).
17m~23m

217 -11-

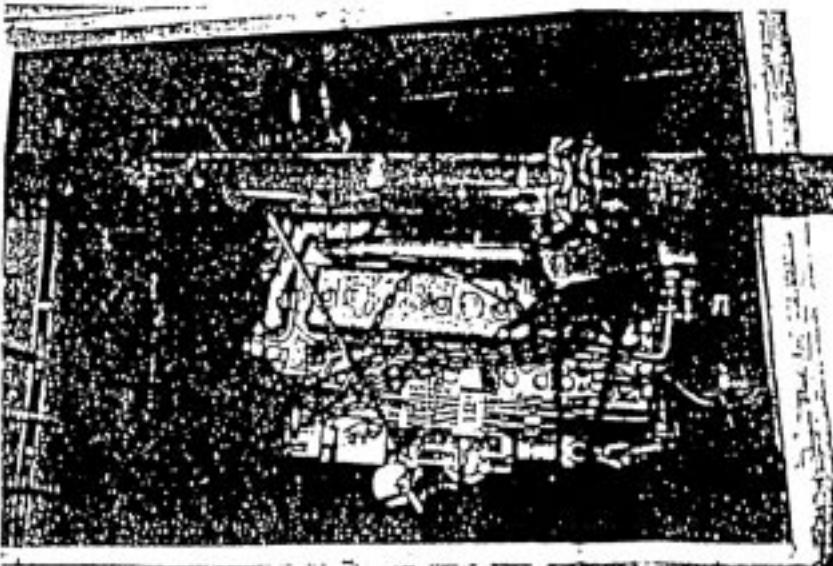
Engines



Outboard Motor 75 HP



Diesel Engine 130 HP
(Type-2 Trawl Boat)



Diesel Engine 150 HP
(Multipurpose Boat)

Conculusion / Recommendation

My professional counterpart to for the post of the Marine Engineer has not yet been appointed. Mr.Poxoran Mohan is absent,he is attending an Individual training course (Marine Engineering) in Japan from May to Augaust,1996. Accordingly ,this survey was conducted jointly with Fishing Techonology course and Fishing Processing course. I understand roughly the fishing conditions and fish processing industry here. Finally I would like to say thank you so much to Mr.R.Can-A-Sing and Mr.Charles Nurse.

Recommedation

- 1) To introduce Diesel Outboard engine instead of gasoline outboard motors.
- 2) To set up slipway with electrically-powered winch fo pirogues (especially north-coast - Toxo etc -)
- 3) To open traning course for outboard and diesel engine maintenance for the fishermen.

FR



ANNEX IV



MEMORANDUM

FROM: Ag. Technical Instructor
Japanese Export, Fish Processing

TO: Co-ordinator, CFTDI
Team Leader, JICA

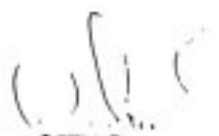
DATE: August 12, 1996

SUBJECT: Submission of Report on Field Survey

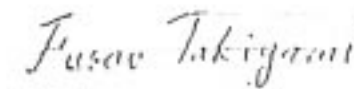
The attached report details the results of the Field Survey on the Fish Landing Sites, Fish Establishments, Marketing Outlets and Fish and Fishery Products in Trinidad and Tobago.

The survey was conducted from May 25 to July 04 and is only preliminary in content serving essentially to familiarize the JICA Expert with the fishery of Trinidad and Tobago and as well to provide data that will inform the work programme.

During our discussion with many processors considerable interest was expressed in the work of the project and most look forward to a close collaboration with the team. Concern was also expressed about the need to conserve our fisheries.



Charles Nurse



Fusao Takigami

/ccs



JICA/CFTDI Regional Project

A Preliminary Survey of Fish Landing Sites, Fish Processing
Establishments and Fishery Product in
Trinidad and Tobago

May to July 1996

by

Fusao Takigami
Fish Processing Expert, JICA
&

Charles Nurse
Technical Instructor, CFTDI

Chaguaramas
August 1996



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2.0	METHODOLOGY
3.0	CONSTRAINTS
4.0	OBSERVATIONS & COMMENTS
4:1	Fish Landing Sites
4:2	Wholesaling and Retailing of Fish
4:3	Fish Processing Establishments
4:3:1	Fish Handling Establishments
4:3:2	Frozen Fish and Shellfish Establishments
4:3:2:1	Fin and Shellfish Processing
4:3:2:2	Pelagic Fin Fish Processing
4:3:3	Cured Fish
4:3:4	Comminuted Products
4:4	Products
5.0	RECOMMENDATIONS
	APPENDICES
	APPENDIX 1 - Schedule of Visits and Persons Met
	APPENDIX 2 - Survey of Processing Establishments
	APPENDIX 3 - Sample Forms, Product Survey, Plant Survey

EXECUTIVE SUMMARY

- (i) Fresh fish are not generally offered for sale under hygienic conditions and the inadequate use of ice does not allow for the retention of intrinsic quality factors (4:1 & 4:2). Within the frozen fish plants similar problem exist. As there is a need to ensure that there are more trained personnel operating within the plant and as a matter of urgency seek to obtain the establishment of an Inspectorate that will address registration of plants and certification of plants and inspection and certification of products (5:1).
- (ii) The manner of packaging for export requires some attention in order to ensure that exports are not compromised. Regular workshops are recommended (4:3:1, 5:x).
- (iii) The Flying Fish fishery both the captive and processing aspects would necessary have to address certain procedures that presently compromises quality. (4:3:2:2)
- (iv) The shellfish processing plants requires extensive refurbishing in order to comply with International Standards (4:3:2:1).
- (v) The tendency for fish processing establishments to be annexes to residence should be actively discouraged especially where comminuted and other added value products are being produced (4:3:1 & 5:xi).
- (vi) Attention should be given by the project to the storage packaging and merchandising of fishery products in supermarkets (4:4:2, 5:viii).
- (vii) The project should address the technology of comminuted products production and its applicability to small enterprises (5:vii).
- (viii) Further evaluation of products is recommended (5:ix).



REPORT ON THE SURVEY OF FISH PROCESSING ESTABLISHMENTS AND FISHERIES PRODUCTS IN TRINIDAD AND TOBAGO CONDUCTED BY THE JICA REGIONAL PROJECT AND CFTDI FROM MAY TO JULY 1996

1.0 OBJECTIVES

The survey was conducted from May 28 to July 04, 1996 and had at its primary objective to familiarize. The JICA specialist with various aspects of the Fishing Industry of Trinidad and Tobago. Other objectives included the collection of information which would serve to inform the work programme and enable the team to identify areas of weakness.

2.0 METHODOLOGY

The survey involved site visits to Fish Landing sites; Fish Handling establishments; Fish Processing Plants and wholesale and retail outlets (Appendix 1). During these visits preliminary evaluation of the particular establishment was conducted (Appendix 3) and these have been supplemented by photographs.

Some of these visits were conducted together with the full team while others were conducted by the JICA Fish Processing Specialist and the CFTDI counterpart staff. During the surveys consideration was given to

- (a) obtaining information pertaining to equipment; variety of activities
- (b) Assessing product quality whenever possible
- (c) Hygiene and Handling capabilities

Since the primary objective was "To familiarize the JICA Counterpart with the Fishery only a representative portion of landing sites, processing establishment and marketing outlets were visited. Those visited are listed in Appendix 2.



3.0 CONSTRAINTS

A proper appreciation of the contribution of the Inshore Fishery to domestic production was constrained by paucity or lack of landings at many sites; this was due to the time of the year and in the case of the shrimp fishery by the unavailability caused by certain fishing areas being no longer accessible. The North Coast in particular at the time of visiting was experiencing a paucity of landings.

4.0 OBSERVATIONS AND COMMENTS

4.1 Fish Landing Sites

The handling practices at the Fish Landing Sites can be categorized into two groups viz. those which primarily supplies the local market and those which may be supplying both the export and local market.

At Cocorite and Pt. Cumana, two sites which primarily supplies the local market little or no ice is used and where ice is used it is a mixture of water and ice (ice slurry) where the ice quantities are inadequate the containers in which the fish are held are unsanitary and as such quality retention is difficult under these conditions.

At the site where both the local and export markets are supplied the handling practices are of a higher standard.

At most of the sites visited fish was being stored or transported in the insulated boxes, while this is commendable the inadequate icing and poor hygiene would however reduce any advantages that the use of such containers can offer.

The opportunity was also provided to examine the distant water vessels which berth at Chaguaramas and those at the National Fisheries (local vessels) compound. The former targets the exportable Fin Fish Species of Snapper and Tuna while the latter are involved in trawl fishing. These trawlers are older vessels, with freezing facilities on board in some of the fish hold one cannot help but get the impression that greater attention should be given to the cleaning of the fish hold. This is not the case with the vessels we visited in Chaguaramas where the sanitation levels seem to be of a higher standard. The ice holding capacity of these vessels are in the region of 7 - 9 tonnes and their fishing trips are usually of 10 - 12 days duration; and although there was no opportunity to inspect the catch there is no doubt that the quality of the catch landed by these vessels would be higher.

There is a need therefore to address the hygiene handling of the catch aboard vessel and although these procedures may vary depending upon vessel type and construction, certain practices are necessary to reduce the risk of contamination.

It may be pertinent to indicate that there are regulations which addresses vessel sanitation for example Annex I & II of the European Union regulations as well as the Codex Alimentarius (Volume B) indicates the sanitary procedures for use aboard vessels; similar procedures are also identified in regulations of many a developed country.

4.2 Wholesaling and Retailing of Fresh Fish

The wholesale fish markets at Port-of-Spain and Orange Valley were visited along with several retail markets which included those at Cocorite, Pt. Cumana, Sangre Grande and Charlotteville, Tobago. All of which require some attention to be paid to maintenance. A similar situation existed at other retail sites.

At Port-of-Spain it was possible to observe a wider variety of Fish Species than anywhere else. The absence of the use of ice was apparent at all sites. At



Orange-Valley the market sales was completed and cleaning was being conducted but again there was evidence of ice not being used on those market stalls where sales were still being conducted.

It should be noted that the adequate use of ice is essential to quality maintenance and retention and every effort should be made to ensure its use.

In terms of the retail marketing the less than hygienic conditions under which the fish was offered for sale has implication with respect to increasing the post harvest loss. For example wooden surfaces are difficult to sanitize and are a source of contamination; the insanitary manner in which some of these are maintained are a further cause of concern. There was also instances of fish and other food products being offered for sale on the same counter.

4.3 Fish Processing Establishments

The processing establishments can be categorized into Fish Handling, Processing Cured Fish and Comminuted Products Establishments.

4.3.1 Fish Handling Establishments

The establishments categorized as Fish Handling are involved in the preparation of fish (gutting and packaging) for the export market. These establishments varied from being annexes to homes (modified garages) containing ice making and air blast chilling facilities; (e.g Wazir Khan) to those establish for that purpose eg. seafood enterprises. Included in this category also are those at the National Fisheries compound which was simply a few tents where the fish was landed, graded, washed and packaged for export as chilled fish. A wide range of species were being handled at these establishments these included Snappers, Mackerels, Bechine, Doctor Fish and in Tobago Tuna, Marlin and Snapper.

Many exporters claimed to export in excess of 30,000 lbs on a weekly basis to markets in USA, Canada and United Kingdom; and in several instances there was a system of networking where more than one establishment or several establishments may be supporting one exporter. An example of this is Lighthouse Industries (Wazir Khan) who is supplied with Fish from Dillon's in Tobago and Frank Boodhoo's operation in Waterloo.

It is also pertinent, to note that in many of these establishments. The workers received no formal training and no one has the responsibility of evaluating quality.

Generally these establishments were kept in a sanitary condition and was well equipped to conduct the task. It may be pertinent to indicate that ice was available in these establishments in more than adequate quantities, most establishments to manufacture their own supply.

There may be a need to address certain procedures in some of these establishments for example packaging styles for export, icing regime and general handling practices.

Details on the facility and equipment is provided in Appendix 2 however it may be pertinent to comment on the individual operations.

Light House Sea Products: Barbados

The establishment is part of a residence and so may be constrained by space. The operation was indeed sanitary however some attention should be paid to refrigeration temperatures. These temperatures in the chiller should not exceed 3°C.



Frank Boodhoo - Waterloo Village

This establishment is another example of an annexed operation. A major area of concern in this operation is the storage of packaging material

- (1) The fish which was landed was of good quality but some attention should be paid to the packaging of the fish for export. It was observed that fish in the round was being placed in the boxes ventral surface up dorsal surface down. The correct procedure is either to place fish on its lateral surface or dorsal surface up and between each layer of fish sufficient ice to cool the fish. The dorsal and lateral surfaces are so structured that it can distribute an appreciable amount of weight without showing evidence of crushing.

Yeates Fishing Operations - Pigeon Pt. Tobago

This is a small establishment which is involved in both captive operations and basic handling. The catch is either sold to an exporter or sold on the local market.

The operator has all necessary basic equipment for his operations and the product because it is fishing beach based is of good quality. However some attention should be paid to the general organization of the place.

Fresh Fish of Tobago - Charlotteville

The establishment is part of a residence and is in the process of being equipped. The establishment is very tidy and the fish was being stored in xactics boxes on ice no air blast chiller were observed. Species which were being handled included Snappers and small Tunas.

Seafood Enterprises - Woodbrook

The plant is engaged in fresh fish handling for the export market. The facility is mainly involved in packaging for export. Fish was generally, properly handled. Species which are exported include Brochet and King Fish.

Seafood Express Ltd. - National Fisheries Compound

The operation is conducted at the National Fisheries Compound. The fish is landed from the vessel graded, washed and packaged for export all in one operation.

National Fisheries - 1995 Ltd.

The team was able to tour the complex and view tuna grading activity, cold storing of fish and contract processing of frozen tuna (steaks) tuna company in the USA. In addition the team was also able to view the refurbished comminuted products line.

Ousman - Cedros

This is a small operation in Cedros where fish is purchased from the fisherman stored on ice and brought to the wholesale market the following day the premises are in a state of disrepair with many pieces of equipment such as freezers and chillers requiring repair. The ice facility is however operational to an extent.

Tri Fish Ice and Cold Storage

This organization has two fish processing establishments one at Macoya and another at Sangre Grande. The latter is the older plant and is the major point of receipt while the plant at Macoya would mainly be involved in the handling for the



export market. The plant is presently being refurbished. Existing equipment for both plants are listed in Appendix 2. Some attention should be paid by the processor to the food contact surfaces in the plant at Sangre Grande as well as the physical layout of the plant and the manner of storing material.

The processor has indicated his intention to upgrade this plant at Sangre Grande it should be noted however that the galvanize food contact surfaces needs to be replaced and there needs to be separation and delimitation of activity areas and proper storage of raw material.

The plant in Macoya would have to ensure that in their refurbishing process they avoid having to pass finished product through what is considered dirty area.

Export Etcetera

This plant produces like Tri Fish produces both fresh and frozen fish. The operation is conducted as part of other operation. The major activity of the company is that of catering for the off-shore and airline industry.

There is considerable cold storage capacity but the area where fish is handled is limited. They however produce some frozen products for the open market.

4.3.2 FROZEN FISH AND SHELLFISH ESTABLISHMENTS

The plants engaged in frozen fish production are of two types those which are located in an industrial estate or are separate and a part from a residence and those which form a part of a residence.

In Trinidad many of these plants operates both a shellfish and fin fish processing line while in Tobago they are mainly involved in pelagic fish processing and more specifically flying fish.

4.3.2.1 FIN AND SHELLFISH PROCESSING

The shellfish processing plants in Trinidad are located on the Gulf Coast. They all but with one exception require extensive refurbishing and are incapable of passing an overseas inspection in their present state. The plants as a secondary activity operates a Fin fish line producing mainly fillets and steaks. It is also not uncommon for fish curing to be also conducted. The plants are equipped with air blast freezers and holding freezers and in one case there is mechanical grading of the shrimp but generally grading and peeling is a manual operation. There is considerable floor space in most instances but poor layout. The fin fish processing lines are also manual lines with products either being tray-wrapped or vacuum packaged. In some instances there is separation of the packaging line from the wet fish operation while in others this may not be so. It was not possible to see any of them in operation since at the time in question there was a scarcity of raw material.

4.3.2.2 PELAGIC FIN FISH PROCESSING

These plants are located in Tobago and may vary from a cottage style operation to commercial all but one can be described as 95% dependent upon manual operation. The plant that is not so has a semi mechanized filleting line may be 70% manual dependent. They contain facilities for air blast freezing of the product; cold storage vacuum packaging as well as ice making capabilities.

The wetfish processing activities (scaling, gutting, filleting etc) are conducted on counters of concrete surfaces which has a basin like depression. Only at the semi mechanized (Terry Swan) plant are these operations conducted under acceptable international standards. The concrete counter surfaces are undesirable since they are difficult to sanitize and serve as a niche for bacteria.



In terms of processing activity many processors tend to freeze and cold store the raw material before processing and thaw before processing. The processors purchase un-iced fish from the vessels a portion just sufficient is retained for the days activities. The balance is cold stored at NIPDEC (at the rate of 0.30 kg p. month) withdrawal from the cold store may vary from one week to three months depending upon catering conditions. Only one shift is operated. The process of cold storing, thawing, processing and re-freezing contributes to some loss in quality and perhaps it may be better if processors store on ice and process using as many shifts as possible during seasonal peaks and shutting down during the off season. Another option is to examine the mechanization of the wet fish processing activities. Consideration should also be given to the use of ice slurries in the captive operations. There would be cost and social implications which would have to be considered but the cold storing of large volumes of raw material and incremental withdrawal and processing in the manner that is presently done may require re-visiting and may not be the best option.

The wet fish processing activities should also be examined from the stand point of the potential of the activities to contaminate the product and quality loss. It would therefore be necessary to reduce waste accumulation during processing; re-tool the equipment in terms of the food contact surfaces and easier more effective cleaning and ensure separation of activity.

The following are comments on some individual plants.

Ocean Harvest - Pt. Lisas

The plant operates both a shellfish processing line and fin fish processing line. The plant obtains its raw material mainly in the frozen form and maintains it during processing in that manner. In terms of shrimp there is mechanical grading, washing using cold water and hand-peeling. The plant is reasonably well equipped (Appendix 2). There is a trained quality

controller on staff and a laboratory is presently being constructed. There is need however in this plant to avoid the use of galvanize. Food contact surfaces these should be replaced with stainless steel some attention should also be given to raw material storage.

Pier 7 - Bonasse Village Cedros

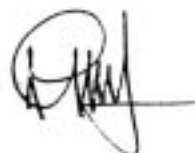
This plant is among the first fish processing plants established it was formerly Amber Seafoods. It is an old plant and is attached to a residence and abounds the sea.

Many pieces of equipment although functioning are quite old or may have been modified from other items for example the storage freezers are modified insulated containers the ice storage cabinet is constructed of concrete. These may not always permit ease of cleaning or adequate insulation. Appendix 2 provide pertinent information. The plant in addition to a shellfish and fin fish line producing both chilled and frozen products also runs a cured fish line producing salted and smoked fish.

There is an absence of a proper product flow and so the risk of product contamination is real. Sanitation levels seem not to be a priority or perhaps of the manner of construction. Proper cleaning is difficult extensive refurbishing works would have to be carried out if this plant is to pass an overseas inspection. Product packaging was acceptable but some attention should be paid to the food contact surfaces.

Dockside Sea Food Packers - Cedros

Repairs are also required to this facility. The equipment consists of ice making and freezers and chillers all the operations are manually conducted. There is however some delimitation of activity for example the packaging area is completely enclosed and the fin fish lines are separate



to shrimp peeling. Appendix provides some additional details. Upgrading of the plant would be desirable. The plant is located on the premises owned by Mr. Aaron Badai. The present status of the plant is as such that despite the fact there is delimitation of activity the potential for contamination still exist since it is not vermin proof. The floors are also extensively cracked and absorbent.

Jacobs Fishing Enterprise - Bon Accord Tobago

This plant is engaged in the processing of fin fish mainly pelagics the floor space is ample enough for the operation, like wise are the ice requirements and freezing and cold storage capacity. However there is need to address the processing flow: separation of the scaling and gutting stations would be desirable, avoidance of waste accumulation would reduce the risk of contamination. Additionally attention should be given to the drains within the plant which is too shallow and narrow. Material which is awaiting to be packaged if stored in perforated bins would tend to be of a better quality.

Terry Swan Ltd. - Shaw Park

This is a well organized plant it is semi-mechanized ideal for the handling of small pelagics such as flying fish and perhaps it can be used as the model for flying fish processors.

4.3.3 CURED FISH

Only two of the plants that were visited carried a cured fish line and this was salt dried fish. The processed fish is usually cured at ambient and mechanically dried. The product is satisfactory. The mode of curing however can cause losses. Chill curing is advisable.



4.3.4

COMMINUTED PRODUCTS

Two establishments were visited both of which can be described as collage plants. One establishment is involved in the production of fish fingers and shrimp nuggets while the other is involved in the production of crab backs.

The premises all form part of a residence in the case of the crab back operations the processing is conducted in a building which is separate to the residence while in the other the operations centre is attached to the residence.

The situation of the processing activity in relation to the residence is important from a Public Health stand point and this is even more critical when food products are being prepared that requires little or no further cooking. Most National and International codes of practices require such premises to be apart from the residence. It should be noted however that they were both quite sanitary in appearance and the water supply is adequate. The raw material for the preparation is purchased already processed and frozen and products are prepared on the basis of orders. In the case of the crab back operations this material is imported from Guyana as a frozen product but before utilization re-picking is necessary in order to remove residual shell material. The significance of this lies in the extent of quality deterioration that may occur. Food badges and plant certification were observed at both premises. The following are some comments on the plants and operations.

Gourmet Delight - Westmoorings

The plant is reasonably well equipped, the equipment being commercial food grade equipment (see Appendix 2). The floor is properly constructed

and well maintained the walls are plastered smooth and painted, white lighting and ventilation is adequate.

The finished product is initially frozen in a small walk in freezer located on the premises and then transported in a refrigerated vehicle to the cold store but generally products are processed on the basis of orders daily throughput is estimated at 1000 - 1600 lbs however the size and location of the premises would not allow for an extensive increase in throughput without compromising the safety and wholesomeness.

The products were sensorially evaluated and the following were found.

	Fish Fingers	Shrimp Nuggets
GENERAL APPEARANCE	Acceptable	Acceptable
TASTE	Dominance of Seasoning, loss of fish flavour, slight bitter taste	Acceptable
TEXTURE	Grainy not sufficiently smooth	Acceptable

Some attention should be paid to the fish fingers it is the view that the proportion of fish to cereal is far too low. It was not ascertained if these products are tested at an approved laboratory but if this is not so every attempt should be encouraged to have this done. The product ingredients are also prepared by the processor or supplied by the client. As such there may be an absence of consistency from batch to batch.

Sea Belle - Santa Cruz

The processing activities are conducted away from the main residence. The activity is more or less a one person operation with some assistance being provided in the re-picking of the crab meat. Although products are prepared upon request, production is averaged to be 150 - 160 backs/batch. The process flow is illustrated in figure 1.



The product is tasty but it is the view there is a loss of the crab flavour in the meat and this may be as a result of how the raw material (crab meat) is initially handled and the lack of quality control that may exist which results in the re-picking of the meat. In conversation with the processors she has indicated that there is considerable problems in accessing a local supply. There is no doubt however that the product do have potential further details on this activity equipment etc are provided in Appendix I.

- Facilities associated with the marketing of the catch.

Participants in the Survey were:

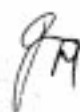
<u>Japanese Expert</u>	<u>Counterpart</u>
Mr. K. Senga, Fishing Technology	Mr. R. Chan-A-Shing, Fishing Gear Technology
Mr. F. Takigami, Fish Processing	Mr. Charles Nurse, Technical Instructor, Fish Processing
Mr. H. Kimura, Marine Engineering	Nil

2. Fishing Technology - Mr. K. Senga - Japanese Expert - ANNEX I

2.1 Observations

The survey identified the following in the Fishing Technology Sub-sector:

- i. The Fishing Industry of Trinidad & Tobago can be considered as comprising inshore artisanal fishery and offshore pelagic fishing.
- ii. The inshore artisanal fishery is characterized by open pirogues between 5m and 10m in overall length powered by outboard engines 40 - 75 Hp.
- iii. The fishing vessels are engaged in daily fishing activities within the territorial waters such as trawling, trolling, gill netting, drift netting, bottom longlining (palangue), hand-lining/banking or a-la-vive and pot fishing.
- iv. The supply of fish to the general public is greatly dependent on the inshore resources.
- v. Fishing exploitation takes place under existing fisheries regulations but there is the need to encourage fishermen to get involved in community based



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fisheries management practices and also the introduction of new or advanced technology.

- vi. The very limited number of active Fishing Co-operatives which exist in fishing communities.
- vii. The need to provide incentive and encourage fishermen to exploit the resources for the benefit of the community rather than only for individual gain.
- viii. The need to inform the fishing communities on the technical, economical and social aspects and benefits associated with fishing.

2.2 Recommendations:

1. The extension of longline fishery in general to the artisanal fisheries sector of Trinidad & Tobago.
2. Expansion of the pelagic longline fishery in specific locations which have been identified.
3. The introduction of set net fishing in locations which have been identified.
4. Provision of incentives to organize fishing co-operatives through the introduction of set net fishing.
5. Organization of fishermen in fishing communities to initiate a process towards sustained development of the fishery to include technical, economic and social aspects.
6. The introduction of improved and modern technology in the fishing industry.
7. The conduct of exploratory fishing to test the new technologies and locate appropriate fishing grounds.



3. Fishing Technology - Mr. Ronald Chan-A-Shing, Fishing Gear Technologist/Counterpart to the Japanese Expert in Fishing Technology - Mr. K. Senga - ANNEX II

Mr. Ronald Chan-A-Shing, Fishing Gear Technologist and Counterpart to the Japanese Expert in Fishing Technology has been requested to resubmit this report on the Field Survey in Fishing Technology. It is the view of the Co-ordinator that this report did not address the objectives and consequently did not meet the requirements of the Survey.

4. Marine Engineering - Mr. Hideo Kimura, Japanese Expert in Marine Engineering - ANNEX III

4.1 Observations

In the are of Marine Engineering observations and notes were taken of the following:

- i. The major fisheries resources of Trinidad & Tobago.
- ii. Major species of fish and shell fish being landed.
- iii. The fishing methods and techniques engaged in the Fishing Industry.
- iv. The estimated number of fishermen and fishing vessels in the artisanal and costal fisheries.
- v. The important landing points, markets and fishing centres around Trinidad & Tobago.
- vi. The distribution of outboard and inboard motors in the various landing sites and fisheries.
- vii. Classification of fishing vessel types in relation to size, construction, propulsion, operation and capacity.



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4.2 Recommendations

The following activities are recommended in the area of Marine Engineering:

- i. Introduction of diesel outboard motors to replace gasoline outboard motors.
- ii. Construction of slipway with electrical/mechanical aids at identified beaches.
- iii. Conducting training courses in the maintenance and repair of both outboard and inboard motors for fishermen throughout Trinidad & Tobago.

5. Fish Processing - Mr. Fusao Takigami, Japanese Expert.

Mr. Charles Nurse, Technical Instructor, Fish Processing/Counterpart to Japanese Expert in Fish Processing - ANNEX IV

5.1 Observations

The following observations were noted in the area of Fish Processing.

- i. Fresh fish is not generally offered for sale under hygienic conditions.
- ii. The handling, storage and preservation of fish and shell fish are inadequate.
- iii. The shortage of trained personnel in fish plants and processing facilities.
- iv. The absence of an Inspectorate to address the registration and certification of fish plants and processing facilities.
- v. The absence of a legal system for inspection and certification of fish and fish products.
- vi. The inadequate packaging of fish and fish products for the local and export markets.



- vii. Non-compliance of fish and shell processing plants and facilities with internationally accepted standards.
- viii. The inappropriate location and construction of fish and shell fish processing plants.
- ix. The low level of technology in the production of comminuted products.

5.2 Recommendations

- i. The training of fish handling and processing personnel throughout the fishing industry.
- ii. The need for the establishment of a National Fish Inspection Authority.
- iii. The establishment of Quality Assurance Standard throughout the fishing industry.
- iv. The inspection of existing fish processing plants and facilities toward remedying shortcomings and updating system.
- v. The establishment and promotion of the production of comminuted products.
- vi. The conduct of workshops and seminars in the area of fish handling, packaging and quality and export requirements to relevant target groups in the industry.
- vii. The establishment and promotion of standards and guidelines for the construction and maintenance of fish processing plants and facilities.

Date: August 23, 1996



ANNEX I

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FIELD SURVEY REPORT

Date: 30 July 1996

JICA Expert: Kazuo Senga

Subject: Field survey at the fishing sites along the coast of Trinidad and Tobago

1. Introduction

The JICA expert and the counterpart conducted the field survey at major fishing bases during the period from 28 May 1996 to 17 July 1996.

The purpose was to grasp overall the actual situation of fisheries in Trinidad and Tobago which is essentially important for the implementation of Project.

2. Objectives

- 2.1 To observe the fishing gears and vessels operated by fishermen.
- 2.2 To identify the needs and existing problems in fishing technology in the inshore artisanal fisheries sector.
- 2.3 To obtain information about the fishing seasons, fishing grounds and migrations of inshore fish species.
- 2.4 To observe the operations of the commercial fishing companies.
- 2.5 To observe the existing facilities in fisheries such as fish markets, retail shops, fish processing plants, cold storages, etc.

3. Survey Activities

DATE	DESTINATION	ACTIVITY
28 May 1996	Port of Spain Chaguaramas and Cocorite	Visit to Wholesale and Retail Fish Market, Appreciation of marketing system and species range. Visit to fish landing sites. Observation on multipurpose fishing vessels. Appraisal of line fishing by using live bait and pot fishing.
4 June 1996	Maracas Bay, Las Cuevas and Blanchisseuse	Visit to fish landing sites. Appraisal of trolling gear and handline for demersal fish. Feasibility study on set net fishing through interview fishermen.
5 June 1996	Salybea, Balandra, Cumana and Toco	Appraisal of fishing vessels and gears such as bottom gill net, drift net, handline, fish pot and bottom longline.

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DATE	DESTINATION	ACTIVITY
11 June 1996	Waterloo, Orange Valley and Otaheiti	Visit to fish landing sites and fish market. Overview of artisanal shrimp trawl and gill net fishery. Appreciation of fish marketing system. Evaluation of the quality and variety of catch.
13 June 1996	Tobago (Pigeon Point, Buccoo point and Mt. Irvine)	Visit to flying fish processing plants, wet fish processor and fish curing plants. Visit to fish landing sites and fishing port. Evaluation of quality and variety of catch. Appraisal of fish pot.
14 June 1996	Tobago (Coral Reef Bay, Scarborough and Charlotteville)	Participation in beach seine operation. Visit to Tobago House of Assembly for courtesy call. Visit fish market and Tobago Fishery Coop. Visit to fish landing sites.
20 June 1996	Port of Spain	Visit to fishing port for appraisal of off-shore longliners and shrimp trawlers. Observation on landing of fresh tuna and snapper by foreign vessels. Observation on cold storage, bunkering and dockside facilities. Visit to fish shop, itinerant vendors and supermarkets. Overview of retail marketing system.
25 June 1996	Point Lisas, San Fernando, Bonasse, Fullarton and Leacos	Visit to shell fish processing plants, red fish handling site for export and shrimp processing plants. Appraisal of artisanal shrimp trawler.
2 July 1996	Sangre Grande, Manzanilla, Mayaro, Guayaguayare and Piarville	Visit itinerant vendors, exporters and fish shops. Appraisal of fishing vessels and gears such as drift net, bottom gill net, handline and bottom longline. Visit to fish landing sites. Visit to Bamboo Grove Fish farm.
5 July 1996	Morne Diablo and Otaheiti	Visit to fish landing sites. Site survey for new fish landing facilities
17 July 1996	Moruga, La lune	Visit to fish landing sites. Study on fishing management of multipurpose fishing vessel through interview fishermen. Appraisal of trolling gear and method.

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4. Results

Allow me to describe only particular points which I want to emphasize as my impressions rather than an overview or outline of the fisheries in Trinidad and Tobago.

4.1 Present situation of fisheries in general

The fishing industry of Trinidad and Tobago can be considered as comprising of an inshore artisanal fishery and offshore pelagic fishery. The inshore artisanal fishery is characterized by open pirogues between 5 and 10m in overall length powered by outboard engines of 40~75 HP. These vessels are engaged in various type of daily fishing activities within the territorial waters such as trawling, trolling, gill netting, drift netting, bottom longlining (palangue), handlining (banking or a-la-vive) and pot fishing.

At the present time Trinidad and Tobago's fisheries is still centered on inshore migratory fish and demersal fish on the continental shelf, accordingly the supply of fish to the general public is also greatly dependent on inshore resources. However and needless to say, over fishing is already in progress especially in shallow waters on the continental shelf. It can be judged easily from the number of fishing vessels engaged in such active fishing methods as trawling and gill netting, and also many reports and papers indicate a decreasing catch and smaller size of fish caught. These fishing activities take place under present regulations, but it is obviously necessary to encourage fishermen get involved in community-based fisheries management practices, and introduce to fishermen new or advanced technology which is attractive for them to apply.

Pelagic longlining, for example, where many more fishermen in Tobago can participate in this fishery, since these fishermen have easier access to the promising fishing grounds of large pelagic species.

Another example can be observed in shrimp trawl industry. The fishermen and owners of shrimp trawlers as well as processors are very frustrated with the situation that the access for Trinidad and Tobago trawlers to rich shrimp fishing ground in Venezuela's territorial water has been closed due to no renewal of a fishing agreement between the two nations. Some of the shrimp trawlers are being converted to longliners and this trend can be encouraged.



4.2 Extension of longline technology to artisanal fishery sector

Consequently an effective extension programme of longline fishing technology together with modernization of fishing vessels and safety at sea would be indispensable (essential). Beside establishing our own program, it might be necessary to refer the success of artisanal longline fishery in Grenada as a model. I am convinced that this program will contribute not only to benefit fishermen but also to earn hard currency through promoting the export of fresh tuna which is well under way. I believe that our project will take on this role, with the full support and cooperation of the Fisheries Division.

Allow me to put this matter into both international and regional perspectives. In the past, the consumption of fresh tuna in North America was focussed on the Japanese communities in the large metropolitan cities. Since the early 1990s, however, the boom in health foods has caused many restaurants and supermarkets to increase their orders for fresh tuna to meet the rising demands from the general public. At the present time, fresh tuna are exported through New York and Miami to the cities all along the East Coasts of USA and it is not unusual to come across Caribbean tuna in "sushi bars" and restaurants in these areas. Everytime I visit North America on official or private trips, I meet some fish importers and people at fish market. They all comment favourably on the freshness and high quality of Caribbean tuna; and on the possibility of better prices if higher technology and improved standards of quality control could be achieved in the future.

4.3 Provide incentives to organize fishery cooperative by means of introducing Set Net Fishery

One of the biggest surprises in this field survey was that a very limited number of fishery cooperatives with limited activities exist in the fishing communities. Among all fishing sites I have visited, I was able to see a fishery cooperative only at Charlotteville in Tobago.

The activities taking place by this cooperative such as sales of fresh, frozen or processed fish, fuel and mini mart were comparatively small scale but were quite active and well adapted to the community.

My question is that although such an active fishery cooperative is existing as a good model for others, why are they so limited. It is maybe because of the relationship between fishermen and vendors so called "reciprocal-dependence".— In most cases, a fisherman would work with a particular vendor in exchange for his provision of ice, fuel, credits and other services, and because of these conditions fishermen do not face serious problems and do not pay even particular attention to the necessity of organizing fishery cooperatives. Consequently demands

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(needs) for fisheries development which many fishermen showed at the respective fishing sites were mostly for their special benefit and not for the benefit of community.

For a fishing community development to succeed, organization of fishermen and people who are concerned with fishery activities in the area will be essential. However, in order to be successful, the organization should have elements to attract the people. For example, establishment of Set Net Fishery could be a good incentive for the people to join the organization which should lead into community-based fishery management practice.

One of the most important objectives of a fishing community development is to start a sustainable process to develop and expand it on their own.

For this purpose, it is indispensable to let fishermen have clear and concrete target which will be beneficial technically and economically.

Set net fishing is almost unknown fishing method for the fishermen in Trinidad and Tobago but has the following advantages:

- ① It is ideal method from the resource management point of view as the gear is stationary like fish pot.
- ② Although much funding is required for purchasing the gear, depreciation cost is comparatively small compared with other large scale fishing gear.
- ③ The fishing operation is normally two times (early morning and evening) a day with actual working hours of 5 hours, free hours are left for another job.
- ④ Catches are always fresh and high in price as most of them are alive at the time of landing.
- ⑤ Unless the gear is damaged by abnormal sea condition or a disaster the fishing operation can be made all the year round. This brings stable income for fishermen.
- ⑥ Existing fishing vessels with outboard engines can be used for fishing operation.
- ⑦ It can contribute to the community as a new tourism business. "Let observe fishing operation and share the catch business" is now well under way by many fishery cooperatives in Japan.

Maracas Bay and Las Cuevas, the North coast of Trinidad, and Bucco Bay and Great Conland Bay of Tobago have a great potentiality for set net fishing. Especially Maracas Bay and Las Cuevas were strongly recommended by Mr. Keishiro Mori who is one of the most famous researchers in set net fishery in Japan.

GH



Common advantages to the respective sites at Maracas Bay, Las Cuevas, Bucco Bay and Great Courland Bay.

- ① Sea is always calm and well protected against wind which allowed fishing operation can be made throughout the year.
- ② There are migrations of marketable fish species such as king fish, jacks and bonito.
- ③ Since many fishermen around the sites engaged in handline fishing by using live bait, a small fish like sardine or anchovy also can be utilized without wasting.
- ④ Ex-participants of JICA's Kanagawa International Fisheries Training Center who have acquired set net fishing technique are stationed in Trinidad and Tobago respectively and willing to get involved in the extension of Set Net.
- ⑤ Fishermen around the sites are also interested to obtain set net fishing technology.
- ⑥ There are presence of appropriate fishermen to organize the set net fishing activities as leaders.
- ⑦ Easy transportation of catch can be guaranteed since the sites are close to large consuming city like Port of Spain and Scarborough.
- ⑧ Set net can be advertized to the general public as a new fishing technology since the sites are characterized as sightseeing spots.
- ⑨ Fishing Centers located at the sites can be utilized as a base for preparatory works and implementation such as basic survey of fishing ground, gear construction, setting, fishing operation and workshops for fishermen.

Fortunately, set net fishing will be implemented in 1999. In order for Project to implement this subject by taking into consideration the organization of fishery cooperative and the community development, we must have the preparatory phase with carefully planned activities which include the socio-economic survey on the community. Then the project selects 1 or 2 of aforementioned sites as the pilot projects. It should be noted that a short-term expert who is knowledgeable and experienced enough in set net fishery is indispensable at the preparatory phase.

5. Conclusion

The field survey was very successful through the effort of many people. I am sure that all knowledges and experiences gained from this survey will be very useful for the implementation of the project.

I would like to express my sincere appreciation to CFTDI, especially Messrs. Ronald Chan-A-Shing and Charles Nurse who made the excellent arrangements and kindly accompanied with us for all destinations.

I also wish to extend my thanks to Mr. Erol Ceisar for all his assistance in making our survey in Toabgo a success.



ANNEX II

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FIELD SURVEY REPORT

Survey of the Present Fishing Situation in Trinidad and Tobago

(May - July, 1996)

Gear Technologist, CFTDI
August 08, 1996

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INTRODUCTION

The first phase of the ongoing Regional Fisheries Training Project at CFTDI (JICA/GOTT Technical Cooperation Project) called for a field survey of the present situation in Trinidad and Tobago during the first three months of the project in the fields of Fishing Technology, Fish Processing and Marine Engineering. Accordingly, a plan to visit particular sites in the Republic was drawn up by the GOTT counterparts (Messrs. Nurse and Chan-A-Shing) and submitted for approval. The approved schedule of survey is shown in Appendix I. It was agreed to operate as a joint team as much as possible, and this was achieved for the most part. In the area of Fishing Technology, the following objectives were identified.

1. APPRAISAL OF THE MAJOR FISHING METHODS OF TRINIDAD AND TOBAGO, VIZ.

1. Multifilament gill nets ("fillette")
2. Monofilament gill nets ("transpearing")
3. Handline fishing ("banking, switchering")
4. Trolling
5. Beach seines, bail seines
6. Demersal trawling for shrimp and fish
7. Fish pots for snappers and groupers
8. Live bait fishing ("a la vive", "lurking")
9. Flying fish fishery (gill nets)
10. Offshore longlining for pelagics
11. Demersal longline ("palangue")

One notable point of interest was the operations of National Fisheries Company 1995 Ltd., where there is bulk transshipment of fish from the Western Atlantic to foreign markets.

2. APPRAISAL OF THE FISHING CONDITIONS THAT EXIST IN THE VARIOUS AREAS

3. APPRAISAL OF THE VESSELS, GEAR AND EQUIPMENT IN USE IN THE VARIOUS FISHERIES.



Survey Activities

A survey of fishing activities of Trinidad and Tobago for the benefit of the JICA team which is based at CFTDI (Messrs. K. Senga, H. Kimura, F. Takigami, and J. Fukui), was conducted by the local counterparts (Messrs. C. Nurse and R. Chan-A-Shing), during the period May 28, 1996 to July 17, 1996. This survey was in the form of site visits to fishing ports/beaches throughout the Republic, as well as visits to fish processing/handling plants and also to wholesale/retail fish markets. At the end of the survey it was anticipated that the JICA personnel would have gathered a comprehensive and detailed look at all aspects of the fishing industry in Trinidad and Tobago with respect to production, handling, marketing and sales of fish and fish products of Trinidad and Tobago.

Site visits were completed on July 17, 1996, with a visit to the South Coast area of Grand Chemin and La Lune. All the proposed site visits were completed and at the end of the survey all objectives were realized (as outlined in the schedule of survey).

The transport and other necessary amenities were organized by the JICA personnel and these arrangements were satisfactory, there were no delays, and the days' programmes went smoothly, throughout. Otherwise, where fishing boats were accustomed to go out to sea at evening time and return early morning, as eg. in the drifting gill net ("fillette") fishery, it was not practical to be on site at these times, so that landings from this fishery and from shrimp boats at Orange Valley, Couva, were not directly observed, and to some extent with the live bait fishery (a la vive) at Chaguaramas, and bait seine fishery at San Fernando. This did not prevent the team from appreciating the details and the importance of these particular fishing methods.

Appendix II is a list of site visits, and these sites are indicated on the map (Appendix III).

CONCLUSION

The operation of the survey as a joint exercise was a worthwhile informative experience for all concerned, and was much appreciated. It is left only to reiterate that the JICA team should now have a thorough insight into the fishing industry of Trinidad and Tobago.



R. Chan-A-Shing
Gear Technologist

APPENDIX I

CARIBBEAN FISHERIES TRAINING & DEVELOPMENT INSTITUTE

SCHEDULE OF SURVEY

- OBJECTIVES:
- *Appreciation of the Fish Handling & Processing capabilities in Trinidad & Tobago.
 - *Overview of Fish and Fishery Products that are locally produced.
 - *Appraisal of the major fishing methods of Trinidad & Tobago.
 - *Appraisal of the fishing conditions that exists in the various areas.
 - *Appraisal of the vessels, gear and equipment in use in the various fisheries.
 - *Facilities associated with the marketing of the catch.

DATE	PERSONNEL	TIME	ACTIVITY
1996:05:28	Joint Team	0500 hrs.	Visit to Port of Spain Wholesale & Retail Fish Market. Appreciation of species range. Appreciation of wholesale marketing system (fish auction).
		1600 hrs.	Visit to fish landing sites. Chaguaramas landing site (fish for export market).

DATE	PERSONNEL	TIME	ACTIVITY
		1300 - 1500 hrs.	Chaguaramas and Cocorite. Overview of multipurpose fishing vessels. Live bait line and pot fishery.
1996:06:04	Joint Team	1100 - 1700 hrs	Visit to North Coast fishing points. Live bait and line fishery. Gill net fishery. Evaluation of the quality of the catch.
1996:06:05	Fishing Technology		Visit to North East Coast (Balandra, Toco and Sans Souci). Line fishing and gill net fishery and agri fishing communities.
1996:06:11	Processing Team	0900 - 1100 hrs.	Fish Plant visit. Barataria - Fresh fish handling, frozen and salted fish production.
		1300 - 1800 hrs.	Visit to fish handling sites and fish markets (Brickfield, Orange Valley, . Otaheiti). Overview of the trawl and gill net fishery. Appreciation of fish marketing system. Evaluation of the quality and variety of the catch.

JM

RM

DATE	PERSONNEL	TIME	ACTIVITY
1996:06:13 - 14			Tobago visit Visit to Flying Fish Processing Plant. Visit to fish landing site (pot fishery) - Pigeon Point & Buccoo. Visit wet fish processor (snappers for export) Visit to fish landing site (beach seine operations). Visit to fish curing plants. Visit to cold store (NIPDEC). Visit to fish port - Scarborough. Visit to Charlotteville - pelagic fishery.
1996:06:20	Joint Team	0900 - 1200 hrs	Visit to Fish Port (off shore long liners and shrimp trawlers). Bunkering and dockside facilities. Transshipment operations. Cost storage of fish (NFC).
	Processing Team	1300 - 1800 hrs.	East West Corridor Overview of the retail marketing system. Fish shops, itinerant vendors, supermarkets. Visit to fish plant - Sangre Grande.
1996:06:25	Joint Team		Shell fish processing landing sites and plants (San Fernando, Cedros, Leccos).

PH

[Signature]

DATE	PERSONNEL	TIME	ACTIVITY
1996:06:27 - 28			Gill net and beach seine (Manzanilla, Mayaro, Guayaguayare).
1996:07:02	Fishing Technology		Handling and gill net fishery - south east coast.
1996:07:04	Fishing Technology		Gill nets - south coast.
*1996:07:02			
*1996:07:05	Joint Team		Morro Diabolo and Otabuito Official Visit
*1996:07:17	Fishing Technology		Moruga, Gran Chemin La Lune

* Change of Schedule

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APPENDIX II - LIST OF SITES VISITED

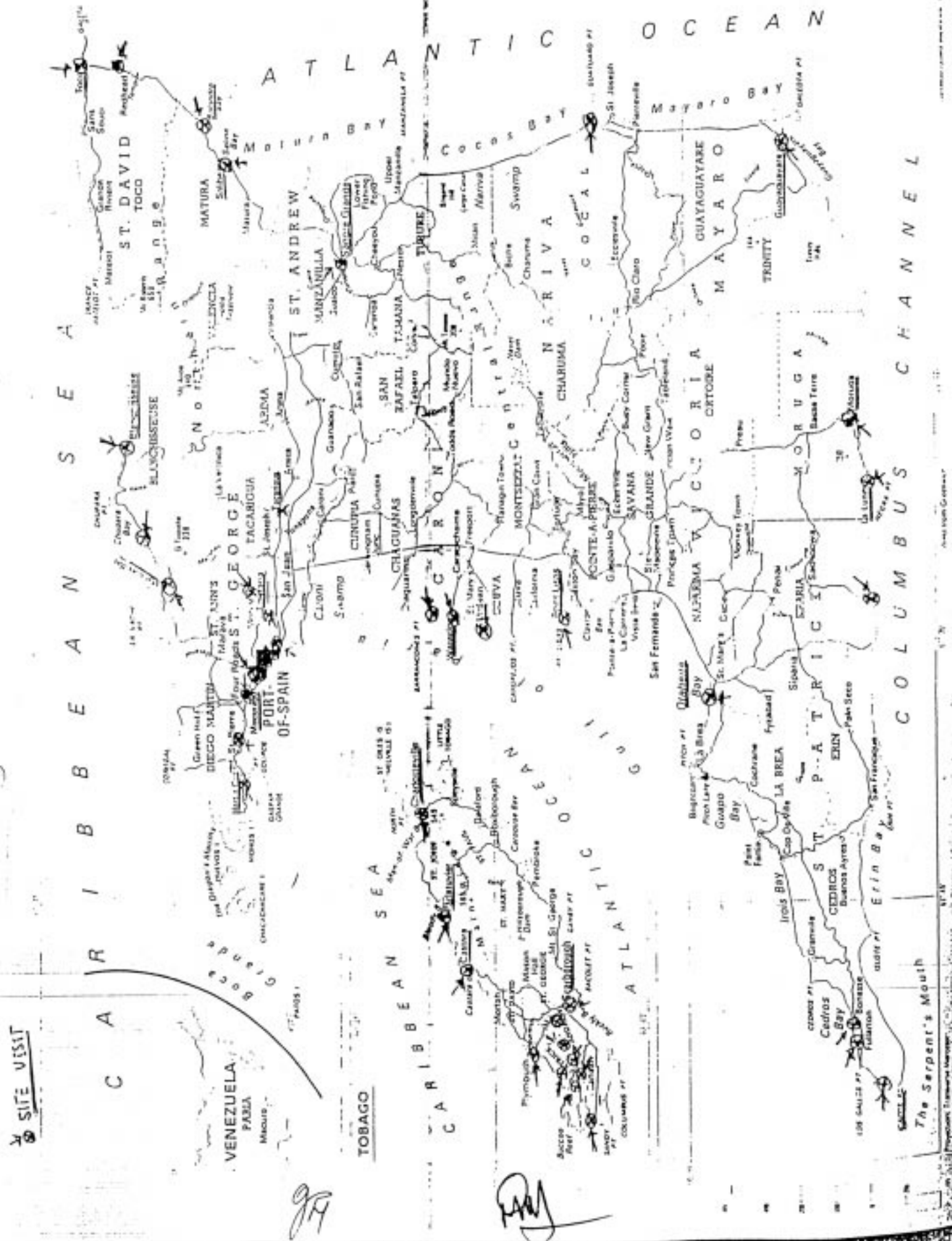
Trinidad: Wholesale fish market, Sealots, Mucurapo, L'anse Mitan, Almoorings, Hart's Cut.
Maracas, Las Cuevas, Blanchisuesse, Salibea, Balandra, Toco, Cumuna, Brickfield, Waterloo, Orange Valley, Otaheite, Bamboo Grove, National Fisheries Co. 1995 Ltd.
Trawler Owners docksite, Sealots.
Icacos, Cedros, Fullerton.
Ortoire, Guayaguayare
Morne Diablo
Gran Chemin, La Lune.

Fish Processing plants at Barataria, Woodbrook, Westmoorings, Santa Cruz, Brickfield, Point Lisas, Trincity, Sangre Grande, Cedros, Fullerton.

Tobago: Buccoo, Milford Bay, Mt. Irvine Bay, Great Courland Bay, Pigeon Point. Charlotleville, Palatuvier, Castara.

Fish Processing and handling at Scarborough, Charlotleville, Bon Accord, Shaw Park.

Courtesy call to the Tobago House of Assembly (Clerk).



ANNEX III



Survey Report

The Regional Fisheries Training Project

Japan International Cooperation Agency (JICA)

Marine Engineering Expert : Hideo KIMURA



CONTENTS

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Engines	P.12
Conculusion / Recommendation	P.13

JH

Paul

Survey on present situation of Fisheries in Trinidad and Tobago

JICA Expert (Marine Engineering)
Hideo KIMURA

Objectives

- * Appreciation of the Fish handling & processing in Trinidad and Tobago.
- * Overview of Fish and Fishery products that are locally produced.
- * Appraisal of the major fishing methods of Trinidad and Tobago.
- * Appraisal of the fishing conditions that exists in the various areas.
- * Appraisal of the vessels, gear, and equipment in use in various fisheries.
- * Facilities associated with the marketing of the catch.

Schedule of Survey

28 May 1996 (Tue)

Visit to Port of Spain wholesale and retail market
Cocorite Fishing centre
Pt. Cumana Fishing village
Almooring (Loading Bay)

04 June 1996 (Tue)

Visit to North coast
Marnas Bay Fishing Centre
Las Cuevas Fishing Centre
Blanchisseuse Fishing Centre

05 June 1996 (Wed)

Visit to North East Coast
Saybea Fishing Centre
Balandra Fishing Centre
Cumana Fishing Centre
Toco Fishing Centre

11 June 1996 (Tue)

Visit to Fish Plant
Ligt House Sea Products.
Trinidad Sea Food Ltd.
Visit to Fish handling sites and fish markets.
Waterloo
Brickfield Fishing Centre.
Orange Valley Fishing Centre.

13 June 1996 (Thu)

Visit to Tobago
Roy Jacob's Fishing Processing Enterprises.
Yeates Fishing Operation.
Tobago sea products Co.Ltd.
Terry Swan Fish Processing Company.
Pigeon Point Fishing Village.
Bucco Bay Fishing Village.

JH



14-June-1996 (Fri)

Great Courland Bay (Beach Seine Fishery)
National Insurance Property Development Company Limited.(NIPDEC)
Charlottevill (Fish market / Tobago Fishing Coop. Society office/ Fresh fish of Tobago etc)
Parlatuvier Bay
English Man's Bay
Castara Bay

20-June-1996 (Thu)

National Fisheries Company (NFC)
Food Electra Ltd.
Sea Foods Enterprises Limited.
Skyline Freight and Management Limited.

25-June-1996 (Tue)

Ocean Harvest Processors Ltd. (St.Lucia)
Banasse Processing Plant. (St.Martin)
Euro Caribbean Fisheries Co.Ltd.(St.Martin)
Icacos Fishing Centre.
Fullarton Fishing Village.

02-July-1996 (Tue)

Bamboo Grove Fish Farm
Tri-Fish (Sangre Grande)
Ortorie Fishing Village.
Guayaguayare Fishing Village.

05-July-1996 (Fri)

Morne Diablo Fishing Village.
Otabite Fishing Centre.

12-July-1996 (Wed)

Moruga Fishing Centre
La Lune Fishing Centre.

JM



Profile of the Fishing Industry

The Fishing Industry of Trinidad and Tobago has traditionally been an artisanal one based on resources occurring in the coastal and territorial waters on the country.

There has however been a trend toward the development of larger, more industrial type vessels targeting traditional fisheries in areas previously inaccessible to the artisanal vessels, and new fisheries off the east coast of Trinidad.

The double-rigged industrial trawlers operating off the north and south coasts of Trinidad and in the deeper waters of the Gulf of Paria and relatively recent trend in the development of a industrial multi purpose vessels equipped with various type of fishing gear.

Fishes Resources of Trinidad and Tobago

A) Coastal Demersal (Soft-Bottom) Resources

Shrimp and associated ground-fish (Jack, Salmon, Catfish, Croakers etc)

B) Coastal Pelagic Resources

Flying-fish, Jacks, Cavalli, Shark, Carite, etc.

C) Coastal Demersal (Hard-Bottom/Coralline) Resources

Snapper, Grouper, Lobster, etc.

D) Oceanic Pelagic Resources

Tuna, Swordfish, Shark, Bill-fish, etc.

E) Deep water Demersal Resources

Snappers, Grouper, Tilefish etc.

Kind of landing fish

Sail fish, Swordfish, Shark, Snapper, Grouper, Jack, Flying-fish, Barracuda, Shrimp, Carite, King fish, Spanish-mackerel, Cavalli, Cro-cro, Herring, Tuna, Catfish, Bone-fish, Hairtail, Sardine, Bonito, Ancho, Jashua, Moonshine, Mullet, Dolophinfish etc.

Fishing Method

Hand line fishing (Live-bait fishing "A-la-vive" and Trolling)

Long line (Coastal pelagics and Bottom line fishing "Banking")

Drift / Gillnet (Carite/Kingfish/Flying fish net)

Trawling (Shrimp and Groundfish)

Pot Fishing (Arrow-Head and Z type)

Trolling

Beach Seines

No. of Fishermen

About 6,000

No. of Fishing Boats

About 2,000

Major Fishery of Trinidad and Tobago

A) Carite Fishery

Fishing Gear	Gillnet / Trolling / A-la-vive line / Beach seines.
Kind of fish	Carite / King fish / Shark / Cavalli / Ancho / Bonito / Salmon / Cro-cro
Landing Site	88 landing site around Trinidad and Tobago. (Trinidad 59, Tobago 29)
Fishing Boats	Pirogues (Made of wood, fiberglass, or wood coated fiberglass) Size from 7m to 9m / Outboard Motor 40 to 75 HP
No. of fishing Boat	Gillnet Fishing Boat approximately 400 Trolling and A-la-vive line approximately 280
No. of carite fishermen	2,000

B) Shark Fishery

Fishing Gear	Gillnet / Hook line (Trolling, A In vive, Live bait fishing) Seines (Beach, Italian Seines) Long line / Hand line.
Landing site	Cedros, Fullerton, Moryga, Mauzanilla, Guayaguayare etc.

C) Trawl Fishery

Classification	Demersal Trawling / Pelagic Trawling		
Kind of fish	Shrimp, Fin-fish, Carb, Squid etc.		
Shrimp Trawl Fleet categories			
	Type-1	Small scale vessels	Inshore, artisanal fleet
	Type-2	Small scale vessels	Inshore, artisanal fleet
	Type-3	Semi-Industrial fleet	Nearshore
	Type-4	Industrial fleet	Offshore
Fishing season	November to May		
Fishing Ground	Gulf of Paria, Columbus channel, North coast		
Landing site	National Fisheries Company / Port of Spain Wholesale Market / Waterloo / Otahite / Bonasse / Fullerton / Icacos etc.		
Kind of Shrimp	Hopper shrimp	Offshore Trawl (Columbus channel)	
	Pink Shrimp	Inshore Trawl (Gulf of Paria) Offshore Trawl (Gulf of Paria / Columbus channel)	
	White cork or Cock Shrimp	Inshore Trawl (Orinoco delta, Gulf of Paria)	
	Brown Shrimp	Inshore and Offshore Trawl (Gulf of Paria / Orinoco Delta/ Columbus channel etc)	

D) Flying fish Fishery (Tobago)

Fishing Ground	Castara to Pigeon point
Fishing Gear	Gillnet
Fishing season	November to July
No. of fishermen	130
Processing plants	Tobago sea products / Jacob's Fishing Enterprises Limited / Harold's etc.

Landing Points (Site) of Trinidad and Tobago

Trinidad (59)

1. Staubles
2. Carenage
3. Pt. Cumana
4. Cocorite
5. Port of Spain
6. la-Basse
7. Cacandee
8. Brickfield
9. Waterloo
10. Orange Valley
11. Carli Bay
12. Mosky Point
13. Claxton Bay
14. St. Margaret
15. Point-A-Pierre
16. Marabella
17. San Fernando
18. Mosquito Creek
19. Otahite
20. La Brea
21. Vessigny
22. Guapo
23. Point Fortin
24. Pt. Ligoure
25. Cap-De-Ville
26. Irois
27. Granville
28. Bois Bourg
29. Bamboo
30. St. Marie
31. Cedros
32. Icaeos
33. Chataham
34. Erin
35. Palo Seco
36. Quinam
37. Morne Diablo
40. Grand Chemin
41. Guayaguayare
42. Grand Lagoon
43. Plassance
44. St. Joseph
45. Ortoire
46. Manzanilla
47. North Manzanilla
48. Salibea
49. Balandra

50. Cumana
51. Toco
52. San Souci
53. Grande Revere
54. Matelot
55. Cachipa
56. Blanchisseuse
57. Filette
58. Las Cuevas
59. Maracas

- * Fishing Complex
- * Fish Market

Tobago (29)

1. Friendship
2. Lambeau
3. Scarborough
4. Blenheim
5. Studley Park
6. Pembroke
7. Goldsborough
8. Belle Garden
9. Roxborough
10. Louis D'or
11. Delaford
12. Kings Bay
13. Speyside
14. Camp Crusoe
15. Chaloteville
16. Hermitage
17. Blooday Bay
18. Patatuvier
19. Castare
20. King Peter's Bay
21. Culloden
22. Arnos Vale
23. Plymouth
24. Grafton
25. Mount Irvine
26. Buccoo
27. Bon Accord Lagoon
28. Milford
29. Store Bay

- 23 site
- 3 site (Port of Spain / Kings Wharf /

Survey site	Complex	Fishing Boat	Engine	Fishing Method
Cocorite	O	Pirogues	O/M	Gillnet/A-la-vive
Pt. Cúmana	X	Pirogues	O/M	Gillnet etc.
Maracas Bay	O	Pirogues	O/M	Gillnet / Itarian net
Almoozing (Landing Bay)	X	Pirogues / Multipurpose Boat	O/M 100/135HP	Gillnet / Pot / Longline/A la vive
Blanchisseuse	O	Pirogues	O/M 55 HP	Gillnet / Trolling
Las Cuevas	O	Pirogues	O/M	Gillnet etc.
Salyba	O	Pirogues	O/M	Gillnet etc.
Balandia	O	Pirogues	O/M	Gillnet etc.
Cumana	O	Pirogues	O/M	Handline/Trolling
Toco	O	Pirogues	O/M	Gillnet/Bottom longline etc.
Waterloo	X	Pirogues	O/M / DIE	Trawl / Gillnet
Brickfield	O	Pirogues	O/M 40.60.75HP	Gillnet/Bottom long line etc.
Orange Valley	O	Pirogues	O/M DIE	Gillnet / Trawl
Icacos	O	Pirogues	O/M 75HP	Gillnet etc.
Fullarton	X	Pirogues	O/M 75HP	Gillnet etc.
Orterie	X	Pirogues / Wood DIE	O/M DIE	Gillnet / Pot etc.
Guayaguayare	X	Pirogues	O/M 48. 75HP	Gillnet etc.
Morne Diablo	X	Pirogues	O/M 55.75 HP	Gillnet etc.
Mounga	O	Pirogues	O/M 40.55.75 HP	Gillnet / Trolling
Otahite	O	Pirogues / Type-2 Trawl	O/M 55.75 HP DIE 135 HP	Gillnet Trawl
La Lune	O	Pirogues	O/M 55.75 HP	Gillnet etc.
Port of Spain	O	Multipurpose / Pirogues / Type-1 Steel Trawler	O/M DIE 135, 375 HP	Gillnet Pot Trawl etc.
Pigeon Point	X	Pirogues	O/M	Gillnet /Pot etc.
Bucco Bay	O	Pirogues	O/M	Gillnet etc.
Charlotevill	O	Pirogues	O/M	Trolling etc.
Great Courland Bay	O	Pirogues	O/M	Beach Seines etc.
Parlatuvier Bay		Pirogues	O/M	
English Man's Bay		Pirogues	O/M	
Castara Bay	O	Pirogues	O/M	Gillnet etc.

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TRINIDAD

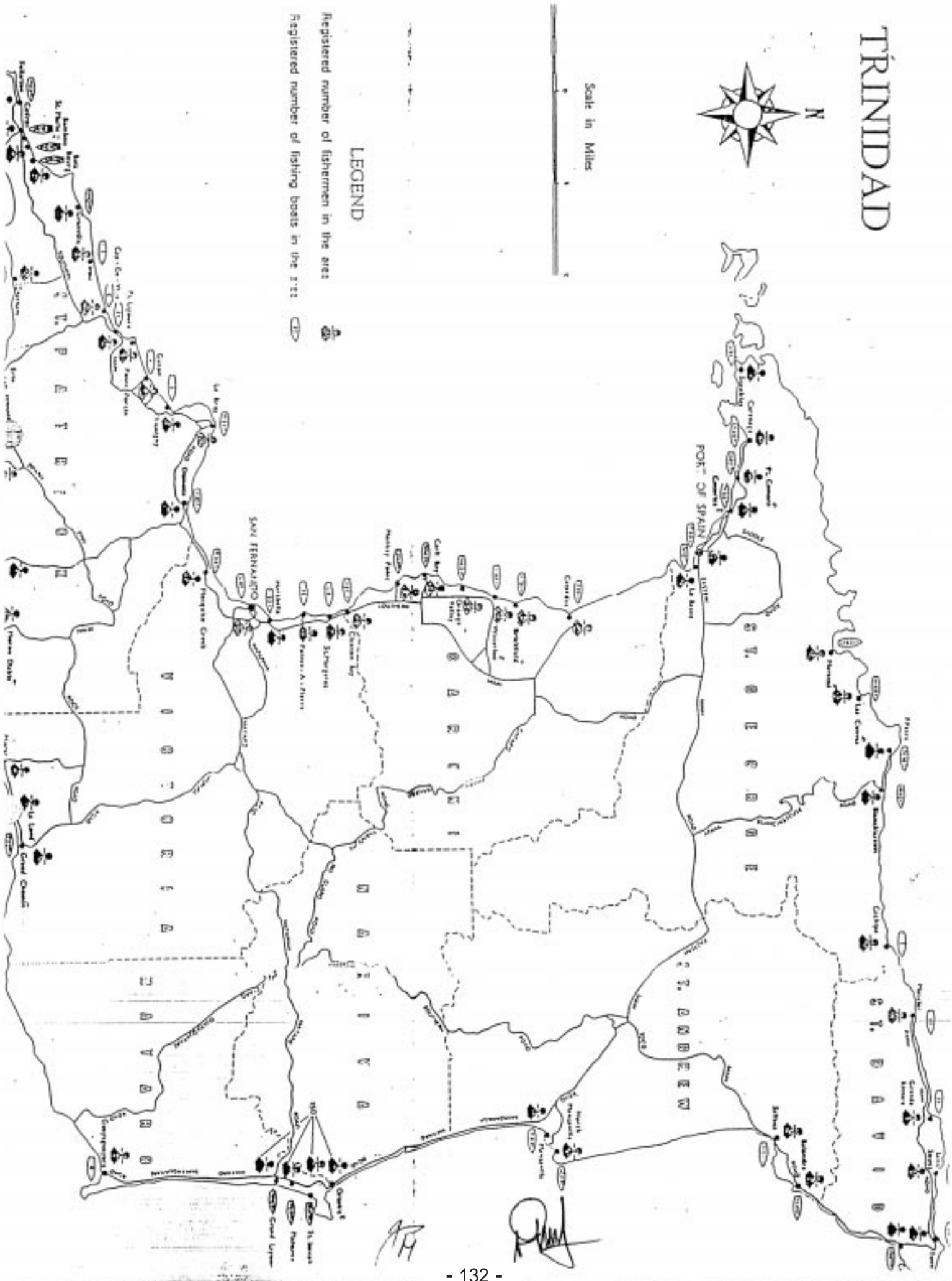


Scale in Miles



LEGEND

- Registered number of fishermen in the area
- Registered number of fishing boats in the area

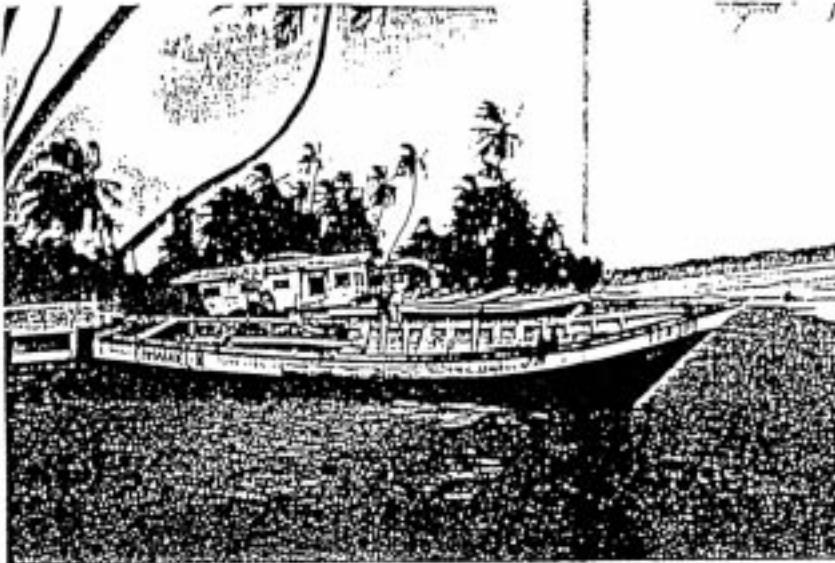


Classification of Shrimp Trawl Boat

Boat Type	Engine Type / HP	Length	Material	Remark
Type-1	Outboard Motor 40-75 HP	6.7-9.8 m	Wood Fiberglass	1 net manually operated
Type-2	Inboard or Inboard Outdrive 130HP	7.9-11.6 m	Wood Fiberglass	1 net manually operated
Type-3	Inboard Diesel Engine 130 HP	10.4-12.2 m	Fiberglass Steel	1 net Hydraulic winch Electronics fishing aids.
Type-4	Inboard Diesel Engine 350-370 HP	17.1-22.9 m	Fiberglass Steel	2 net Hydraulic winch Electronic fishing aids



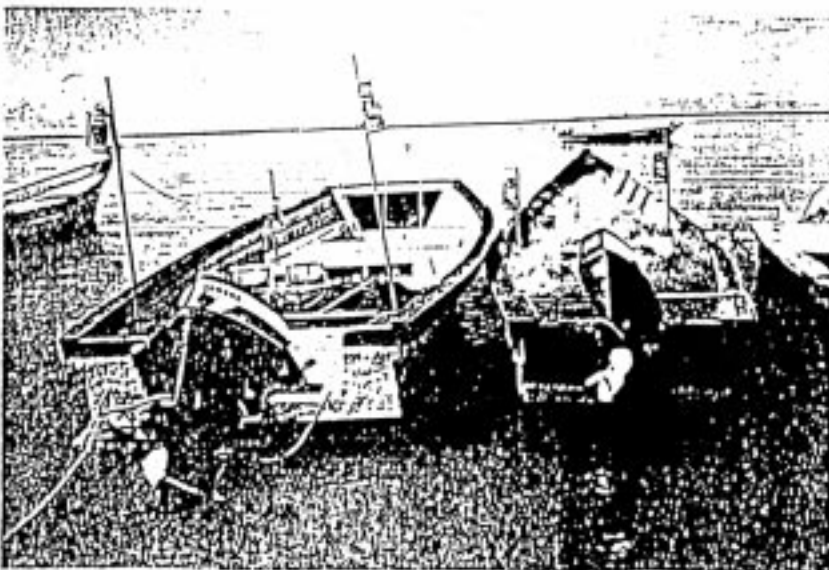

Fishing Boats



- 1) Pirogues (Wood)
6m ~ 11m

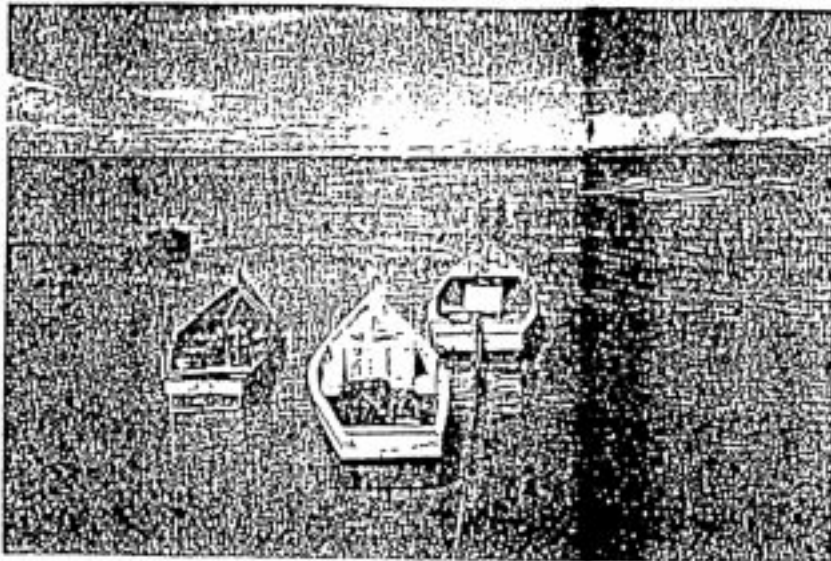


- 2) Trolling Boat (Tobago)
FRP



- 3) Pirogues (Fibreglass "FRP" or
FPP coated wooden boat)
L = 7 ~ 9M
Outboard Motor = 40 ~ 75HP

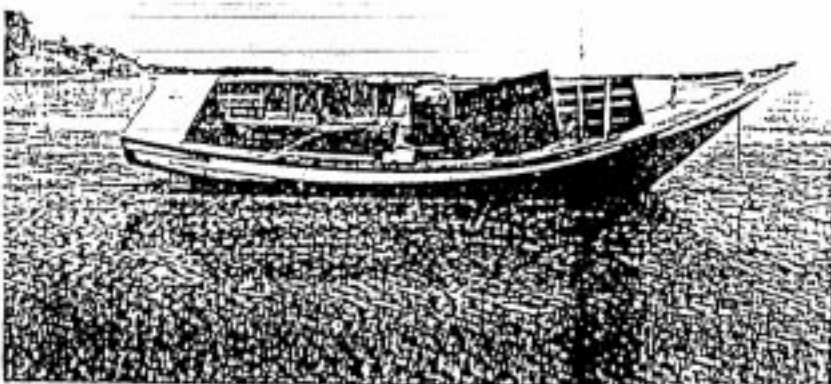
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- 4) Type-1 (Shrimp Trawl Boat)
Wood / Fiberglass
L=7 ~10M
Outboard Motor



- 5) Type -1 Shrimp Trawl Boat
Type- 2 Shrimp Trawl(Center)



- 6) Type-2 Shrimp Trawl Boat
(Wood / Fiberglass)
L= 8~12M
Inboard Diesel Engine 130HP

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APPENDIX III

FISH PLANT
SANITATION COMPLIANCE CHECKLIST

INITIAL

OTHER

AND ADDRESS OF PLANT INSPECTED	REGION		CC 1
	DISTRICT		2 - 3
OWNER (Company or Individual)	YEAR		8 - 2
INSPECTED BY NAME	MONTH		10 - 1
OF INSPECTOR	CODE 1 - EXCELLENT 2 - GOOD		
AND TITLE OF ACCOMPANYING INDIVIDUAL	3 - SATISFACTORY 4 - UNSATISFACTORY		
	5 - CRITICAL (CIT)		

1. PREMISES	2. RAW MATERIALS	3. BUILDING CONSTRUCTION	4. LIGHTING	5. VENTILATION	6. WATER SUPPLY

7. ICE	8. DISPOSAL OF WASTES	9. LAVATORY ACCOMMODATIONS	10. CONSTRUCTION AND REPAIR OF EQUIPMENT, CONTAINERS & UTENSILS	11. CLEANING & SWIT. TREAT.

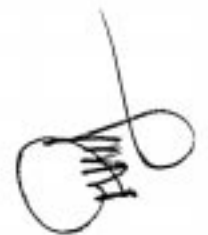
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DATE	PLACES VISITED	INTRODUCTIONS	REMARKS/ACTIVITY
04.C. '96	Comminuted Fish Processing Establishments - Gourmet Delight Westmornings - SeaBelle - Santa Cruz - Supermarkets - Uncle Beccoes - Malabar Meats	Mr. & Mrs. Joe Charles - Owner/Manager Mrs. Ariel Hurford - Owner/Manager	Tour of Facilities Tour of Facilities Survey of Fishery Products Survey of Fishery Products

DATE	PLACES VISITED	INTRODUCTIONS	REMARKS/ACTIVITY
20.06.96	National Fisheries Compound - National Fisheries - Seafood Express Ltd. - Local Trawler Facilities Visit to Fish Plant - Export Etcetera - Seafood Enterprises Ltd. Visit to Fish Retail Outlet - Captain Lee's	Mr. Joey Voisson - Manager Dr. Doon Ramsaroop - Owner/Manager Mr. Hosein Khan - Trawler Fleet Owner Mr. B. Jennings - Manager Mr. Anthony Byer - Director Mr. Ken Cree - Owner Ms. Donaris Lashington - Supervisor	Appreciation of the operations Appreciation of handling and packaging for export On board tour of local trawler Tour of facilities Appreciation of Fish Shop Operation
25.06.96	Visit to Fish Plant - Ocean Harvest Dockside Seafoods - Pier 7 Seafoods	Ms. Pat Charles - Plant Supervisor Mr. Ivan Ramdeen - Plant Supervisor Mr. Baumann, Manager Mr. Bridgemohan Ramoutar - Manager Ms. Karmeni Maharaj - Plant Supervisor	Tour of Plant Facilities Tour of Plant Facilities
02.07.96	Tri Fish Ice and Cold Storage	Mr. Bassari Mohammed - Owner Manager Mr. Hassan Harhic - Manager Mr. Clyde Crosby - Owner/Manager Atlantis Marketing	Tour of Plant
02.07.96	Guayaguayare	Francis Teitt - Boat Owner & Leading Fisherman Emile Straker - Boat Owner	

PM

PLACES VISITED	INTRODUCTIONS	REMARKS/ACTIVITY
13 & 14.06.96 Visit to Tobago Fish Processing Plants & Cold Stores - Roy Jacobs Fish Processing Ent - Tobago Sea Products - Terry Swan Fish Processing Co. - Fresh Fish of Tobago - THA Plant at Turtle Beach Visit to Landing Sites Buccoo Pigeon Point Mt. Irvine Charlotteville	Mr. Yeates Owner/Manager Yeates Fishing Operations Mr. Roy Jacobs Owner/Manager Mr. John Terry Swan - Owner/Manager Ms. Karen Shaw - Food Technologist (THA) Mr. Victor Solomon - Vesse Captain Fisheries Division Mr. Authur Moore - Manager Fishing Cooperative Mr. Allan Richards - Clerk c' the House	Appreciation of Fish Handling Operations Appreciation of Flying Fish Processing Operations Appreciation of Fresh Fish Handling Operations Tour of Facilities Meeting with the Clerk
13.06.96 Tobago House of Assembly NIPDEC	Mr. Eric Alexander - Manager NIPDEC Cold Store	Appreciation of Storage Facilities




DATE	PLACES VISITED	INTRODUCTIONS	REMARKS/ACTIVITY
	Fish Plant - Laventille Fish Landing Sites Brickfield Orange Valley Otahaiti Fish Plant - Brickfield	Mr. Roger Wazon - Supervisor: Trinidad Seafoods Ltd. Mr. Mumtez Eazhai - Fish Vendor Mr. Frank Bocoram - Owner Manager	Observed fish handling and processing activity Tour of premises Appreciation of fish marketing systems Evaluation of fish quality Fish handling establishments - sales to exporters and processors Appreciation of Fish Handling operations



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APPENDIX I

Survey Schedule and Persons Introduced to JICA Specialists

DATE	PLACES VISITED	INTRODUCTIONS	REMARKS/ACTIVITY
28.05.96	Port-of-Spain wholesale fish market Cocorite Fish Centre L'anse Mitan Chaguaramas Almooring	Mr. Brian Skinner (Manager) Mr. Gellison, Captain fishing vessel "Rejoice" (multipurpose vessel) Mr. Harry - Owner Fishing Vessel	Observed Fish Marketing Activity Observed Fish Handling Practices Observed Fish Handling and Retailing Activities Boarded and toured vessel Boarded and toured vessel
04.06.96	Hart's Cut (Tardieur Supplies) Visit to North Coast Maracas Bay Fishing Facilities Las Cuevas Blanchieusseuse	Ms. Elaine Bharat - Caretaker & Statistical Collector Mr. Joey Mclean - Leading Fisherman Mr. N. Marciano - Lobster Collector/Boat Owner Mr. Grachette - Boat Owner & Vendor	Live bait and live fishery Inspection of gear Seine and Gill net Fishing
05.06.96	Balandra Bay Fishing Facilities Curmana Bay Toco	Mr. Granville Pierre - Caretaker/Statistical Collector and Boat Owner/Fisherman	Live bait and live fishery Line fishing and gill net fishery
11.06.96	Fish Plant - Barataria	Mr. Wazir Khan - Owner/Manager Lighthouse Sea Products	Fresh fish handling for the export market.

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