REPORT OF THE TASK FORCE TO ASSESS THE MARINE FISHERIES EDUCATION AND TRAINING NEEDS IN THE REGION

Southeast Asian Fisheries
Development Center

February 1981

This Report has been prepared

by:

Yasumatsu Miyake
Overseas Fishery Cooperation Foundation,
JAPAN,

Capt. Vudhi Sudhasaneya
Head of the Training Division
Training Department
SEAFDEC, Bangkok
Thailand

This Report has been prepared

by:

Yasumatsu Miyake
Overseas Fishery Cooperation Foundation,
JAPAN,

Capt. Vudhi Sudhasaneya
Head of the Training Division
Training Department
SEAFDEC, Bangkok
Thailand

CONTENTS

I. INTRODUCTION

The Training Department of the Southeast Asian Fisheries Development Center (SEAFDEC) organized a Consultative Meeting on Fisheries Education and Training in Southeast Asia, in Bangkok, in 1979. The Meeting was attended by representatives of the Governments as well as of fishery training institutions in the Region. The meeting recommended the promotion of cooperation among fishery training institutions in the Region, with a view to improving and strengthening fishery training activities in the countries.

As a follow-up to the recommendation, SEAFDEC, with financial contributions from FAO and the FAO/SIDA Bay of Bengal Small-scale Fisheries Programme, sent a mission consisting of Mr. Y. Miyake, Overseas Fishery Cooperation Foundation, Japan, and Capt. Vudhi Sudhasaneya, Head of the Training Division, Training Department, SEAFDEC, to certain countries in the Region, in November 1980.

The Mission visited fishery training institutions in the Philippines, Indonesia, Malaysia, Bangladesh and Sri Lanka during the period from 9 November to 3 December 1980, with terms of reference to review and assess fisheries training facilities and programs as well as significant fisheries developments in various sectors (excluding the aquaculture sector) with a view to determining:

(a) Whether a program can be formulated for exchange visits of fisheries personnel between the countries visited, so that the personnel concerned can benefit from additional short-term training not available in their own countries, and also from the study of significant developments in various fisheries sectors which might have useful application in their own countries. In this regard, priority should be given to exchange visits of value to instructors, extension workers, managers of small- and medium-scale fishery enterprises and selected, progressive fishermen;

(b) Under what conditions the various training institutions and fisheries directorates would make available their facilities for the training of, or study tours by selected non-nationals in the categories shown above.

The Mission wishes to record its appreciation of the assistance given by the officials of the fisheries departments as well as by the staff of fishery training institutions in the countries visited by the Mission. Without such assistance and cooperation, it would not have been possible for the Mission to complete the review of the fishery training activities in those countries.

II. ITINERARY, PLACES VISITED AND PERSONS INTERVIEWED

November 8 (Sat.)	Capt. Vudhi Sudhasaneya left Bangkok; arrived in Manila
November 9 (Sun.)	Mr. Miyake left Tokyo; arrived in Manila
November 10 (Mon.)	Visited Bureau of Fisheries and Aquatic Resources, Quezon City
	Interviewed Mr. Pablo T. Tamesis, Chief, Training Division, Bureau of Fisheries and Aquatic Resources (BFAR)
	Visited South China Sea Fisheries Development and Coordinating Programme; interviewed Mr. P.M. Macleod, Senior Programme officer of the Programme
	Visited University of the Philippines in the Visayas; interviewed Dr. Jose A. Carreon, Dean of the College of Fisheries
November 11 (Tue.)	Visited Fishermen's Training Center, Cavite; interviewed Director, Capt. Hermegenes L. Bitanga, and others; collected information and assessed the facilities
November 12 (Wed.)	Left Manila for Indonesia; stayed in Singapore
November 13 (Thur.)	Arrived in Jakarta; visited General Directorate of Fisheries and interviewed Mrs. B. Soenyoto in charge of foreign relations
November 14 (Fri.)	Visited Academy of Fisheries, Jakarta; interviewed instructors, Mr. Iwan Refianto, Mr. Haruono (marine engineering), Mr. H. Ikegami (navigation), Mr. M. Tomishima (refrigeration); collected information and assessed the facilities
	Left Jakarta for Tegal via Semarang (by air and car); arrived in Tegal

November 15 (Sat.)	Visited Marine Fisheries Training School, Tegal; interviewed instructors, Mr. Sukotjo, Mr. Kasdhi; collected information and assessed facilities
	Left Tegal for Jakarta (by car and train); arrived in Jakarta
November 16 (Sun.)	Left Jakarta for Penang, Malaysia, via Singapore; arrived in Penang
November 17 (Mon.)	Rested
November 18 (Tue.)	Visited Fisheries Training Institute, Penang; interviewed Mr. Ismail Tanfid, instructor of fish handling, and Mr. Ivor Klucas, Manager, Fish Handling and Processing project (U.K. assistance)
	Collected information and assessed the facilities
	Visited Fishermen's Training Centre, Glugor; met Mr. Carvalho, Principal, and Mr. Azizan B. Ghazali, a former trainee of SEAFDEC who was posted there as a fishing instructor; assessed the facilities
	Visited Malayan Marine Industries, Ltd., Penang. Observed tuna canning factory
November 19 (Wed.)	Left Penang; arrived in Kuala Lumpur
November 20 (Thur.)	Visited Department of Fisheries; interviewed Director-General, Tengku Dato' Ubaidillah bin Abdul Kadir and Deputy Director-General, Mr. Wan Awang bin Wan Yaacob
	Left Kuala Lumpur; arrived in Decca, Bangladesh

November 21 (Fri.)	Visited Directorate of Fisheries; interviewed Mr. M.A. Huq, Director of Fisheries; Dr. A.H.A. Jalil, Asst. Director of Fisheries; and Mr. M.R. Mazumder
	Visited Bangladesh Fisheries Development Corporation; met Director, Mr. Lutfur Rahman
	Visited Ministry of Fisheries and Livestock; met Additional Secretary, Dr. M.Y. Ali; interviewed Prof. P.C. George, Fishery Adviser, Project Manager, FAO/UNDP Fishery Advisory Service Project.
November 22 (Sat.)	Left Dacca; arrived in Chittagong
November 23 (Sun.)	Rested. Met Regional Fishery Officer
November 24 (Mon.)	Visited Fish Harbour Complex and Marine Fisheries Training Centre, Chittagong; interviewed Mr. N.M. Iqbal, Principal in charge, and Mr. Nuran Nabi Sarker, senior instructor; collected information and assessed the facilities
November 25 (Tue.)	Visited Danish Boat Building Project, Chittagong; interviewed Mr. Kristian P. Lyngborg, Project Manager
	Visited National Fishermen's Cooperative Society, Chittagong; interviewed Executive Officer of the Society
	Left Chittagong; arrived in Dacca
November 26 (Wed.)	Left Dacca; arrived in Calcutta
	Encountered general strike in West Bengal; stayed 2 nights
November 28 (Fri.)	Left Calcutta; arrived in Madras
November 29 (Sat.)	Left Madras; arrived in Colombo

November 30 (Sun.)	Rested
December 1 (Mon.)	Visited Ministry of Fisheries; interviewed Mr. Sarath Perera, Additional Secretary (Training), and Mr. Shelton G.S. Dassenayake, Director of Fisheries (Training & Education)
	Visited Fisheries Training Institute, Crow Island; interviewed Mr. T.H. Gajanayake, Principal of the Institute, Capt. Eiichi Haruta, Chief Adviser to the Institute
	Collected information and assessed the facilities
December 2 (Tue.)	Visited Fishery Training Centre, Negombo; interviewed Mr. M. Nelson Perera, Principal of the Centre
	Visited Negombo South Fishery Cooperative Society; interviewed Mr. D. Robert Fernando, President of the Society
December 3 (Wed.)	Left Colombo; arrived in Bangkok
December 9 (Tue.)	Mr. Miyake left Bangkok; arrived in Tokyo.

III. FINDINGS AND OBSERVATIONS

1. PHILIPPINES

(1) Fishermen's Training Center, Cavite

General

The Training Center was established in 1974 as a UNDP/FAO project with an initial UNDP fund of US $854,447 and the Philippine Government's counterpart contribution of ₱ 5.5 million. The training started in January 1975. The UNDP assistance was terminated in May 1976 and the Center has since been operated under the budget of the Bureau of Fisheries and Aquatic Resources with an all-Filipino teaching and administrative staff.

The Fishermen's Training Center is located within the naval complex in Sangley Point, Cavite City; the campus is therefore assured of maximum security. The Center is about 40 km away from Manila and can be reached in an hour by car.

The objectives of the Center are to provide technical training with a view to supplying the fisheries manpower required for the development of the commercial fishing industry in line with the expanded fish production program of the Bureau of Fisheries and Aquatic Resources. More specifically, the Center is to produce skilled and competent skippers/masterfishermen and fishing boat engineers to be engaged in the "Commercial Fisheries Sector", where fishing boats of over 3 gross tons are employed. (In the municipal fisheries sector, fishing boats of 3 gross tons or less, using relatively simple gears, operate mostly in shallow coastal waters, many of them for subsistence fishing.)

A feature of the Center is that it trains for the purpose of upgrading mainly crew of commercial fishing boats sent to the Center by employer enterprises, and, therefore, the problem of unemployment of the graduates hardly exists. This appears to be the great advantage of the Center compared with certain fishery training institutions in some other countries, e.g. Bangladesh, Malaysia and Sri Lanka, where difficulties have been experienced in finding suitable jobs for the trainees after graduation.

Admission Requirements

(1) Fishermen with the following qualifications may be admitted:

(a) Age between 21 and 45;

(b) Must have at least three years' sea experience on on board a vessel not less than 10 gross tons with at least 1 year on a fishing vessel; for applicants in the fishing boat engineer course, experience must be on engines of 60 HP or more;

(c) Must be physically fit, and have good eye-sight and normal hearing;

(d) Must have completed elementary school or preferably higher education.

(2) Instructors from schools of fisheries (major in fish capture). Only four to five are accepted per session.

(3) Fisheries extension workers from the Bureau of Fisheries and Aquatic Resources (major in fish capture). Only three to four are accepted per session.

Training Facilities

There are three classrooms and three workshops, including a fishing gear workshop, a mock bridge and a marine engineering workshop.

The Center operates two training vessels:

M/V Maya-Maya: 165 gross tons, used for trawl and purse-seine.

F/B Hasa-Hasa: 69 gross tons, used for trawl manoeuvring and engine operation by trainees prior to boarding M/V Maya-Maya.

Other equipment provided includes:

Netting, twines, ropes, floats, sinkers, etc., for constructing trawl gear; marine engines; various electronic instruments for navigation and fish finding; engine workshop equipment and tools; four vehicles including a school bus.

Training Privileges

Free meals and lodging; ₱ 60 monthly cash allowance; personal accident insurance up to ₱ 10,000.

Instructors

There are twelve instructors besides the principal of the Center. They include three instructors for fishing gear and methods, two for engineering, and the others for navigation, seamanship, electronics/ acoustics, marine biology, fish handling, fisheries maritime law, etc.

Almost all of the instructors are graduates of universities, and one of them is under training at the SEAFDEC Training Department in Bangkok. The Mission was told that so far three instructors of the Center, including the present one, have been trained at the SEAFDEC Training Department.

Training Program

The Center has, so far, produced over 500 graduates in both courses of skippers/masterfishermen and fishing boat marine engineers.

At the time of the Mission's visit, 49 trainees were undergoing the eleventh course, including 35 fishing course trainees and 14 engineering course trainees.

Courses offered

Two courses are offered, namely:

1. Skipper/Masterfisherman course
2. Fishing boat engineer course

The duration of each course is six months. Two batches are trained every year for each course.

The maximum number of trainees admitted at one time is 60 for both courses. The teaching is conducted in English and, when required, in a local dialect.

Curriculum:

A. Course for skippers/masterfishermen

Shore Training

SUBJECT	NO. OF HOURS		
	Lecture	Workshop	Total
1. Fishing gear/method	70	98	168
2. Navigation	60	80	140
3. Seamanship/Rules of the road/ First aid	48	32	80
4. Electronics/Acoustics	30	30	60
5. Fish handling	20	8	28
6. Fisheries maritime law	28	0	28
Total	252	252	504

Sea Training: Four weeks, equivalent to 30 days or a total of 720 hours.

B. Course for fishing boat engineers

Shore Training

SUBJECT	NO. OF HOURS		
	Lecture	Workshop	Total
1. Internal combustion engine	84	106	190
2. Auxiliary machinery; Tool work and equipment	76	94	170
3. Refrigeration/Electricity	56	88	144
Total	216	288	504

Sea Training: Four weeks, equivalent to 30 days or a total of 720 hours.

Firefighting and damage control

The subject, which is a part of the curriculum, is now dealt with separately at the Philippine Coast Guard Training Center. The trainees of both courses who have undergone the training on this subject are given a separate certificate for the course.

(2) RFTC (Regional Fisheries Training Center) Project

This is a project of the Bureau of Fisheries and Aquatic Resources, aiming at establishing seven Regional Fisheries Training Centers (RFTC) in strategic places in the country, primarily for the training of personnel in the municipal fishery sector. The project is being financed by the World Bank. The construction of physical facilities will soon start and is to be completed by mid-1982. The seven RFTCs will organize short courses or otherwise train coastal fishermen, the annual target being 1,400 fishermen for each Center or a total of 9,800 fishermen under the project.

It appears that one of the key problems of the project is how to secure the instructors required at these regional training centers. In this connection, assistance and cooperation by SEAFDEC and other fishery training institutions in the Region will be most valuable.

2. INDONESIA

(1) Academy of Fisheries, Jakarta

General

The Academy of Fisheries, Jakarta, was established in September 1962 in order to give higher (College level) education in fisheries to the graduates of senior high schools. Three courses are provided, i.e. Fishing techniques, Marine engineering and Fish processing, each lasting for three years. School fees, travel expenses and subsistence expenses for the students are all borne by the Government. Up to 1980, some 600 students had graduated from the Academy.

Admission requirements

One hundred and twenty students are admitted annually. Requirements for admission are as follows:

1) Graduates from senior high schools, technical high schools, fishery senior high schools, or agricultural senior high schools.

2) Must not be over 22 years old, not less than 160 cm. tall, and wear no glasses.

3) Must pass the entrance examination.

The Mission was informed that there were usually as many as 800 applicants each year. Among the students admitted, drop-outs during the three years have amounted to about 20%. At present, the third year students consist of 30 for the course on fishing techniques, 30 for the course on marine engineering and 24 for the course on fish processing. About 10% of the total students are women students who train in the fish processing course.

Training facilities

The campus is located on 5 hectares of land in the suburbs of Jakarta. One disadvantage is the fact that the campus is a little far away from the sea, where training boats are berthing. The facilities include:

1) Office buildings
2) Class rooms
3) Auditorium
4) Dormitory for students (Capacity 300 students, consisting of 260 male and 40 female students)

5) Housing for instructors

6) Guest house

The training facilities are:

1) Laboratories for:
   - Chemistry
   - Food processing and refrigeration
   - Biology/Microbiology
   - Navigation and electronics
   - Oceanography

2) Ice-making plant (5 ton capacity)

3) Marine engine workshop and electronics workshop

4) Fishing gear workshop and welding workshop

5) Library

6) Training vessels:
   M.S. MADIDIHANG - 300 GT (multipurpose)
   M.S. TABULARASA - 100 GT (trawler)

Instructors

Full-time lecturers	18
" assist. lecturers	15
Part-time lecturers	45

Among the full-time lecturers, there are two Japanese lecturers, one for navigation and the other for refrigeration engineering.

One of the problems regarding the teaching staff appears to be the small number of full-time lecturers, the major part of the teacning staff working on a part-time basis. This seems sometimes to cause inconveniences in the execution of the training program.

Training Program

Three courses are offered at the Academy, namely: fishing techniques, marine engineering, and processing. It is planned to start at course on fish culture in 1981. Graduates are committed to serving in the Government for at least five years after graduation.

The three years of training at the Academy consist of six semesters. During the first four semesters students attend lectures and practices. The ratio of theory and practice is generally 40 to 60. During the final two semesters, the students are sent to commercial fishing vessels for job training. They then prepare for their final examinations. The training is conducted along the lines of a semi-military system, and good discipline is maintained.

Cirriculum

Fishing techniques course

I. Basic subjects

1. Religious guidance
2. Pancasila/National ideology/Indonesian philosophy
3. Military exercise
4. Mathematics
5. Physics
6. Fisheries biology
7. Statistics
8. Indonesian language
9. English

II. Technical subjects

A. Fisheries

10. Fisheries science
11. Fisheries oceanography
12. Design of fishing gear
13. Construction of fishing vessel
14. Marine meteorology
15. Fishing techniques
16. Fish handling and preservation
17. Shipping organization and management

B. Navigation

18. First aid
19. Spherical trigonometry

20. Nautical science/coastal navigation
21. Nautical arithmetic/astronomical navigation
22. Navigational instruments and accessories:
    a) Conventional
    b) Electronic navigational aid
23. Piloting and chart work
24. Manoeuvre
25. Ship stability
26. Regulations for preventing collision at sea
27. Code of signals
28. Maritime rules and regulations
29. Seamanship and maintenance
30. Basic marine engineering

III. Supporting subjects

31. Fisheries economics
32. Administration and management of fishery establishment
33. Extension service
34. Public finance administration
35. Japanese language

Marine engineering course

I. Basic subjects

(Same as the basic subjects, items 1-9 for the Fishing Techniques Course)

II. Technical subjects

A. Fisheries

10. Introduction to fisheries
11. Fishing techniques
12. Design and construction of fishing vessel
13. Fish handling and preservation
14. Shipping organization and management

B. Engineering

15. First aid
16. Mechanical drawing
17. Refrigeration engineering
18. Electricity
19. Mechanical technology/workshop
20. Auxiliary machinery
21. Technology of metallurgy
22. Technique motor
23. Marine diesel engineering
24. Electronics
25. Seamanship and maintenance
26. Propulsion and resistance
27. Maritime rules and regulations

III. Supporting subjects

28. Fisheries economics
29. Administration and management of fishery establishment
30. Extension service
31. Japanese language

Processing course

I. Basic subjects

(Same as the basic subjects, items 1-9 for the Fishing Techniques Course)

II. Technical subjects

A. Fisheries

10. Fisheries science
11. Shipping organization and management

B. Processing

12. First aid
13. Organic chemistry

14. Analytical chemistry
15. Biochemistry
16. Physical chemistry
17. Modern food processing
18. Traditional food processing
19. Processing machinery and accessories
20. Refrigeration
21. Food chemistry/nutrition
22. Microbiology
23. Quality control
24. Hygiene
25. Toxicology
26. Quality standard of fishery products in Indonesia
27. Regulations applying to food

III. Supporting subjects

(Same as the supporting subjects, items 28-31 for the Marine Engineering Course)

Although the Academy provides three-year courses at a college level, the purpose is to give practical rather than academic training, and no B.A. degrees are offered.

(2) Marine Fisheries Training School, Tegal

The fishery training set up in Tegal includes both the Senior Fisheries High School and the Fisheries Training Centre in the same campus. Buildings, training facilities, equipment, as well as the teaching staff are used in common for both purposes, under the same director. More specifically, the Senior High School is under BPLPP (Agricultural Education, Training and Extension Agency of the Government), while the Training Centre comes under the General Directorate of Fisheries. In other words, the training institution as a whole is operated under the supervision of the two Government agencies in a coordinated manner.

The Marine Fisheries High School was established in 1963 and, with assistance from UNDP and FAO, was enlarged in 1971 to include a fishery vocational training center in order to meet the requirements of skilled personnel for the Indonesian fishing industry, which was expected to expand.

As to the Senior Fisheries High School, it provides a three-year training for deck officers and engineers to students who are graduates from junior high schools. The present annual intake is 120 students per year. The syllabus includes both general and technical subjects. The first two years of study are spent on campus and the final year is spent on training vessels attached to the school.

As to the Training Centre, there are six types of courses being provided as follows:

(1) Marine fisheries skippers or engineers course (six months)

Trainees are graduates of senior technical high schools. The duration of the course is six months. There are two main classes, namely, deck and engine. The course differs from that of the Fisheries High School in that there are no general subjects, the whole time being devoted to vocational training, at a higher level. On-campus training lasts for three months and a further three months are spent on the fishery training vessels. Students are admitted normally every quarter, but for 1980 only one course was given.

The qualifications obtained by the graduates are MPL II for the deck course and AMKPL II for the engine course, which allow the operation of boats up to 150 gross tons and up to 100 miles off shore, as second mates and engineers, respectively.

(2) Skipper or engineer training course (one month)

Trainees are common fishermen. Two courses are organized a year, each course accommodating 30 students. The graduates are given qualifications to operate vessels up to 60 miles offshore (SKK 60 miles).

(3) Courses for fishery extension specialists and field-workers

The duration of the course is six months for each, and the courses are organized once a year. Approximately 30 officers are trained a year. Trainees for the extension specialists course are mainly graduates from the Academy of Fisheries or universities, while trainees for the extension field-workers course are mainly senior high school graduates. The graduates are expected to work either as fishery extension specialists or as field-workers. Fishery extension specialists are further divided into five particular areas, namely, fishery extension specialists on fish capture, fish culture, fish marketing, fish technology and fishery credit. The subjects taught at courses include not only fishery technical matters but also marketing, cooperatives, extension methodology, rural sociology and other subjects relating to extension work.

(4) Vocational training course for university students

This is a short-term practice training of university students in order to supplement their study in the university which is mostly theoretical. Twenty students a year are taken for the course.

(5) Preservice training of new recruits to the Government

This is a training course for introducing new recruits in Government administration to practical fishery. The duration of the course is normally two months.

(6) Mobile training team

The training team consists of five to seven instructors, a training boat and the equipment required for training. This is intended to reach fishermen living far from training institutions and unable to participate in courses held at the training centers. The course lasts for four weeks and those fishermen who have completed the course are given the same qualifications as given in the case of (2) "Skipper and engineer training course, one month", namely, "SKK 60 miles."

Training Facilities

The school is equipped with machinery and instruments essential for conducting training in fishing, navigation, marine engineering and fish processing as follows:

Fishing techniques course: Fully equipped mock navigation bridge (electronic implements such as direction finder, radar, compass, transmitter, receiver).

Net-loft with trawls, purse seines, longlines, gill nets, lampara nets, etc.

Engineering course: Workshop with several sizes and types of marine diesel engines (the largest is 430 HP), Yanmar cut-away, outboard engines, etc.

There are also workshops for machine tools, refrigeration, electricity and smithery.

Training vessels: Ten training vessels of various types and sizes are available, ranging from a 30m - 550 HP vessel to a 9m - 72 HP vessel. Most of the vessels are operated from Tegal, but the larger vessels often use the deep water ports of Cilacap or Semarang. The duration of the training trips varies from one day to over one month.

General facilities

The campus of 8.5 hectares is spacious. The buildings include a library (3,000 volumes), a meeting room, seven class rooms, an auditorium, a dining hall, and a dormitory building capable of accomodating 400 students at any one time.

Instructors

The total number of instructors at the school amounts to 50, including assistant instructors. They are roughly broken down as follows: 25 for engineering, 10 for navigation, and 15 for fishing and processing.

The crew members of the training vessels number approximately 120. In addition, a staff of about 30 work on the administration.

The teaching staff are graduates from fisheries departments of agricultural colleges, from the Academy of Fisheries, Jakarta, from naval training schools and the Tegal School itself. Most of the instructors have spent some time working in a branch of fishing or in engineering industries. Many of the senior staff have also studied abroad in the United Kingdom, Norway, Yugoslavia, Japan, Korea, Malaysia, Singapore or New Zealand.

Training Programs

The curricula of some of the courses given at the Training Centre are shown below:

CURRICULUM

Fisheries Extension Specialist Training Course

(6 months)

Subject	Credit hours	
	Lecture	Practice
I. GENERAL		
1. Fisheries development strategy	18	-
2. Agricultural development administration	18	-

Subject	Credit hours	
	Lecture	Practice
3. Agricultural development economics	18	-
4. Fisheries extension system	18	-
II. FUNCTIONAL		
5. Extension planning	10	8
6. Extension operation	10	8
7. Extension evaluation	10	8
8. Extension methodology	10	8
III. SUBSTANTIVE		
9. Fisheries resources	9	-
10. Fisheries management	10	8
11. Fishing port management	10	8
12. Fisheries regulations	9	-
13. Fishing techniques	27	-
14. Material and design of fishing gear	-	144
15. Seamanship	27	15
16. Marine engine	36	54
IV. SEA TRAINING	-	
		3 months

CURRICULUM

Fisheries Extension Fieldworker Training Course

(6 months)

I.	BASIC		
1.	Religious guidance	12	-
2.	Pancasila/National ideology	12	-
3.	Technical drawing	12	-

Subject	Credit hours	
	Lecture	Practice
II. TECHNICAL SUBJECT		
A. Fisheries		
4. Fisheries management	12	-
5. Fisheries biology	24	-
6. Fisheries oceanography	12	-
7. Material and design of fishing gear	27	40
8. Fishing techniques	24	-
9. Fish handling and preservation	16	8
B. Marine engines		
10. Marine diesel engine	26	44
11. Auxiliary machinery	24	42
12. Electricity	24	42
13. Refrigeration engineering	24	42
14. Workshop work	-	42
15. Maritime rules and regulations	12	-
16. First aid	12	-
III. SEA TRAINING		
17. Sea training	-	520 (±3 months)
18. Discussion	-	8
IV. FISHERIES DEVELOPMENT PROGRAM AND EXTENSION		
19. Program of the fisheries development	18	-
20. Program of the fisheries credit scheme	9	-
21. Program of the fisheries extension	31	-
22. Development of the marketing of fisheries products	18	-
23. Quality control of the fisheries products	18	-
24. Program of the fisheries resources management	13	-
25. Fisheries regulations	13	-
26. Extension methodology	27	-
27. Rural sociology	15	-

CURRICULUM

Marine Fisheries Skipper Training Course

(6 months, for 2nd grade/MPL II)

Subject	Credit hours	
	Lecture	Practice
I. BASIC SUBJECTS		
1. Religious guidance	12	-
2. Pancasila/National ideology	12	-
II. TECHNICAL SUBJECTS		
A. Fisheries		
3. Fisheries management	12	-
4. Fisheries biology	24	-
5. Fisheries oceanography	12	-
6. Material and design of fishing gear	24	108
7. Fishing techniques	24	-
8. Fish handling & preservation	16	8
9. Fisheries regulations	12	-
B. Navigation		
10. Seamanship & maintenance	24	12
11. Nautical science, coastal navigation	24	24
12. Piloting and chart work	24	24
13. Code signals	24	24
14. Regulations on prevention of collision at sea	36	-
15. Maritime rules and regulations	12	-
16. First aid	12	-
17. Marine engine	24	-
C. Sea training	-	520 (3 months)

CURRICULUM

Marine Fisheries Skipper Training Course

(1 month for 60 miles)

	Subject	Credit hours	
		Lecture	Practice
	FISHERIES		
1.	Fisheries resources	6	-
2.	Fishing techniques	10	-
3.	Materials and design of fishing gear	10	33
4.	Fish processing and preservation	4	-
5.	Fisheries management	8	-
	NAVIGATION		
6.	Seamanship	12	10
7.	Navigation	12	8
8.	Code signal	3	2
9.	First aid	4	2
10.	Regulations on prevention of collision at sea	4	4
	SEA TRAINING	-	40
	DISCUSSION		4
	Total	73	103

CURRICULUM

Marine Fisheries Engineer Training Course

(1 month, for 60 miles)

Subject	Credit hours	
	Lecture	Practice
FISHERIES		
1. Fisheries resources	6	-
2. Fishing techniques	10	-
3. Materials and design of fishing gear	6	16
4. Fish processing and preservation	4	2
5. Fisheries management	8	-
ENGINE		
6. Main engine and auxiliary machinery	30	40
7. Workshop work	-	4
8. First aid	4	2
SEA TRAINING	-	40
DISCUSSION	-	4
Total	68	108

CURRICULUM

Marine Fisheries Skipper Training Course

and

Marine Fisheries Engineer Training Course

(15 days, for 60 miles, by Mobile Training Team)

	Subject	Credit hours			
		Deck Class		Engine Class	
		Lecture	Practice	Lecture	Practice
	A. FISHERIES SUBJECT				
1.	Fisheries resources	5	-	5	-
2.	Fishing techniques	10	-	10	-
3.	Design and construction of fishing gear	10	33	6	18
4.	Fish handling	4	-	4	-
5.	Fisheries management	6	-	6	-
	B. NAVIGATION SUBJECT				
6.	Seamanship	10	-	-	-
7.	Coastal navigation	14	-	-	-
8.	Code signal	4	-	-	-
9.	Regulations on prevention of collision at sea	4	-	-	-
10.	First aid	4	2	-	-
	C. BASIC ENGINEERING				
11.	Main engine and auxiliary machinery	-	-	23	30
12.	Workshop work	-	-	4	-
	D. SEA TRAINING	-	40 (4 days)	-	40 (4 days)
	E. GENERAL DISCUSSION	-	4	-	4
	Total	71	79	58	92

3. MALAYSIA

There are three marine fisheries training institutions in Malaysia, namely, the Fisheries Institute Malaysia, located in Penang, and the two Marine Fisheries Training Centres, one in Penang and the other in Kuala Trengganu.

The Fisheries Institute Malaysia conducts training courses of advanced level for offshore fishery operatives, while the Marine Fisheries Training Centres provide courses to upgrade the skill of ordinary fishermen in fishing and engine operations.

The Mission had the opportunity to visit the Fisheries Institute and the Marine Fisheries Training Centre, both located in Penang.

(1) Fisheries Institute Malaysia, Penang

In anticipation of the development of offshore fisheries, the Fisheries Institute was established with UNDP/FAO assistance in Batu Muang, Penang. The courses were started in 1972 with intake of the first batch of 50 trainees. Up to 1979, a total of 363 operatives, consisting of 215 skippers and 148 engine drivers, were trained.

Regular two year courses

Two kinds of courses are available, i.e. the skipper course and the engine driver course, in which students are given theoretical, practical and shipboard training.

During the first year, seven months shore and three months sea training are given. During the second year, 10 months are spent on sea training.

Besides the above regular courses, a fisheries extension officers course for 1 year on the subject of fish handling, and processing, is being organized, starting in 1980. The British Government is assisting in the conduct of the course by assigning two experts in the field of fish handling. Twenty trainees, who have completed their upper secondary education, will be enrolled. They will be working as fishery extension workers after their training.

Admission requirements

The school system in Malaysia consists of six years elementary, three years lower secondary, two years upper secondary, two years pre-university and then university. The admission requirements for the two-year course of the Fisheries Institute are at least a "lower secondary certificate with a pass in mathematics (SRP)". Some students, however, have completed their upper secondary education (SMP).

Facilities

There are two engineering workshops where practical training in diesel engine, refrigeration, electricity and auxiliary workshop techniques is given.

There are also two net-lofts where construction and repairs of fishing gears are carried out. A "mock wheel-house" equipped with an echo-sounder, a radar and a radio telephone, is available for teaching purposes.

There are five class-rooms, with various teaching aids such as cutout engine models, drawings, charts, film strips, slides, and an overhead projector. In addition, a large hall with a 500 seating capacity is available; the boarding house can accommodate 120 students; a dining hall, a students' recreation room with a canteen attached, and facilities for various games are available to the students.

Regarding training vessels, a total of, seven vessels, wood and steel, are available, including one 200 ton boat (steel) and six wooden boats ranging from 80 tons (one vessel) to 40 tons (six vessels). The 200 tonner is a trawler/purse seiner on loan from FAO, the 80 tonner is a trawler, the 40 tonners comprise three trawlers and a purse seiner.

The Mission was informed that, at the present time, the Institute has fourteen instructors including four for fishing gear, three for navigation, three for engineering, and four for sea training. Many of the instructors were trained abroad, in Canada, Japan, Indonesia (Naval Academy), etc.

Problems

The annual intake of trainees is normally 60, comprising some 35 in the skipper course and some 25 for the engine driver course. At the time of the Mission's visit, there were 109 trainees, i.e. 33 fishing trainees and 24 engineering trainees in the first year, and 30 fishing trainees and 22 engineering trainees in the second year. However, a major difficulty encountered by the Institute is the comparatively limited employment opportunities in the fishing industry available to the graduates. This is largely because the anticipated fishery development which promoted the establishment of the Institute did not take place. The fishing industry still consists largely of inshore or coastal fishery. There are very few registered vessels over 50 gross tons requiring the skill of qualified skippers and engine drivers. The Mission was told that none of the fishing vessels is equipped with a fish finder, radar or radio-telephone. Not only the industry but also MAJUIKAN (Fisheries Development Authority) have not contributed to the expansion of the industry as was expected. The expansion has taken place in the industry in terms of number of

vessels, but there has been hardly any expansion towards offshore and deep sea waters.

As seen in the Table "Employment Status of Fisheries Graduates (15/10/1980)", 140 (39%) out of 363 graduates during the period from 1972 to 1979 are either employed in non-fisheries sectors, or unemployed or their occupation is unknown. With respect to Peninsular Malaysia, 135 graduates are employed in the fisheries sector, but only 13 seem to be engaged in the private fishing industry, the remaining 122 graduates being employed in government sectors, i.e. either the Fisheries Division or the Fisheries Development Authority. It is also believed that perhaps only 20% to 25% of the graduates employed in the fisheries sector in Peninsular Malaysia work as operatives, while the others are employed mainly in shore-based jobs as technicians, net-makers or menders, fisheries assistants, cooperative assistants, instructors, patrol boat crew, etc.

The general situation of insufficient employment opportunities, as mentioned above, has had unfortunate repercussions, such as the drifting by many graduates into land-based jobs, and diminishing enthusiasm of trainees shown by the increasing number of drop-outs, and the decreasing number of applicants for training at the Institute.

Thus, the original purpose of the establishment of the Institute has apparently not been realized. Any improvement in the situation would depend on the development of a viable offshore fishing industry which would lead to an improved status of the industry, making it more attractive to graduates.

TABLE

Employment Status of Fisheries Institute Graduates

(15/10/80)

By year and by course (1972-1979)

A. Fisheries Sector	1972		1973		1974/75		1975/76		1976/77		1977/78		1978/79		Total	
	Fishing	Engine	F	E	F	E	F	E	F	E	F	E	F	E	F	E
Fisheries Division	8	2	8	2	6	4	6	4	3	1	3	2	5	2	39	17
Fisheries Development Authority	5	3	10	2	7	8	4	-	10	3	1	6	4	3	41	25
Self-employed	1	-	1	1	2	-	2	1	1	1	2	-	-	1	9	4
Sarawak	1	4	3	6	1	1	1	4	1	7	2	5	3	5	12	32
Sabah	3	20	50	4	7	1	3	6	2	3	3	1	2	2	25	19
B. Non-fisheries Sector	9	10	20	8	3	5	13	7	6	6	5	6	2	5	58	47
C. Unemployed	2	-	1	-	1	-	2	1	5	1	3	-	7	1	21	3
D. Unknown	-	-	2	-	-	-	4	-	-	1	2	-	2	-	10	1
	29	21	50	23	27	19	35	23	28	23	21	20	25	19	215	148

By course (1972-1979)

A. Fisheries Sector	Fishing	Engine	Total
Fisheries Division	39	17	56
Fisheries Development Authority	41	25	66
Self-employed	9	34	13
Sarawak	12	32	44
Sabah	25	19	44
B. Non-fisheries Sector	58	47	105
C. Unemployed	21	3	24
D. Unknown	10	1	11
	215	148	363

(2) Marine Fisheries Training Centre, Penang

The Centre was established in 1960. The training given at the Centre is in the field of marine engine maintenance, coastal navigation and fishing gear and techniques. Two types of courses are held annually, one for helmsman training and another for the 3rd class engine driver. Each course lasts for three months, and is given three times a year, for the following three-month periods: namely, January/April, May/August, and September/December.

Admission requirements do not include any formal education but the applicants must have three years' sea experience as a fisherman. There is no age limit. All expenses including meals and accommodation are paid by the Government. The dormitory accommodates 30 trainees. Total number of trainees per year is about 75. Since its establishment, the Centre has trained well over 1,700 fishermen.

Training facilities

The training facilities include:

Three classrooms; three workshops, i.e. one for engine maintenance, one for the fishing gear loft, and one for the experimental tank used for the purpose of fishing gear instruction:

Fishing gears including trawl net, gill net, handline and longline.

Fish finder, and ship/shore communicating set.

The Centre has a wooden training vessel of 54 GT.

The Centre has five instructors. The Mission noted that two of them have been trained at the Training Department of SEAFDEC.

Certificate of Proficiency

A certificate of 3rd class engine driver or helmsman of a fishing boat is given to those who have completed the course successfully.

4. BANGLADESH

(1) Marine Fisheries Training Centre, Chittagong

The Marine Fisheries Training Centre, Chittagong, was established by the Bangladesh Fisheries Development Corporation in 1973 with U.S.S.R assistance. There were eight U.S.S.R instructors in

1973-1976, two Danish instructors in 1977-79 and one Japanese instructor during 1977-80, but at the moment all the teaching is being done by the Bangladesh instructors. Since the inception of the Centre, 453 students were admitted, of whom 250 have completed the course; 85 are now continuing the course, while 75 went to the U.S.S.R. for specialized training.

The objectives of the Centre are to ccnduct training in the following fields:

(1) Navigation (Nautical engineering)

(2) Marine engineering

(3) Radio engineering

(4) Fish processing technology

(5) Gear technology (Trawl operation)

(6) Refrigeration engineering

(7) Electrical engineering

Qualifications for admission

There is an age limit for all courses, namely, not below 16 years and not above 22 years. Swimming is a pre-requisite for admission, and the candidates must take the entrance test. The academic qualifications required are generally a high school certificate but differ from course to course as regards details, which will be explained later for each course.

Training Facilities

Most of the training equipment and aids were donated by the Government of the U.S.S.R. They include engines, compressors, condensers, pumps, generators, electro-radio-navigation devices such as sonar, radar, echosounder, radio direction finders, radio receivers and transmitters, automatic navigation and pilotage instruments (magnetic compass, gyro-compass, chronometers, signalling instruments, etc.), processing equipment including canning plants, fish drying, filleting equipments, various models of nets, etc. They are installed in eleven class rooms and laboratories of the Training Centre. There are also 100 films, 1200 slides, charts, wall sheets, etc., as training aids.

However, as far as the Mission was able to ascertain, there appears to be neither a net-loft available for practice of net cutting and mending, nor an actual size trawl net, purse seine or gill net for demonstration. There are no training vessels attached to the Centre, but the students get shipboard training on board the vessels of the BFDC

(Bangladesh Fisheries Development Corporation) as the two training vessels donated by U.S.S.R are out of operation owing to the non-availability of spare parts. In fact, they appear to be so badly damaged as to be beyond repair. There is a dormitory which accommodates 100 students.

Instructors

At the moment, the Centre has a teaching staff of eleven members, of whom two are temporary. Generally speaking, most of the teaching staff are apecialized in various types of engineering, i.e. marine electrical, radio, nautical, refrigeration, and processing, while there seem to be only a few specialized in fishing or gear technology. This may be a problem of the Centre, together with the lack of training vessels and a net-loft as mentioned earlier. The training in fishing gear and methods may not be practical enough to meet the actual needs of the fishing industry.

Employment situation

The curricula and syllabi of the Centre have recently been recognized by the Ministry of Ports and Shipping. The main sources of employment of the graduates seems to be the BFDC, but it is not sufficient to accommodate all the graduates who have totalled some 250 so far. Many graduates, therefore, seek employment abroad and in fact 74 graduates are employed by the fishing fleets of Kuwait, Libya, etc. The commercial fishing fleet of Bangladesh has yet to be developed, and the joint venture efforts with Thailand appear to be one of the steps to achieve this.

Curricula, basic entrance qualifications and duration of the Courses given at the Center

NAUTICAL ENGINEERING (Navigation)

i)	Basic qualification	H.S.C. (Pre-Engineering Group), having at least one 2nd Division either in S.S.C. or H.S.C. examination
ii)	Duration	2½ years
	a) Theoretical	15 months
	b) Sea practice	15 months

	Name of subjects	Duration
	Main subjects	
1.	Seamanship	210 hrs
2.	Navigation and pilotage	200 hrs
3.	Fundamentals of nautical astronomy	150 hrs
4.	Fundamentals of maritime law & rules of the road	100 hrs
	Auxiliary Subjects	
5.	Technical means of navigation	150 hrs
6.	Ship's Regulations	20 hrs
7.	Fundamentals of Ship theory	60 hrs
8.	Fundamentals of radio engineering and electronics	80 hrs
9.	Fundamentals of safety precautions and fire fighting	40 hrs
10.	Ship's power plants	30 hrs
11.	Fundamentals of commercial fishing	90 hrs
12.	Fish processing	40 hrs
13.	Oceanography and meteorology	40 hrs
14.	Electrical engineering & Electrical equipment of the ship	80 hrs
15.	Ichthyology	40 hrs
16.	Fundamentals of technical drawing	40 hrs
17.	Fundamentals of technical mechanics	60 hrs
18.	Fundamentals of economics of fishing fleet & commercial correspondence	
19.	Physical training	300 hrs

MARINE ENGINEERING

i)	Basic qualification	H.S.C. (Pre-Engineering Group) having at least one 2nd Division either in S.S.C. or H.S.C. examination or S.S.C. 2nd Division with Diploma in Mechanical Engineering from Polytechnic Institute
ii)	During	2½ years
iii)	Theoretical and workshop	18 months
iv)	Sea practice	12 months

	Name of subjects	Duration
	Main Subjects	
1.	Internal combustion engine	280 hrs
2.	Ship's refrigeration plant	100 hrs
3.	Ship's auxiliaries and fishing gears	120 hrs
4.	Technology of repair	100 hrs
	Auxiliary Subjects	
5.	Safety precautions and fire fighting instruments	40 hrs
6.	Ship's Regulations	40 hrs
7.	Fundamentals of electrical engineering	60 hrs
8.	Technology of metal	80 hrs
9.	Workshop practice	400 hrs
10.	Ship's construction	40 hrs
11.	Ship's auxiliary boilers	40 hrs
12.	Fundamentals of thermodynamics and heat transfer	100 hrs
13.	Ship's electrical equipment	80 hrs
14.	Technical drawing	80 hrs
15.	Technical mechanics	80 hrs
16.	Fundamentals of electro-navigation devices	80 hrs
17.	Physical training	300 hrs

RADIO ENGINEERING

i)	Basic qualification	H.S.C. (Pre-Engineering Group) with one 2nd Division either in S.S.C. or H.S.C. Examination or S.S.C. with Diploma in Electronics from Polytechnic Institute
ii)	Duration	1½ years
iii)	Theoretical	1 year
iv)	Sea practice	6 months

	Name of subjects	Duration
	Main Subjects	
1.	Fundamentals of radio engineering	90 hrs
2.	Electro-navigational devices	150 hrs
3.	Morse keying and rules of communication	470 hrs
	Auxiliary Subjects	
4.	Repair and maintenance of ship's radio equipment	60 hrs
5.	Electrical engineering	90 hrs
6.	Fundamentals of Radar and RDF	150 hrs
7.	Fundamentals of Ship's hydro-acoustic equipment	110 hrs
8.	Safety precautions and fire fighting	40 hrs
9.	Ship's regulation	40 hrs
10.	Fundamentals of seamanship	60 hrs
11.	Fish Processing	40 hrs
12.	Ichthyology	40 hrs
13.	Physical Training	150 hrs

FISH PROCESSING TECHNOLOGY

i)	Basic qualification	H.S.C. (Science) with Chemistry, having at least one 2nd Division either in S.S.C. or in H.S.C. examination
ii)	Duration	1 year
iii)	Theoretical	7 months
iv)	Sea and shore practice	5 months

	Name of subjects	Duration
	Main Subjects	
1.	Fish processing equipment	90 hrs
2.	Fish processing and quality control	200 hrs
	Auxiliary Subjects	
3.	Ichthyology	40 hrs
4.	Chemistry	40 hrs
5.	Fundamentals of Refrigeration	50 hrs
6.	Ship's hygiene	40 hrs
7.	Ship's construction	40 hrs
8.	Ship's regulations	40 hrs
9.	Safety precautions and fire fighting	40 hrs
10.	Physical training	100 hrs

GEAR TECHNOLOGY (TRAWL OPERATION)

i)	Basic qualification	H.S.C (Science) with at least one 2nd Division either in S.S.C. or H.S.C. Examination
ii)	Duration	1 year
iii)	Theoretical	7 months
iv)	Sea & shore practice	5 months

	Name of subjects	Duration
	Main Subjects	
1.	Fundamentals of Commercial Fishing	200 hrs
2.	Ship's auxiliaries and Fishing Gears	80 hrs
	Auxiliary Subjects	
3.	Technical drawing	40 hrs
4.	Safety precautions in the operation of fishing gears and deck gears	40 hrs
5.	Ship's construction	40 hrs
6.	Fish processing	40 hrs
7.	Fundamentals of seamanship	60 hrs
8.	Ichthyology	40 hrs
9.	Ship's hygiene	40 hrs
10.	Physical training	100 hrs

REFRIGERATION ENGINEERING

i)	Basic qualification	Diploma in Power or Refrigeration Engineering from any Polytechnic Institute
ii)	Duration	1 year
iii)	Theoretical	7 months
iv)	Sea practice	5 months

	Name of subjects	Duration
	Main Subjects	
1.	Refrigeration plant	250 hrs
2.	Repair and erection of refrigeration plants	130 hrs
	Auxiliary subjects	
3.	Ship's construction	50 hrs
4.	Electrical equipment of fishing vessel	50 hrs
5.	Fish processing	50 hrs
6.	Device of ship's refrigeration plants	50 hrs
7.	Safety precautions	40 hrs
8.	Ship's regulations	40 hrs
9.	Ichthyology	40 hrs
10.	Physical training	100 hrs

ELECTRICAL ENGINEERING

i)	Basic qualification	Diploma in Electrical Engineering from any Polytechnic Institute
ii)	Duration	1 year
iii)	Theoretical	7 months
iv)	Sea practice	5 months

	Name of subjects	Duration
	Main subjects	
1.	Ship's electrical power plants and mains	80 hrs
2.	Ship's electrical machines and electrical drives	260 hrs
	Auxiliary subjects	
3.	Design of fishing vessels	50 hrs
4.	Ship's power plants, auxiliaries and commercial fishing mechanism	80 hrs
5.	Electrical and radio navigational devices	80 hrs
6.	Technology of electrical wiring and repairing works	30 hrs
7.	Ichthyology	40 hrs
8.	Physical training	100 hrs

5. SRI LANKA

(1) Sri Lanka Fisheries Training Institute, Colombo

The Fisheries Training Institute was established, with the assistance of the Government of Japan, in Crow Island, Colombo, in 1975. The purpose of the Institute is to conduct practical as well as theoretical training, at a higher level, in fishing gear and methods, navigation, marine engineering, etc. In other words, the Institute trains sea-going personnel, namely, skippers, masterfishermen, and marine engineers, to be engaged in off-shore and deep-sea fisheries. In addition, there are four Fishery Training Centres, i.e. in Negombo, Tangalle, Batticaloa and Jaffna, which were established earlier for the purpose of training coastal fishermen. The Mission had the opportunity to visit the Fishery Training Centre in Negombo.

Trainees' qualifications for admission

General certificate of education/ordinary level. Formerly, GCE/Advanced level was a pre-requisite, but now it has been lowered to the ordinary level. However, in practice, 60% of the trainees have the GCE/Advanced level. Former trainees of local Fishery Training Centres are given priority in the selection.

The courses are conducted in Singhalese or Tamil in alternate years. About 20 trainees are admitted per year, half for the deck officers course and half for the engine room officers course.

The dormitory facilities can accommodate a maximum of 60 students.

Training Facilities

The Institute has six class rooms and seven workshops, i.e. machine room, testing room, engine room, performance room, forging room, refrigeration plant and electric-generator room. Fishing gears owned by the Institute include trawl net, ring net, small purse seine, drift net, bottom long line, tuna long line, trolling line, etc. Engineering workshops are equipped with a varieties of engines, machine tools and testing instruments. It seems that the engine section is better equipped than the fishing section.

The Institute is very well equipped with training vessels. There are four of them, i.e. a 200 ton tuna long liner which was acquired recently, a 75 ton pole and line vessel, a 25 ton trawler and a 12 ton gill-netter.

Instructors

The Centre has 12 lecturers and four assistant lecturers, covering mainly the fields of engineering and fishing. Besides these, some 10 visiting lecturers teach subjects such as navigation, oceanography, meteorology, biology, industrial mathematics, electronics, fishery regulations, fishermen's cooperatives, hygiene, radio telephone, etc. These lecturers come from the Navy, the University of Sri Lanka, the Ministry of Fisheries, fishery cooperatives, etc.

Some of the lecturers were trained abroad, in particular in Japan, i.e. at the Shimonoseki Fisheries University or the International Fisheries Training Centre operated by the Japan International Cooperation Agency.

The Courses

Two courses are provided at the Institute, namely the deck officers course and engine room officers course. Both courses, which used to be two-year courses, now last for 18 months each.

The curriculum is planned in such a way that class room work and practice constitute 40% and 60% respectively.

Available hours for lecture and practice in the Institute are calculated as follows, taking the engine room officers course as an example:

		1st year	2nd year
1)	One and half years 365 + 182.5 = 547.5 days	365 days	182.5 days
2)	Vacation (Aug. Dec. Apr.) days are deducted	- 37 328 days	- 13.5 169 days
3)	Practice on board (minimum) 1st year 3 wks and 2nd year 9 wks used	- 21 307 days	- 63 106 days
4)	Holidays (Sat. & Sun. national holidays, etc.) are deducted	- 110 197 days	- 38 68 days

		1st year	2nd year
5)	Other days to be deducted: e.g. examination, opening, graduation, etc.	- 25	- 17
		172 days	51 days
6)	Total available hours (6 hrs/day)	1,032 hrs	306 hrs
7)	Total	1,330 hrs	

Position of employment of the graduates

The employment situation (as of April 1980) of the graduates is available for the first to third year graduates (1977, 1978, 1979). There were 40 graduates in all, including 23 for marine engineering and 17 for fishing, who completed the courses and passed the final examination. It is noted that 10 out of 23 engine course graduates and five out of 17 fishing course graduates were employed by Japanese fishing companies, while others were employed in Government service as well as private sectors, including Sri Lanka private shipping companies. Many worked in non-fisheries sectors, and it was reported that four graduates were unemployed. It appears that here too there is a problem of ensuring employment opportunities for the graduates of the Institute.

(2) Fisheries Training Centre, Negombo

This Centre was established in 1962, with the help of the Japanese Government, as the first fishery training institution set up in Sri Lanka. Later three further similar fishery training centres were set up in Tangalle, Batticaloa and Jaffna to take care of the respective areas.

The Centre conducted two courses, i.e. fishing, and engine operation, but these two courses have recently (since 1980) been integrated into a fishing boat operators course which lasts for 12 months.

Under the new integrated course, the fishermen trainees are provided with intensive training in navigation, engine operation and maintenance, and fishing gear and methods for the purpose of coastal fisheries development.

Pre-requisites for admission are a) the 8th standard of education (in fact, many are GCE/Ordinary level students); b) preferably sons of fishermen; and c) ages between 18 to 30 years. Thirty trainees a year are admitted and they are divided into three groups, of 10 trainees each. Each group undergoes, in turn, a three months, training

in fishing gear and methods (theory and practice on land), a three months' training in engine operation (theory and practice) and three months, fishing training at sea. The remaining three months are devoted to examination, holidays, etc.

Training facilities consist of two classrooms, a workshop equipped with milling and drilling machines, lathe, marine diesel engines, out-board motors, etc., two training vessels (11 ton and 3.5 ton vessels) and fishing gears, including trawl net, ring net, gill net, bottom long lines, tuna long lines and trolling lines.

The dormitory can accommodate a maximum of 30 trainees.

Instructors of the Centre include: the Principal (a specialist in marine engineering), three marine engineers and three fishing gear specialists.

The Mission was told that there were some 200 applicants a year from which 30 were selected. Approximately 50% of the graduates of the Centre are engaged in fishing activities.

IV. CONCLUSIONS AND RECOMMENDATIONS

1. CONCLUSIONS

As described in the preceeding chapters, the Mission visited fishery training Institutions in the Philippines, Indonesia, Malaysia, Bangladesh and Sri Lanka, and was able to observe the training facilities and discuss problems with the directors or other staff of these institutions. The views and conclusions of the Mission, based on its observations and relevant discussions, are summarized as follows:

Although it was possible for the Mission to visit only some of the fishery training institutions in the Region, the field of training of those institutions visited were mainly fishing gear and methods, and marine engineering, with the purpose of building up skills and expertise needed for the development of the fishing industry, particularly in offshore waters. While the Mission noted that training facilities, including equipment and teaching personnel, vary from one training institution to another regarding scope and qualifications, there certainly seems to be a need for improvement. It would, therefore, be most appropriate for fishery training institutions in the Region to cooperate with respect to the following:

(1) Exchange or visits of instructors

It would be most beneficial if arrangements could be made between fishery training institutions in the Region for the exchange

of instructors. Instructors either in fishing gear and methods, or marine engineering from one institution might stay at another institution to teach or assist in teaching for a medium term, i.e. six months to one year. Such an arrangement would provide both institutions concerned with the opportunity to increase communication and mutual understanding. The instructors concerned would be able to acquire skills new to them, e.g. teaching methods with which they are not so far familiar. They might also have the opportunity to observe fisheries different from their own, which would broaden their experience, and improve the quality of their future teaching activities.

Exchange of personnel would not necessarily have to be on a bilateral basis between two institutions but could be arranged in a variety of patterns among any given number of fishery training institutions in the Region as appropriate.

One possible difficulty in effecting the exchange of instructors might be the language. The teaching in those institutions visited by the Mission is conducted, as a rule, in local languages, except in cases where it is necessary to use English. In many cases, however, English is the language which is normally understood by the students.

In this connection, attention is be called to the fact that the people of Indonesia and Malaysia speak the same language and that most of them have a common religion. It appears, therefore, that an exchange or visits of instructors between these two countries would be feasible and beneficial.

Apart from this medium term exchange of personnel, short visits of instructors should also be considered. Perhaps, short visits might be organized in some cases, more easily, than longer term stays as a member of the teaching staff. One trip might include visits to several fishery training institutions in several countries, including SEAFDEC in Bangkok and JICA Yokosuka International Fishery Training Centre in Japan. The Fishery Training Institutions in Indonesia and Sri Lanka would be particularly worthwhile visiting, as they are conducting relatively higher level training and are well equipped with teaching instruments and aids. Instructors from other countries would greatly benefit from a visit to these countries.

The costs involved in such an exchange of instructors would be, in principle, travel fares and allowances for living expenses in the host country, presuming that living allowances to the family members continue to be paid by the home country. Patterns of arrangements for the governments or training institutions to bear the costs could vary and should be determined after due consultation among the parties

concerned. As will be referred to later on, however, funds from external aid-giving agencies will also be required. As for short-term visits, it would be necessary for SEAFDEC to find funds either from its own or from external sources.

(2) Training courses or seminars for the benefit of instructors

Many of the instructors of the fishery training institutions are university graduates and some have also been trained abroad. However, as far as the fields of fishing gear and methods, and marine engineering are concerned, it appears that there is a need for improvement of knowledge and updating skills. Generally speaking, fishery training institutions have a relatively small teaching staff of their own, and rely on a large number of part-time instructors drawn from outside. Under the circumstances, for most of the institutions the number of full-time instructors of their own should be increase and strengthened, and, in this connection, it would be appropriate to organize regional training courses or seminars for fishery instructors. Such courses or seminars might take place within SEAFDEC, at one of the fishery training institutions in the Region, or possibly at JICA's Yokosuka International Fisheries Training Center in Japan. The subjects of the course or seminar would initially be limited to a specific field such as fishing gear and methods or marine engineering, together with a study of teaching methods and aids.

(3) Availability of training materials

Most of the training is conducted in local languages and the Mission was under the impression that few text books and manuals are available which are suitable for use at the fishery training institutions. However, the Mission understands that SEAFDEC is initiating a project under which it will play the role of an information clearing house for the fisheries training institutions in the Region. The Mission believes that such a project will be most useful for improving the teaching activities of the fishery training institutions in the Region.

(4) Observation tours/seminars on fishery developments

Owing to the Mission's very short stay in each country and to its having had some difficulty in contacting the persons chiefly concerned, it was not able to ascertain particular fishery developments in countries in the Region which might be usefully visited and studied by extension workers or leading fishermen. One exception is the development of certain types of purse seine fisheries in the Philippines. While the possibility of organizing visits to the Philippines in order to observe these purse seine fishing operations should be explored with the governments concerned, the matter might be discussed more suitably among

the persons who are well versed in recent fishery developments in each country, possibly on the occasion of technical meetings held by SEAFDEC, with a view to identifying fisheries developments in regard to which study tours or seminars might be organized.

2. RECOMMENDATIONS

The Mission wishes to make the following recommendations, based on the foregoing observations and conclusions:

(1) SEAFDEC should draw up cooperative projects for the exchange or visits of instructors of the fishery training institutions in the region, to include those institutions visited by the Mission as well as SEAFDEC. Such projects might include exchange of instructors between training institutions for a medium term (6-12 months), primarily for cooperation or assistance in teaching, as well as short-term visits of relevant instructors to familiarize themselves with practices of other fishery training institutions with a view to improving and updating their qualifications.

The projects might be implemented as a part of TCDC (Technical Cooperation among Developing Countries) which is being promoted by FAO in the Region. In this connection, SEAFDEC should follow up the matter in cooperation with FAO, the South China Sea Fisheries Development and Coordinating Programme, and the Bay of Bengal Small-Scale Fisheries Programme, in order to integrate the projects into the total scheme of the TCDC in the Region.

(2) SEAFDEC should organize or arrange, if necessary in cooperation with other international organizations such as FAO or national aid agencies including JICA of Japan, training courses or seminars for instructors from the fishery training institutions in the Region. The scope of each of these courses or seminars should be limited to either fishing gear and methods, or marine engineering, together with teaching methods and aids in both cases.

In this connection, it would be useful if SEAFDEC were to approach JICA and explore the possibility of the Kanagawa International Fisheries Training Center organizing the training course or seminar for the benefit of the instructors from the countries in the Region. The course or seminar might last for a period of two to three months, drawing upon local expertise as lecturers, and consisting of theoretical and practical training, including visits to fishery production centers to observe actual fishery operations. Such a course or seminar would, contribute greatly towards broadening the knowledge of the instructors and upgrading the quality of training in fishery training institutions in the Region.

(3) With respect to funding the projects recommended above, the ability of individual governments or fishery training institution to bear the cost will naturally be limited. SEAFDEC should, therefore, notwithstanding any amount of its own funds which might be available for the purpose, approach international organizations or programs such as FAO, the South China Sea Fisheries Development and Coordinating Programme, the Bay of Bengal Small-scale Fisheries Programme, the Asian Development Bank, as well as various bilateral agencies with a view to raising funds for the various projects proposed above.

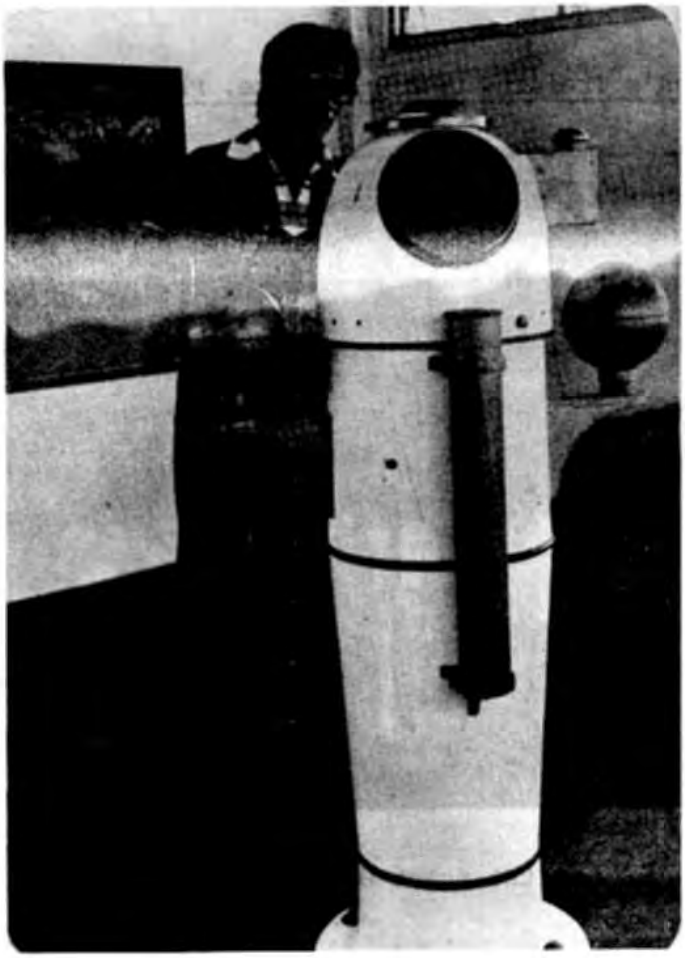
APPENDIX

Fishermen's Training Center, Cavite, Philippines (1)

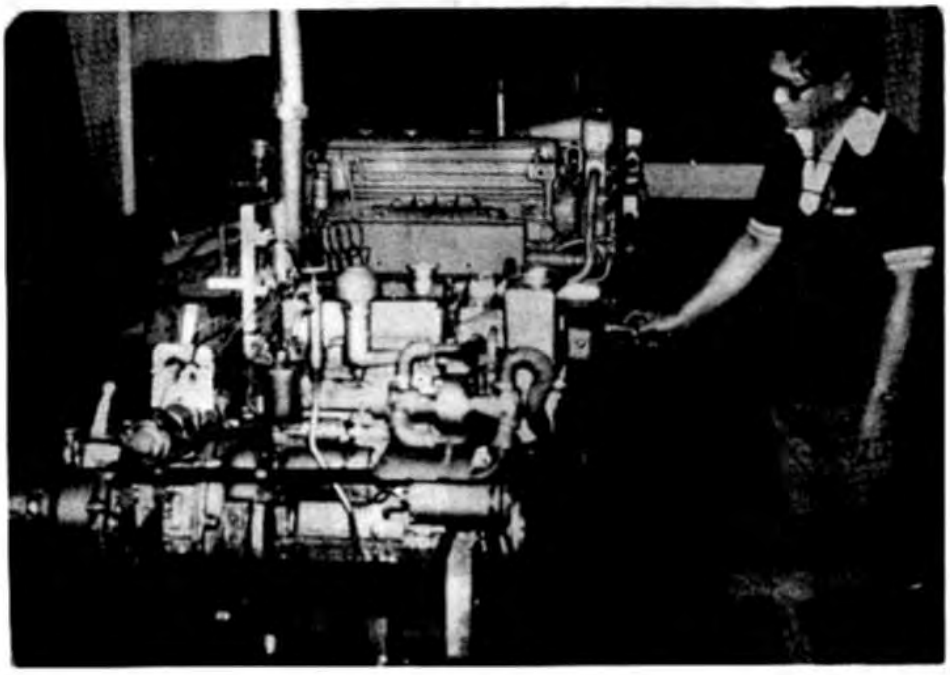
1. At the front entrance

2. Net-making practice

Fishermen's Training Center, Cavite, Philippines (2)



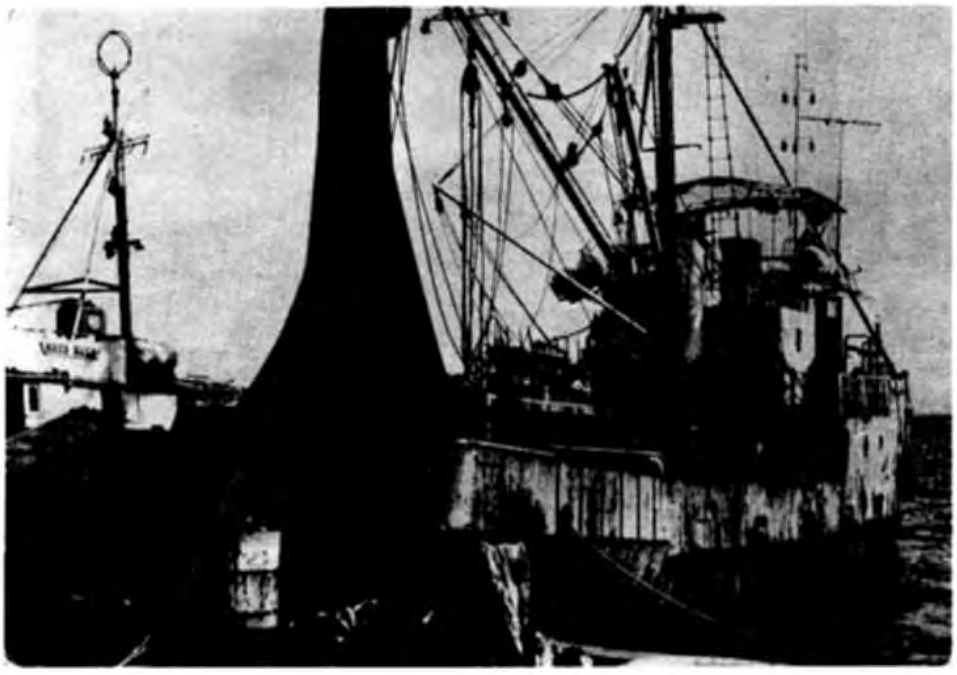
3. Mock bridge



4. Engine workshop

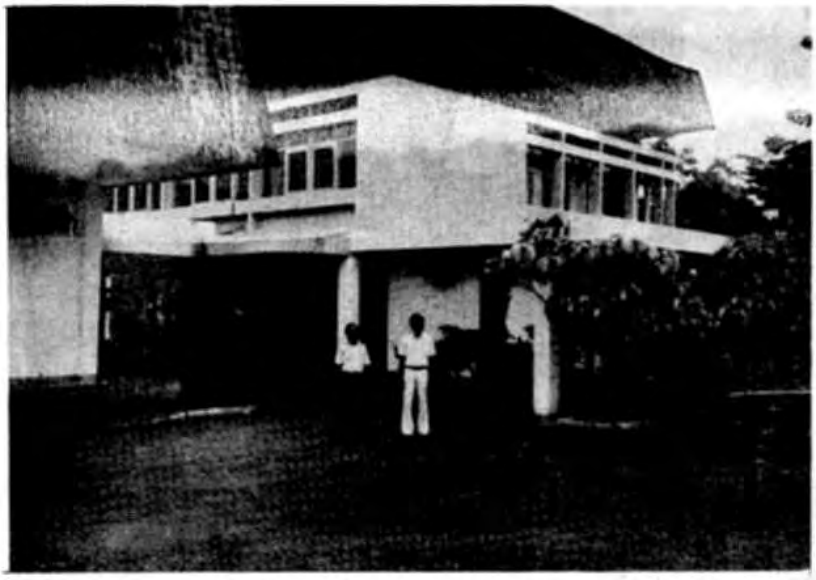
Fishermen's Training Center, Cavite, Phillippines (3)

5. Welding practice



6. Training vessel "Maya-Maya"

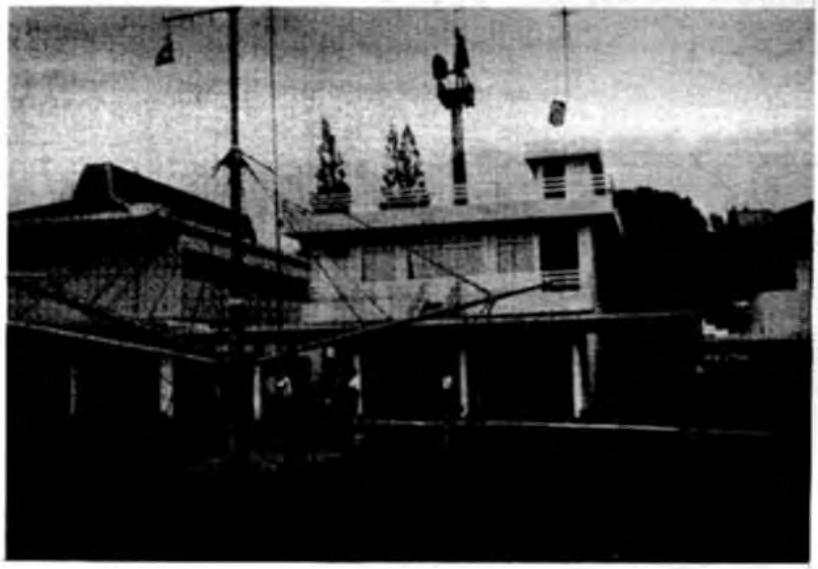
Academy of Fisheries, Jakarta, Indonesia (1)



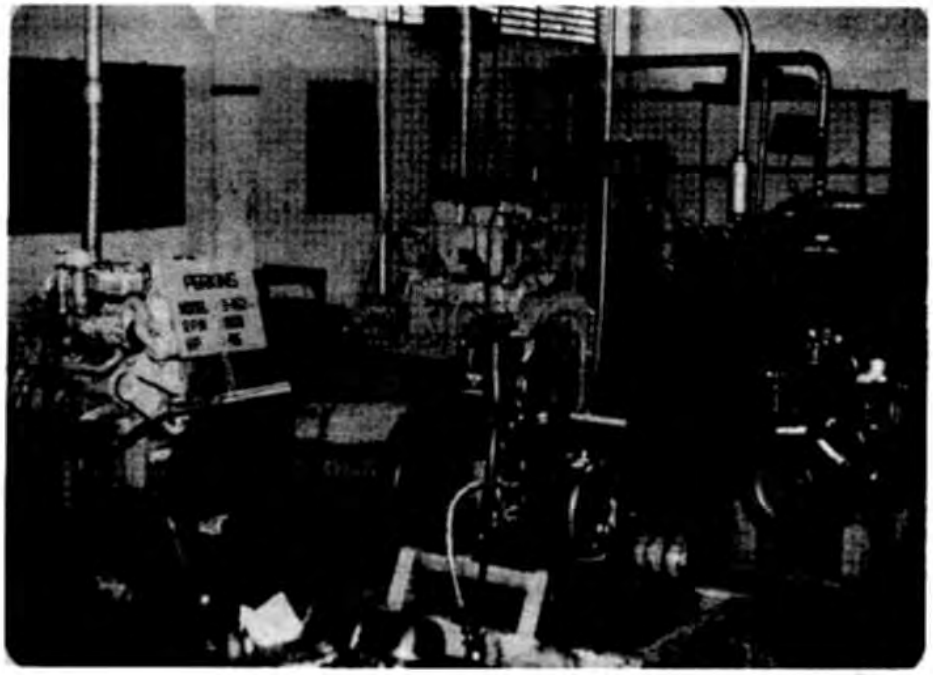
1. Main entrance

2. Campus

Academy of Fisheries, Jakarta, Indonesia (2)

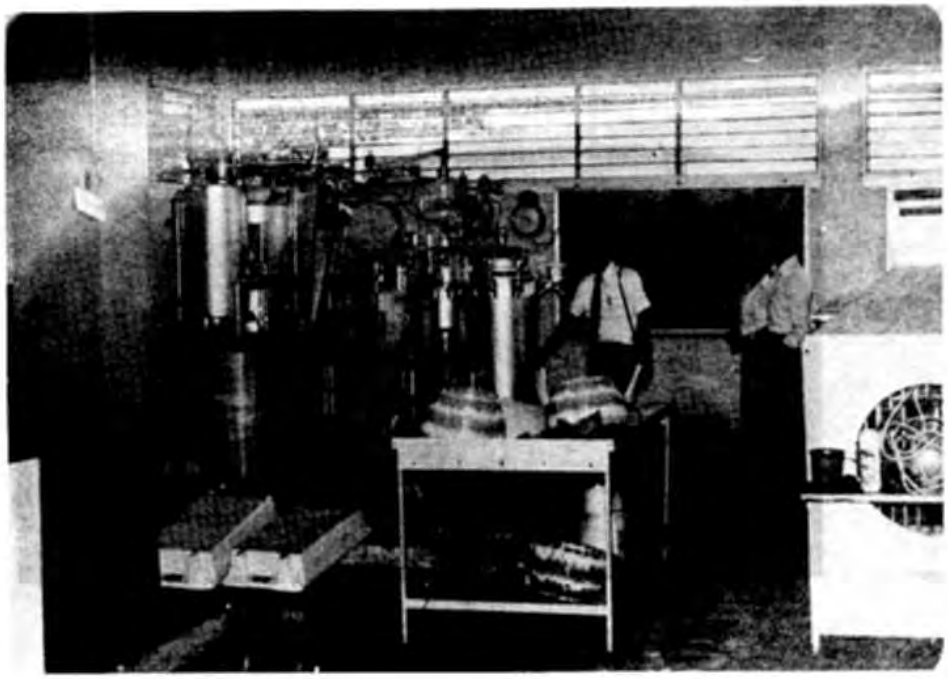


3. Mock bridge

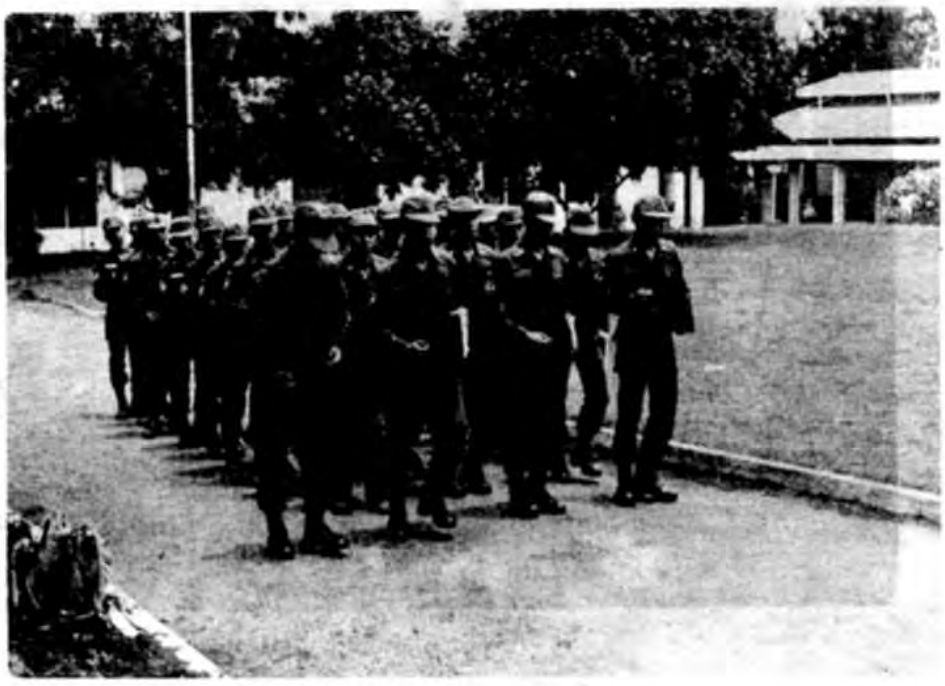


4. Engine workshop

Academy of Fisheries, Jakarta, Indonesia (3)



5. Processing workshop



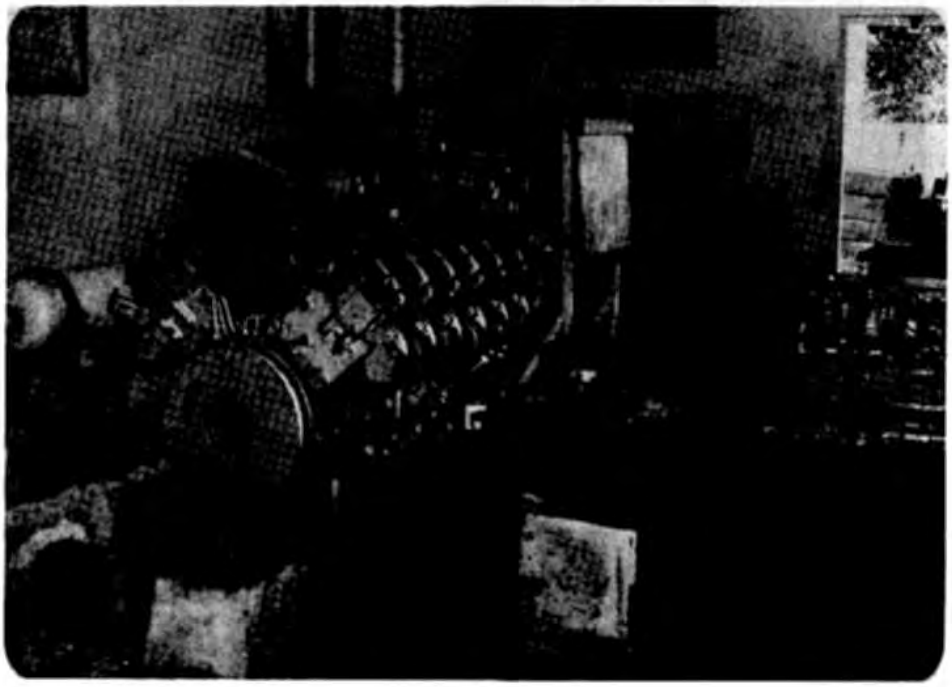
6. Students moving from one class to another

Marine Fisheries Training School, Tegal, Indonesia (1)

1. Campus

2. Mock bridge

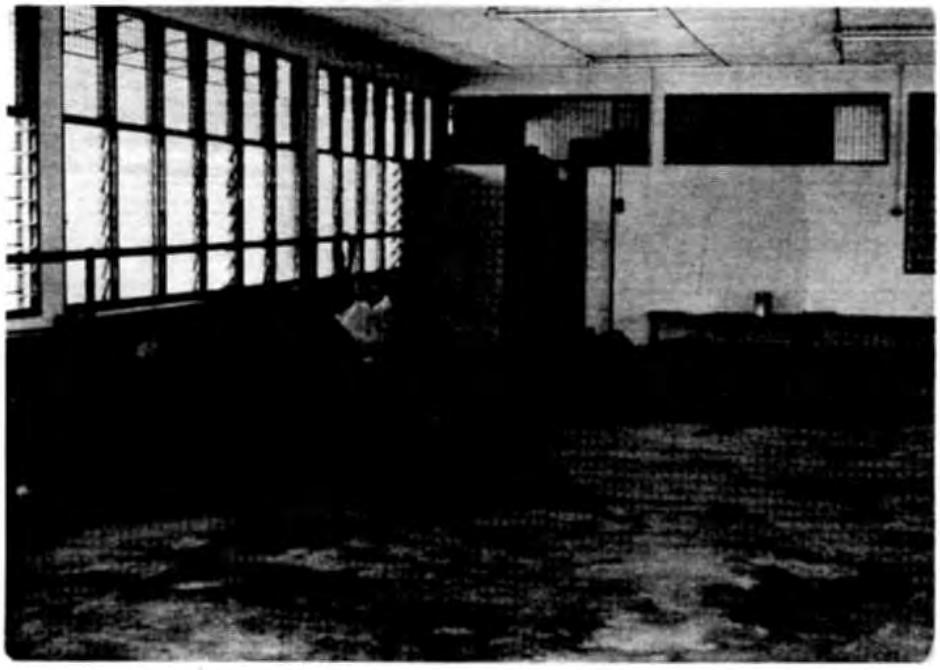
Marine Fisheries Training School, Tegal, Indonesia (2)



3. Engine workshop

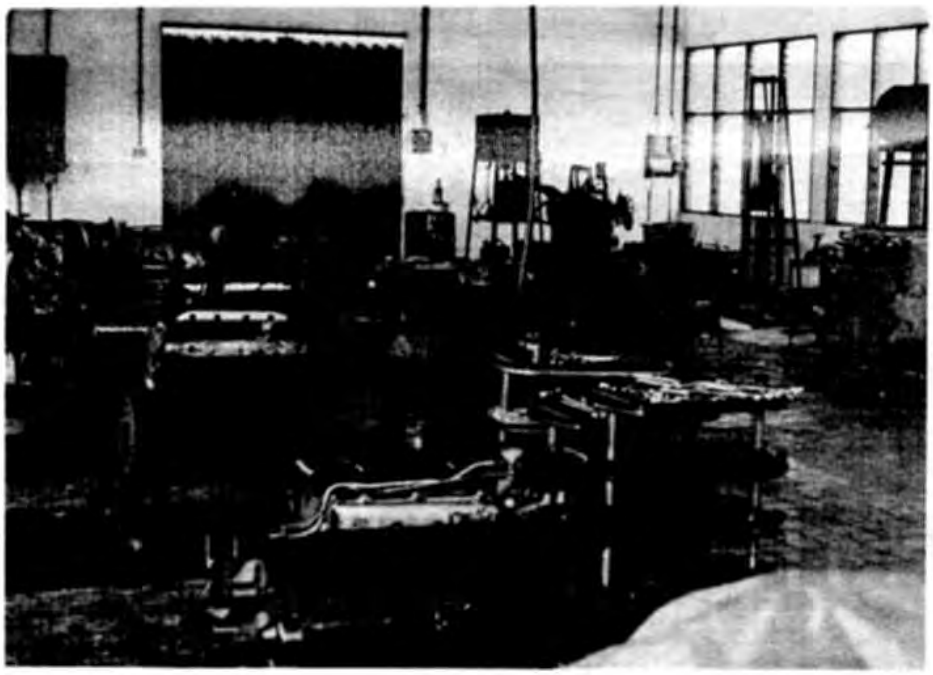
Fisheries Institute Malaysia, Penang, Malaysia (1)

1. Main building

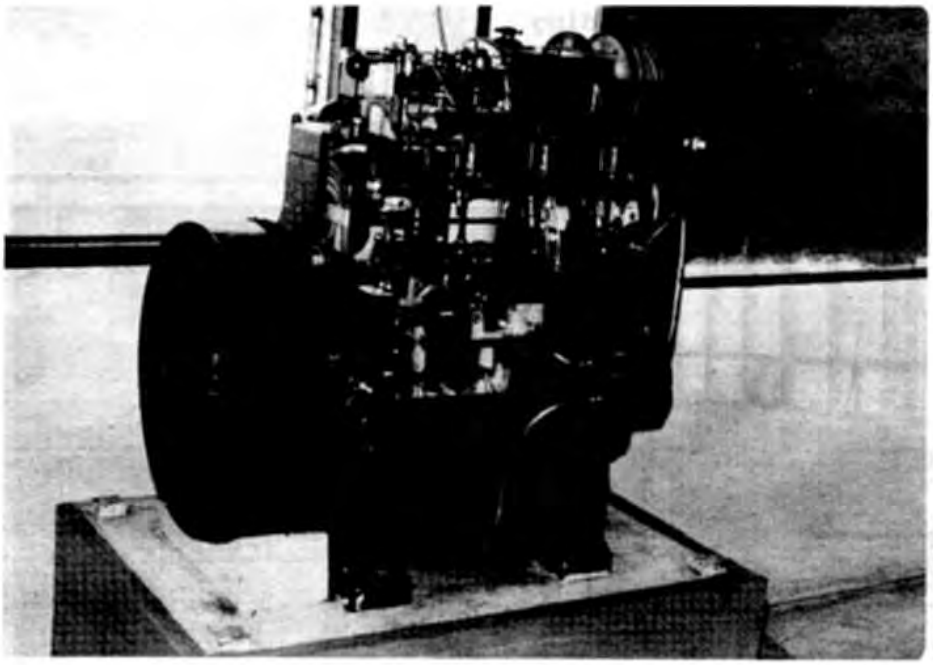


2. Net-loft

Fisheries Institute Malaysia, Penang, Malaysia (2)



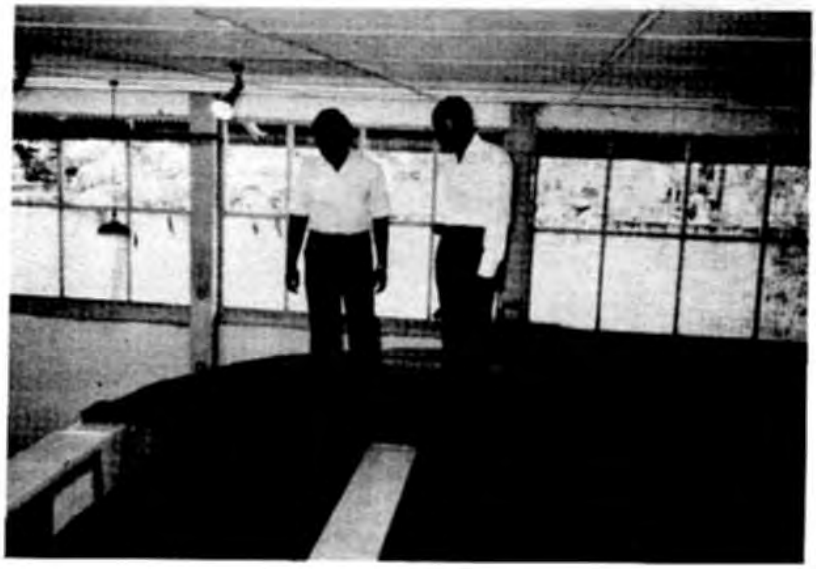
3. Engine workshop



4. Model engine

Marine Fisheries Training Centre, Penang, Malaysia (1)

1. Engine workshop

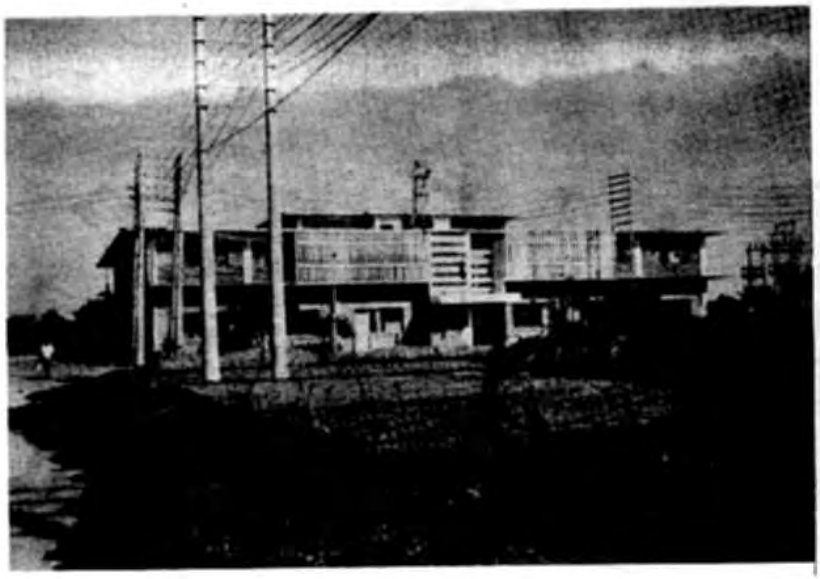


2. Gear demonstration tank

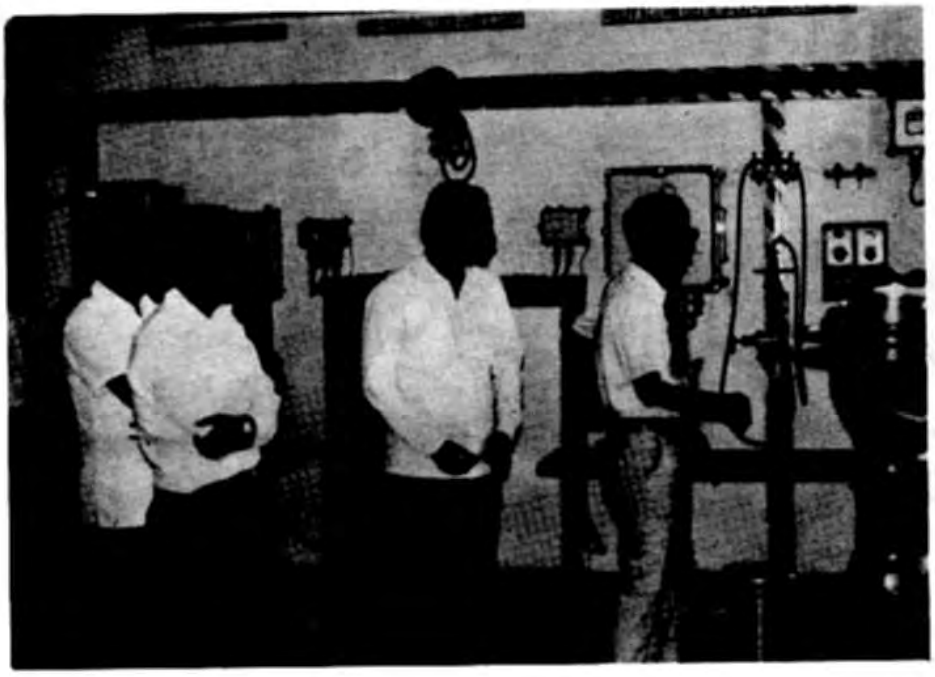
Marine Fisheries Training Centre, Penang, Malaysia (2)

3. Fishing gear workshop

Marine Fisheries Training Centre, Chittagong, Bangladesh (1)



1. Main building



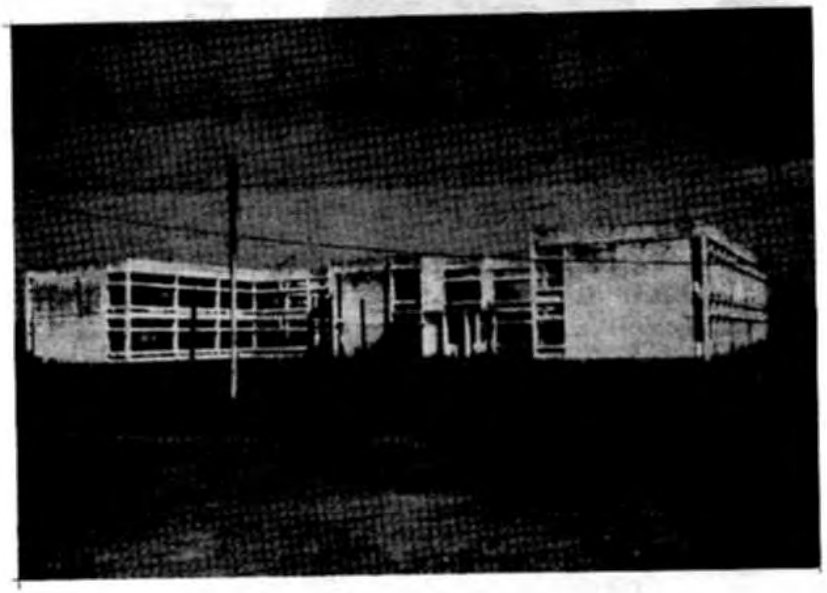
2. Navigating instruments

Marine Fisheries Training Centre, Chittagong, Bangladesh (2)

3. Fishing gears and materials

4. Students in class

Marine Fisheries Training Centre, Chittagong, Bangladesh (3)



5. Dormitory

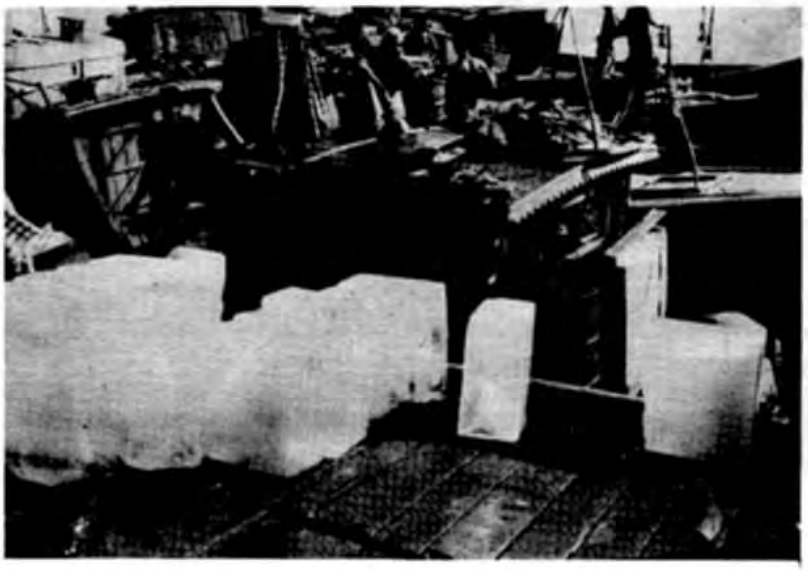
National Fishermen's Cooperative Society, Chittagong, Bangladesh (1)

1. Office of the Society

2. Net-making plant of the Society

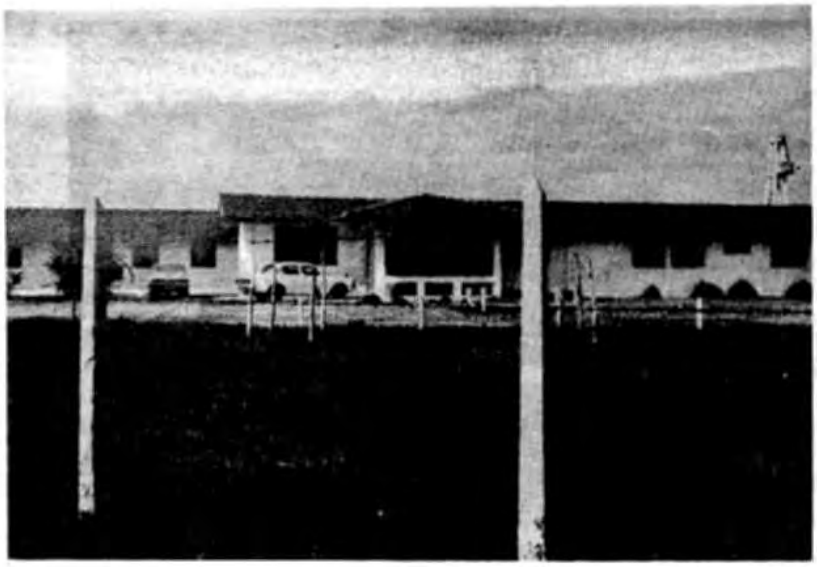
National Fishermen's Cooperative Society, Chittagong, Bangladesh (2)

3. Boatyard of the Society

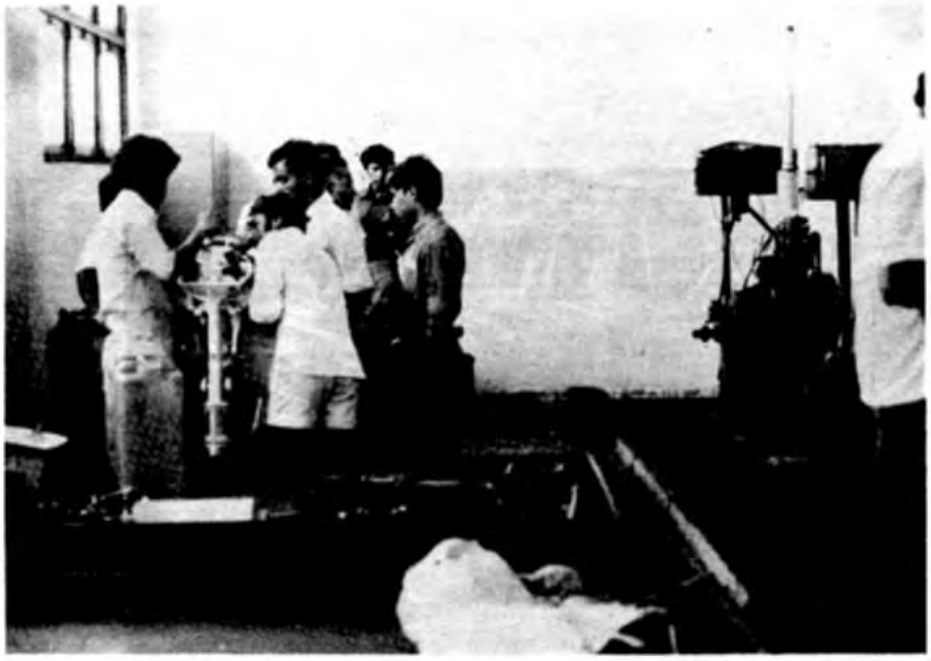


4. Fishing boat loading ice

Sri Lanka Fisheries Training Institute, Colombo (1)

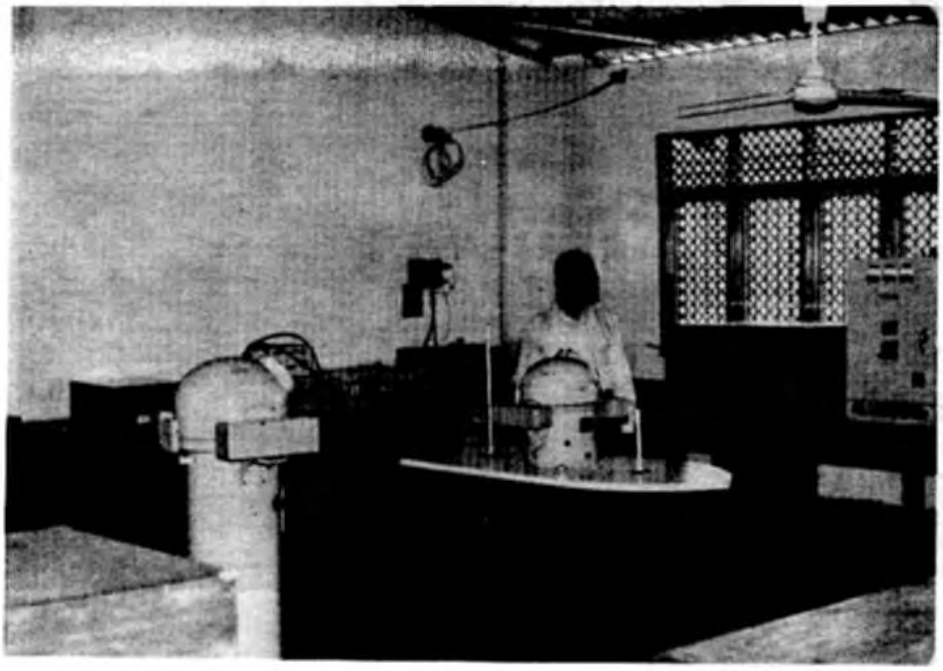


1. Main building

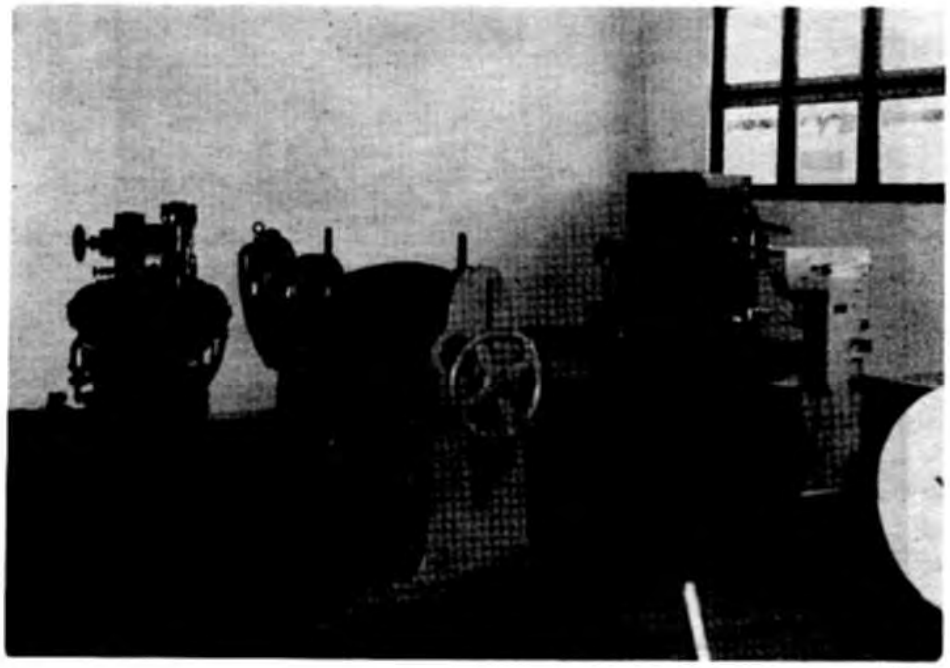


2. Engine workshop practice

Sri Lanka Fisheries Training Institute, Colombo (2)



3. Navigation workshop



4. Engine workshop

Sri Lanka Fisheries Training Institute, Colombo (3)

1. Training vessel (200 ton long-liner)

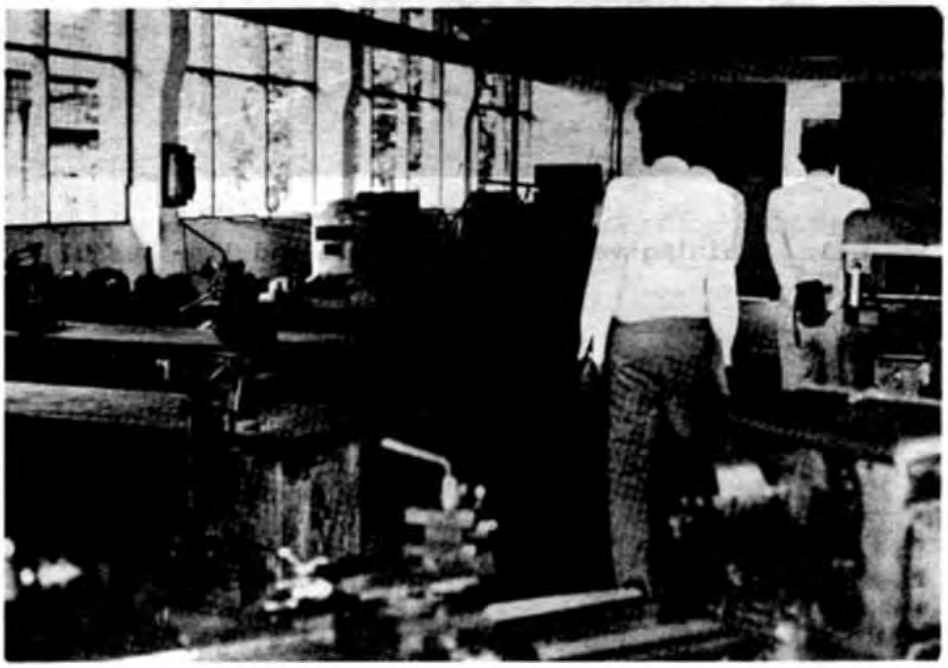
2. Training vessel (12 ton gill-netter)

Sri Lanka Fisheries Training Institute, Colombo (4)

3. Training vessel (75 ton pole and line vessel)

Fisheries Training Centre, Negombo, Sri Lanka

1. Main building



2. Engine workshop