The ice made here will be transported by truck, etc., to a jetty beyond the road (for small boats) and another jetty 1.6km from the plant (for medium and large boats) and be loaded into the boats.

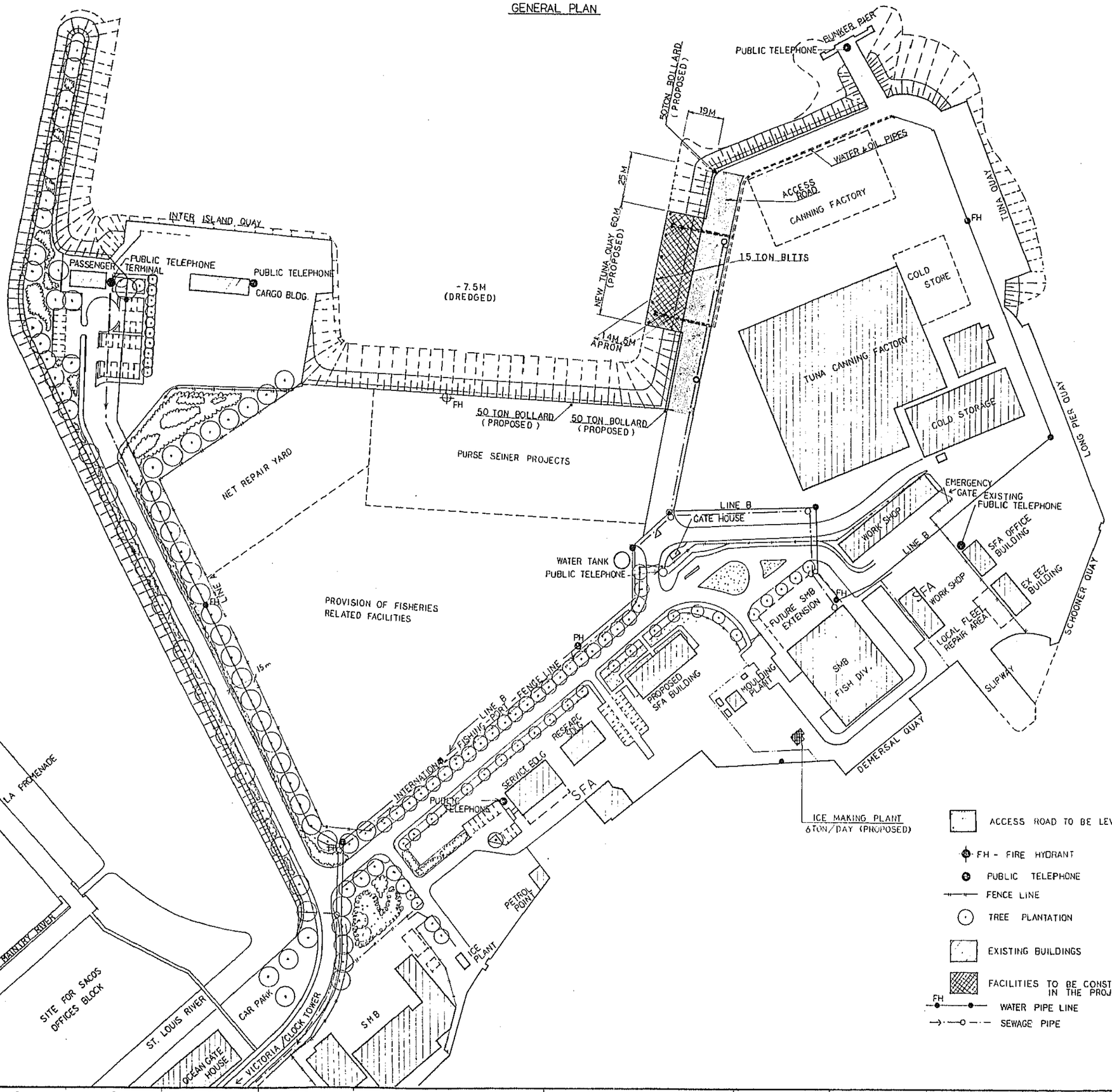
Considering this, the height of the ice making plant from the ground level is planned at 0.8m adjusting to the loading deck of trucks.

4.3.4 Basic Design Drawings

The basic design drawings prepared based on the results of the discussions described in the previous section are as follows:

DRAWING NO.	DRAWING TITLE
1.	General Plan
2.	New Tuna Quay
3.	Ancillary Facilities
4.	Access Road
5.	Plan for Ice Making Plant (Victoria)
6.	Plan for Ice Making Plant (Praslin)
7.	Ice Making Plants

GENERAL PLAN



GENERAL NOTES

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		REFERENCE DRAWINGS		
		REVISIONS		

GENERAL PLAN

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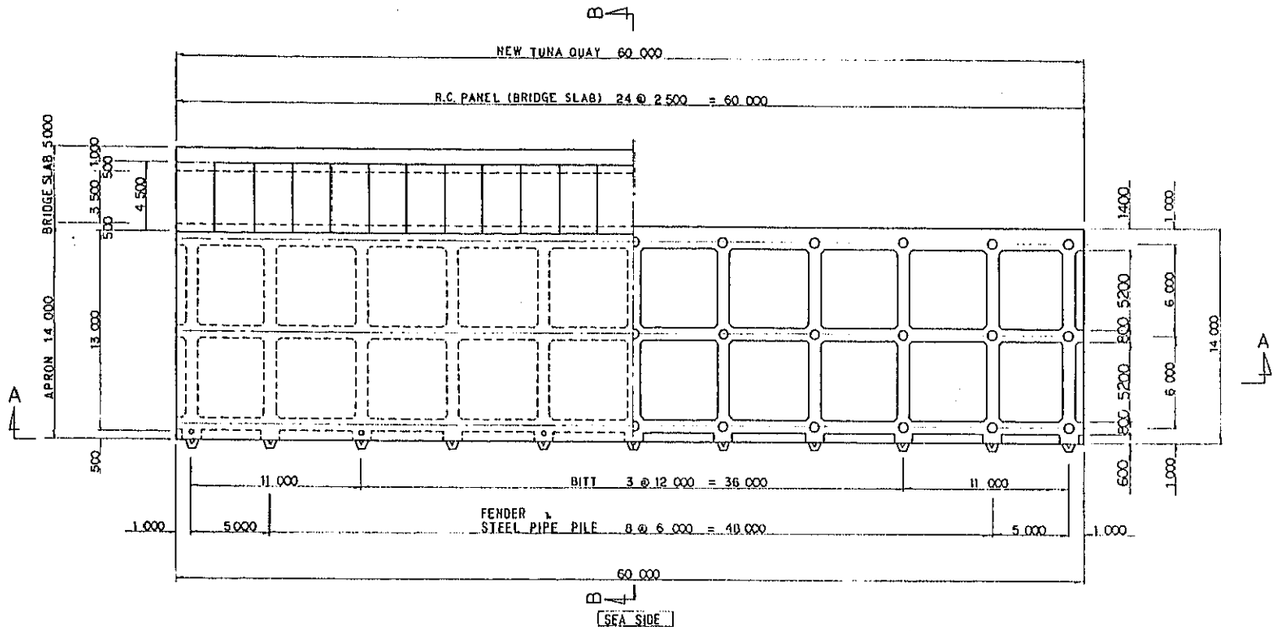
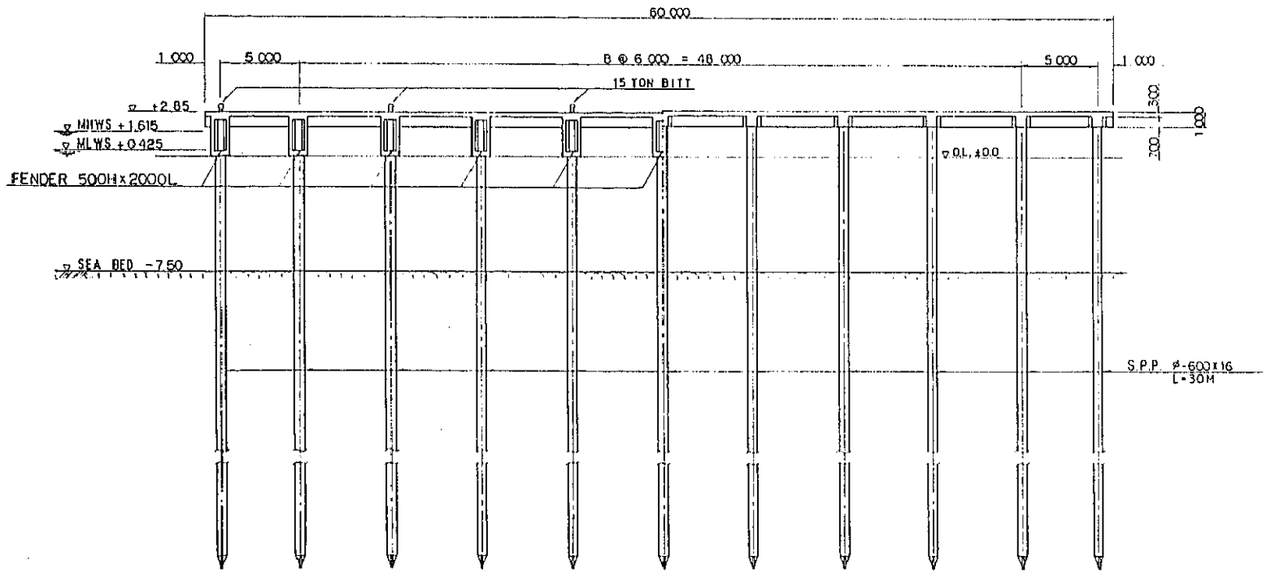
		DWG. NO. 1	

4 - 27

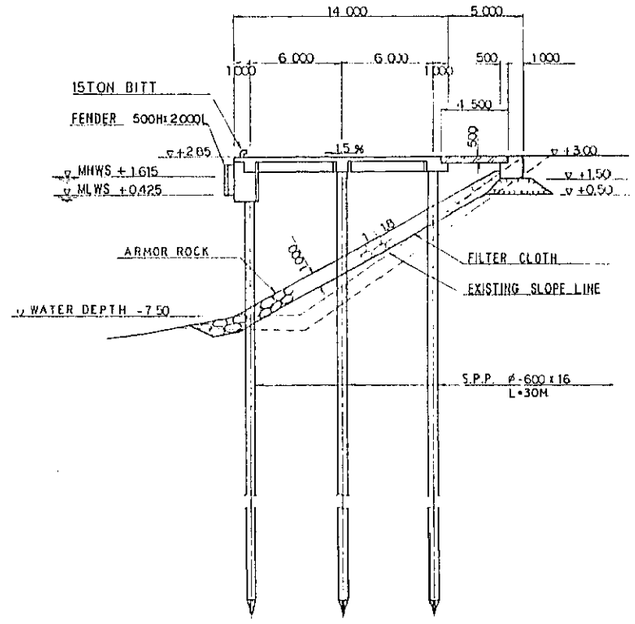
PLAN



A-A SECTION



B-B SECTION



GENERAL NOTES

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NEW TUNA QUAY

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DATE		DWG. NO. 2	

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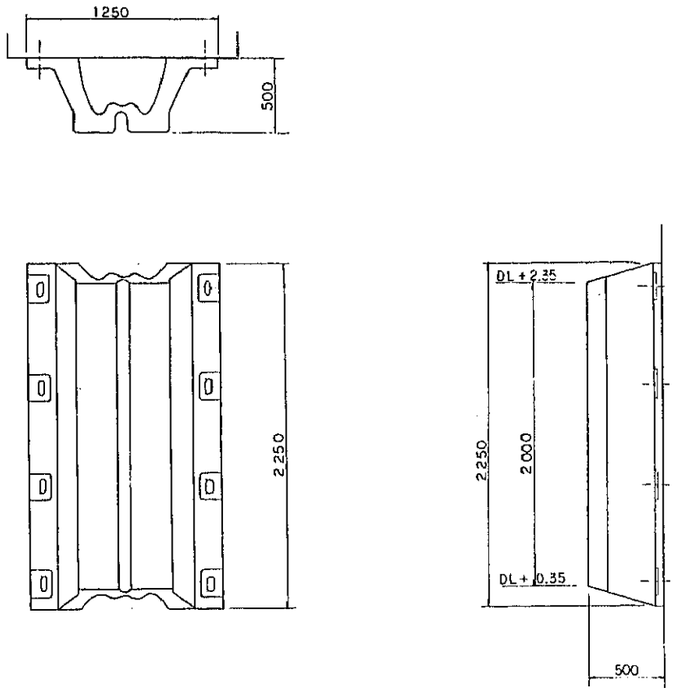
(FOR REFERENCE)



PLAN OF 15TON BITT
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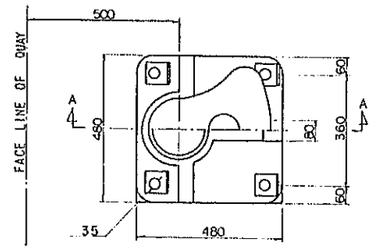

A-A SECTION
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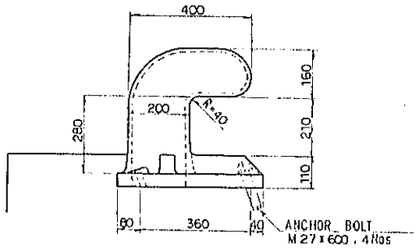

PLAN OF 50TON BOLLARD
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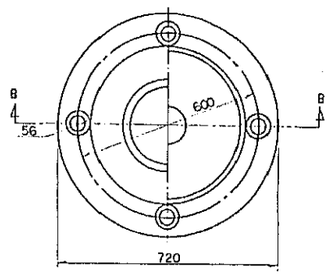

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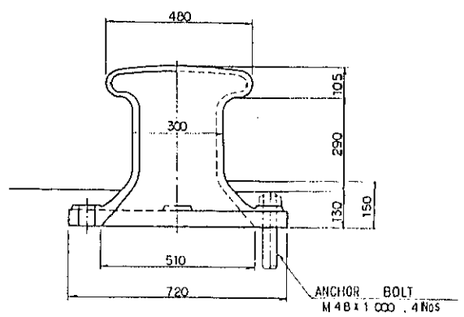

GENERAL NOTES

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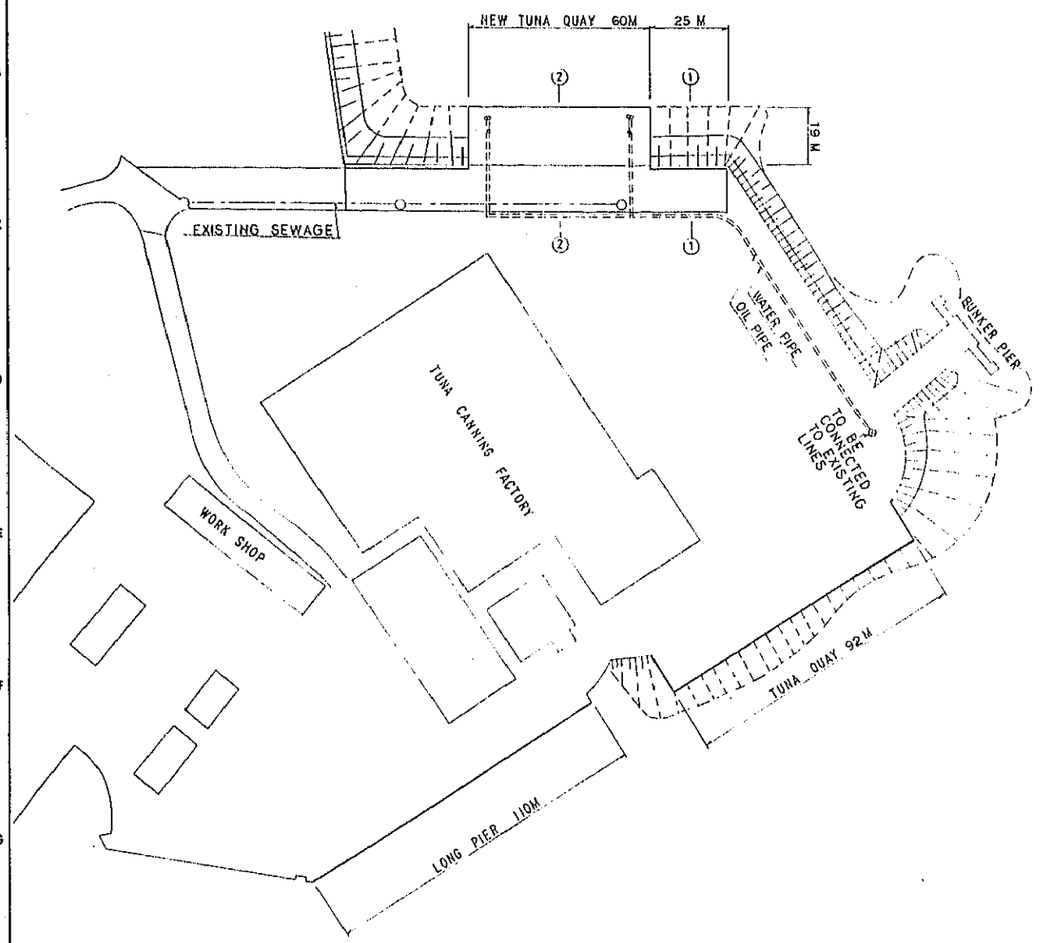
NO.	DATE	DESCRIPTIONS	BY	APP'D
REVISIONS				

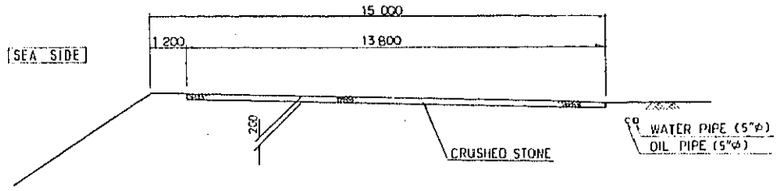
ANCILLARY FACILITIES

SUBMITTED	APPROVED	SCALE	REV. NO.
		1 : 10 , 1 : 20	◇
DATE		DWG. NO. 3	

PLAN FOR ACCESS ROAD
S=1/1000



①-① SECTION
S = 1/100



②-② SECTION
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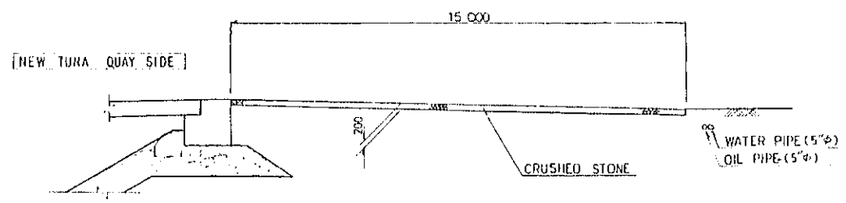

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GENERAL NOTES

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NO.	DATE	DESCRIPTIONS	BY	APP'D
REVISIONS				

ACCESS ROAD

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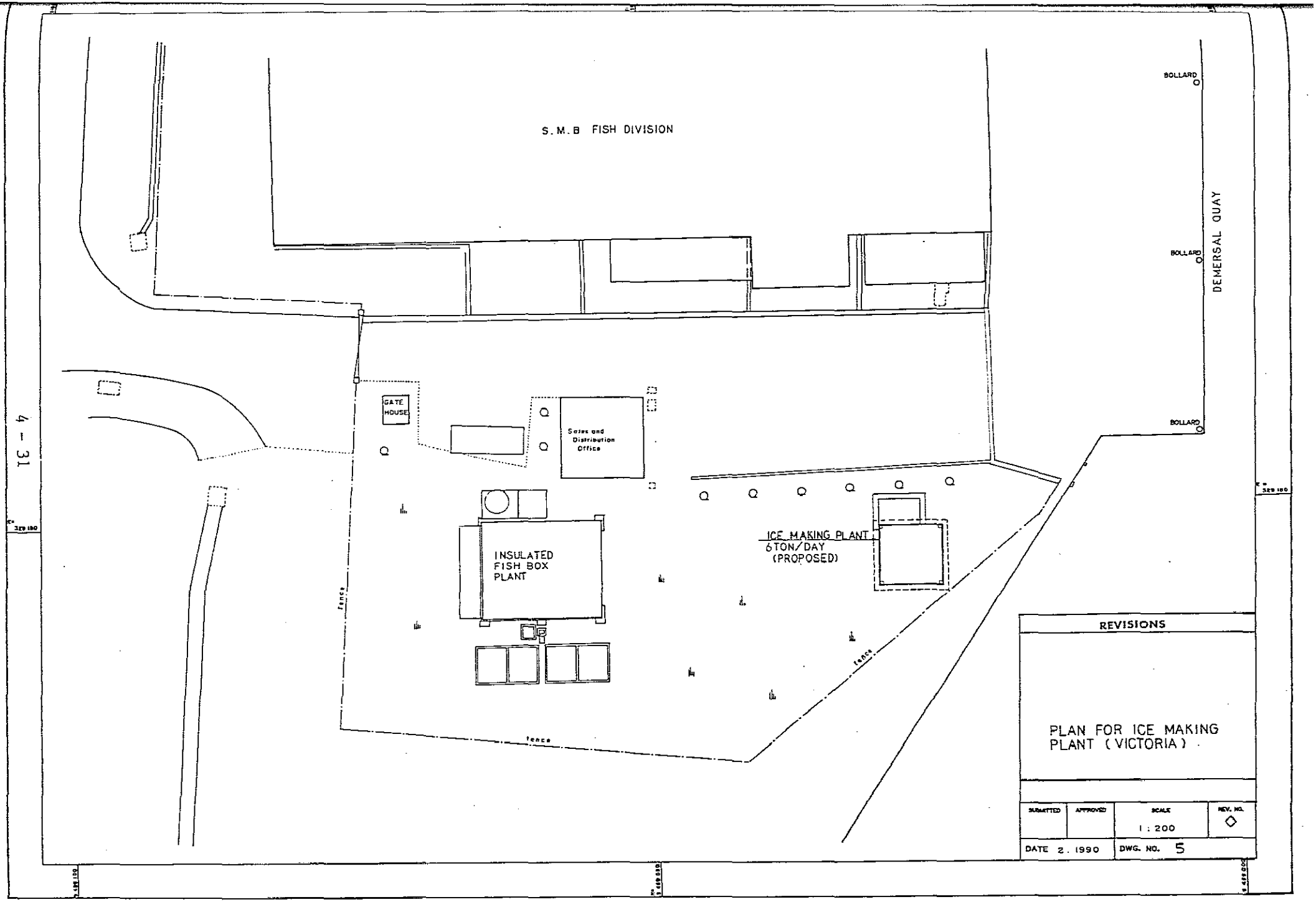
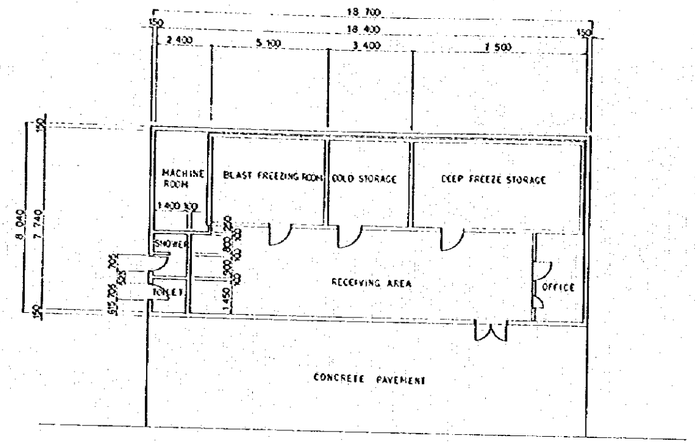
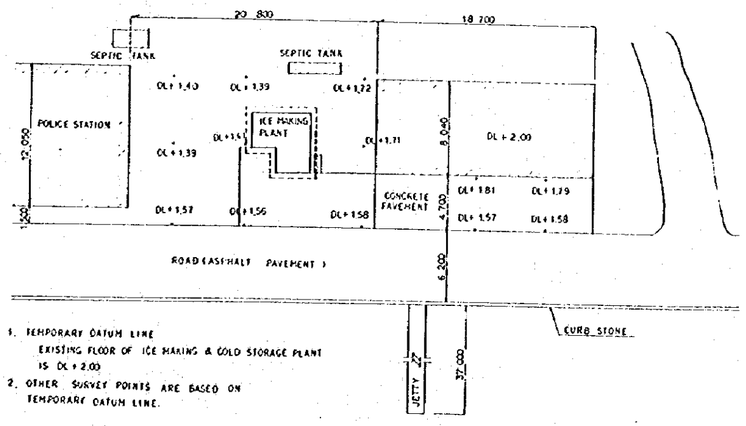

S.M.B FISH DIVISION
BOLLARD
BOLLARD
BOLLARD
DEMERSAL QUAY
GATE HOUSE
Sales and Distribution Office
INSULATED FISH BOX PLANT
ICE MAKING PLANT
6TON/DAY
(PROPOSED)
fence
fence
fence
4 - 31
REVISIONS
PLAN FOR ICE MAKING PLANT (VICTORIA)
SUBMITTED
APPROVED
SCALE
1 : 200
REV. NO.
DATE 2. 1990
DWG. NO. 5

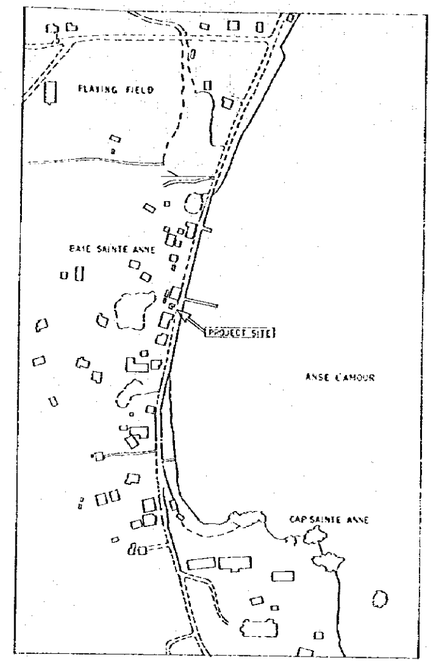


EXIST. ICE MAKING PLANT & COLD STORAGE S=1:100

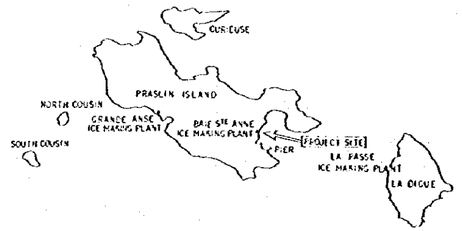


1. TEMPORARY DATUM LINE
   EXISTING FLOOR OF ICE MAKING & COLD STORAGE PLANT IS DL+2.00
2. OTHER SURVEY POINTS ARE BASED ON TEMPORARY DATUM LINE.

PROJECT SITE S=1:200



LOCATION MAP (2) NOT TO SCALE



LOCATION MAP (1) NOT TO SCALE

GENERAL NOTES

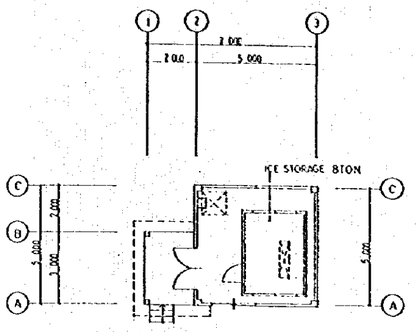
NO	DATE	DESCRIPTIONS	BY	APP'D
		REFERENCE DRAWINGS		
		REVISIONS		

PLAN FOR ICE MAKING PLANT (PRASLIN)

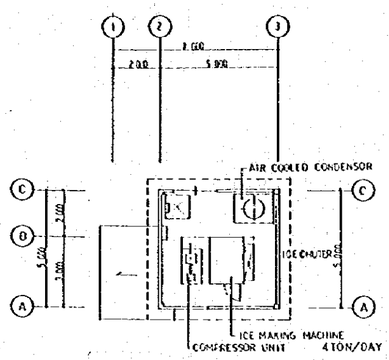
DRAWN BY	APPROVED	SCALE	REV NO
DATE		AS SHOWN	
		DWG NO 6	

ICE PLANT (PRASLIN)

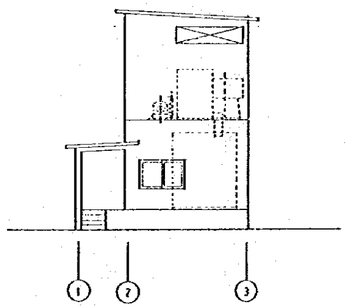
SCALE 1:100



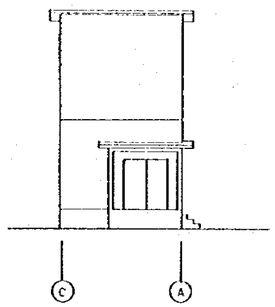
1st. FLOOR PLAN SCALE 1:100



2nd. FLOOR PLAN SCALE 1:100



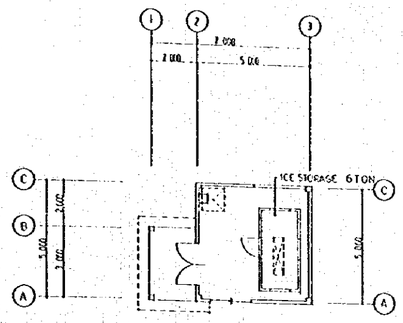
ELEVATION SCALE 1:100



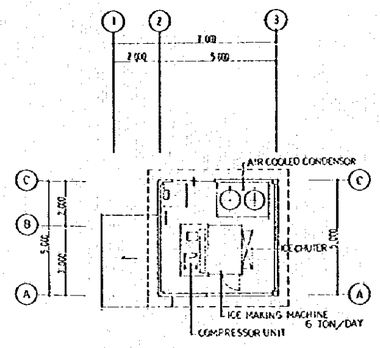
ELEVATION SCALE 1:100

ICE PLANT (VICTORIA)

SCALE 1:100



1st. FLOOR PLAN SCALE 1:100



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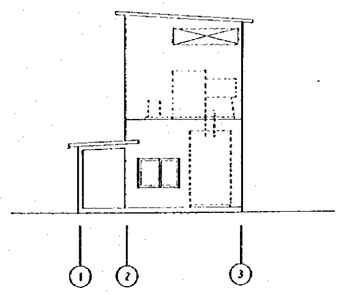
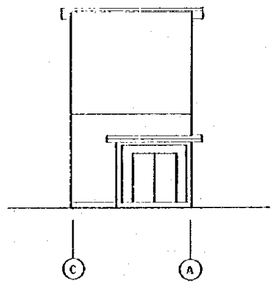


ELEVATION SCALE 1:100



ELEVATION SCALE 1:100

GENERAL NOTES

DESCRIPTIONS | DWG. NO.

REFERENCE DRAWINGS

NO	DATE	DESCRIPTIONS	BY	APD

REVISIONS

ICE MAKING PLANTS

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DATE		1:100	◇
		DWG. NO. 7	

4.4 Construction Plan

(1) Construction Situation in Seychelles

There are two types of building contractors in Seychelles: one is the government-owned builder; the other is private companies. These builders are mainly engaged in road/building construction, and have practically no experience in port construction work.

Recently, infrastructure construction for Port Victoria was accomplished under the East Coast Project which was carried out by foreign contractors.

It is possible to hire general construction workers in the country but they have no port construction work experience.

Local contractors have their own construction equipment, such as cranes, trucks, excavating machines, bulldozers, etc.

The Seychelles Navy has its own barges and crawler cranes. Construction materials, such as sand, stone, and cement are locally available. Other products, such as reinforcing bars, structural steel, and plywood, are obtainable through local suppliers. It is difficult, however, to obtain heavy construction steel materials, such as steel piles and sheet piles, on the local market.

(2) Construction Policies

In view of the above construction situation, construction policies for the Project will basically be as follows:

- The Seychelles Fishing Authority (SFA) will be responsible for the Seychelles side's Project construction. Work to be borne by the Seychelles side (see Table 4-4-1) shall be undertaken by SFA.

- Consulting services and construction work for the Project are to be conducted by Japanese companies.

- Locally obtainable construction equipment, materials, and labour should be utilized as much as possible.

- Engineers and technicians needed in the construction of the ice making plant should be dispatched.

(3) Construction Supervision Plan

i) Contents of Construction Supervision Work

Based on Japanese grant aid cooperation procedures, a consultant company will make a contract agreement for Project construction with the Seychelles Fishing Authority, and will obtain verification of the contract agreement from the related Japanese agencies concerned with the Project.

Following is the contents of the construction supervision work at each step:

- Detailed Design Period:

After the contract agreement is made, the consultant company will prepare the detailed design and the tender documents for the Project based on the basic design report. If it is necessary to revise any Project item concerning the detailed design, the consultant must obtain approval to make the appropriate changes from the related agencies of both the Seychelles and Japanese sides.

- Tendering Period:

The Seychelles Government will conduct tendering for Project construction. The tender will be offered to Japanese contractors. For the tendering, the consultant will assist the Seychelles Government with the following:

① Tender notice

② Evaluating contractors for prequalification

③ Explanation of tender documents and answering questions put forth by contractors

④ Conducting tendering

⑤ Making tender evaluation

- Construction Period:

Throughout the Project construction period, the consultant company will dispatch one civil engineer (class three engineer equivalent) to the Project site as their representative. He will be responsible for construction supervision and quality control management and will make reports related to Project construction to the Project related agencies.

ii) Project Construction Responsibilities

The respective items of the Project construction to be borne by the Seychelles and Japanese sides are as listed in Table 4-4-1.

Table 4-4-1 Project Construction Responsibilities

Work to be Borne by Japanese Side

Fishing Port Civil Facility:

- Construction of new tuna quay

Related Fishing Port Facilities:

- Construction of ice making plant (Victoria Fishing Port)
- Construction of ice making plant (Praslin Island)

Work to be Borne by Seychelles Side

- To secure land necessary for Project construction and access road to the Project site
- To clear construction site and remove obstructions
- To provide facilities for the distribution of electricity and water supplies to the Project site, and to install telephone lines to the Management Office's main switchboard
- To exempt Japanese nationals from customs duties, internal taxes, and other fiscal levies which may be imposed in Seychelles with respect to the supply of products and services under the verified contracts
- To acquire permissions and approvals required in Seychelles for Project construction
- To bear commissions to a Japanese foreign exchange bank for the banking services based on the Banking Agreement
- To accord Japanese nationals, whose services may be required in connection with the supply of products and services under the verified contract, such facilities as may be necessary for their entry into Seychelles and stay therein for the performance of their work.
- To ensure prompt unloading, tax exemption, customs clearance at ports of disembarkation in Seychelles and prompt internal transportation of the products purchased under the grant.
- To bear all expenses, including operation and maintenance costs, of the facilities and equipment other than those to be borne by the Japanese grant aid.

iii) Construction Plan

As the fishing port is being used, Project construction must be carried out so as not to interfere with fishing boat operations and fish landing and transshipping.

Construction methods for major items are as follows:

- Temporary Yard

It is possible to secure a temporary yard for Project construction within the fishing port area. Necessary yard space for each item is estimated as follows:

Site office:	300 m^2
Labourers' lodging:	500 m^2
Reinforcing bar fabrication plant:	300 m^2
Form making plant:	300 m^2
Concrete plant:	1,500 m^2
Stone storage yard:	1,500 m^2
Steel material storage yard:	2,000 m^2
Construction equipment yard & road space, etc.	2,600 m^2
TOTAL	9,000 m^2

- Pile Driving

Temporary staging is to be built stretching out from land to sea and a three-point supported crawler-type pile driver on the staging will drive steel piles. The temporary staging will be built with H-shaped steel piles by driving them in with a vibratory hammer. The upper stage will be covered with steel frames. The following is a list of major equipment:

Three-point support crawler crane:	40 to 50 tonne class
Crawler crane (for standby use):	40 to 50 tonne class
Pile driving hammer:	D-40 class
Vibratory hammer:	60 KW class

- Upper Concrete Work

Brackets are to be welded on the steel piles and the temporary beams and planks are to be set up on the brackets for staging use. Forms and reinforcing bars will be assembled on the staging. The forms must be firmly fixed so that they will not move when the concrete is placed.

The concrete will be mixed by a temporary batching plant in the temporary yard. It will then be transported to the construction site by mixer trucks. The transported concrete will be placed by concrete buckets.

- Rubble Mound and Stone Covering Work

The stone material will be placed by an orange bucket attached to a crawler crane. The stone placed on land will be levelled by the crawler crane. The stone placed in the sea will be levelled by using a diver's boat and, if necessary, a crane.

(4) Construction Equipment and Material Procurement Plan

i) Construction Materials

Construction materials to be procured in Seychelles and Japan are shown in Table 4-4-2.

Table 4-4-2 Construction Material Procurement

Materials to be procured in Seychelles	• Cement, sand, and gravel for concrete • Stone for rubble mound and slope protection • Reinforcing bars (small diameters) • General structural steel (L-shaped) • Wooden boards • Lubricating and fuel oil
Materials to be Procured in foreign countries including Japan	• Steel piles • Fenders, bollards, and bitts • Ice making plant equipment. • Materials necessary for temporary work (steel, temporary deck, etc.)

ii) Construction Equipment

Except for locally obtainable equipment, all Project use construction equipment will be shipped from Japan or other countries.

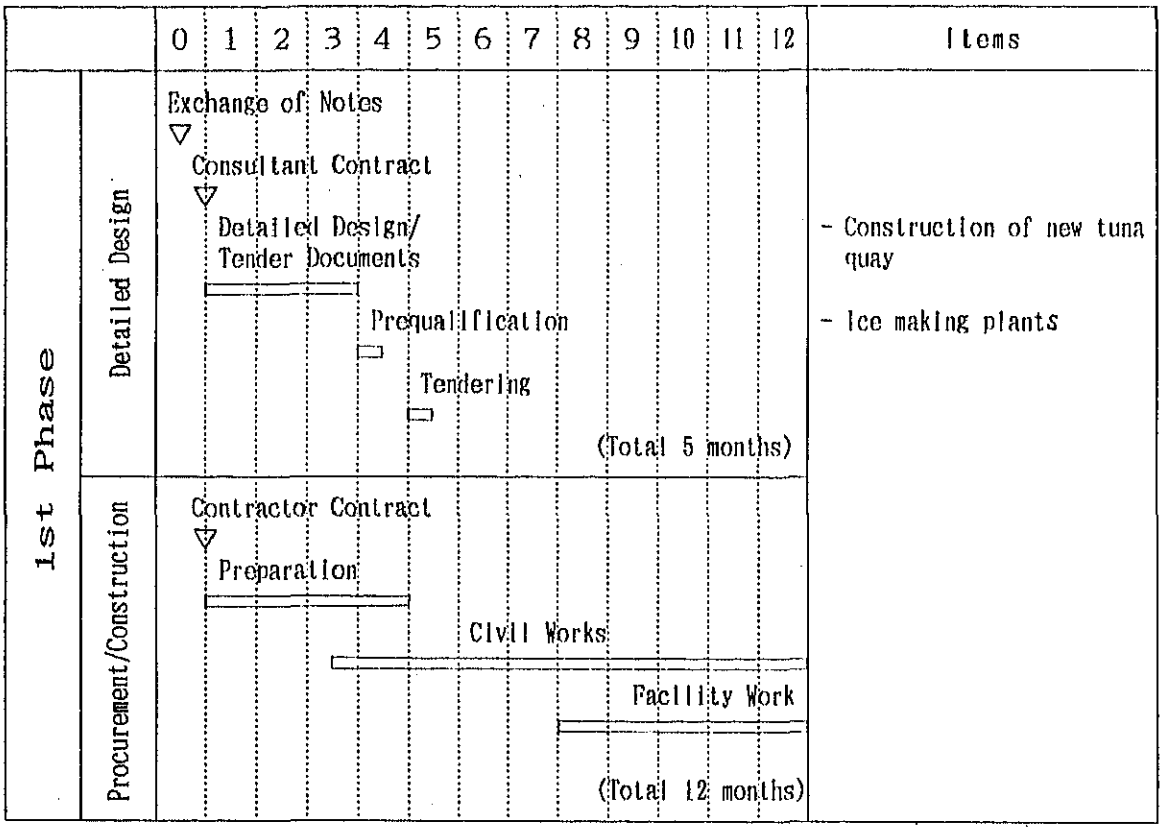
- Three-point support crawler crane: 40 to 50 tonne class
- Crawler crane (for standby use): 40 to 50 tonne class
- Pile driving hammer: D40 class
- Vibratory hammer: 60 KW class
- Concrete batching plant
- Power generator
- Orange bucket
- Diver's boat
- Welding machine (semi-automatic)

This construction equipment is obtainable in Japan, Singapore, etc.

(5) Project Implementation Schedule

Project construction will be carried out in one (1) phase according to the schedule shown in Table 4-4-3.

Table 4-4-3 Project Implementation Schedule



CHAPTER 5 PROJECT EFFECTS AND CONCLUSION

CHAPTER 5 PROJECT EFFECTS AND CONCLUSION

5.1 Project Effects

The Victoria Fishing Port is the central base of fish landing and transshipment, and fuel and provision supply for foreign fishing boats operating in Seychelles' 200-mile Exclusive Economic zone. It is where the traditional artisanal fishery activities are conducted. The following effects will be achieved after constructing the fishing port infrastructures under the Project:

(1) Direct Effects:

As a result of construction of the new tuna quay:

- Fishing boat congestion at the present quay will be alleviated and efficient fish landing and transshipping by purse seiners will be possible.

- The greater the number of foreign purse seiners and reefer cargo boats that enter the Victoria Fishing Port the larger the amount of fish landing and transshipment volume. Thus, the revenues from port entrance fees, quay use fees, and fish landing and transshipment fees will increase.

- By conducting efficient fish landing and transshipping operations, unsafe working conditions and damage to fish will be reduced.

- By conducting efficient fish landing and transshipping, fishing boats will be able to go out to sea for fishing more frequently thereby increasing their total fish catch and transshipment volume.

- By alleviating fishing boat congestion, channel safety for the adjacent commercial port will be improved.

As a result of the construction of the ice making plant:

- Whenever local fishing boats want to go out to sea for fishing it will be possible to supply them with sufficient amounts of high quality ice.

- For artisanal fishery boats at Praslin and La Digue, time and fuel costs for ice supply trips to and from Victoria Port will be saved after completion of the ice making plant at Praslin.

- By receiving a sufficient volume of ice in a timely manner, local fishing boats will be able to fish in remote parts of the sea for longer periods of time, thereby increasing their fish catches and will be able to retain fish freshness.

- Maintaining the freshness of catches for longer periods of time will make it possible to obtain higher fish prices.

(2) Indirect Effects

The following indirect effects will result after accomplishing the aforementioned direct effects:

- By conducting smooth fish landing for the tuna canning factory that is to be expanded, the amount of fish will increase. This will bring about more employment opportunities, i.e., there will be a need for additional port workers, and the transporting business will surely grow.

- By exporting greater amounts of higher quality fresh fish, foreign currency earnings will increase. Further, by providing higher quality fresh fish to tourist related industries, the fishery will indirectly contribute to the tourist industry, the most important industry in Seychelles.

- As the amount of fish to be purchased by SMB will increase in proportion to the size of the fish catch by the artisanal

fishery and to the freshness of the fish, the income and living standards of local fishermen will be improved. And, once the artisanal fishery becomes more attractive to young people, the present fishermen's aging trend will be reversed. and the development and activation of the artisanal fishery will be further improved.

5.2 Recommendations

In order to realize the maximum Project effects, the Study Team proposes the following recommendations:

- For effective management and operations, agencies related to the port and its facilities should maintain close communications.

- For the effective use of the quays at the fishing port, and for the safety of the boats using the port and the adjacent commercial port, the boat observation system should be modified and improved.

- A management system that can react promptly to the operational needs or failures of the Project facilities should be established. The operation and maintenance costs should be included in the facilities' management budget.

After Project implementation, the described effects will have a positive impact on the double-structured artisanal and industrial fisheries that are characteristic of the Seychelles. Also, Project implementation will contribute to the country's fishery development, to the increase of foreign currency earnings, and to creating employment opportunities, which, as a result, will contribute to the country's stable economic expansion.

The Project effects are in agreement with the Government of Seychelles' policies in the National Development Plan.

Seychelles has sufficient budgetary funds and personnel to handle the management and operations of the Project facilities; thus, there are no foreseeable problems in these areas once the Project facilities are completed.

In view of the above, it is thought to be appropriate to implement the Project under the Japanese Government's grant aid cooperation programme.

APPENDIX

APPENDIX

APPENDIX 1 Members of the Study Team

(1) 1st Visit (Jan. 28 to Feb. 26, 1990)

Official Member

Mr. Mitsuyoshi Murakami (Team Leader)

Director, Office for Overseas Fisheries Cooperation, International Affairs Div.,
Fisheries Agency,
Ministry of Agriculture, Forestry and Fisheries

Mr. Masamitsu Nakaizumi (Fishing Port Development)

Deputy Director, Development Div.,
Fisheries Promotion Dept.,
Fisheries Agency,
Ministry of Agriculture, Forestry and Fisheries

Mr. Hiroshi Shiono (Project Coordinator)

Second Basic Design Study Div.,
Grant Aid Planning & Survey Dept.,
Japan International Cooperation Agency (JICA)

Consultant Member (Pacific Consultants International)

Mr. Kazunao Sakata	Project Manager	Fishing Port Planning
Mr. Masato Suzuki	Expert	Port Structure Design
Mr. Hiroshi Nishimaki	Expert	Plant/Utility Design
Mr. Katsumi Kira	Expert	Fishery and Marketing
Mr. Shigeyoshi Yoshida	Expert	Topographic/Hydrographic Survey

(2) 2nd Visit (May 22 to Jun. 4, 1990)

Official Member

Mr. Satoru Goto (Team Leader)

Deputy Director, Far Seas Fisheries Div.,
Oceanic Fisheries Dept.,
Fisheries Agency,
Ministry of Agriculture, Forestry and Fisheries

Mr. Yusuke Kitamura

Planning Div.,
Grant Aid Project Management Dept.,
Japan International Cooperation Agency (JICA)

Consultant Member (Pacific Consultants International)

Mr. Kazunao Sakata	Project Manager	Fishing Port Planning
Mr. Masato Suzuki	Expert	Port Structure Design

APPENDIX 2 Itinerary of the Study Team

(1) 1st Visit (Jan. 28 to Feb. 26, 1990)

Date (1990)	Team's Activities	Specialist's Activities
Jan. 28 (Sun)	Departed Tokyo by FLT AF269	
Jan. 29 (Mon)	Departed Paris by FLT AF455	
Jan. 30 (Tue)	Arrived Mahe, Seychelles, inspected Victoria City and Victoria Fishing Port.	
Jan. 31 (Wed)	Paid a courtesy visit upon SFA. Inspected the Project site in Victoria Fishing Port. At SFA, explained the purposes of the study for Japanese grant aid cooperation and the inception report for the Project.	
Feb. 1 (Thu)	Paid a courtesy visit upon the Minister of Agriculture and Fisheries. Held a meeting with SFA officials at the Habour Master's Office of Port Victoria. Inspected Port Victoria from a boat. Held a meeting among the Study Team. Dinner party under the auspices of the Minister of Agriculture and Fisheries.	Collected data (Geology, tide level, quay structures).
Feb. 2 (Fri)	Inspected fishing port facilities and other Japanese grant aid projects.	Surveyed construction field situations. Collected data (fisheries, ice making).
Feb. 3 (Sat)	Held a meeting among the Study Team to report study results and to analyze collected data.	Inspected ice making plants in Praslin and La Digue (Mr. Nishimaki, Mr. Kira)
Feb. 4 (Sun)	Held a meeting with JICA's fishery specialists.	Inspected tide gauges and prepared for surveying.

APPENDIX 2 (continued)

Date (1990)	Team's Activities	Specialist's Activities
Feb. 5 (Mon)	Held a meeting among the Study Team. Held a meeting with SFA officials at the SFA Office (confirmed the contents of Seychelles' request for the Project). Cocktail party at the residence of the Minister of Agriculture and Fisheries.	Collected data (past survey data, fishing boats). Set up a current observation station.
Feb. 6 (Tue)	Held a meeting with SFA officials about the contents of the Minutes of Discussions. Held a meeting among the Study Team and prepared the Minutes of Discussions.	Surveyed construction field conditions. Set up tide level observation station and commenced observation.
Feb. 7 (Wed)	Paid a courtesy visit upon the Chairman of the SFA Board Committee. Inspected the tuna canning factory. Paid a courtesy visit upon the Principal Secretary of the Ministry of Planning and External Relations. Dinner party under the auspices of the Study Team.	Collected data (weather data, quay structures)
Feb. 8 (Thu)	The Minutes of Discussions were signed at the Ministry of Agriculture and Fisheries. Messrs. Murakami, Nakaizumi, and Shiono departed Mahe by FLT KQ451.	Conducted topographic survey. Collected fishery related data.
Feb. 9 (Fri)	Messrs. Murakami, Nakaizumi, and Shiono paid a courtesy visit upon the Japanese Embassy and JICA Office in Nairobi and reported the contents of the Minutes of the Discussion.	Held a meeting among the specialists. Started current observations (25 hour period). Confirmed the location of a bench mark. Collected fishery related data.
Feb. 10 (Sat)	Messrs. Murakami, Nakaizumi, and Shiono departed Nairobi by FLT BA054.	Finished current observations. Clarified collected data (quay structures).

APPENDIX 2 (continued)

Date (1990)	Team's Activities	Specialist's Activities
Feb. 11 (Sun)	Messrs. Murakami, Nakaizumi, and Shiono departed London by FLT BA007.	Adjusted tide level gauge. Held a meeting among the specialists concerning the collected data. Mr. Nishimaki departed Mahe for Japan via London by FLT BA064 (arrived Tokyo Feb.14).
Feb. 12 (Mon)	Messrs. Murakami, Nakaizumi, and Shiono arrived Tokyo.	Collected Project related data at Statistics Dept. Conducted topographic survey (Mr. Yoshida).
Feb. 13 (The)		Conducted levelling survey. Made detailed investigation of the existing quay support structures.
Feb. 14 (Wed)		Interviewed local construction contractor about heavy construction equipment. Held a meeting with the Harbour Master of Port Victoria. Mr. Kira departed Mahe for Japan via London by FLT BA064 (arrived Tokyo Feb. 17).
Feb. 15 (Thu)		Interviewed three local construction contractors. Conducted plain survey. Mr. Sakata departed Mahe by FLT KQ451.
Feb. 16 (Fri)		Conducted sounding survey. Mr. Sakata paid courtesy visits to the Japanese Embassy and JICA Office in Nairobi and reported the findings of the field surveys.
Feb. 17 (Sat)		Conducted sounding survey. Mr. Sakata departed Nairobi for Japan via London by FLT BA054 (arrived Tokyo Feb.19).
Feb. 18 (Sun)		Clarified collected data. Prepared a topographic map.

APPENDIX 2 (continued)

Date (1990)	Team's Activities	Specialist's Activities
Feb. 19 (Mon)		Conducted sounding survey and leveling survey.
Feb. 20 (Tue)		Conducted traverse survey and levelling survey.
Feb. 21 (Wed)		Removed tide level gauge. Inspected Material Testing Laboratory.
Feb. 22 (Thu)		Made a courtesy visit upon the Ministry of Planning and External Relations. Messrs. Suzuki and Yoshida departed Mahe by FLT KQ451.
Feb. 23 (Fri)		Messrs. Suzuki and Yoshida paid courtesy visits to the JICA Office in Nairobi and reported the results of the field surveys. Departed Nairobi by FLT BA054.
Feb. 24 (Sat)		In flight.
Feb. 25 (Sun)		Departed London by FLT BA007.
Feb. 26 (Mon)		Arrived Tokyo

APPENDIX 2 (continued)

(2) 2nd Visit (May 22 to June 4, 1990)

Date (1990)	Team's Activities	Specialist's Activities
May 22 (Tue)	Departed Tokyo by JL719	
May 23 (Wed)	Departed Singapore by HM604, arrived Mahe. Paid courtesy visits upon the Minister of Agriculture and Fisheries and the Principal Secretary of the Ministry of Planning and External Relations.	
May 24 (Thu)	Explanation of the draft report at SFA.	
May 25 (Fri)	Explanation of the draft report at SFA. Inspected facilities of SMB Fish Div. Dinner party under the auspices of Minister of Agriculture and Fisheries.	
May 26 (Sat)	Held a meeting among the Study Team.	
May 27 (Sun)	Held a meeting among the Study Team.	
May 28 (Mon)	Held a meeting with Seychelles' side (confirmation of project contents) Held a meeting among the Study Team (reported to the Government of Japan).	
May 29 (Tue)	Held a meeting with SMB Fish Div. Paid a courtesy visit upon the Principal Secretary of the Ministry of Tourism and Transport. Dinner party under the auspices of the Study Team.	Collected data (employment guidelines and cost estimation: Mr. Suzuki)
May 30 (Wed)	Held a meeting among the Study Team (preparation of the Minutes of Discussions).	Inspected the site for a proposed ice making plant at Praslin Is. (Mr. Sakata). Collected data (Mr. Suzuki)

APPENDIX 2 (continued)

Date (1990)	Team's Activities	Specialist's Activities
May 31 (Thu)	Paid a courtesy visit upon the Minister of Planning and External Relations. Departed Mahe by KQ451. Reported to the Japanese Embassy and JICA office in Nairobi.	
Jun. 1 (Fri)	Departed Nairobi by LH575	
Jun. 2 (Sat)	Arrived Frankfurt	
Jun. 3 (Sun)	Departed Frankfurt by LH710	
Jun. 4 (Mon)	Arrived Tokyo	

APPENDIX 3 List of Personnel Interviewed

Seychelles Side Officials:

(1) Seychelles Fishing Authority (SFA)

Chairman of SFA:	Mr. G. Savy
Managing Director:	Mr. Philippe Michaud
Resource Management Director:	Mr. J.N. De Lestang
Fishing Port Manager:	Mr. C. Toussaint
Assistant Fishing Port Manager:	Mr. P. De Lafontaine
Research Director:	Mrs. G.L. Carrara
Fisheries Economist:	Mr. Michel Marrel

(2) Ministry of Agriculture & Fisheries

Minister:	Mr. Jeremie Bonnelame
Director General:	Mr. P.S. Ange

(3) Ministry of Planning & External Relations

Minister:	Madame D. De St. Jorre
Principal Secretary:	Mr. Bertrand Rassool
Senior Project Architect:	Mr. G.W. Gonthier
Senior Economic Cooperation Officer:	Mrs. M. Roberts

(4) Ministry of Tourism & Transport

Principal Secretary:	Mr. Maurice L. Lalanne
Director General Port & Marine Services Div.:	Mr. S.A.G. Andrade
Harbour Master:	Capt. R.R. Morgan
Assistant Harbour Master:	Mr. P. Grandcourt

(5) Ministry of Community Development

Director Land & Surveys:	Mr. R.F. Changtave

(6) Ministry of Administration & Manpower

Principal Statistician:	Mr. H. Gappy

(7) Seychelles Marketing Board (SMB)

Fish Division General Manager:	Mr. C.B.J. Lablache
Fish Division Representative:	Mr. J.C. Hoareau
Assistant Operation Manager:	Mr. Joseph Tirant

Japanese Side Officials:

(1) JICA Officer in Seychelles:

Coastal Fishing Promotion Technical Cooperation, Specialist:	Mr. Nobuyuki Suekane

(2) Japanese Embassy in Kenya:

Envoy Extraordinary and Ambassador Plenipotentiary:	Mr. Naohiro Kumagai
First Class Officer:	Mr. Ichiro Nagame

(3) JICA Office in Kenya:

Manager:	Mr. Kenji Kumagishi
Officer:	Mr. Masayoshi Jyuro

MINUTES OF DISCUSSIONS
ON
THE PROJECT FOR REINFORCEMENT
OF
FISHING PORT AND ITS FACILITIES
IN
PORT VICTORIA

In response to the request of the Government of the Republic of Seychelles, the Government of Japan decided to conduct a basic design study on the Project for Reinforcement of Fishing Port and Its Facilities in Port Victoria (hereinafter called "the Project") and entrusted the study to the Japan International Cooperation Agency (JICA). JICA sent to the Republic of Seychelles the Basic Design Study Team headed by Mr. Mitsuyoshi MURAKAMI, Director, Office for Overseas Fisheries Cooperation, International Affairs Div., Fisheries Agency, Ministry of Agriculture, Forestry and Fisheries, from January 28 to February 26, 1990.

The Team had a series of discussion on the Project with the officials concerned of the Government of the Republic of Seychelles headed by Mr. Philippe MICHAUD, the Ministry of Agriculture and Fisheries and conducted a field survey in Port Victoria, Victoria City.

As a result of the study, both parties agreed to recommend to their respective Governments that the major points of understanding reached between them, attached herewith, should be examined towards the realization of the Project.

Victoria, February 8, 1990

村上光雄

Mr. Mitsuyoshi MURAKAMI
Leader, Basic Design Study Team
Japan International
Cooperation Agency (JICA)

Mr. Philippe MICHAUD
Head of Delegation
The Ministry of
Agriculture & Fisheries

ATTACHMENT

1. OBJECTIVE OF THE PROJECT

The objectives of the Project is to contribute to the development of fishery and distribution of marine products around Victoria Port in the Western Indian Ocean area by developing the fishing port equipped with necessary facilities.

2. EXECUTING BODY

The responsible organization for the Project is the Ministry of Agriculture and Fisheries and the executing organization for the Project is Seychelles Fishing Authority.

3. PROJECT SITE

The proposed site of the Project is located in Victoria, capital of Seychelles in Mahe Island as shown in ANNEX I.

4. REQUEST BY THE GOVERNMENT OF SEYCHELLES

The contents of the Project requested by the Government of the Republic of Seychelles are listed in ANNEX II.

Some clarification was provided by the Seychelles team concerning the item "a new tuna quay".

The study team will convey to the Government of Japan that the Government of the Republic of Seychelles wishes to construct a new tuna quay under the Project emphasizing its necessity.

5. MEASURES TO BE TAKEN BY THE GOVERNMENT OF THE REPUBLIC OF SEYCHELLES

The Government of the Republic of Seychelles will take necessary measures listed in ANNEX III on condition that the Grant Aid by the Government of Japan is extended to the Project.

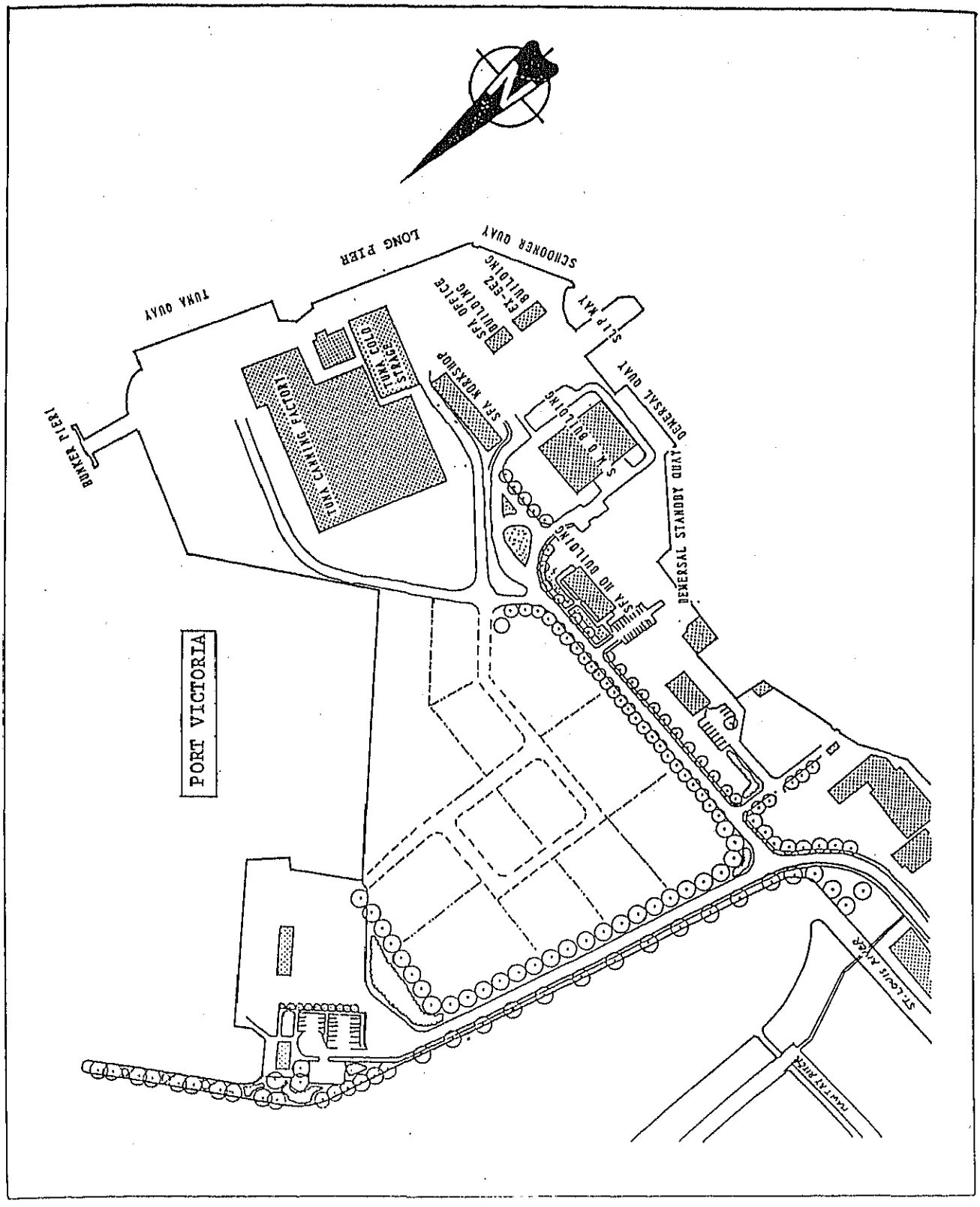
6. UNDERTAKING OF JAPAN'S GRANT AID SYSTEM

The Seychelles' side has understood Japan's Grant Aid System explained by the Team which includes a principle of use of a Japanese consulting firm and a Japanese firm for the construction.

7. BUDGET AND PERSONNEL

The Government of Seychelles will assure the necessary budget and personnel for the operation and maintenance of the facilities and equipment provided, on condition that the Grant Aid by the Government of Japan is extended to the Project.

ANNEX I LOCATION MAP



ANNEX II

OUTLINE OF THE REQUEST

1. Rehabilitation of Existing Tuna Quay and Long Pier

2. Ice Making Plants

3. Dry Ice Plant

4. Insulated Fish Box Container Plant

ANNEX III

Necessary measures to be taken by the Government of Seychelles.

1. To secure cleared land necessary for the execution of the Project and provide enough space for such construction as temporary offices, working area, stockyard and others.

2. To ensure that sea area necessary for the construction of the facilities be freely accessible.

3. To provide facilities for distribution of electricity, water supply, drainage and sewage, telephone and other incidental facilities up to the Project site.

4. To ensure prompt unloading, tax exemption, customs clearance at ports of disembarkation in Seychelles and prompt internal transportation therein of the products purchased under the grant.

5. To exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which may be imposed in Seychelles with respect to the supply of the products and services under the verified contracts.

6. To accord Japanese nationals whose services may be required in connection with the supply of the products and the services under the verified contract such facilities as may be necessary for their entry into Seychelles and stay therein for the performance of their work.

7. To maintain and use properly and effectively the facilities constructed and equipment provided under the Grant Aid.

8. To bear all the expenses including operation and maintenance cost of the facilities and equipment other than those to be borne by the Grant Aid.

MINUTES OF DISCUSSIONS

ON

THE PROJECT FOR REINFORCEMENT

OF

FISHING PORT AND ITS FACILITIES

IN

PORT VICTORIA

In response to the request of the Government of the Republic of Seychelles the Government of Japan decided to conduct a basic design study on the Project for Reinforcement of Fishing Port and its Facilities in Port Victoria (hereinafter called "the Project") and entrusted the study to the Japan International Cooperation Agency (JICA). JICA sent to the Republic of Seychelles the Basic Design Study Team headed by Mr Mitsuyoshi Murakami, Director, Office for Overseas Fisheries Cooperation, International Affairs Div., Fisheries Agency, Ministry of Agriculture, Forestry and Fisheries, from January 28 to February 26, 1990.

As a result of the study, JICA prepared a draft final report and dispatched a Draft Final Report Explanation Team headed by Mr Satoru Goto, Deputy Director, Far Seas Fisheries Div., Fisheries Agency, Ministry of Agriculture, Forestry and Fisheries to explain and discuss it from May 22 to June 4, 1990.

Both parties had a series of discussions on the report and have agreed to recommend to their respective Government that the major points of understanding reached between them, attached herewith, should be examined towards the realization of the Project.

Victoria, 31st May, 1990

後藤暁

Mr Satoru Goto
Leader, Basic Design Study Team
Japan International
Cooperation Agency (JICA)

Mr Philippe Michaud
Head of Delegation
The Ministry of
Agriculture & Fisheries

ATTACHMENT

1. Outline of the Project is as follows
   (1) New Tuna Quay
   (2) Ice Making Plant (Praslin)
   (3) Ice Making Plant (Mahe)

2. The Seychelles' side has principally agreed to the basic design proposed in the draft final report (and appropriate amendment as shown in ANNEX will be incorporated in the final report).

3. The Seychelles' side has understood Japan's grant aid system and reconfirmed that the necessary measures will be taken by the Seychelles' side, which are manifested in the ANNEX III of the MINUTES of DISCUSSIONS signed on February 8, 1990, on condition that the grant aid would be extended to the Project.

4. The Seychelles' side will ensure that the responsible and executing organization, which are manifested in the ATTACHMENT of the MINUTES of DISCUSSIONS signed on February 8, 1990, will provide sufficient cooperation for implementation of the Project.

5. The Seychelles' side will ensure that necessary budget and adequate number of personnel for proper and effective operation and maintenance of the facilities will be secured.

6. The final report (ten copies in English) will be submitted to the Seychelles' side through JICA by the end of August, 1990.

ANNEX

Followings are to be incorporated in the final report.

(1) New Tuna Quay
(2) Ice Making Plant (Praslin)
(3) Ice Making Plant (Mahe)

LIST OF SEYCHELLES ISLANDS AND AREAS

	Area (Hectares)		Area (Hectares)		Area (Hectares)		Area (Hectares)
TOTAL SEYCHELLES	45 250.7						
INNER ISLANDS							
GRANITIC ISLANDS		OUTER ISLANDS (ALL CORALLINE)		FARQUHAR GROUP		COSMOLEDO ATOLL	
Mahe	15252.0	Ile Plate	54.0	PROVIDENCE ATOLL		Menai	241.0
Praslin	3756.0	Coetivy	931.0			Ile du Nord	21.0
La Digue	1010.0			Providence	157.0	Ile Nord-Est	
Ste Anne	219.0	AMIRANTES GROUP		Bancs Providence	71.0	Ile du Trou	0.5
Ile au Cerf	127.0			St. Pierre	167.0	Goelette	3.0
Ile Longue	21.2	Remire	27.0			Grand Polyte	
Ile Ronde	1.8	D Arros	150.0	FARQUHAR ATOLL		Petit Polyte	
Ile Moyenne	8.9	Desroches	394.0			Grand Ile (Wizard)	192.0
Ile Seche	1.9	Etoile	1.4	Ile du Nord		Pagode	
Ile Cachee	2.1	Boudeuse	1.4	Ile du Sud		Ile du Sud	
Ile Anonyme	9.6	Marie Louise	52.5	Manaha Nord		Ile Moustiques	
Ile Hodoul	0.1	Desnoeufs	35.0	Manaha Milieu		Ile Baleine	
Ile aux Rats	0.8			Manaha Sud		Ile Chauve Souris	
Ile Souris	0.4	AFRICAN BANKS		Goelettes		Total	509.0
Ile Therese	73.9			Lapin			
Conception	60.3	Bancs Africain	30.0	Ile du Milieu			
L'Islette	3.2	Ile du Sud		Depose		Astove	661.0
Chauves Souris (Mahe)	0.1			Bancs de Sable		Assomption	1171
Ile aux Vaches	4.7	ST JOSEPH'S ATOLL		Total	799.0		
L'Ilot	0.5						
Cousin	28.6	St Joseph		ALDABRA GROUP			
Cousine	25.7	Fouquet					
Curieuse	286.0	Ressource		ALDABRA ATOLL			
Ile Ronde (Praslin)	19.3	Petit Carcassaye					
Chauve Souris (Praslin	0.7	Grand Carcassaye		Grand Terre			
St. Pierre (Praslin)	0.5	Benjamin		Picard			
Ile aux Fous	2.2	Banc Ferrari		Polymie			
Ile Aride	66.3	Chien		Malbar			
Cave	0.7	Pelican		Ile au Cenores			
Felicite	268.0	Vars		Ile Michel			
Marianne	94.7	Ile Paul		Ile Esprit			
Grand Soeur	84.0	Banc de Sable		Ile Moustiques			
Petite Soeur	34.0	Bancs Cocos		Ilot Parc			
Ile aux Cocos	1.8	Total	122.0	Ilot Emile			
Ile la Fouche	0.3			Ilot Yanque			
Silhouette	1995.0			Ilot Dupois			
Ile du Nord	201.0	POIVRE ATOLL		Ilot Magnan			
Mamelles	8.8			Ile Lanier			
Ile aux Recifs	20.0	Poivre	111.0	Total	15380.0		
Fregate	219.0	Florentin					
L'Ilot Fregate		Ile du Sud	157.0				
CORALLINE ISLANDS		ALPHONSE AND ST FRANCOIS ATOLLS					
Ile aux Vaches	191.0	Alphonse	174.0				
Ile Denis	143.0	Bijoutier	7.4				
		St. Francois	17.0				

Table A-5-1 Seychelles Islands and Areas

(Source: Statistical Abstract 1988)

ACTUAL AND PROJECTED GROWTH OF POPULATION, 1771 - 2000

Year	Population	Notes
1771	28	First settlement
1789	591	Census figure
1803	2121	"
1807	2759	"
1821	5782	"
1830	8500	Estimate
1840	4360	Census figure
1851	6841	"
1861	7560	"
1871	11179	"
1881	14191	"
1891	16440	"
1901	19237	"
1911	22691	"
1921	24523	"
1931	27444	"
1941	32564	Mid-year estimate
1947	34632	Census Figure
1951	34370	Mid-year estimate
1960	41425	Census Figure
1961	42936	Mid-year estimate
1971	54695	"
1977	61786	Census figure (1)
1980	63261	Mid-year estimate
1981	64035	"
1982	64413	"
1983	64335	"
1984	64717	"
1985	65244	"
1986	65653	"
1987	66370	
1988	66626	
1990	69551	Projection (2)
1995	75714	"
2000	82443	"

Source: Management and Information Systems Division
Notes: (1) Adjusted to mid-year 1977
(2) See Table 18

Table A-5-2 Population

(Source: Statistical Abstract 1988)

VISITORS : SUMMARY DATA, 1984 - 1988

	1984	1985	1986	1987	1988
VISITOR ARRIVALS (000)	63.4	72.5	66.8	71.7	77.4
AVERAGE LENGTH OF STAY (NIGHTS	10.8	11.0	11.5	11.4	11.0
VISITOR NIGHTS (000) (1)	685	798	781	817	851
PURPOSE OF VISIT (% of total)					
Holiday	84.8	86.3	91.4	92.2	92.2
Business/holiday and business	6.9	5.5	6.6	6.2	6.6
Transit/other	8.3	8.2	2.0	1.5	1.2
VISITOR ARRIVALS BY COUNTRY OF RESIDENCE (% of total)					
Europe	70.2	75.5	82.5	83.2	82.9
France	17.4	16.3	21.2	19.4	18.5
UK and Eire	12.3	13.6	20.9	23.5	25.8
Italy	11.2	15.8	17.2	20.0	18.9
West Germany	13.5	13.9	8.8	7.4	7.1
Switzerland	9.2	7.8	6.5	4.7	4.0
Other Europe	6.6	8.1	7.9	8.2	8.6
Africa	15.7	11.0	9.1	7.9	10.3
Other	14.0	13.5	8.4	8.9	6.8
Commercial banks' purchases of foreign exchange from tourism sector (Rm) (2)	233	347	336	379	439
CRUISE SHIP PASSENGERS (000)(3)	4.2	2.9	4.0	4.6	2.9

Source: Management Information Systems Division

Notes : (1) Visitor arrivals times average length of stay
(2) Not adjusted for purchases from residents and sales to visitors returning home
(3) Not included as visitors

Table A-5-3 Tourist Data

(Source: Statistical Abstract 1988)

NATIONAL ACCOUNTS AGGREGATES, 1983 - 1987

Million Rupees

	1983	1984	1985	1986	1987
Current Price Series					
Net National Product					
at factor cost (National Income)	711.1	771.9	882.9	934.0	954.9
plus Depreciation	59.3	64.3	75.2	84.4	90.7
plus Net indirect taxes	186.4	190.6	204.6	213.2	252.4
Gross National Product					
at market prices	956.8	1026.8	1162.7	1231.6	1298.0
Private Consumption (residual)	673.3	653.0	700.7	716.9	827.6
Public consumption	326.0	327.7	417.4	497.6	449.2
Gross Fixed Capital Formation	210.4	231.5	273.5	292.6	258.0
Exports minus Imports of					
goods and services (1)	-252.9	-185.5	-228.9	-275.5	-236.8
Constant (1976) market prices					
Gross National Product	406.3	446.1	488.5	508.6	529.9
Gross Domestic Product	429.5	460.3	505.4	511.0	533.3

Source: Management and Information Systems Division

Note: (1) Including factor income received from or paid to the rest of the world

Table A-5-4 Gross National Product and Gross Domestic Product

(Source: Statistical Abstract 1988)

Table A-5-5 List of Fisheries Development Project (1990 - 1994)

1990-1994 NATIONAL DEVELOPMENT PLAN - FISHERIES PROJECTS

No.	Description	Total	Pre-1989	1989	1990	1991	1992	1993	1994	Funding Source
A.	S.F.A. PROJECTS									
1.	Repair and upgrading of old tuna quay	5			5					Foreign
2.	Information and training publications	0.7			0.3	0.2	0.1	0.1		Foreign
3.	Mariculture (Giant Clams, etc.)	3			1.5	0.5	0.5	0.3	0.2	Foreign
4.	Regional organizations contributions	2.5			0.5	0.5	0.5	0.5	0.5	
5.	Regional organizations accommodation	1.5				1.5				
6.	Resource surveys and assessments	5			1	1	1	1	1	Foreign
7.	Development of fisheries technology	1.5		0.3	0.3	0.3	0.3	0.3		Foreign
8.	Extension programme	0								
9.	Schooner fleet management	0								Foreign
10.	Improvement to Baie Ste Anne fish landing place	0.48		0.48						Foreign
11.	Improvement to Grand Anse landing place	0.65		0.65						Foreign
12.	Clearance of reef passes	5			0.1	0.1	0.1	0.1	0.1	
13.	Fleet replacement programme	24.1	4.3	3.1	3.4	3.4	3.4	3.4	3.1	Foreign
14.	Restroom facilities	0.5				0.5				
15.	Research workshop and stores	1.45			1.45					
16.	Winches for beaching fishing boats	0.17			0.17					
17.	Equipment for research boat	0.09		0.09						
18.	New tuna quay	32.0				32.0				
19.	Renovation of EEZ building for rent	1.51		1.51						
20.	Consultancies	0								
	SUB-TOTAL	68.95	4.3	6.13	8.32	39.1	5.0	4.8	4.0	
B.	CONSERVERIE DE L'OCEAN INDIEN (COI)									
21.	Expansion of canning capacity	15			15					
C.	PECHE MARITIMES SEYCHELLOISES (PMS)									
22.	Purse Seiners	110			22	22	22	22	22	
23.	Offices and Workshop	3			3					
24.	Tuna Quay	16			16					
D.	INDUSTRIAL MARITIME SCHOOL									
25.	Maritime School	40								Foreign
E.	S.M.B. FISHING DIVISION									
26.	Dry ice plant	0.5	0.5							
27.	Fish box processing plant	2			2					
28.	La Digue ice plant	0								
29.	Praslin ice plant	0								
	SUB-TOTAL									
F.	DEPARTMENT OF INDUSTRY									
30.	Processing of fish skins									
31.	Turtle farming									
	SUB-TOTAL									
G.	OTHERS									
32.	Boat construction (La Digue boat builders)	0								
33.	Shrimp project (SMB Trading Division)	60			10	40	10			
	SUB-TOTAL	60			10	40	10			
	GRAND TOTAL									

(Source: National Development Plan: Draft)

Table A-5-6 Purse Seiners Active in the Western Indian Ocean

SEINER	FLAG	GRT	1988 OCT	NOV	DEC	1989 JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
DREMNEC	France	1200	(	-	-	-	-	-	-	-	-	-	-	-
TRESCAO	"	1146	(	-	-	-	-	-	-	-	-	-	-	-
AVEL VIZ	"	768	(	-	-	-	-	-	-	-	-	-	-	-
KERHADEC	"	1146	(	-	-	-	-	-	-	-	-	-	-	-
CAP ST PAUL	"	768	(	-	-	-	-	-	-	-	-	-	-	-
BOUGAINVILLE	"	875	(	-	-	-	-	-	-	-	-	-	-	-
GLENAN	"	929	(	-	-	-	-	-	-	-	-	-	-	-
ROSPICO	"	1146	(	-	-	-	-	-	-	-	-	-	-	-
ILE TRISTAN	"	783	(	-	-	-	-	-	-	-	-	-	-	-
ARMEN	"	773	(	-	-	-	-	-	-	-	-	-	-	-
TREVIGNON II	"	1146	(	-	-	-	-	-	-	-	-	-	-	-
GEVRED	"	603	(	-	-	-	-	-	-	-	-	-	-	-
BAYOTA	"	1146	(	-	-	-	-	-	-	-	-	-	-	-
KERGUELEN	"	1146	(	-	-	-	-	-	-	-	-	-	-	-
PRINCE DE JOINVILLE	"	851	(	-	-	-	-	-	-	-	-	-	-	-
CHRISTOPHE COLOMB	"	851	(	-	-	-	-	-	-	-	-	-	-	-
KERSAINT	"	1200	(	-	-	-	-	-	-	-	-	-	-	-
PENDRUC	"	1200	(	-	-	-	-	-	-	-	-	-	-	-
SANTA MARIA	"	777	(	-	-	-	-	-	-	)	.	(	-	-
MAGELLAN	"	851	(	-	-	-	-	-	-	-	)	.	(	-
MAR DE SERGIO	Spain	1829	(	-	-	-	-	-	-	-	-	-	-	-
ALACRAN	"	1333	(	-	-	-	-	-	-	-	-	-	-	-
MONTEFRISA SIETE	"	1350	(	-	-	-	-	-	-	-	-	-	-	-
JUAN RAMON EGANA	"	1536	(	-	-	-	-	-	-	-	-	-	-	-
IZARO	"	1520	(	-	-	-	-	-	-	-	-	-	-	-
ALBACORA CATORCE	"	1475	(	-	-	-	-	-	-	-	-	-	-	-
ALBACORA QUINCE	"	1475	(	-	-	-	-	-	-	-	-	-	-	-
TXORI ZURI	"	1333	(	-	-	-	-	-	-	-	-	-	-	-
ALBACORA ONCE	"	1499	(	-	-	-	-	-	-	-	-	-	-	-
ATERPE ALAI	"	988	(	-	-	-	-	-	-	-	-	-	-	-
ALBACORA DOCE	"	1475	(	-	-	-	-	-	-	-	-	-	-	-
ALBACORA SEIS	"	1345	(	-	-	-	-	-	-	-	-	-	-	-
PLAYA DE MOJA	"	972	(	-	-	-	-	-	-	-	-	-	-	-
ALBACORA CUATRO	"	1585	(	-	-	-	-	-	-	-	-	-	-	-
TXORI EDER	"	833	(	-	-	-	-	-	-	-	-	-	-	-
ALAMADRADA TRES	"	1308	.	(	-	-	-	-	-	-	-	-	-	-
EUZKADI ALAI	"	1365	.	(	-	-	-	-	-	-	-	-	-	-
TXORI URDIN	"	833	.	.	.	(	-	-	-	-	-	-	-	-
CAMPOLIBRE ALAI	"	1365	.	.	.	.	.	.	.	.	.	(	-	-
MONTE LAPE	"	1095	.	.	.	.	.	.	.	.	.	.	(	-
ALBACORA DIECISEIS	"	1475	(	-	-	-	-	-	-	-	-	)	.	(
NARANCO/KAI ALAI	"	1145	(	-	-	-	-	-	)	.	.	.	.	(
TXORI AUNDI	Panama	1370	(	-	-	-	-	-	-	-	-	-	-	-
LADY SUSHIL I	Mauritius	535	(	-	-	-	-	-	-	-	-	-	-	-
LADY SUSHIL II	"	1039	(	-	-	-	-	-	-	-	-	-	-	-
EASTERN PACIFIC	"	725	(	-	-	-	-	-	-	-	-	)	.	.
TIDRA	USSR	2634	(	-	-	-	-	-	-	-	-	-	-	-
IVAN BORZOV	"	2635	.	(	-	-	-	-	-	-	-	)	.	(
TRIDAKNA	"	2635	.	.	(	-	-	-	)	.	.	(	-	-
E. PREOBRAZHENSKIY	"	2635	.	(	-	-	-	)	.	(	-	-	-	-
NIPPON MARU	Japan	1788	(	-	-	-	-	-	)	.	.	.	(	-
FUKUICHI MARU 63	"	500											(	-
Total			43	47	48	49	49	48	46	45	46	48	50	51

(Source: Seychells Fishing Authority)

Fig. A-5-1

GOVERNMENT OF SEYCHELLES - GENERAL ORGANISATION

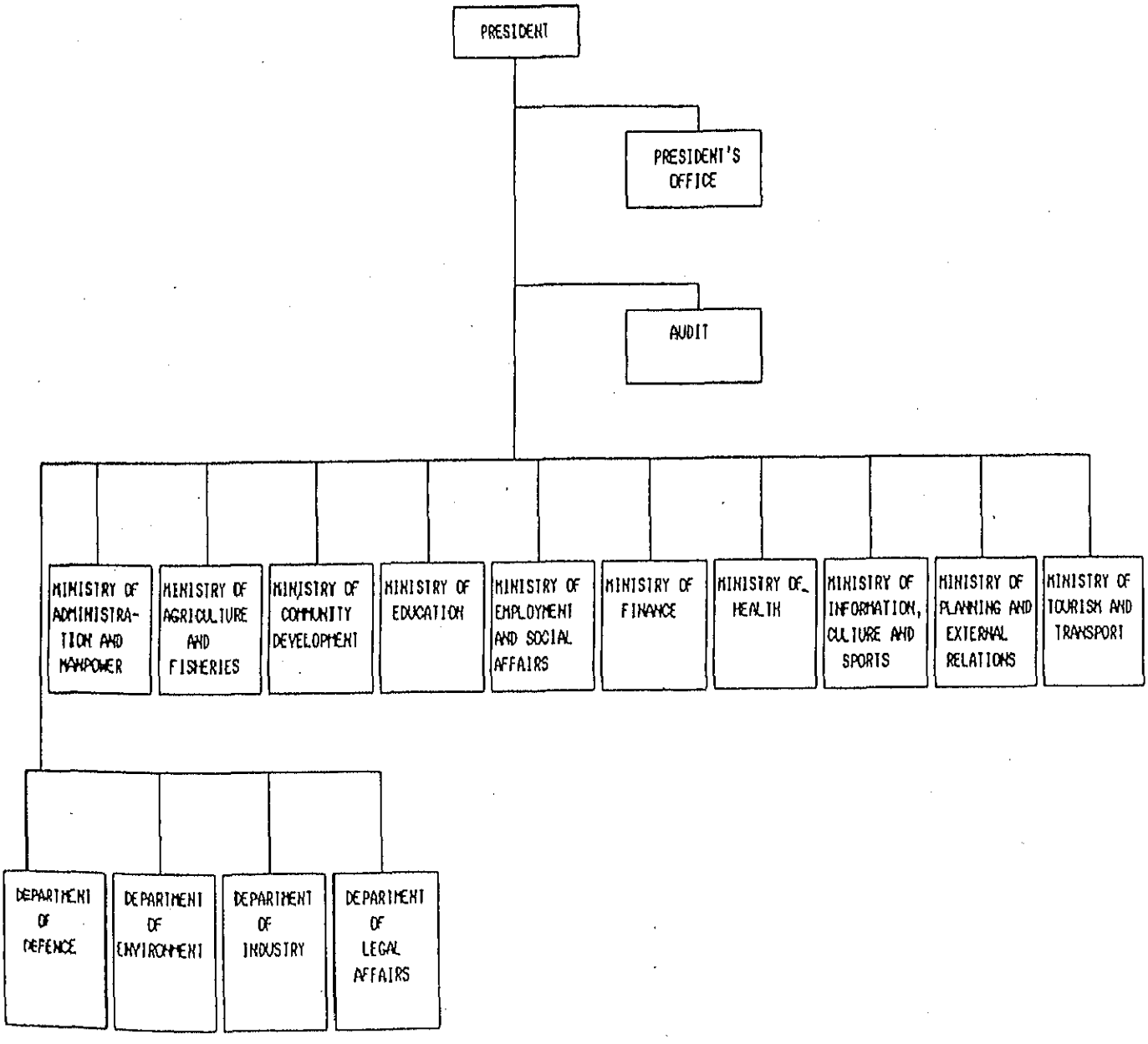


Fig. A-5-2 Ministry of Agriculture and Fisheries

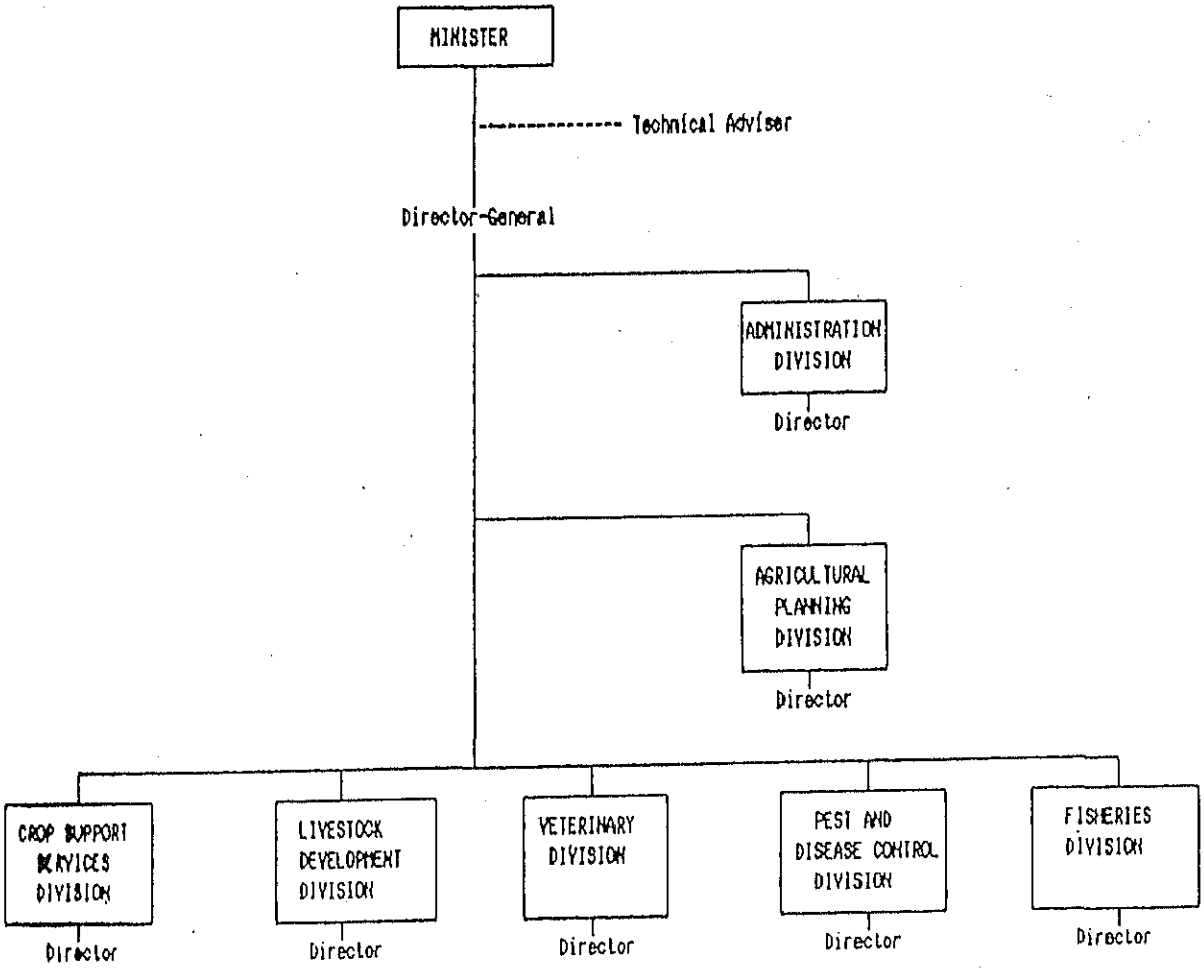
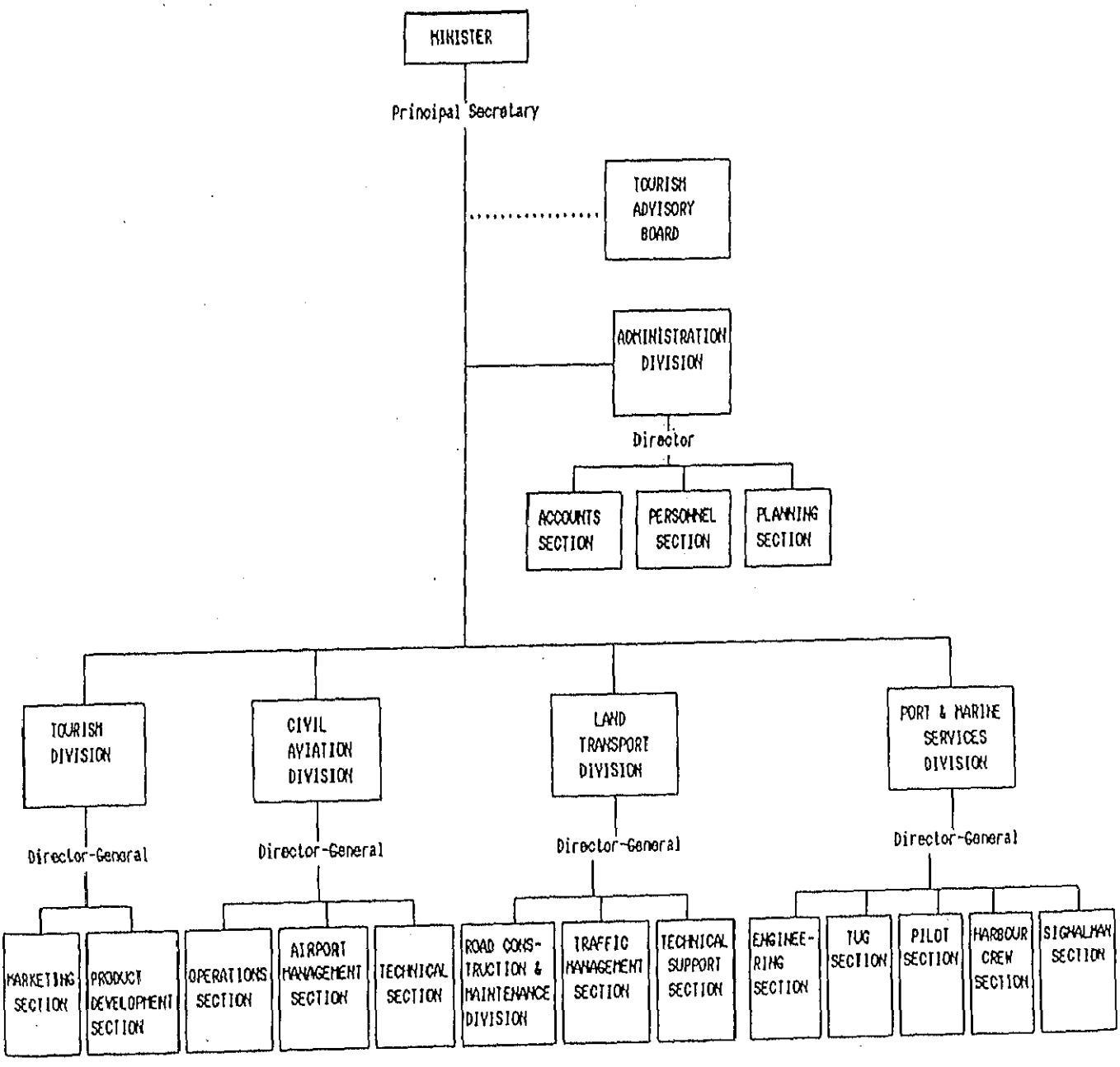


Fig. A-5-3 Ministry of Tourism and Transport



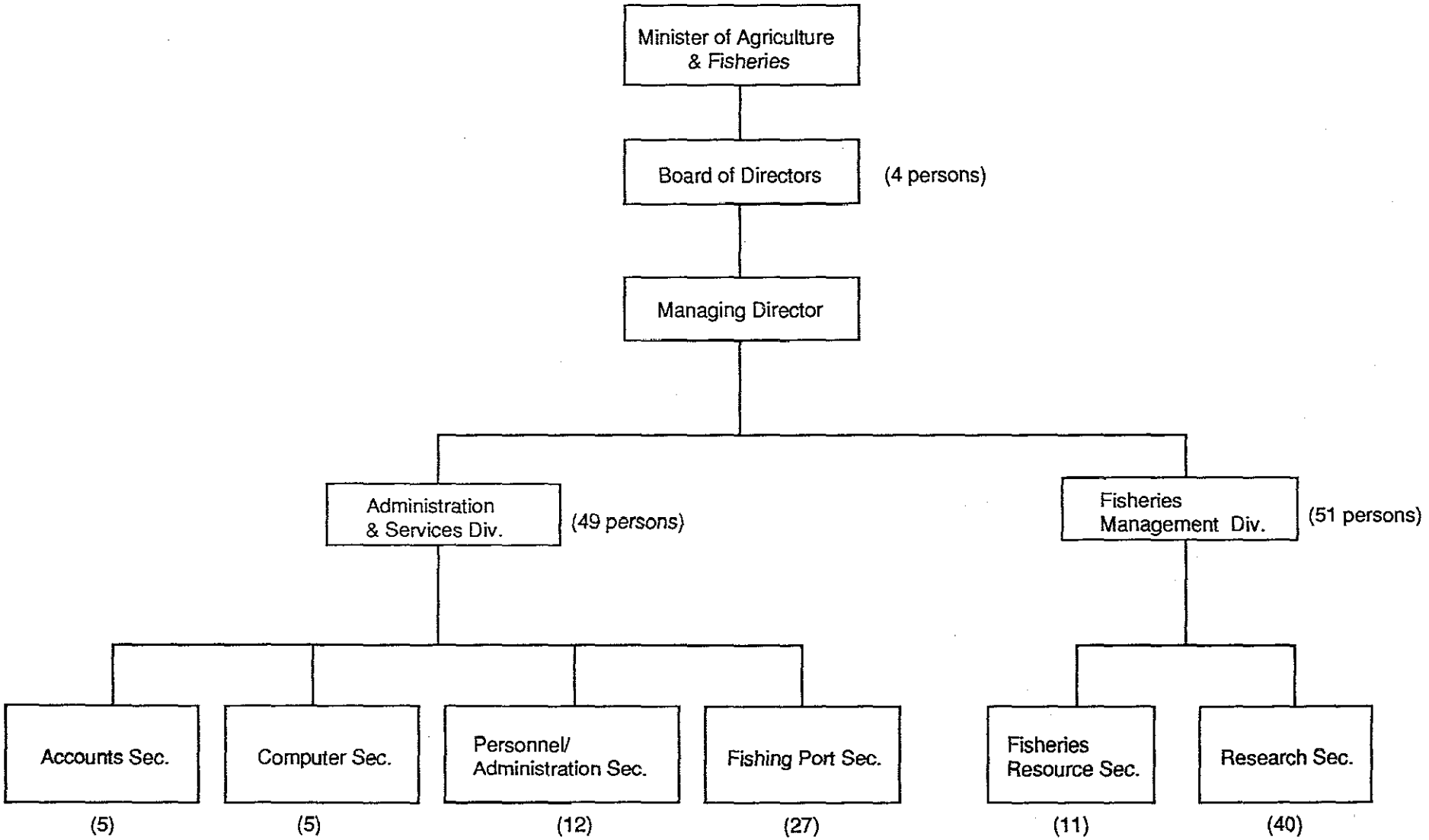


Fig. A-5-4 Seychelles Fishing Authority

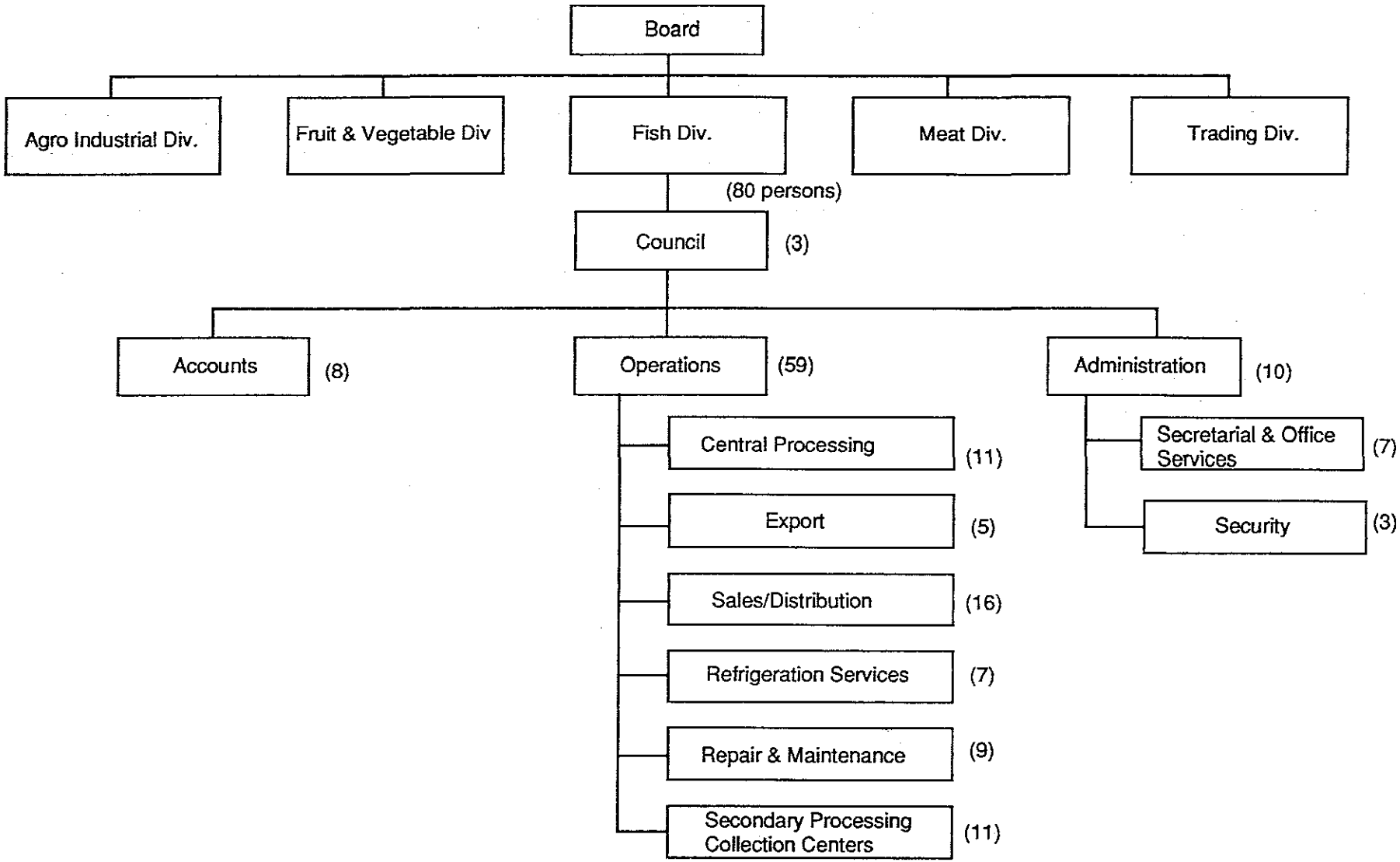


Fig. A-5-5 Seychelles Marketing Board (Fish Div.)

APPENDIX 6 Survey of the Facilities Provided by 1986 Fiscal Year Japanese Grant Aid

The Study Team conducted surveys of the facilities and the boat provided by the Japanese Government's grant aid in fiscal year 1986 for the purpose of the development of Seychelles' coastal fisheries. During the survey period, Mr. Suekane, a JICA specialist, accompanied the Study Team. The surveys conducted are as folows:

1. Small Survey Boat (FRP) Survey:

Boat Name:	Etelis
Manufacturer:	Yanmer Shipbuilding Co.
Dimensions:	18.40m length, 4.50m width, 2.40m depth
Gross Tonnage:	14.00 tonnes
Engine:	165 PS
Equipment Units:	Radar, Color Fish Finder, Trolling Outriggers, Nautical Navigation System by Satellite

2. Research and Training Building Survey:

   Fishing gear, research and surveying instruments

3. Workshop Survey:

   Workshop machinery and a set of tools.

   - According to the navigation records, the Etelis conducted an average of three survey sailings a month (four to six days per sail).
     The surveys included fish resources surveys of octopuses, crabs, and shrimp, and trial of trolling and long-line fishing.

   - In the research and training building, two or three lectures are given monthly either in the audio-visual classroom or the laboratory.

   - Boat engines were being repaired or inspected in the workshop. The workshop is operated continuously.

   All facilities were well maintained and effectively used.

APPENDIX 7 Collected Natural Condition Data

(1) Weather Data

- Weather statistics
- Yearly, seasonal, monthly wind direction frequency data

(2) Project Site Data

- Location map of natural condition surey stations
- Soil columnar diagrams (past survey data)
- Harmonic analyses data of tide levels
- Harmonic analyses data of currents
- Topographic and sounding surveys

WEATHER STATISTICS: MONTHLY DATA, 1972-1988 AND SEVENTEEN-YEAR AVERAGES
SEYCHELLES INTERNATIONAL AIRPORT (SEA LEVEL)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Year
Rainfall (mm)													
Average 1972 - 88	381	271	176	181	105	65	68	105	122	219	216	293	2203
1987	449	279	128	118	230	109	51	52	160	260	93	58	1987
1988	286	75	172	92	87	121	124	178	161	275	202	240	2013
Sunshine (hrs per day)													
Average 1972 - 88	5.0	6.3	6.8	7.6	8.4	7.7	7.4	7.4	7.6	7.1	6.7	5.3	6.9
1987	4.2	6.8	7.1	8.1	7.0	7.5	8.5	7.4	6.6	5.7	7.5	7.7	7.0
1988	4.8	6.7	6.4	7.6	8.1	7.4	6.5	5.2	7.0	7.0	6.8	6.4	6.7
Mean maximum temperature (oC)													
Average 1972 - 88	29.8	30.4	31.0	31.3	30.6	29.2	28.3	28.5	29.1	29.6	30.1	29.9	29.8
1987	29.9	30.5	31.4	32.0	31.4	29.2	28.9	28.6	29.5	30.1	30.8	31.1	30.3
1988	30.6	31.3	31.7	31.5	30.5	28.6	27.9	28.6	29.5	30.1	30.3	30.2	30.1
Mean minimum temperature (oC)													
Average 1972 - 88	24.2	24.8	24.9	25.1	25.5	24.8	24.1	24.1	24.3	24.4	24.0	23.9	24.5
1987	24.3	24.8	25.5	25.8	25.5	25.3	24.8	24.6	24.9	24.9	24.8	24.7	25.0
1988	25.0	25.5	25.9	25.9	25.7	24.7	24.2	24.6	24.8	24.7	23.9	24.1	24.9
Humidity (average %)													
Average 1972 - 88	82	80	79	80	78	79	80	79	78	79	80	82	80
1987	80	79	75	77	79	78	79	79	78	78	75	76	78
1988	82	77	78	79	78	83	83	80	76	81	81	83	80
Windspeed (average knots)													
Average 1972 - 88	6.8	6.4	5.5	5.0	7.6	10.5	11.7	12.1	11.0	7.9	5.6	5.8	8.1
1987	7.1	5.0	5.6	5.0	5.4	10.2	12.1	13.3	10.6	8.3	6.0	6.0	7.9
1988	5.3	5.1	6.9	4.9	8.2	11.4	15.1	12.7	10.9	6.4	5.8	5.6	8.2

Source: Meteorological Office
Notes: Averages based on Jan 72 - Dec 1986

Table A-7-1 Weather Statistics

(Source: Statistical Abstract 1988)

SEYCHELLES
AVE. (1987 – 1989)

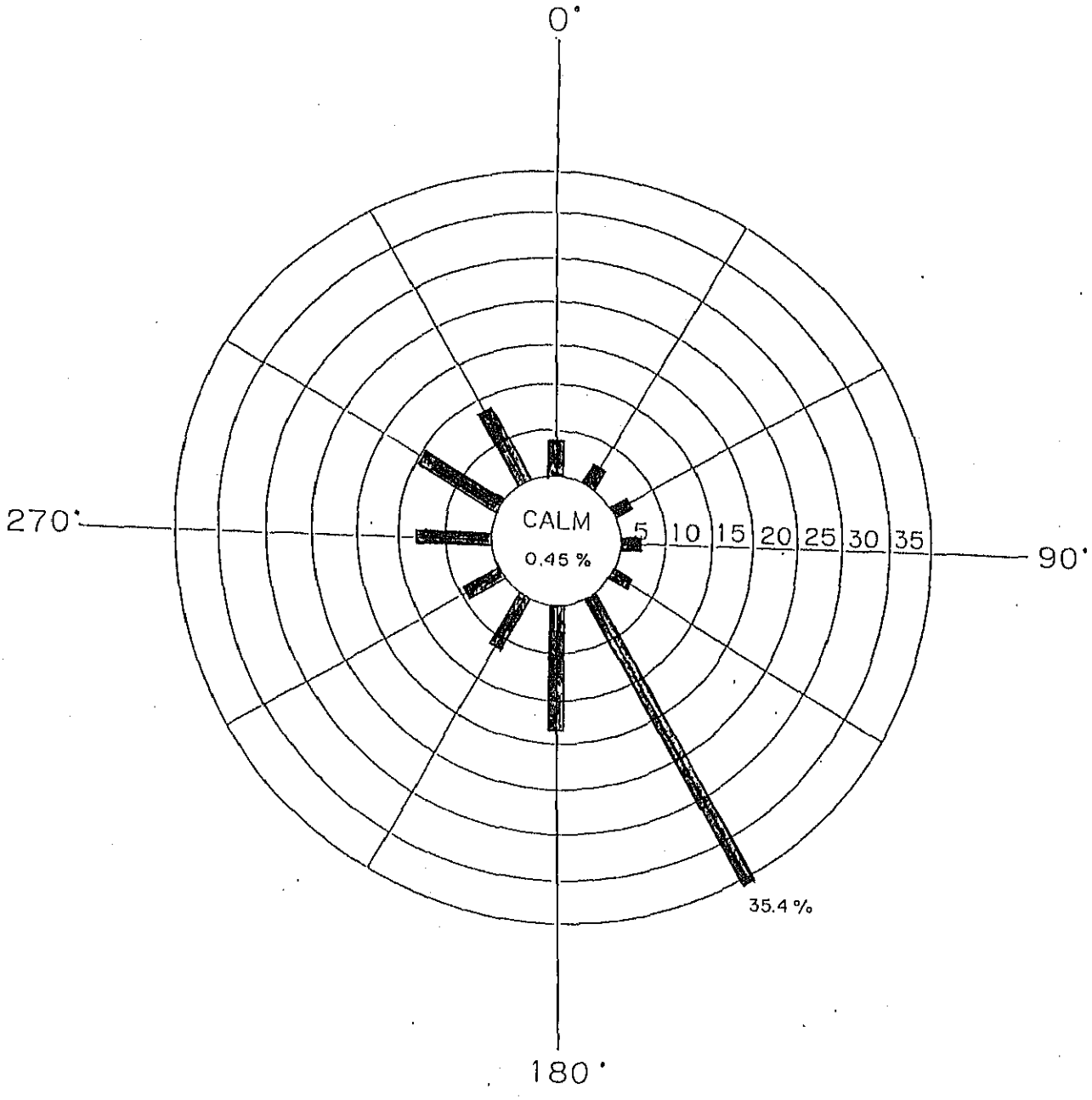
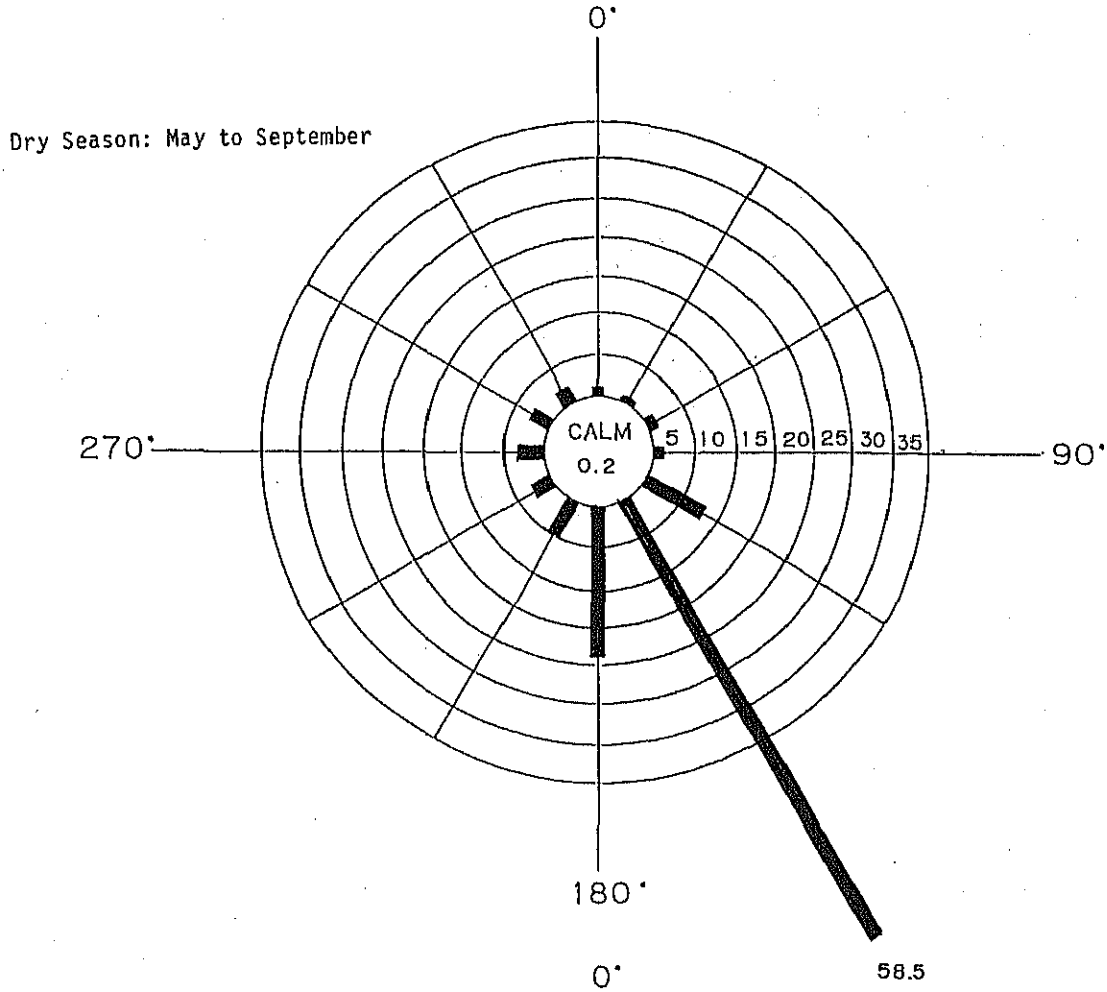


Fig. A-7-1 Frequency of Average Annual Wind Direction (1987 - 1989)



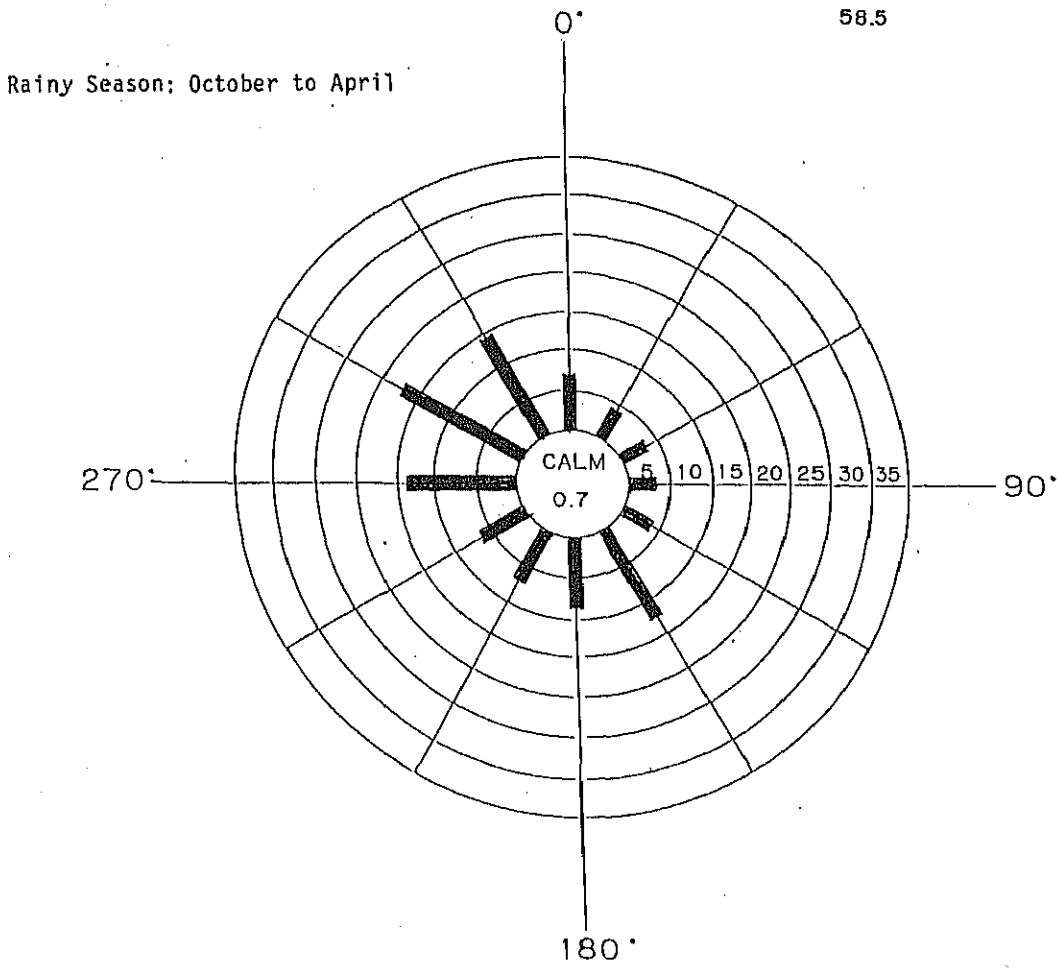


Fig. A-7-2 Frequency of Average Wind Direction by Seasons (1987 - 1989)

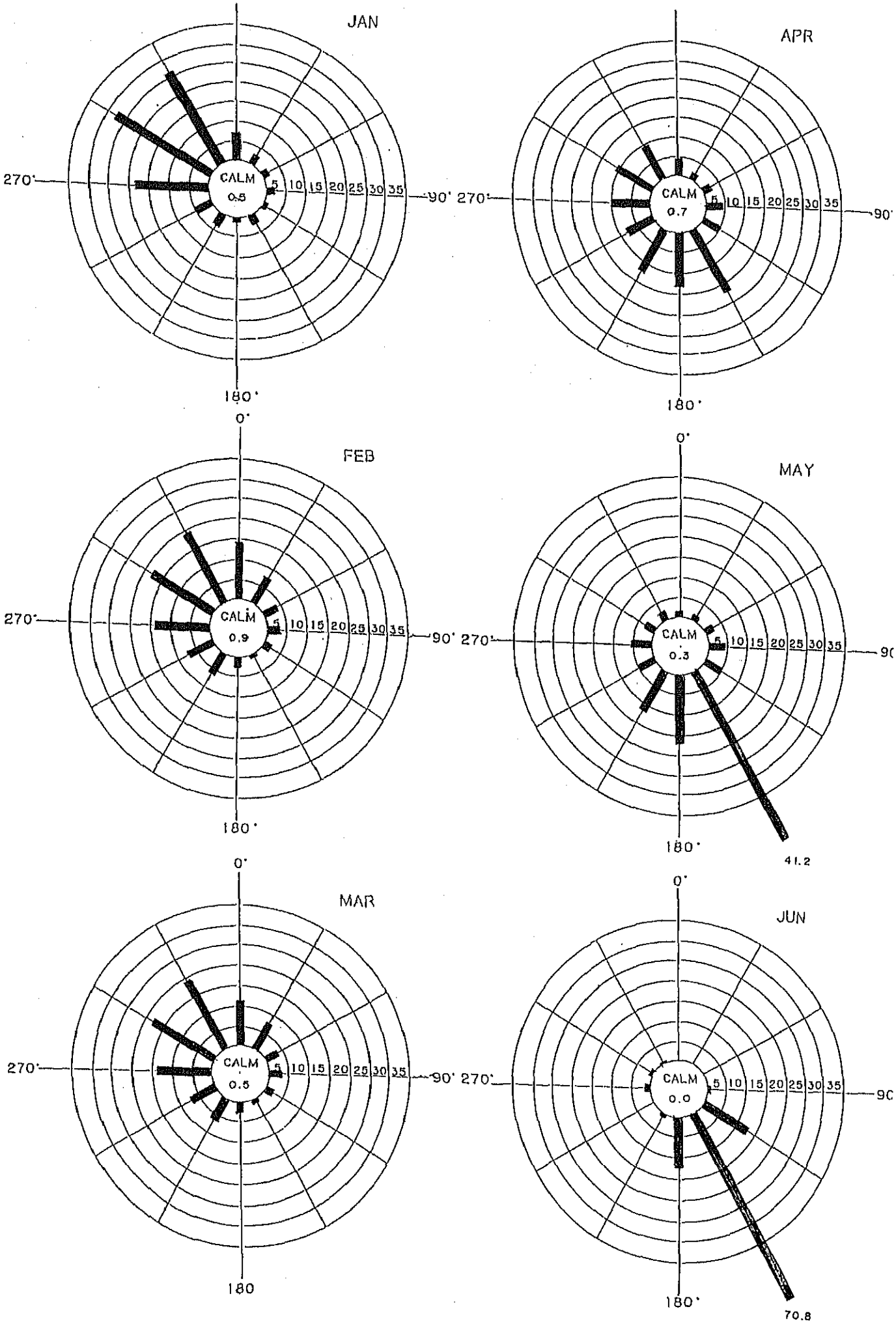


Fig. A-7-3 Frequency of Average Monthly Wind Direction (1987 - 1989)

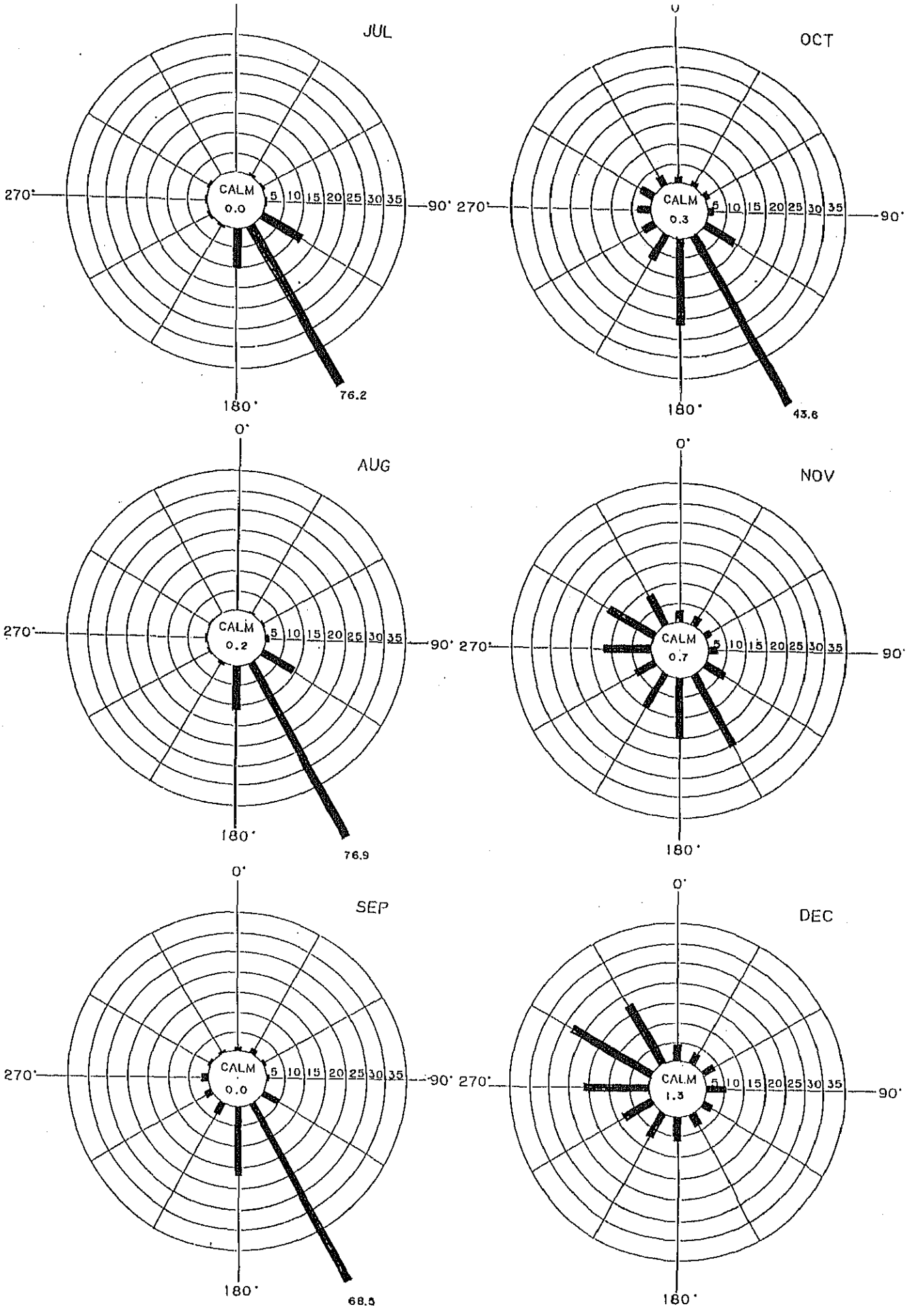


Fig. A-7-4 Frequency of Average Monthly Wind Direction (1987 - 1989)

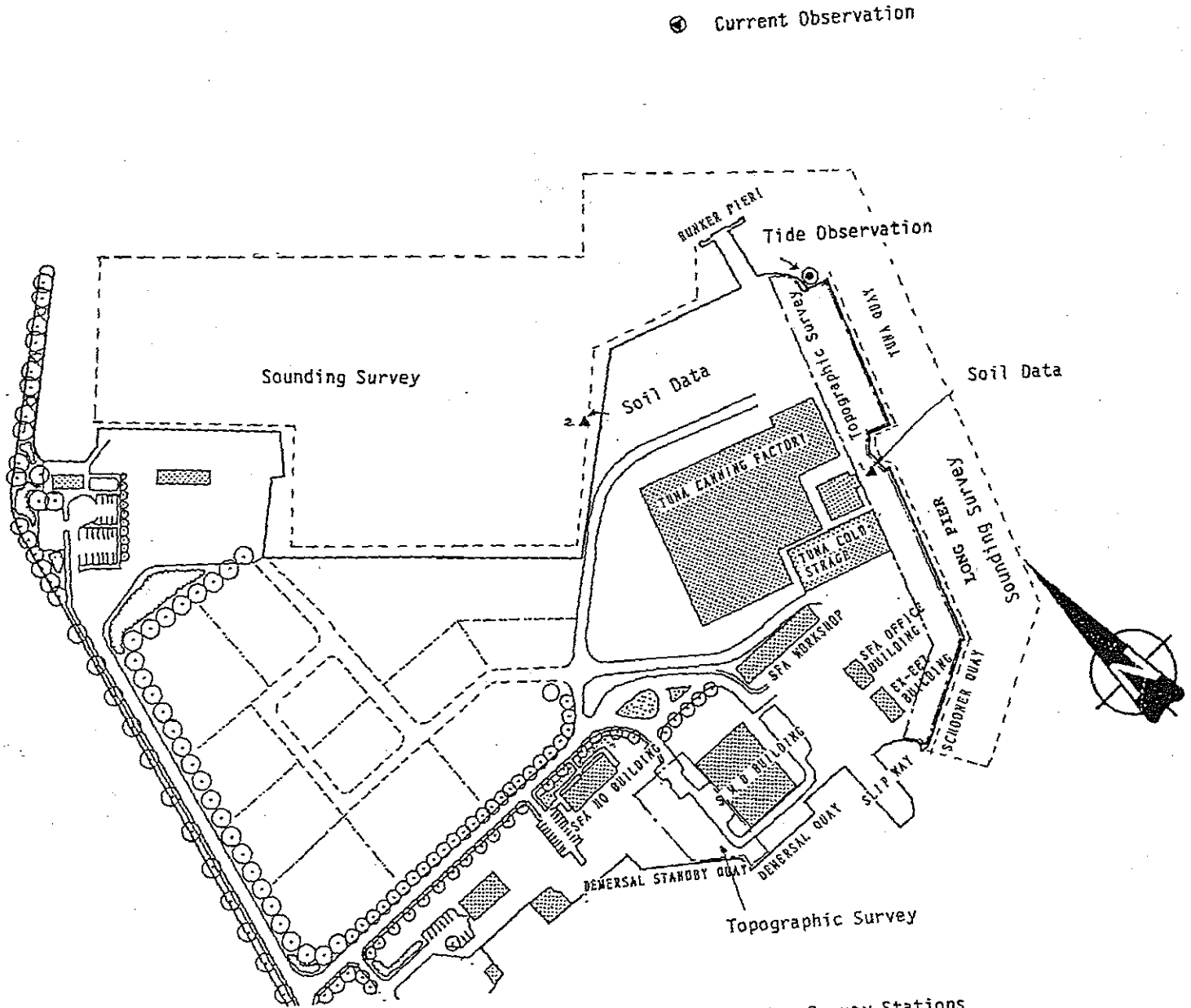
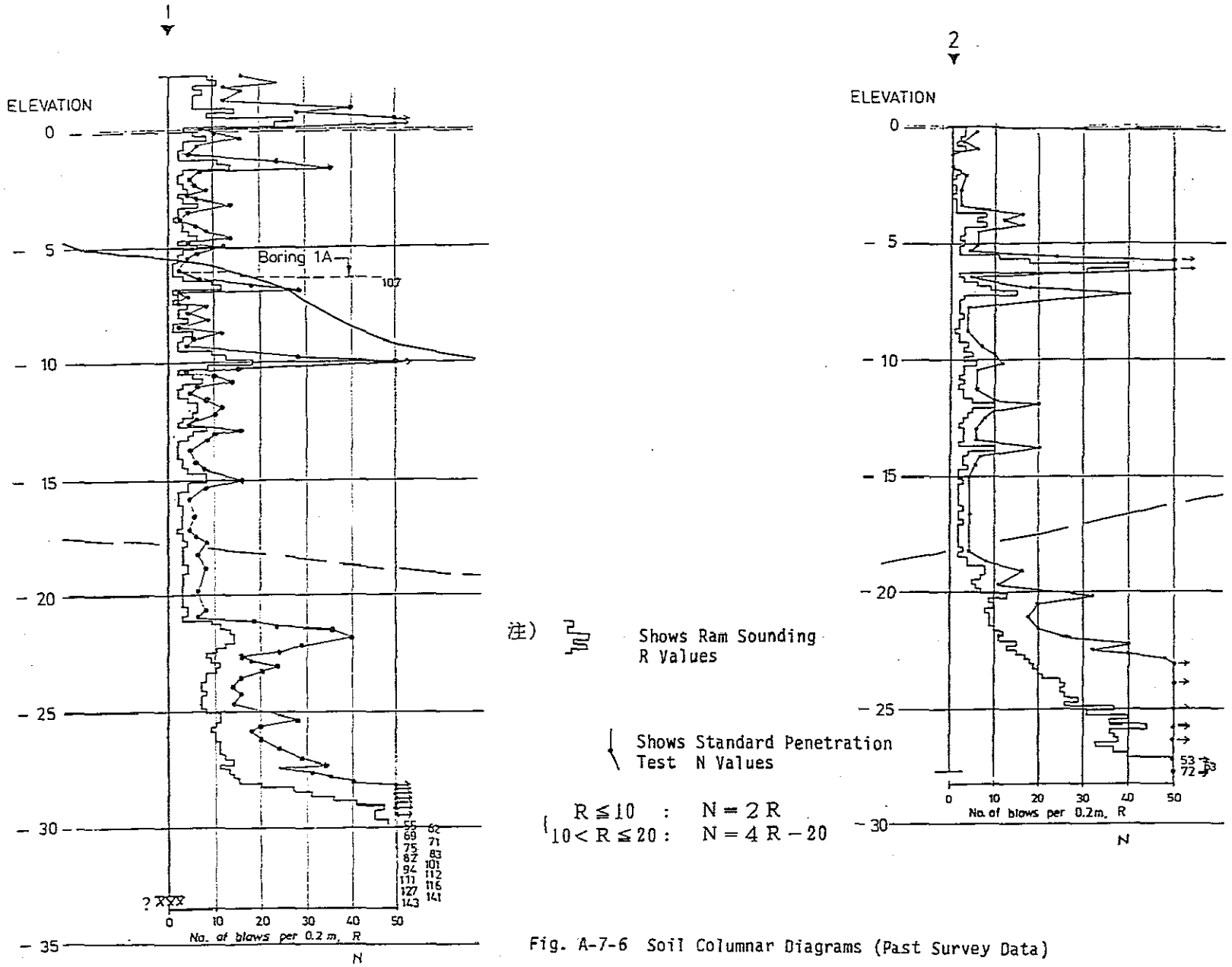


Fig. A-7-5 Location Map of Natural Condition Survey Stations



注) Shows Ram Sounding R Values

Shows Standard Penetration Test N Values

$R \leqq 10 : N = 2R$

$10 < R \leqq 20 : N = 4R - 20$

Fig. A-7-6 Soil Columnar Diagrams (Past Survey Data)

Tide

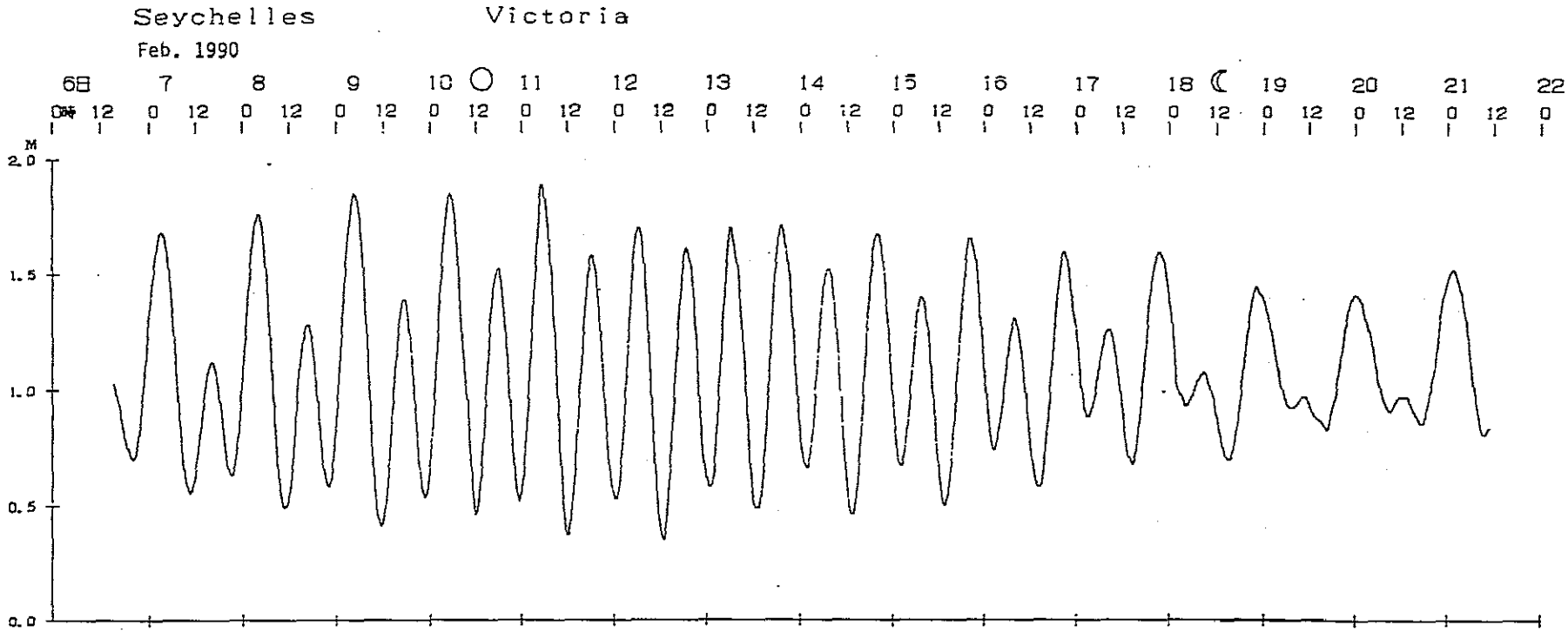


Fig. A-7-7 Changes in Tide Level

Table A-7-2 Tide Level Harmonic Analysis Results

Sea : Seychelles
Location : Victoria
Latitude : 4° 37' 11"S
Longitude : 55° 27' 44'E
Date : 6 to 21 Feb. 1990
Standard Time: -4.0 hour
Datum Line : Chart Datum Level

Components	Amplitude (cm)	Lag (°)
M 2	41.2	127.7
S 2	18.0	168.0
K 2	4.9	168.0
N 2	6.7	120.3
K 1	18.1	58.0
O 1	10.6	56.5
P 1	6.0	58.0
Q 1	2.5	6.0
M 4	0.6	166.1
MS 4	0.6	198.1
A 0	107.4	

Table A-7-3 List of Tidal Components (15 days Period)

Symbol	Name	Amplitude	Phase Lag
M_2	Main Lunar	12.42 h	28.984°/h
S_2	Main Solar	12.00	30.000
K_2	Changes during Orbital Cycle	11.97	30.082
N_2	Monthly Variation in Means Distance	12.66	28.440
K_1	Solitary Lunar	23.93	15.041
O_1	Main Lunar Diurnal	25.82	13.943
P_1	Main Solar Diurnal	24.07	14.959
Q_1	Main Lunar Eliptic	26.87	13.399
M_4	Moor Fortnightly	6.21	57.986
MS_4	Littoral current	6.10	58.984
V_0	Current	-	-

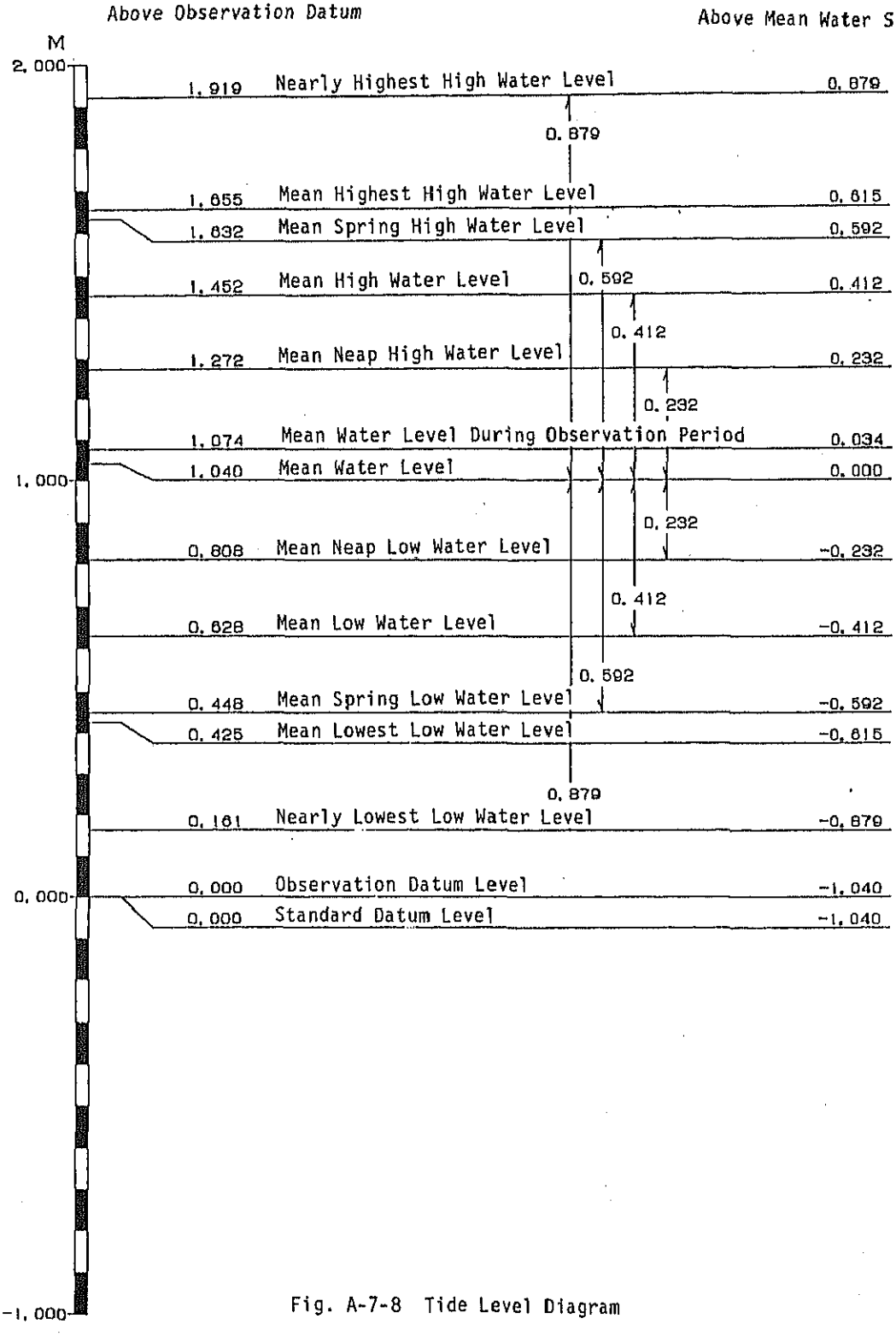


Fig. A-7-8 Tide Level Diagram

* Victoria

Table A-7-4 Current Harmonic Analysis Results

Seychelles
Victoria
E 55° 27' 46"
S 4° 37' 7"
-1.0 m below sea level
9 to 10 Feb. 1990

Components	North Component		East Components		Elliptic Elements						Main Current	
					Long Axis			Short Axis				
	V CM/SEC	Lag °	V	Lag	Dir.	V	Lag	Dir.	V	Lag	V	Lag
M2	1.7	294	1.9	16	65	2.0	354	155	1.6	84	2.0	354
S2	0.7	335	0.8	56	65	0.9	35	155	0.7	125	0.9	34
K2	0.2	335	0.2	56	65	0.2	35	155	0.2	125	0.2	34
N2												
K1	2.2	90	4.5	100	64	5.0	98	154	0.3	188	5.0	98
O1	1.3	89	2.6	98	64	2.9	96	154	0.2	186	2.9	96
P1	0.7	90	1.5	100	64	1.7	98	154	0.1	188	1.7	98
Q1												
M4												
MS4												
A0	-1.5		-0.6		1.6			200			-1.2	

Table A-7-5 Current Harmonic Analysis Results

Seychelles
Victoria
E 55 27' 46"
S 4 37' 7"
B +1.0 m above sea bottom
9 to 10 Feb. 1990

Components	North Component		East Components		Elliptic Elements						Main Current	
					Long Axis			Short Axis				
	V CM/SEC	Lag °	V	Lag	Dir.	V	Lag	Dir.	V	Lag	V	Lag
M2	0.8	276	1.0	185	273	1.0	3	3	0.8	273	1.0	208
S2	0.4	317	0.4	225	273	0.4	43	3	0.4	313	0.4	249
K2	0.1	317	0.1	225	273	0.1	43	3	0.1	313	0.1	249
N2												
K1	3.0	64	4.2	22	58	4.8	35	148	1.7	305	4.8	33
O1	1.7	62	2.4	20	58	2.8	33	148	1.0	303	2.8	31
P1	1.0	64	1.4	22	58	1.6	35	148	0.6	305	1.6	33
Q1												
M4												
MS4												
A0	-0.2		-1.8		1.8			265			-1.7	

Table A-7-6 Current Elliptic Elements

Seychelles

Depth	Date	Axis	M1			M2			M4			Constant	
			θ °	V cm/s	H h	θ °	V cm/s	H h	θ °	V cm/s	H h	θ °	V cm/s
Victoria -1.0	9 to 10 Feb. 1990	L	64	6.7	6.2	65	2.6	0.2	317	2.3	3.3	200	1.6
		S	154	0.4	12.2	155	2.1	3.2	47	1.1	4.8		
		S/L		0.07			0.82			0.49			
Victoria B+1.0	9 to 10 Feb. 1990	L	58	6.5	2.0	273	1.4	0.5	289	1.5	2.8	265	1.8
		S	148	2.3	20.0	3	1.1	9.5	19	0.8	4.3		
		S/L		0.36			0.82			0.53			

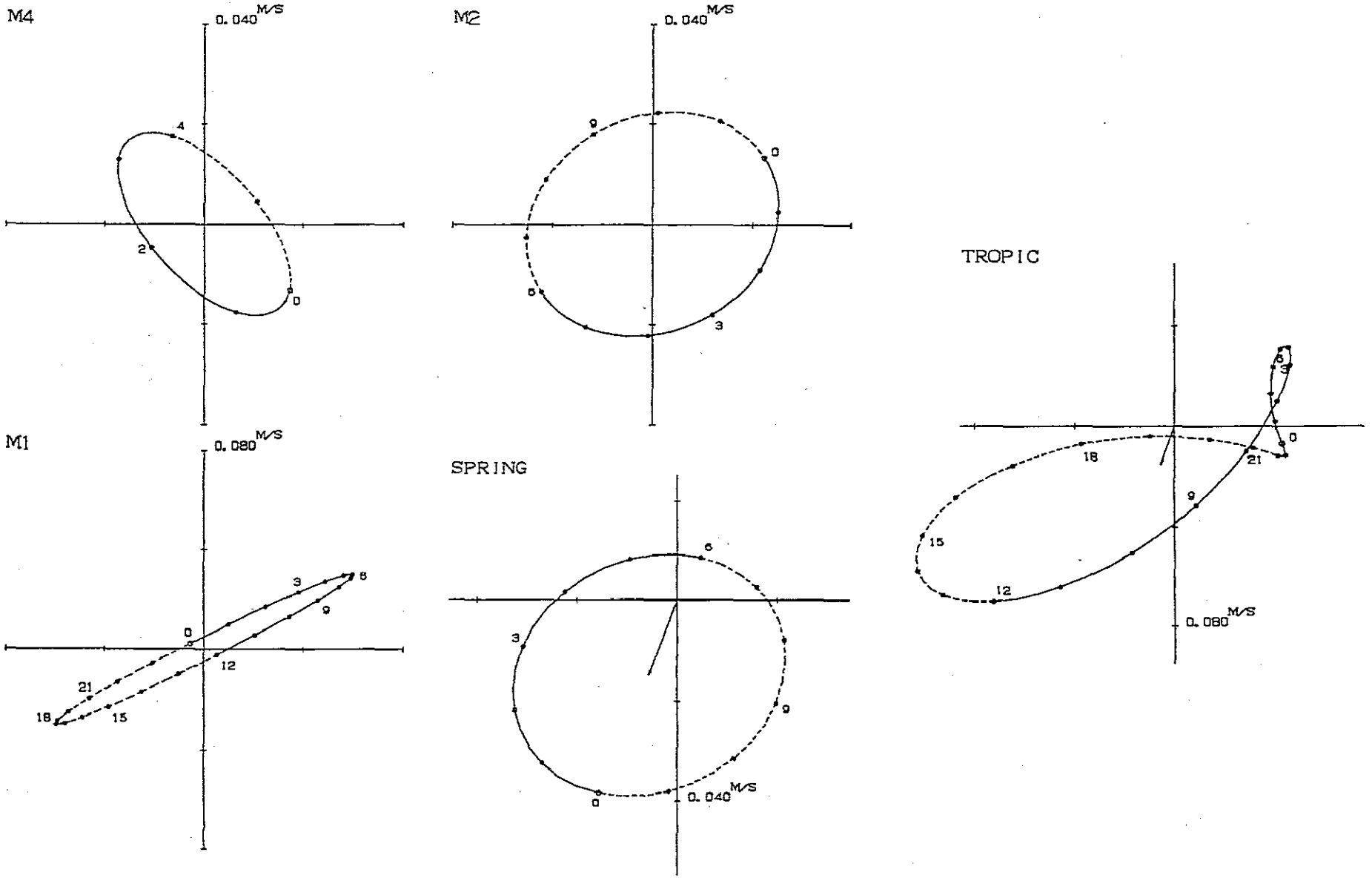


Fig. A-7-9 Current Ellipse Seychelles Victoria -1.0M

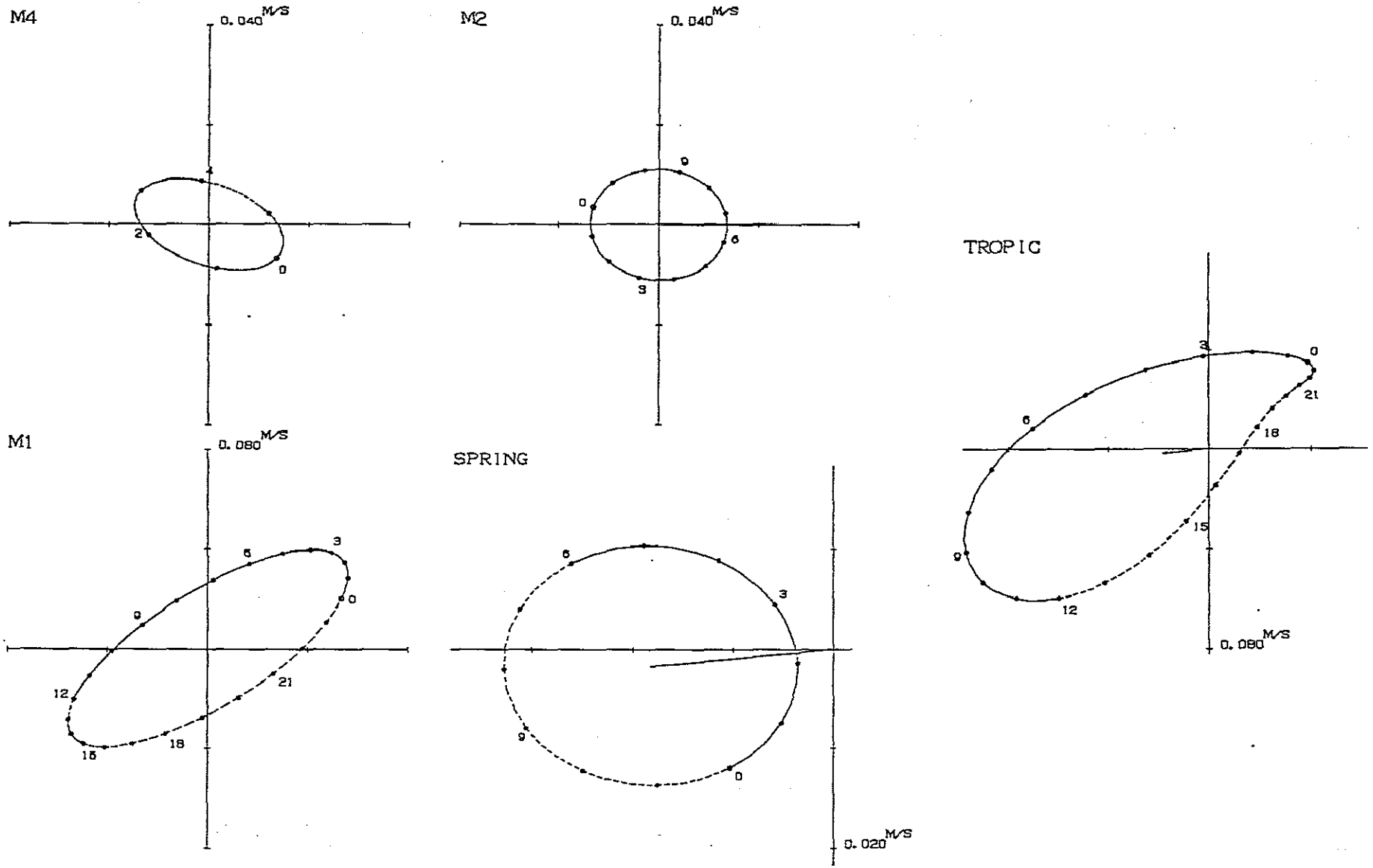


Fig. A-7-10 Current Ellipse Seychelles VictoriaB+1.CM

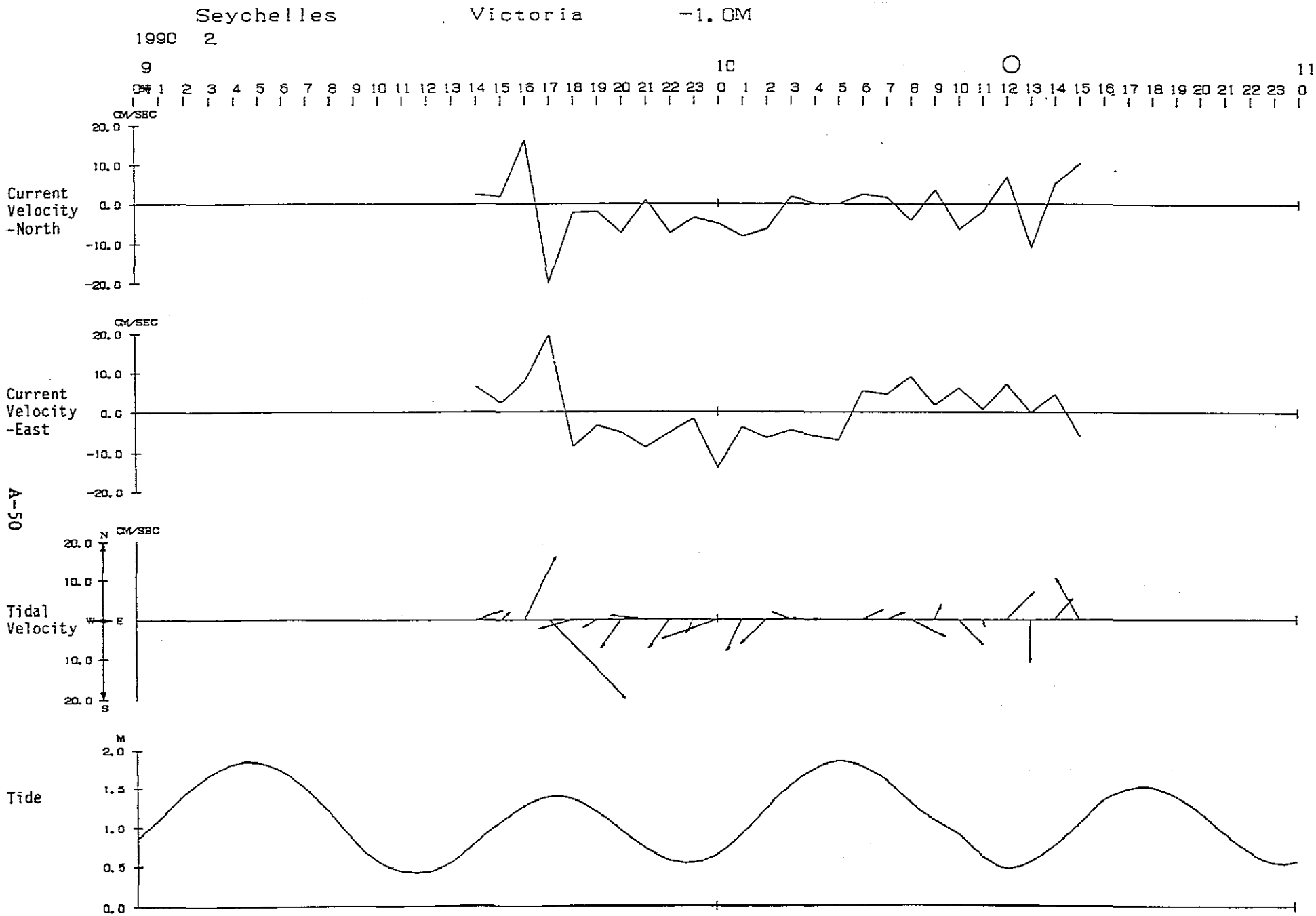


Fig. A-7-11 Component Curve abd Vector

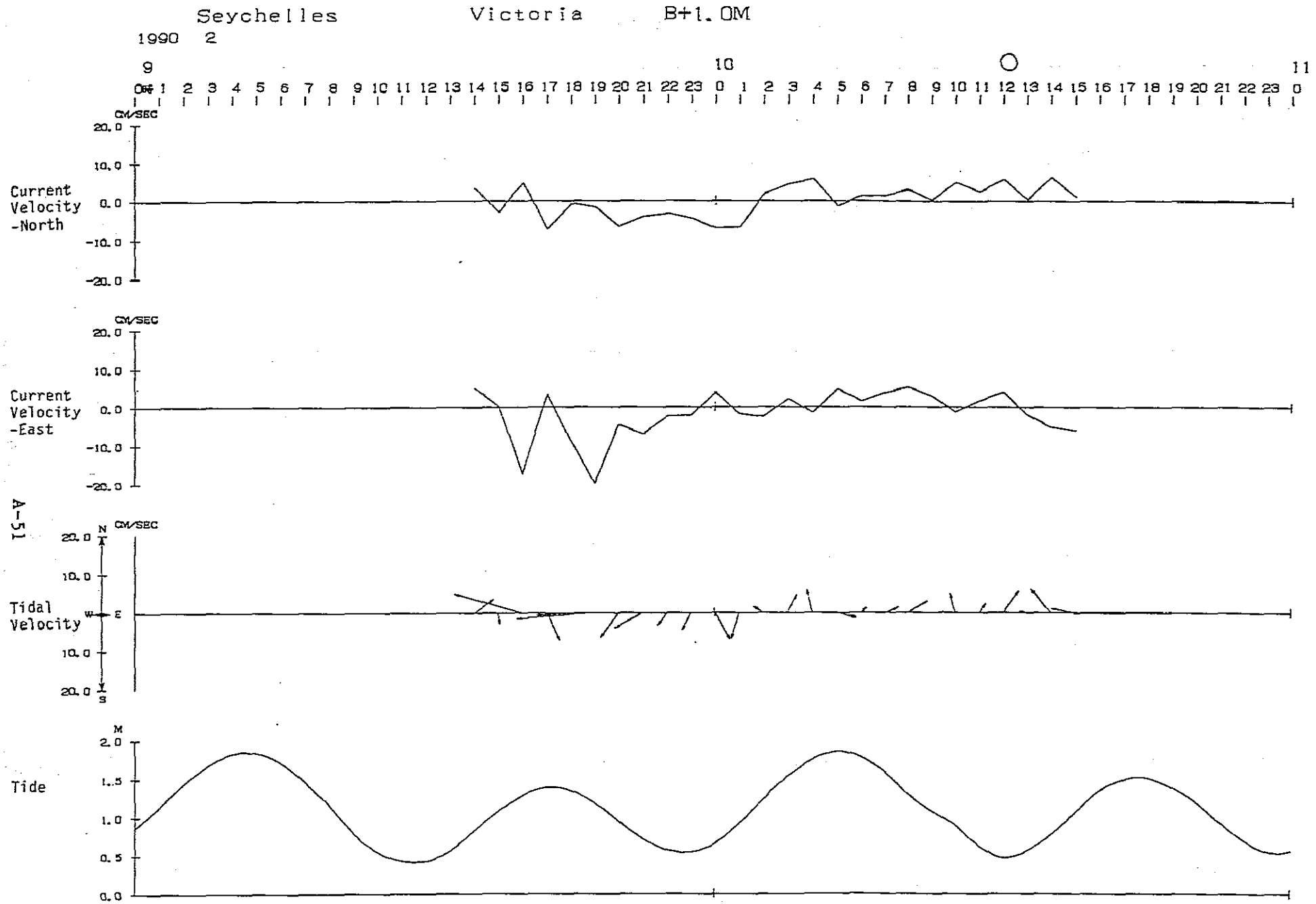


Fig. A-7-12 Component Curve and Vector

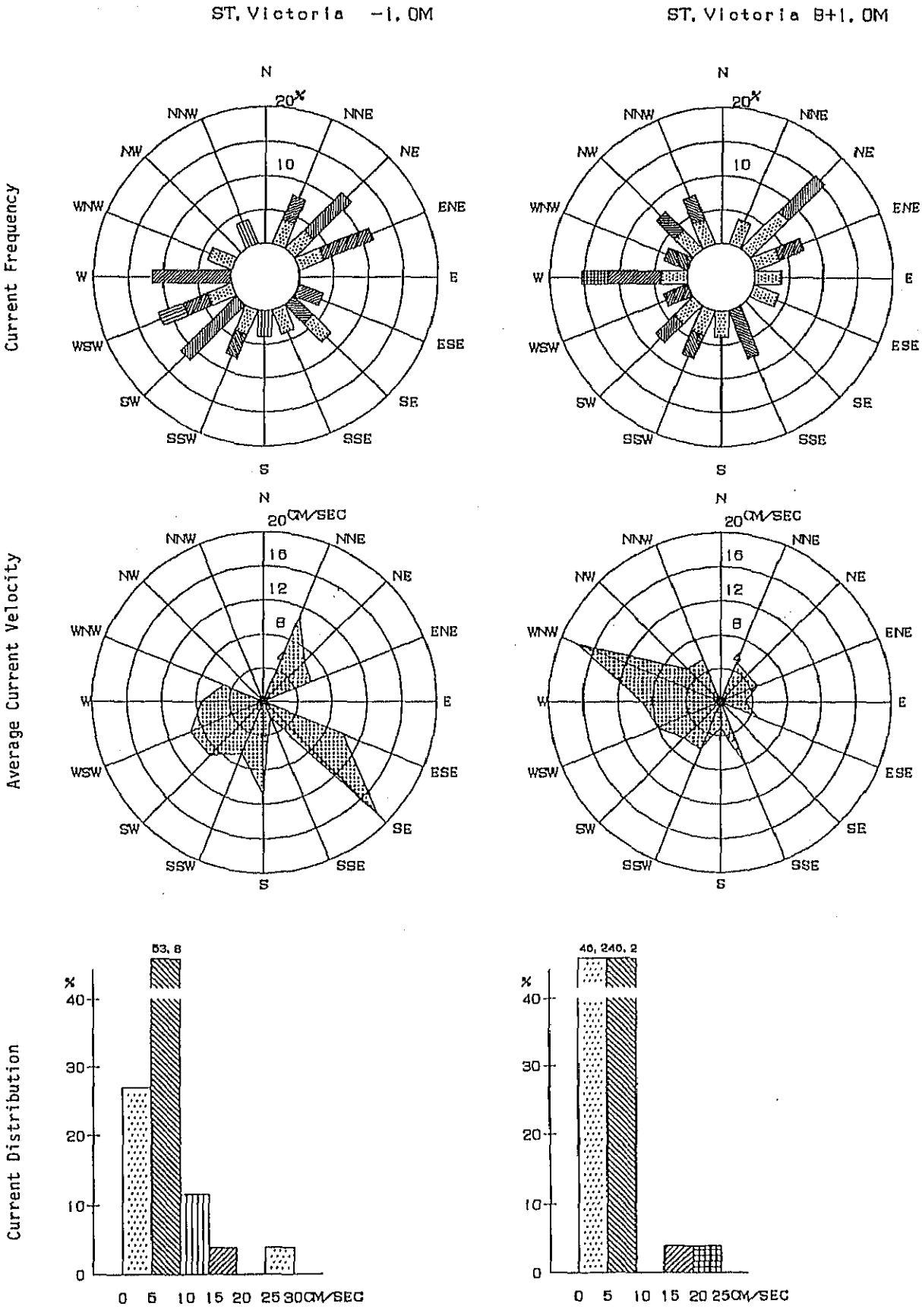
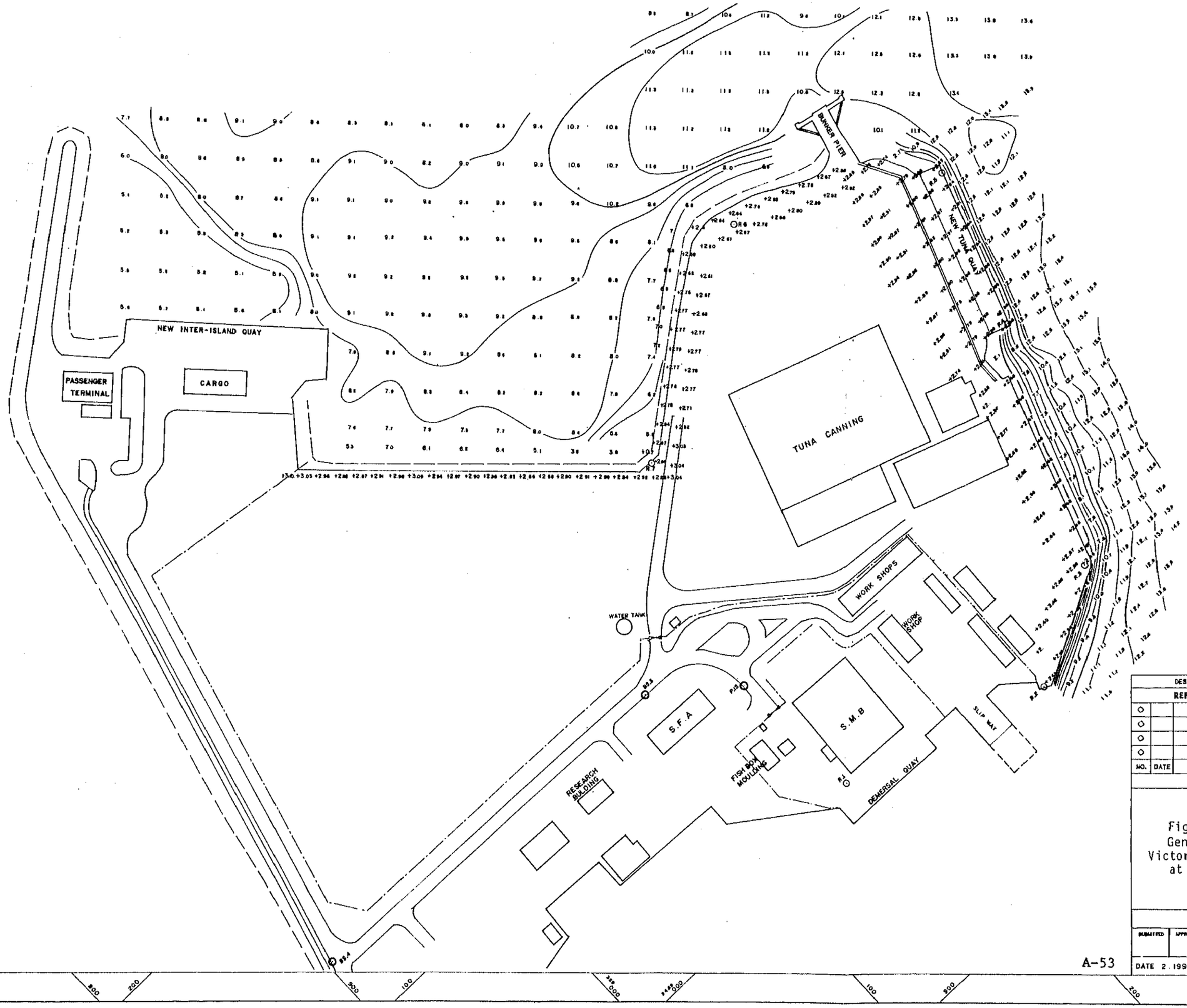


Fig. A-7-13 Current Frequency

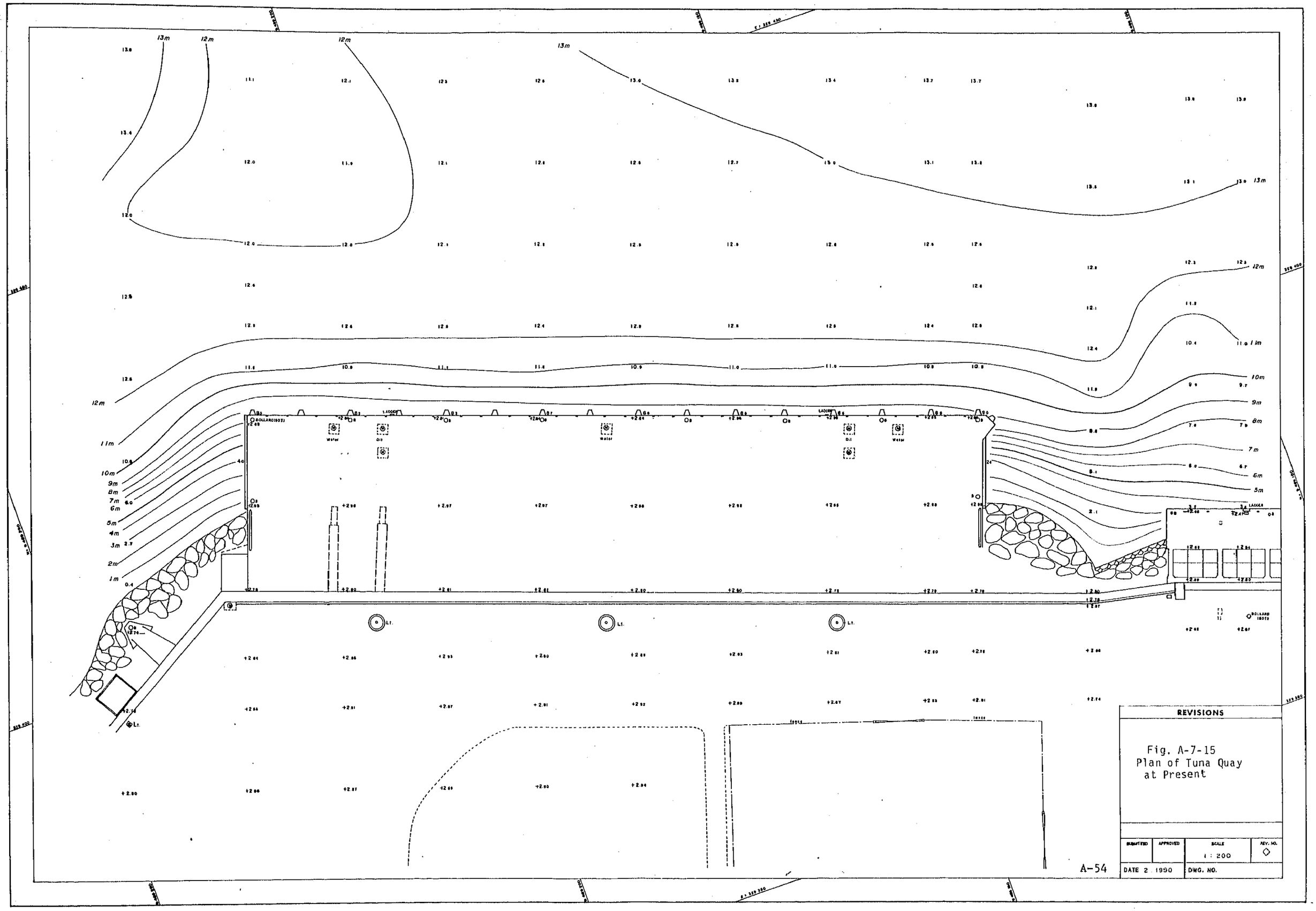


DESCRIPTIONS	DWG. NO.
REFERENCE DRAWINGS	
◇	
◇	
◇	
◇	

NO.	DATE	DESCRIPTIONS	BY	APP'D
REVISIONS				

Fig. A-7-14
General Plan of
Victoria Fishing Port
at Present

SUBMITTED	APPROVED	SCALE	REV. NO.
		1 : 1,000	◇
DATE 2.1990		DWG. NO.	



REVISIONS

Fig. A-7-15
Plan of Tuna Quay
at Present

SUBMITTED	APPROVED	SCALE	REV. NO.
		1 : 200	◇
DATE 2 1990		DWG. NO.	

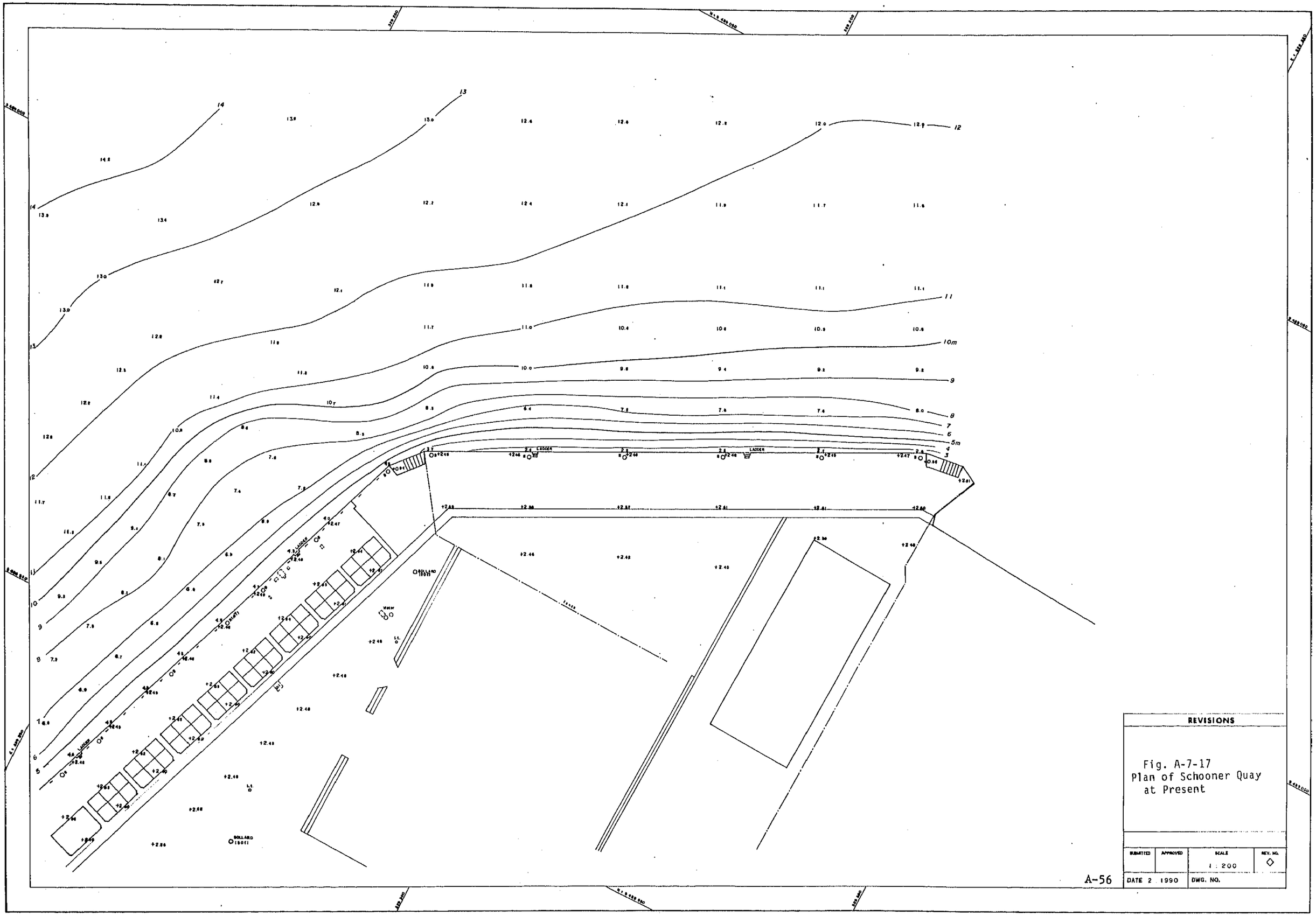
A-54

REVISIONS

Fig. A-7-16
Plan of Long Pier
at Present

SUBMITTED	APPROVED	SCALE	REV. NO.
		1 : 200	◇
DATE 2 . 1990		DWG. NO.	

A-55

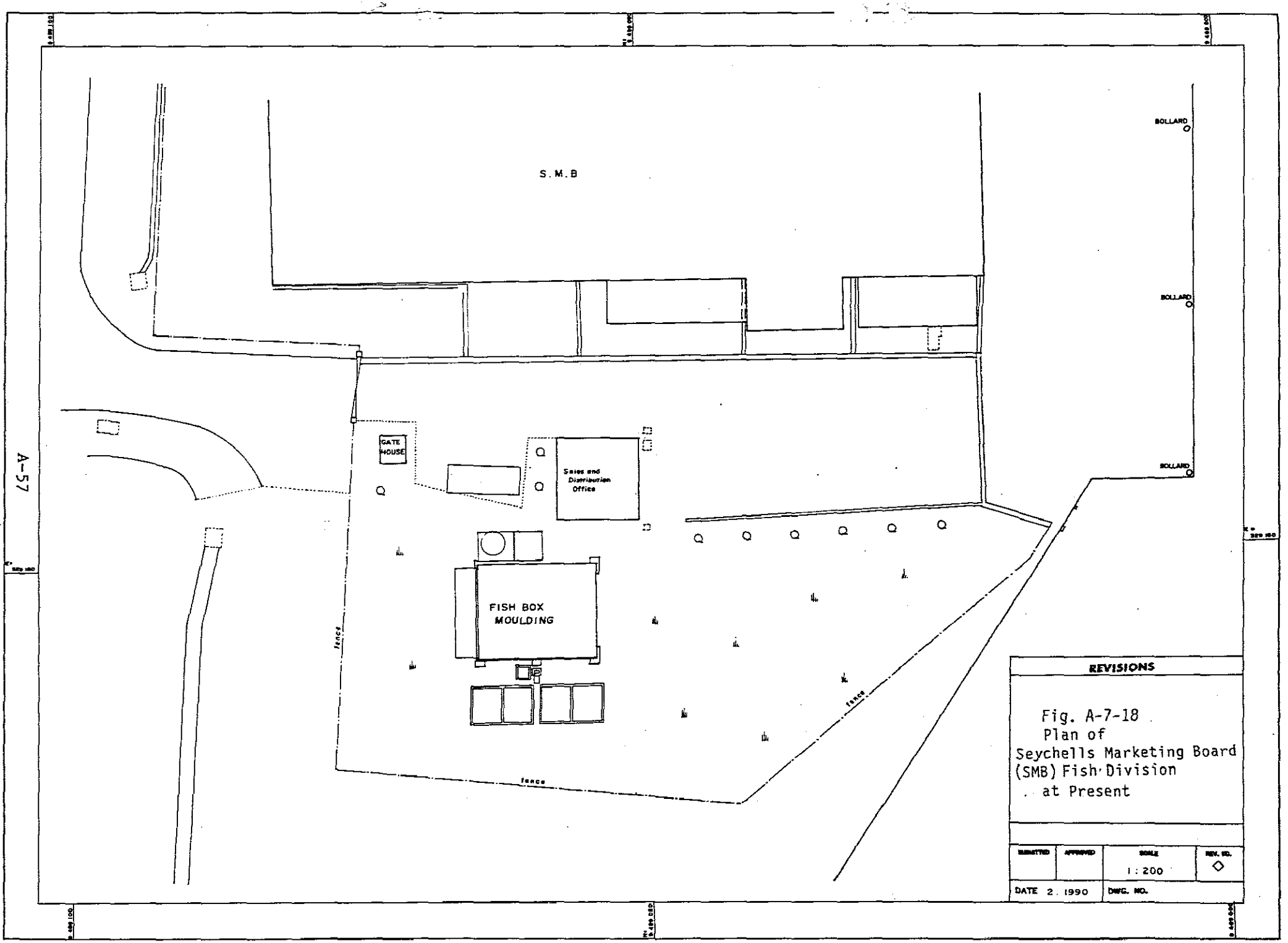


REVISIONS

Fig. A-7-17
Plan of Schooner Quay
at Present

SUBMITTED	APPROVED	SCALE	REV. NO.
		1 : 200	◇
DATE 2 1990		DWG. NO.	

A-56



REVISIONS

Fig. A-7-18
Plan of
Seychells Marketing Board
(SMB) Fish Division
at Present

SUBMITTED	APPROVED	SCALE	REV. NO.
		1 : 200	◇
DATE 2. 1990		DWG. NO.