

NATIONWIDE ROLL-ON ROLL-OFF TRANSPORT SYSTEM DEVELOPMENT STUDY IN THE REPUBLIC OF THE PHILIPPINES

VOLUME 3

APPENDICES

AUGUST 1992

FINAL REPORT

JAPAN INTERNATIONAL COOPERATION AGENCY

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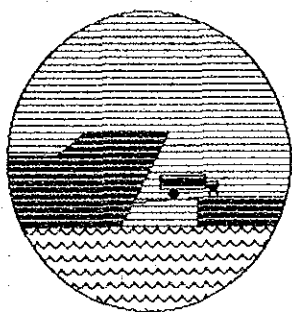
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Table A-1-2-1 Examples of Ro/Ro Fare in Japan

Route	A	B	C	D	E
Distance (NM)	61.0	42.1	39.8	62.1	26.2
Fare per Vehicle	yen	yen	yen	yen	yen
Car Length					
~ 3 m	9,700	8,140	5,770	11,300	6,490
3 ~ 4	12,900	10,820	7,830	15,140	7,830
4 ~ 5	16,200	13,490	9,680	16,950	9,680
5 ~ 6	21,100	16,790	10,510	26,470	13,940
6 ~ 7	28,600	19,570	11,330	34,300	17,380
7 ~ 8	32,600	23,070	12,570	39,140	21,070
8 ~ 9	36,700	25,960	13,910	43,260	23,340
9 ~ 10	42,900	28,740	15,450	49,850	26,060
10 ~ 11	47,200	31,720	17,000	54,490	28,200
11 ~ 12	51,500	34,510	18,440	60,150	30,360
2nd Class Passenger Fare	1,400	1,980	1,850	n.a.	1,960
Pesos per NM of Major Type	Pesos	Pesos	Pesos	Pesos	Pesos
Passenger Car or Small (4.7m)	53.1	64.1	51.2	61.0	73.9
8tons (truck or Bus (10 ~ 10.5 m)	154.8	150.7	90.0	160.5	215.4
Passenger per NM	4.6	9.4	9.8	n.a.	15.0

Note : 1. No cargo fare is charged.

2. One diver for each vehicle is free for 2nd class passenger cabin.

Source: Ferry Directory, 1991 (in Japanese)

Table A-1-4-1 Classification of the study ports by management organization

PORT	PPA Base Port	PPA Terminal Ports	Municipal Port	Private Port
1 MARIVELES BATAAN			○	
2 CAVITE CAVITE			○	
3 LUCENA QUEZON			○	
4 BATANGAS BATANGAS	○			
5 CALAPAN MINDORO ORIENTAL		○	○	
6 ROXAS MINDORO ORIENTAL			○	
7 ABRA DE ILOG MINDORO OCC.			○	
8 SAN JOSE MINDORO OCC.				
9 BALANACAN MARINDUQUE		○		
10 STA. CRUZ MARINDUQUE		○		
11 ODIONGAN ROMBLON			○	
12 EL NIDO PALAWAN				
13 PUERTO PRINCESA PALAWAN	○			
14 TABAGO ALBAY		○		
15 MATNOG SORSOGON		○		
16 BULAN SORSOGON		○		
17 VIRAC CATANDUANES		○		
18 MASBATE MASBATE		○		
19 MILAGROS MASBATE			○	
20 ILOILO CITY ILOILO	○			
21 ESTANCIA ILOILO			○	
22 AJUY ILOILO			○	
23 NEW WASHINGTON AKLAN			○	
24 JORDAN GUIMARAS				○
25 BACOLOD NEGROS OCC.				
26 PULUPANDAN NEGROS OCC.		○		
27 SAN CARLOS NEGROS OCC.		○		
28 ESCALANTE NEGROS OCC.				○
29 MANAPLA NEGROS OCC.			○	
30 DUMAGUETE NEGROS ORIENTAL	○			
31 TANDAYAG NEGROS ORIENTAL			○	
32 GUIHULNGAN NEGROS ORIENTAL			○	
33 CEBU CITY CEBU	○			
34 CARMEN CEBU			○	
35 TUBURAN CEBU			○	
36 TOLEDO CEBU		○		
37 DUMANJUG CEBU			○	
38 BATO(SAMBOAN) CEBU			○	
39 SANTANDER CEBU			○	
40 DALAGUETE CEBU			○	
41 ARGAO CEBU			○	
42 TALIBON BOHOL		○		
43 TUBIGON BOHOL		○		
44 LOON BOHOL			○	
45 TAGBILARAN BOHOL		○		
46 JAGNA BOHOL		○		
47 UBAY BOHOL			○	
48 LARENA SIQUIJOR		○		
49 ALLEN NORTHERN SAMAR				○
50 SAN ISIDORO NORTHERN SAMAR			○	
51 ORMOC LEYTE			○	
52 ISABEL LEYTE		○		
53 MAASIN SOUTHERN LEYTE		○		
54 LILLOAN SOUTHERN LEYTE			○	
55 DAPITAN ZAMBOANGA DEL NOR			○	
56 ZAMBOANGA ZAMBOANGA DEL SUR	○			
57 BASILAN SULU(TAP.GROUP)		○		
58 JOLO SULU(JOLO GROUP)	○			
59 CAGAYAN DE ORO MASAMIS ORIENTAL	○			
60 BALINGOAN MASAMIS ORIENTAL			○	
61 TANGUB MASAMIS OCC.			○	
62 LIPATA SURIGAO DEL SUR		○		
63 MAMBAJAO CAMIGUIN			○	
64 BENONI CAMIGUIN		○		
65 TUBOD LANA DEL NORTE			○	
66 DAVAO CITY DAVAO CITY	○			
67 BABAK SAMAL ISLAND			○	

Source: JICA Study Team

Table A-1-4-2 Previous works on Ro/Ro Ferry Transportation Development

R/No.	Link	Port	Report I	Report II	Report III	Report IV	Report V
1	Matnog	Allen				○	○
2	Matnog	San Isidro	○			○	○
3	Batangas City	Calapan		○		○	○
4	Liloan	Lipata	○			○	○
5	Argao	Loon				○	○
6	Escalante	Tuburan			○	○	○
7	Carmen	Isabel					○
8	Tandayag	Bato			○	○	○
9	Tubod	Tangub					○
10	Iloilo City	Bacolod	○	○		○	○
11	Iloilo City	Pulupandan					
12	Iloilo City	Jordan					
13	Toledo	San Carlos	○	○	○	○	
14	Cebu City	Tubigon	○	○			
15	Dumaguete	Santander		○			
16	Dumaguete	Dapitan					
17	Jagna	Cagayan de Oro					
18	Zamboanga City	Basilan					
19	Zamboanga City	Jolo					
20	San Jose	Puerto Princesa					
21	Cavite City	Mariveles					
22	Batangas City	Abra de Ilog					
23	Lucena City	Balanacan					
24	Tabaco	Virac				○	
25	Bulan	Masbate					
26	Milagros	Estancia					
27	San Jose	New Washington					
28	Cebu City	Ormoc	○	○			
29	Ubay	Maasin					
30	Davao City	Babak					
31	Roxas	Odiongan					
32	Roxas	New Eashington					
33	Matnog	Masbate					
34	Cebu	Talibon	○	○			
35	Jagna	Mambajao					
36	Benoni	Balingoan					
37	San Jose	El Nido					
38	Cebu City	Tagbilaran	○	○			
39	Lucena City	Santa Cruz					
40	Dalaguete	Larena					
41	Guihulngan	Dumanjug			○		
42	Ajuy	Manapla			○		

[Remarks] Report I : NTPP 1982
 Report II : Updating of the Ferry Study Under
 Road F/S III (March 1982)
 Report III : Ro/Ro Facilities Development Study
 of PPA
 Report IV : Reconnaissance Survey 1989 IATCPTP
 Report V : Inception Report, Oct. 1989, IATCPTP

[Source] JICA Study Team

Table A-1-5-1(1) Summary of Physiographical Condition
for Each Province

Physiographical Province		Character (Remarks)
Palawan	Northern Palawan	Under : Sediments Rock (Paleozoic to Mesozoic) Intermediate: Plutonic Rock Upper : Sediments (Eocene to Recent)
	Central to Southern Palawan	Under : Ultramafics core (shitore rock, chart, marble, quartzites) Intermediate: Clastic rock (Cretaceous to Eocene) Upper : Sediments (Eocene to Miocene)
	Northwest Sulu Sea Basin	Sedimentary Rock
Western	Ilocos	Under : Crystalline schists and quartzites Upper : Sedimentary Rock (Locally) (Eocene to Miocene)
	Zambales Range	Lower : Ultramafics (peridotite, dunite gabbro) Upper : Pelagic sediment (NE part) (Eocene to Oligocene) Ophiolite (NE part) Quartz diorites (N to NE part) and onioriteda Clastics (Eastern Parts) (Meocene)

Source: Geology of the Philippines, PAGASA

Table A-1-5-1(2) Summary of Physiographical Condition
for Each Province

Physiographical Province		Character (Remarks)
Western	Zambales Range	Andestics volcanics (Miocene to Quaternary) (S to E parts)
	Mindoro	Under : Various rocks (Carboniferous to Pleistocene) Upper : Metamorphic and intrusive rock (Mountain) Tertiary sediments (coated area)
	Buruanga Peninsula	Metamorphic rocks (Permian to Triassic)
	Zamboanga Peninsula	Under : Metamorphosed geosynclinal Rock (Paleozoic to Mesozoic) Upper : Sediments (Miocene) and Volcanics
Central	Luzon Central Cordillera	Under : Metavolcanics and Meta-sediments (Cretaceous to Tertiary) Upper : Limestone and clastics (Miocene)
	Cagayan Basin	Marine Clastics and Carbonate Rock (Oligocene to Pleistocene)
	Central Luzon	Sediments (Miocene to Pliocene)
	South of Manila Region	Quaternary Volcanos and Pyroclastic Deposit

Source: Geology of the Philippines, PAGASA

Table A-1-5-1(3) Summary of Physiographical Condition
for Each Province

Physiographical Province		Character (Remarks)
Central	Bondoc Peninsula	Sediments (Miocene to Pleistocene)
	Marinduque	Under : Gray-wacke and Metamorphics (Cretaceous) Upper : Wackes and Limestone (Eocene)
	Masbate	Under : Schist (Pre-Cretaceous) Intermediate: States, grey-wacke and meta-volcanics Upper : Tertiary clastics and limestone
	Leyte	Under : Sedimentary and Volcanic Rocks Intermediate: Sedimentary Rock (Miocene) Upper : Shallow marine and terrestrial deposits (Miocene to Pleistocene)
	Mindanao Central Cordillera	Under : Ophiolitic melange (Cretaceous to Paleogene) Intermediate: Sediments (Miocene) Upper : Diolite (Miocene)
	Cotabato Basin	Sedimentary File (Oligocene to Pleistocene)
	East-Panay Ridge (Central Masbate-Guimaras-Negros)	Lower : Diorite-Granodiorite Upper : Clastics and Limestone
	Visayan Basin	Metavolcanics (Cretaceous to Tertiary) and Sediments

Source: Geology of the Philippines, PAGASA

Table A-1-5-1(4) Summary of Physiographical Condition
for Each Province

Physiographical Province		Character (Remarks)
Central	Northern Sierra Madre	Lower : Ophiolite Upper : Volcanic Rocks Limestone and Clastics (Miocene)
Eastern	Southern Sierra Madre	Lower : Rocks (Cretaceous to Tertiary) Intermediate: Younger rocks limestone, clastics and volcanic (Miocene) Upper : Volcanic and Conglomerates (Miocene to Pleistocene)
	Western Bicol	Lower : Greenschists, volcanics, clastics and limestone (Cretaceous to Tertiary) Upper : Sedimentary and Volcanic rocks (Oligocene to Miocene)
	Bicol Basin	Sediments (Miocene to Pliocene)
	Samar	Lower : Metavolcanics and Metasediments (Cretaceous) Upper : Limestone, clastics and volcanics (Miocene to Pliocene)
	Diwata	Lower : Rock and Clastics Upper : Limestone and Clastics (Miocene)

Source: Geology of the Philippines, PAGASA

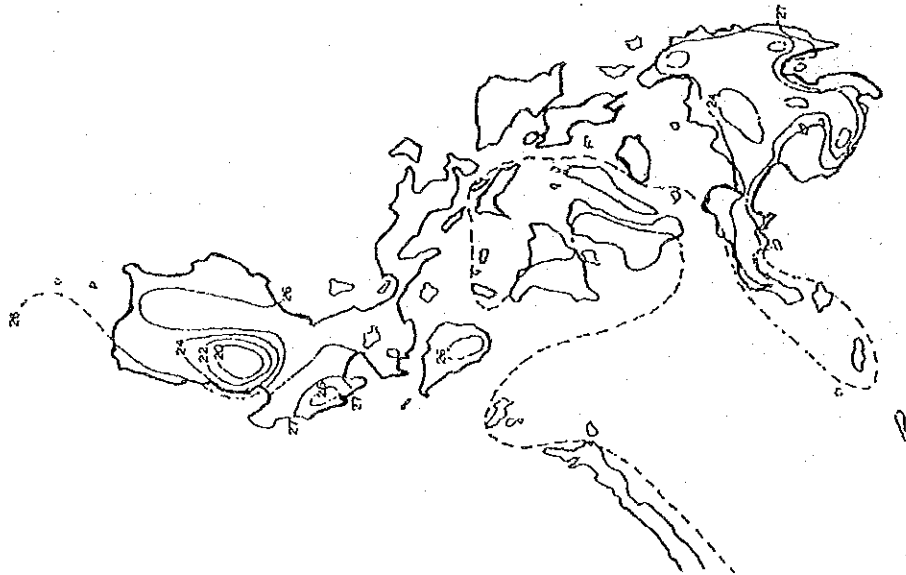


Figure A-1-5-1
Normal Dry Bulb
Annual (1951 - 1980)



Figure A-1-5-2
Normal Maximum Temperature
Annual (1951 - 1980)

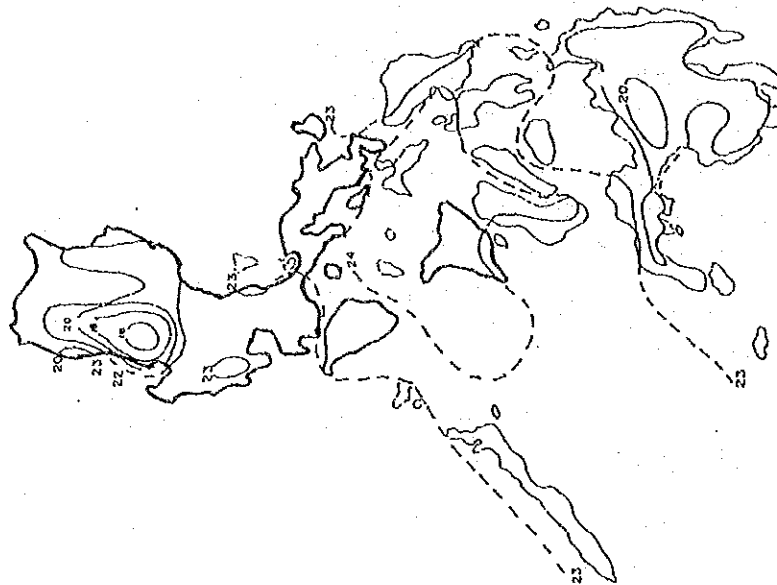


Figure A-1-5-3
Normal Minimum Temperature
Annual (1951 - 1980)

Source: Climatological Normal & Extreme of Temperature 1988, PAGASA

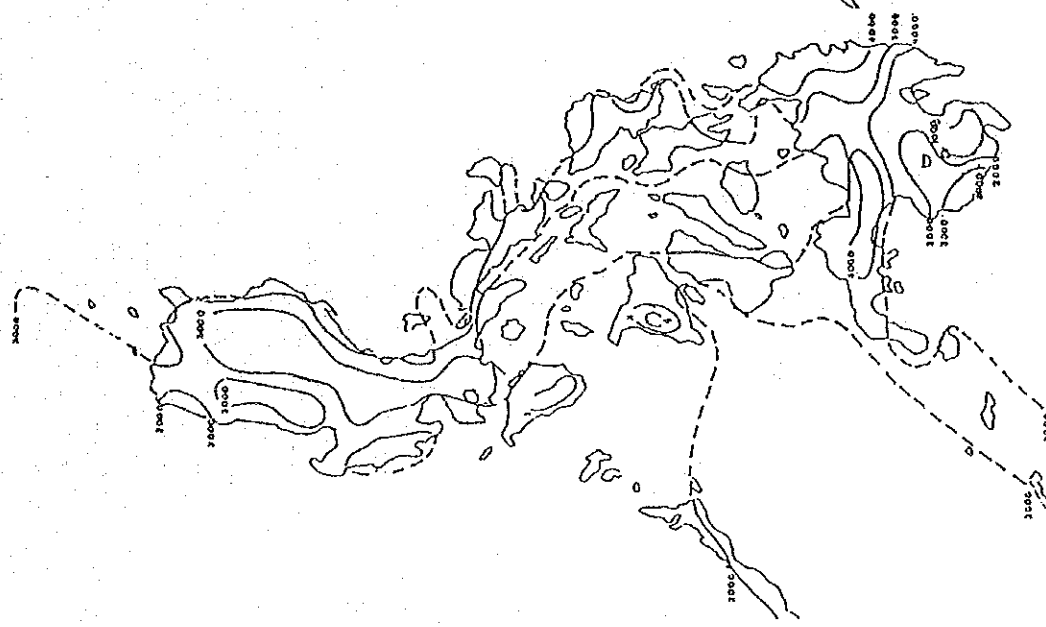


Figure A-1-5-4
Normal Rainfall

Annual (1951 - 1980)

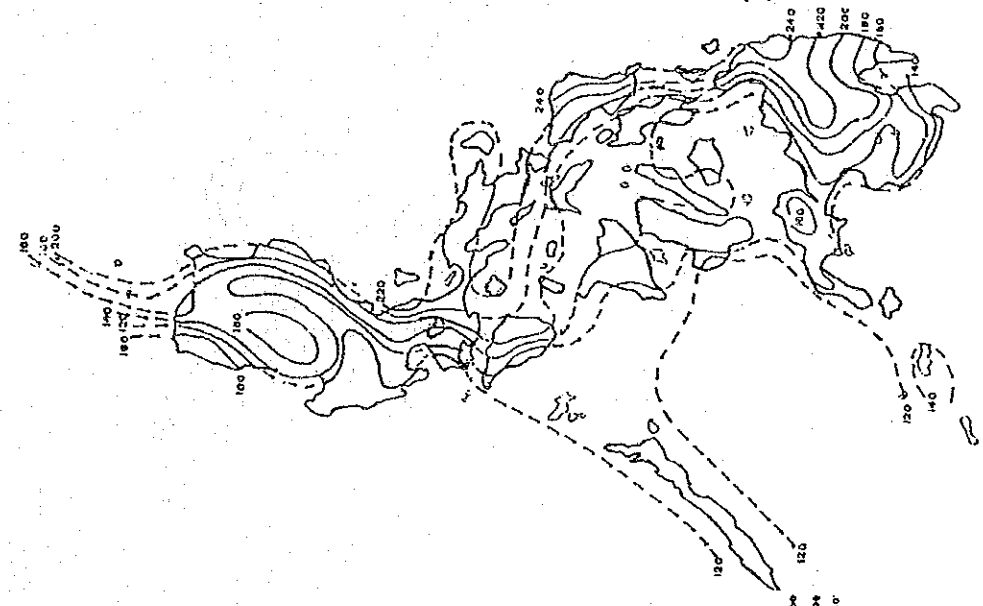


Figure A-1-5-5
Normal Number of Rainy Days

Annual (1951 - 1980)

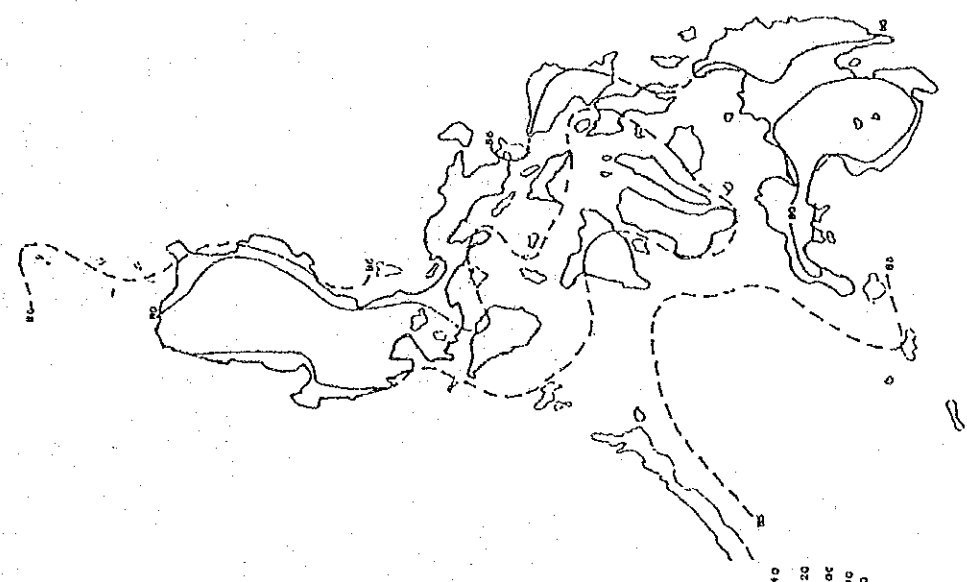


Figure A-1-5-6
Normal Relative Humidity

Annual (1951 - 1980)

Source: Climatological Normal & Extreme of Rainfall 1988, PAGASA

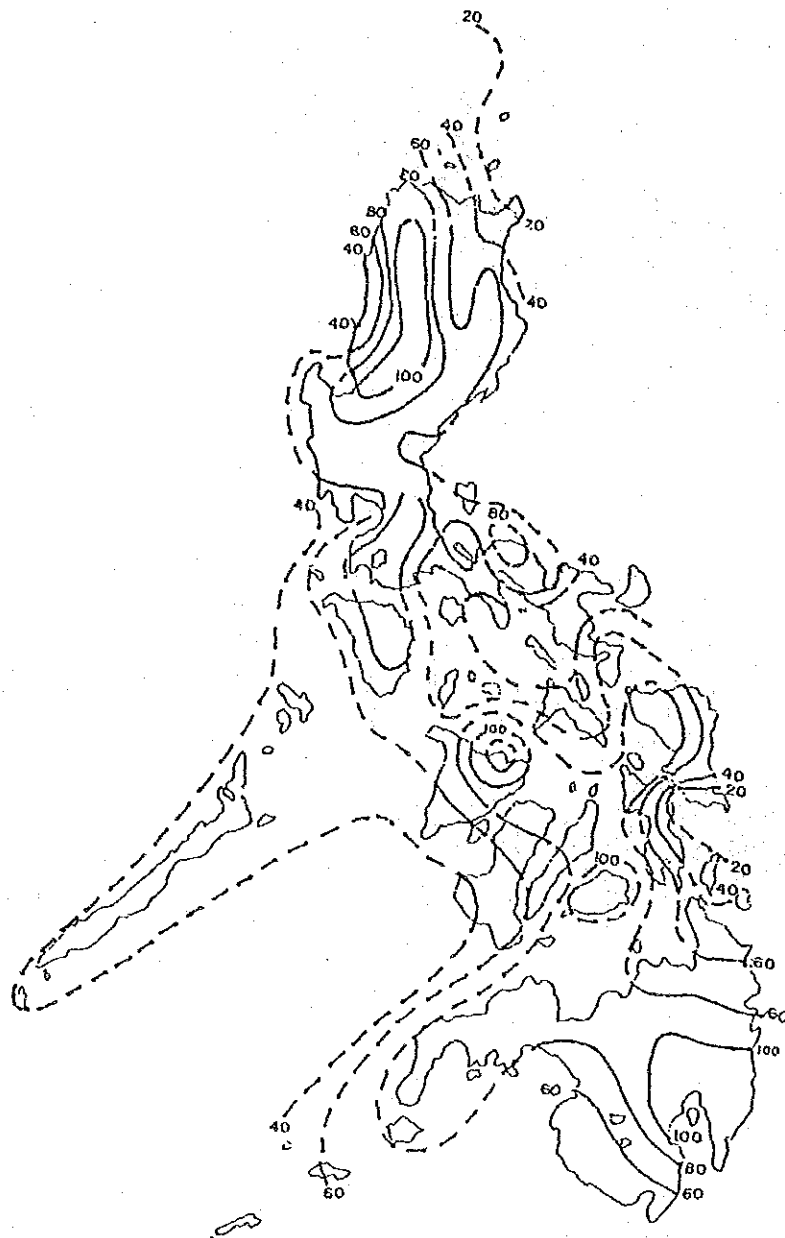


Figure A-1-5-7 Normal Number of Days with
Thunder Storm Annual (1951 - 1980)
Source: Climatological Normal & Extreme of
thunderstorm, 1988, PAGASA

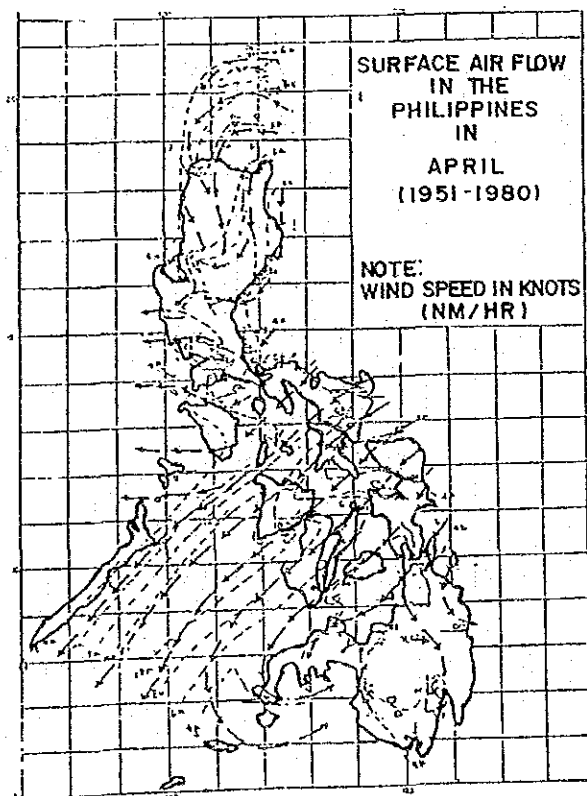
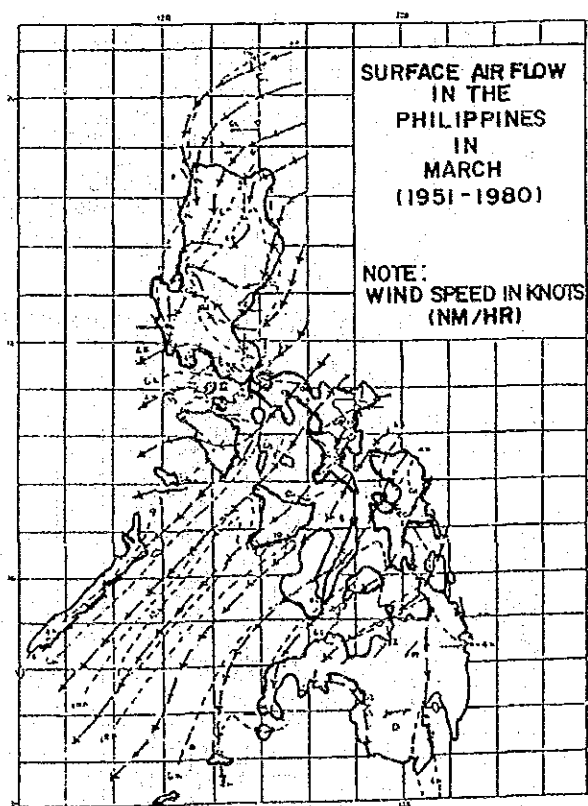
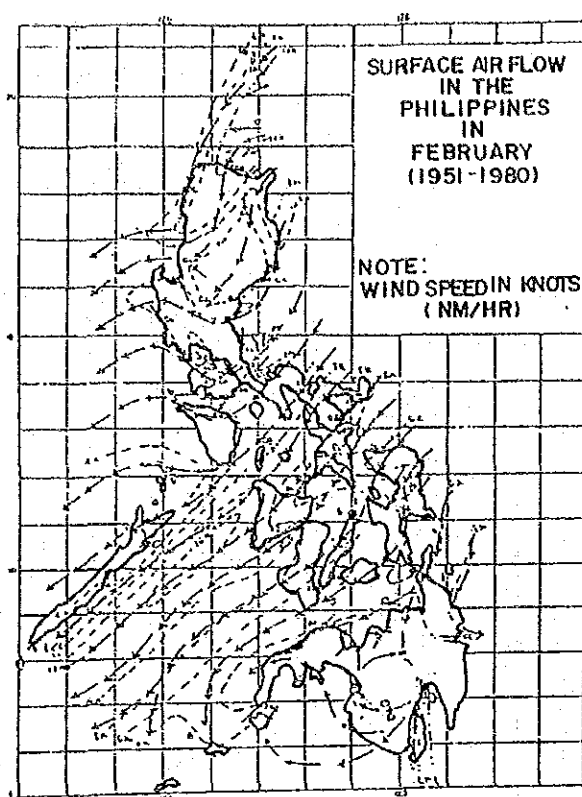
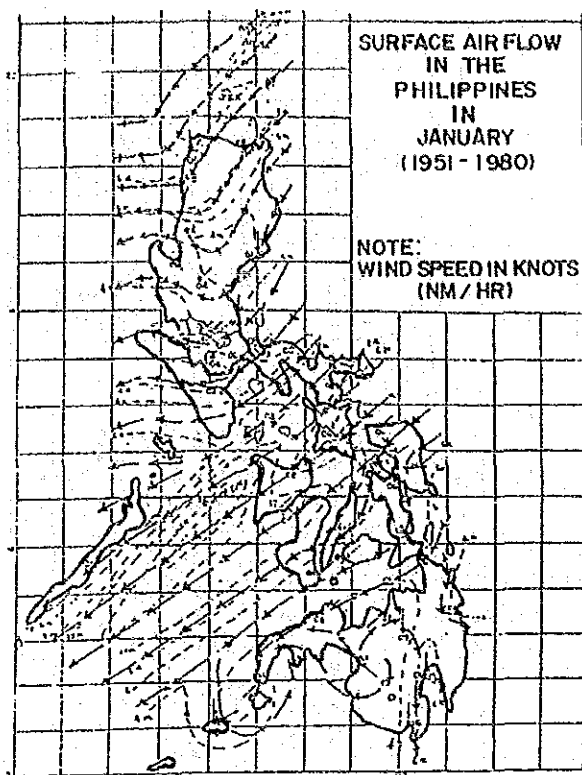


Figure A-1-5-8 Surface Air Flow in the Philippines 1951 - 1980
(January - April)

Source: Climatological Normal of Surface Wind 1988, PAGASA

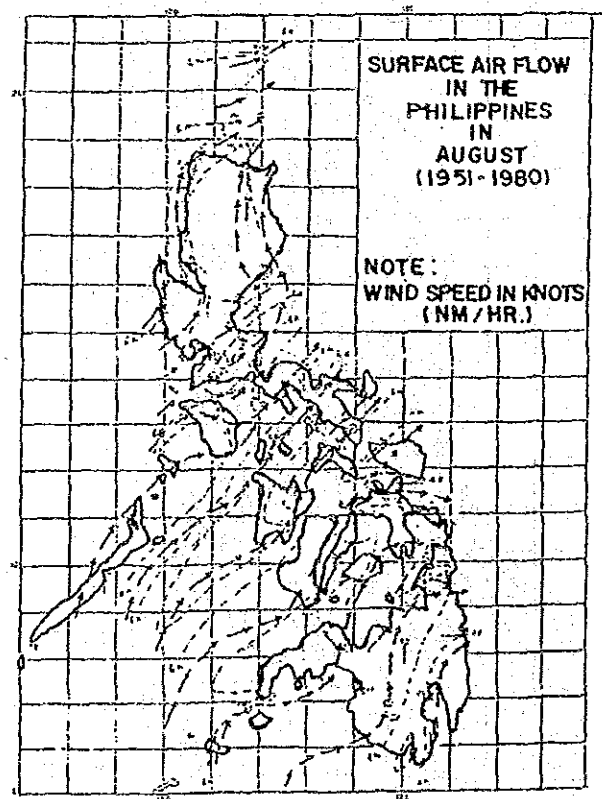
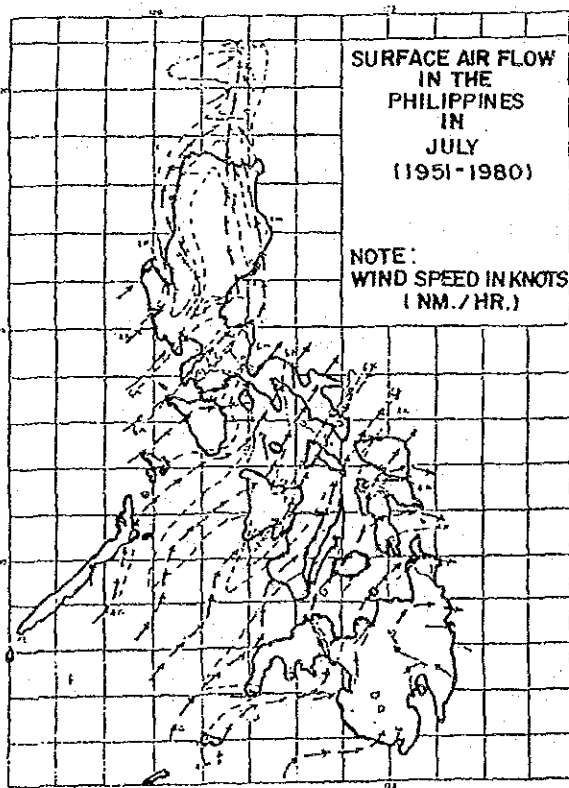
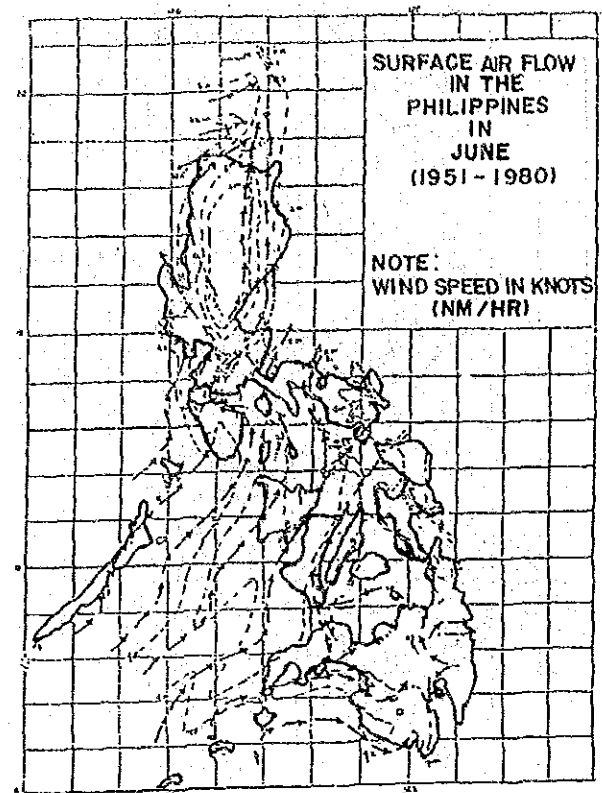
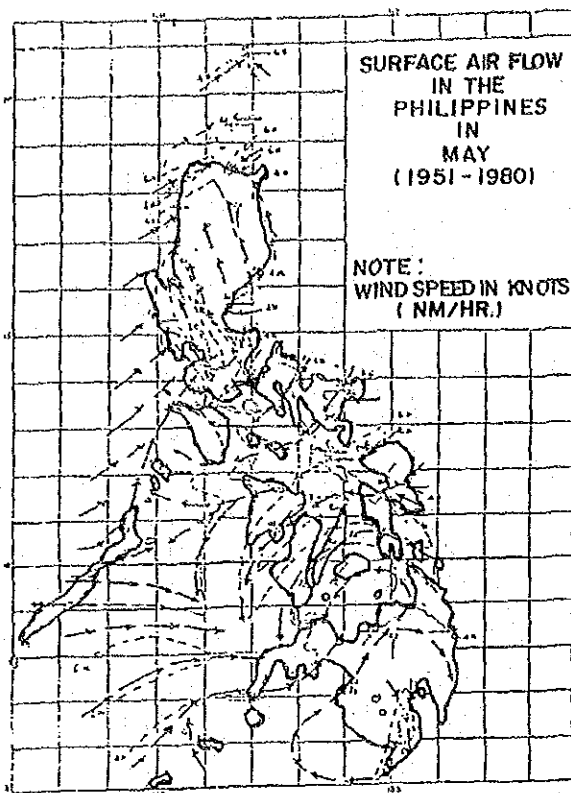


Figure A-1-5-9 Surface Air Flow in the Philippines 1951 - 1980
(May - August)

Source: Climatological Normal of Surface Wind 1988, PAGASA

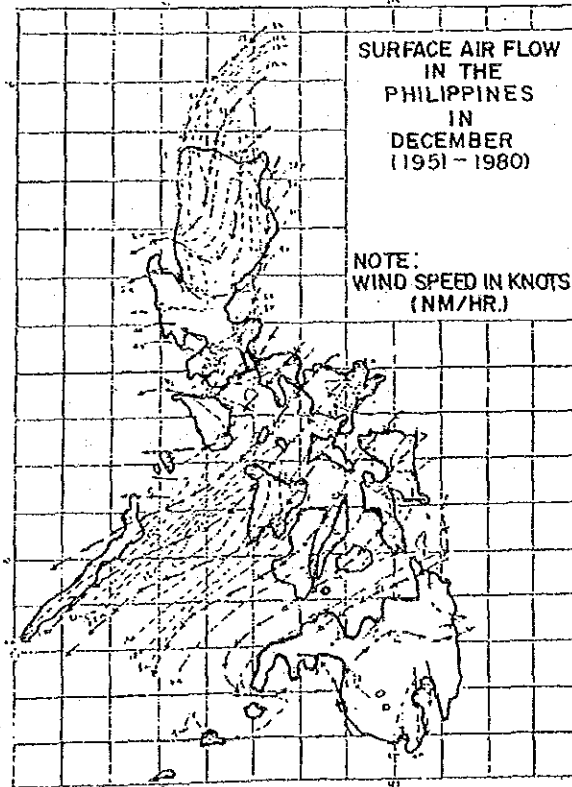
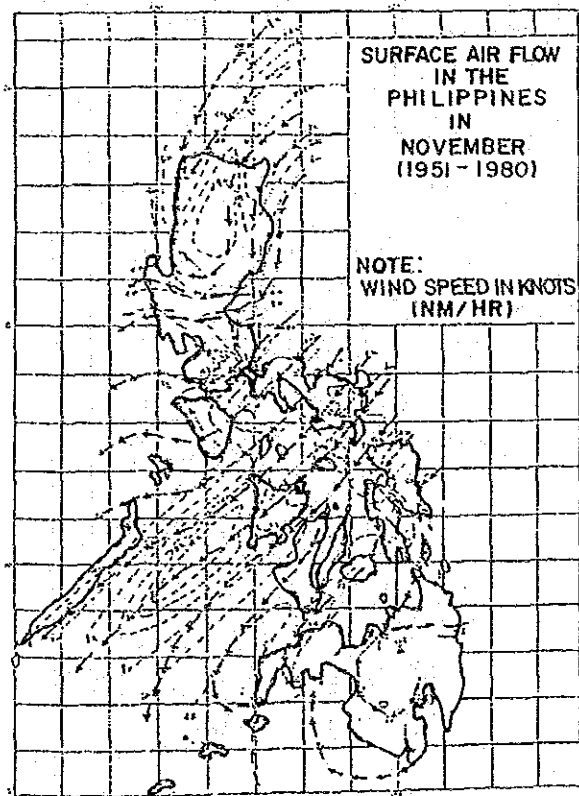
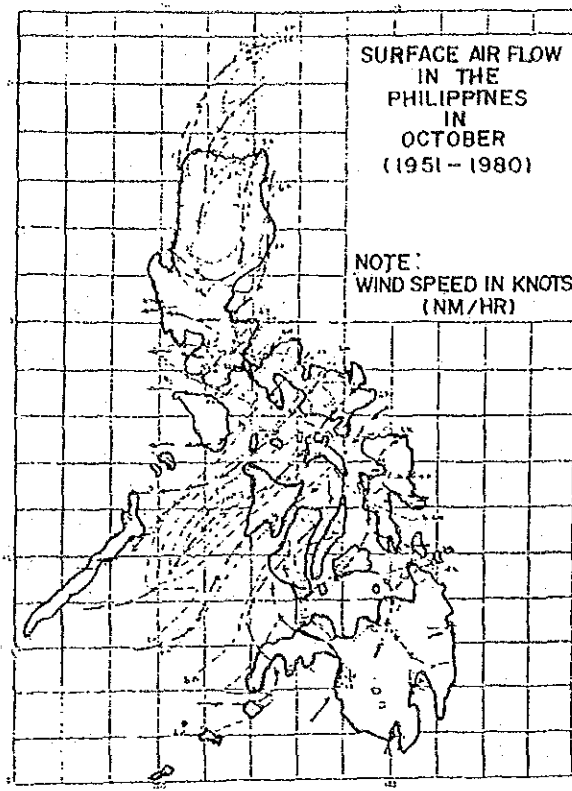
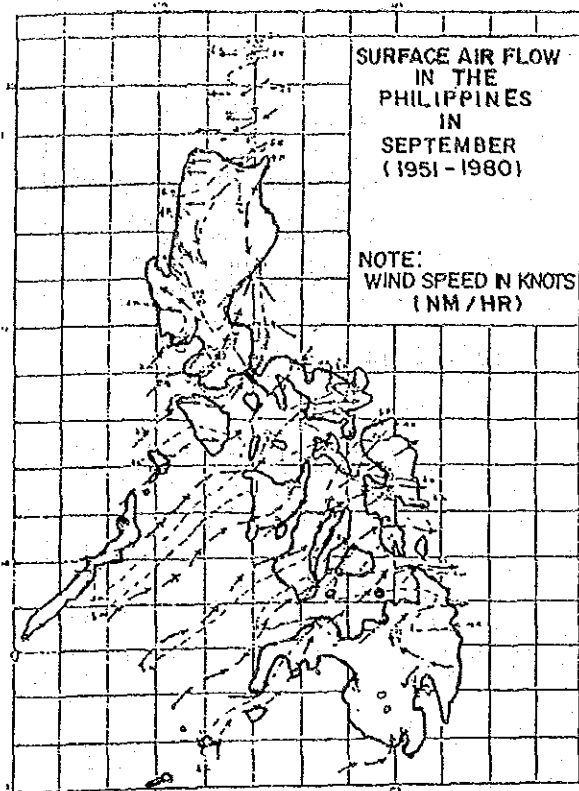


Figure A-1-5-10 Surface Air Flow in the Philippines 1951 - 1980
(September - December)

Source: Climatological Normal of Surface Wind 1988, PAGASA

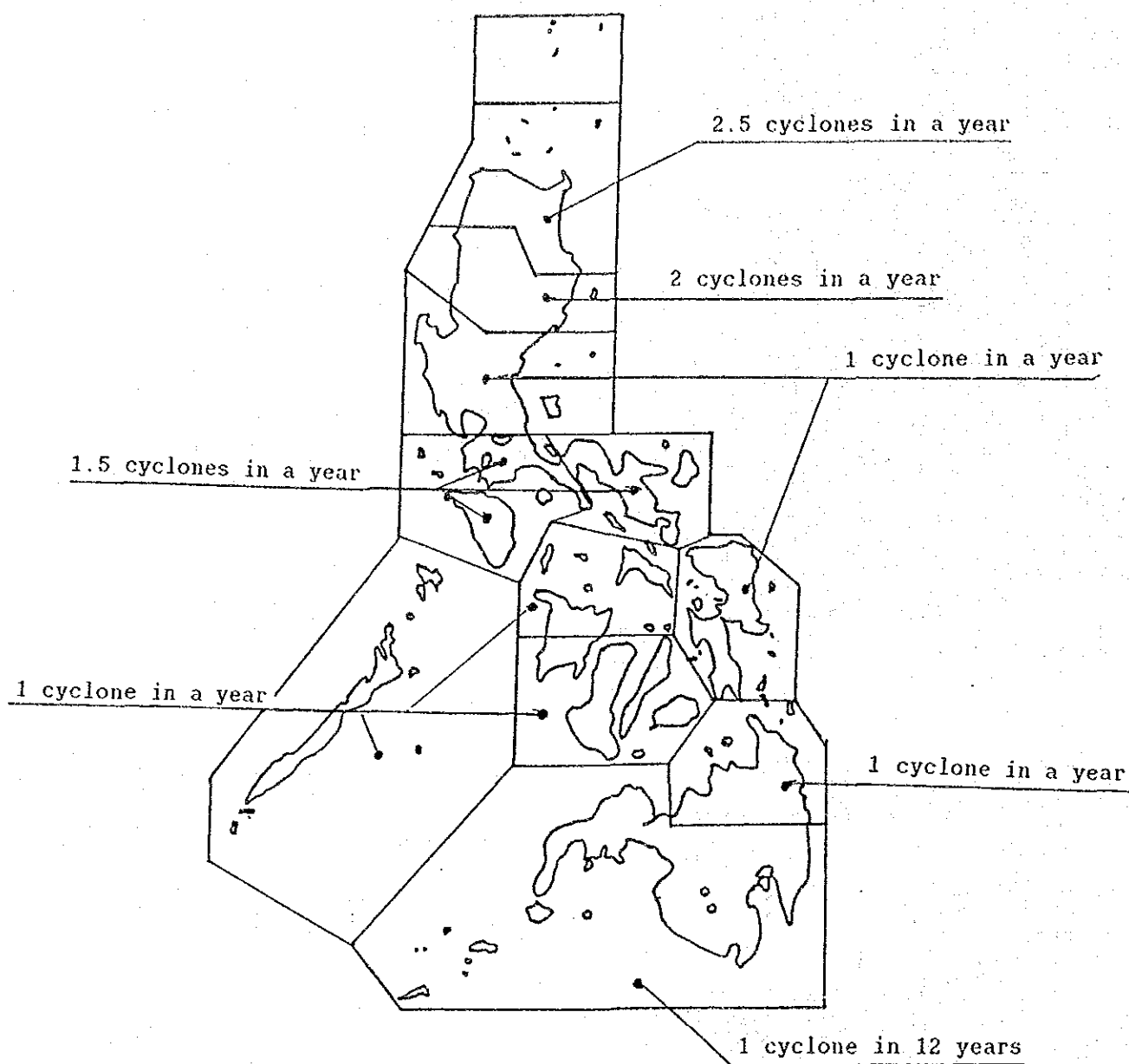


Figure A-1-5-11 Frequency of Tropical Cyclone Passage
(1948-1982)

Source: Tropical Cyclone in the Philippines 1989, PAGASA

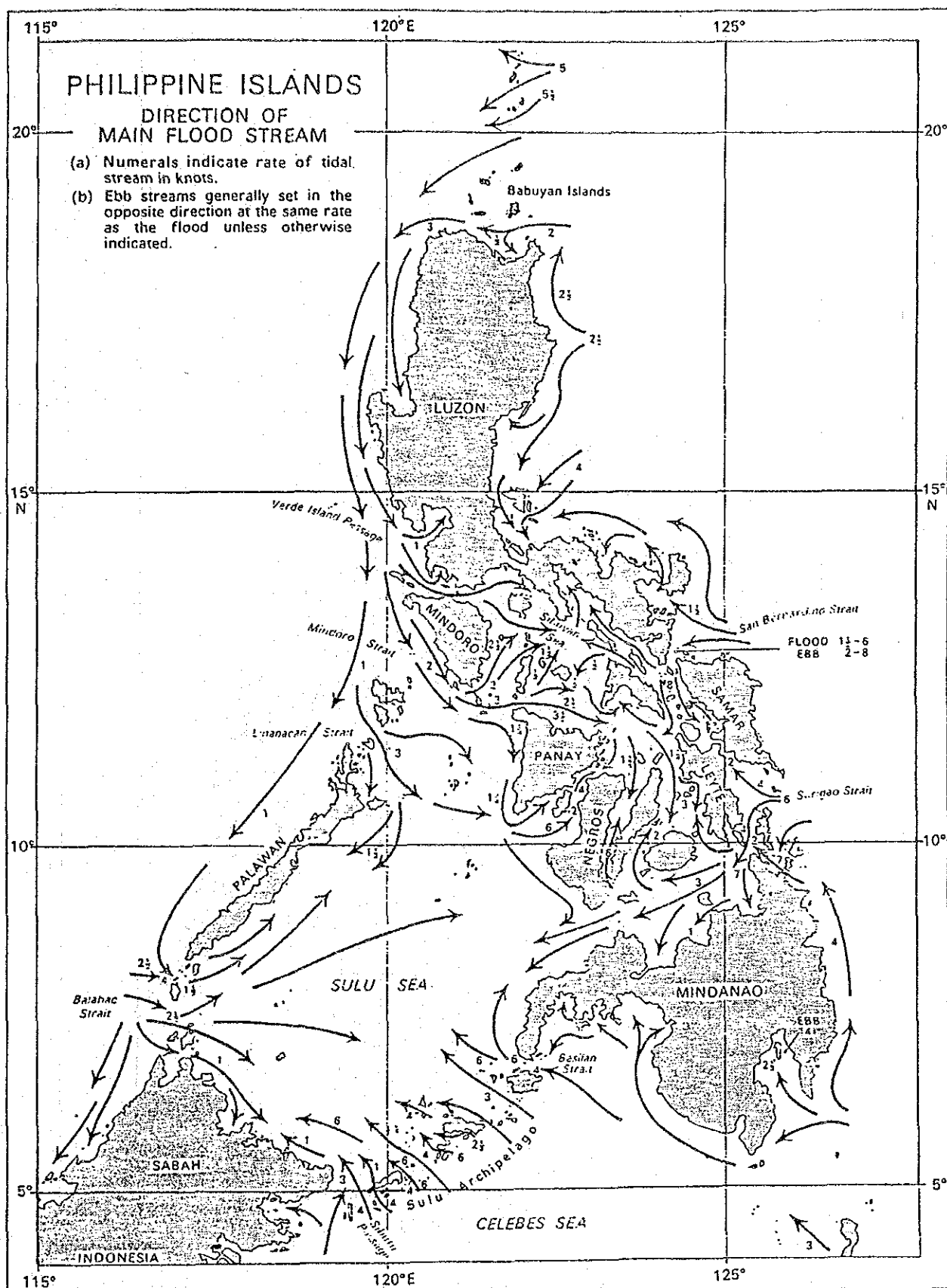


Figure A-1-5-12 Direction of Main Flood Stream in the Philippines
 Source: Philippine Island Pilot, The Hydrographer
 of the Navy

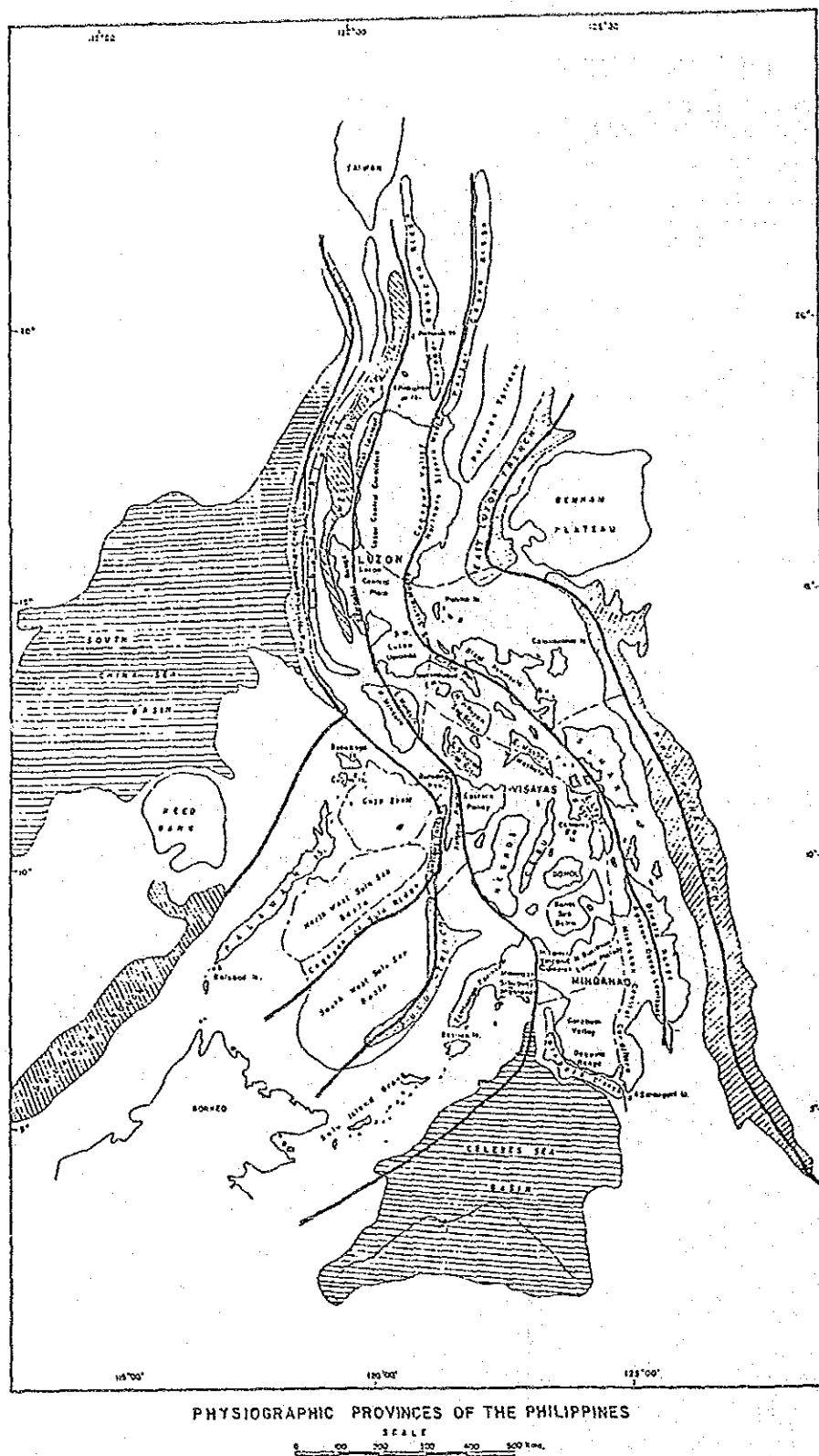


Figure A-1-5-13 Physiographic Province of the Philippines
Source: Geology of the Philippines, PAGASA

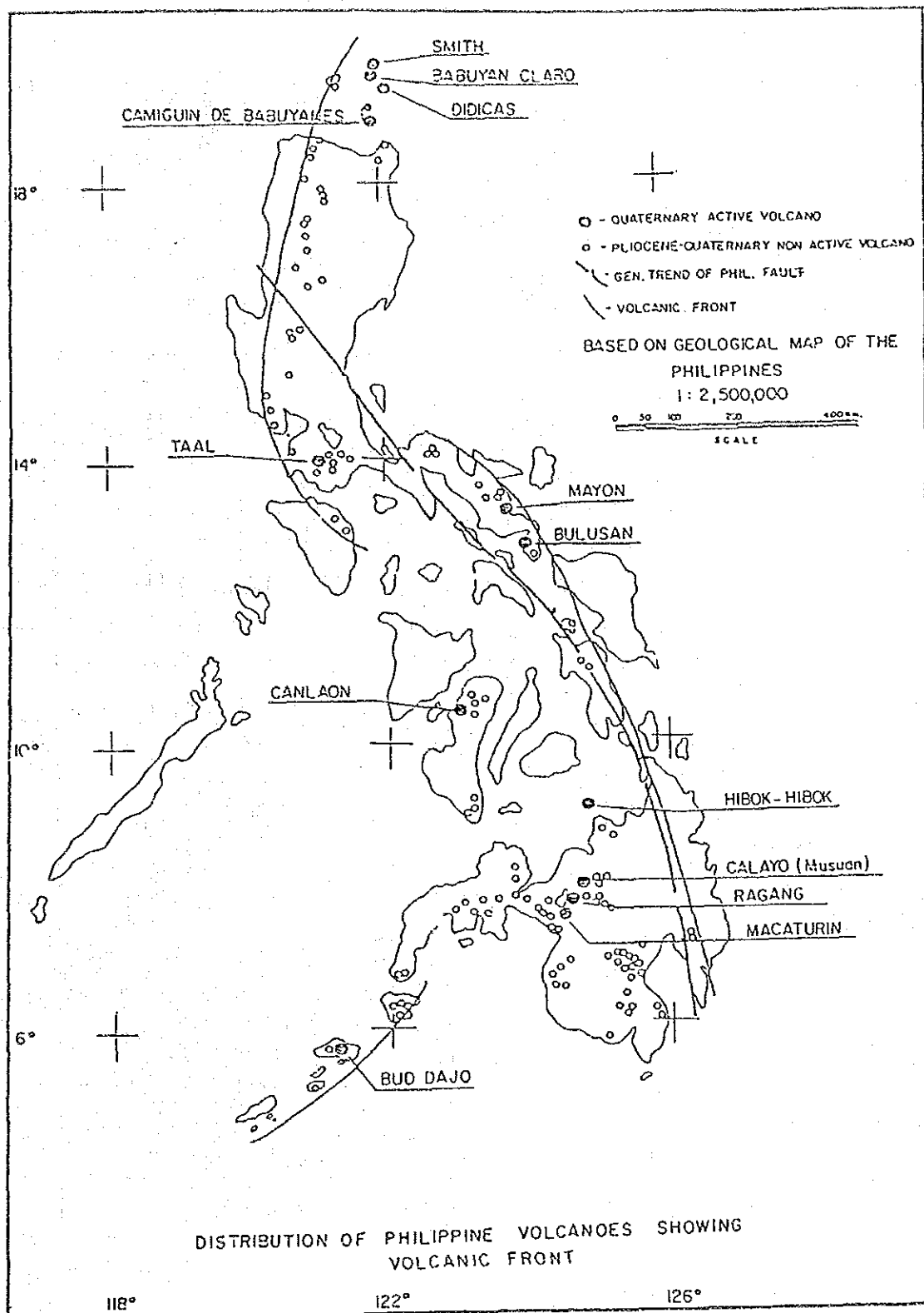
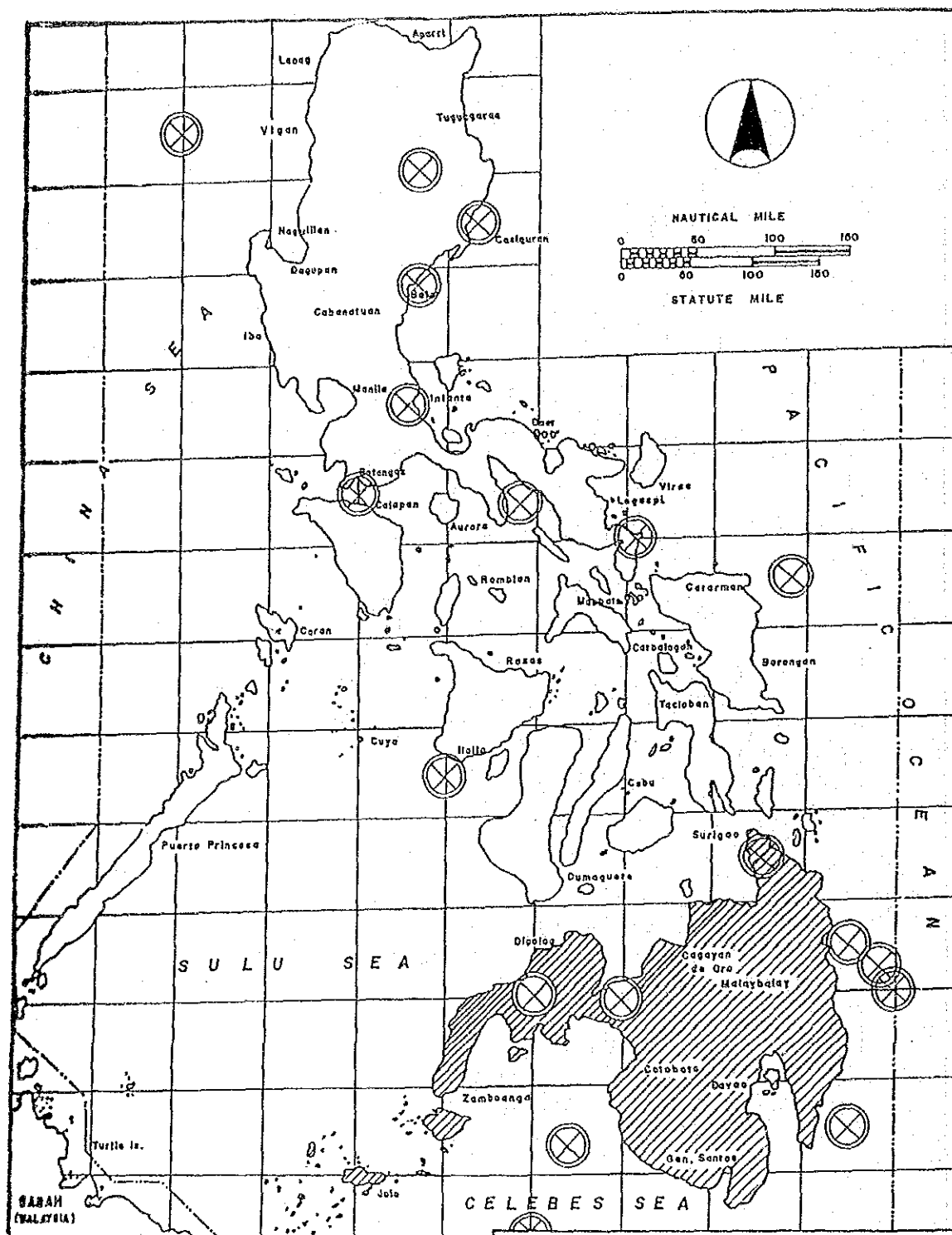


Figure A-1-5-14 Distribution of Philippine Volcanoes
Source: Geology of the Philippines, PAGASA



LEGEND:
 (X) EPICENTERS OF VERY STRONG
 ... EARTHQUAKE (M 7) (1960 - 1979)

Figure A-1-5-15 Epicenters of Strong Earthquakes
 in the Philippines (1979 - 1990)

Note A-1-5-1 Wave Climate in the Philippines

Waves in Area M

1. This area is composed of many Islands including Panay, Cebu, Negros, Bohol, etc. The topographical condition in this area is very complicated making the study of the wave climate extremely difficult. In order to acquire as much as possible greater appreciation of the wave climate conditions in this area, the larger water basin such as Sibuyan sea, Visayan sea and others were choosen.

2. The 1986 daily wind data of PAGASA from the stations at Daet, Legaspi, Catarman, Roxas, Masbate, Iloilo, Mactan, Maasin and Surigao were used for this study considering the following factors: direction of the different monsoon winds and topographic condition. The summaries of the wind data for each station are tabulated in Table N-1-5-1.1.

3. This however is still supplemented other wind data obtained from the observation conducted on land area and converted to off-shore wind data. In the conversion, the following assumptions were considered:

4. The daily average wind speed is reported in the PAGASA report. The wind speed, however, changes from time to time in a day. To make the variation of wind speed in a day, wind speed was separated into 3 portions that is 8 hours with faster wind speed (1.25V), 8 hours with average wind speed and 8 hours with slower wind speed (0.75V).

5. Conversion factor between on-land wind and off-shore wind is set at 1.25 from the previous study. The wind speed classification is shown in Table N-1-5-1.2. Table N-1-5-1.3 includes the wave height classification against wind speed as calculated by means of S-M-B method.

Waves in Areas A, B, C and D

6. In the case of areas A, B, C and D which are facing the open seas such as Philippines sea, South China sea, Celebes sea and Pacific Ocean, the swell generated from far distances should also be taken into account.

Although the PAGASA wind data could not be used in the estimation of oceanic swell, the report on wave height observed by ocean going vessels can be utilized. Weather Bureau in Japan has divided the Pacific Ocean into longitude 5 and latitude 2 and based on these dimensions segment collect and summarize weather report including wave height observed by ocean-going vessels. Table N-1-5-1.4 shows the summary of average wave height for a 10-year duration from 1971 to 1980 for area A, B, C and D.

Table N-1-5-1.1 Wind Statistics for PAGASA Stations

Station	V	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Total
Masbate	1	5		7	4	19		17				12	1	2		2	2	72
	2	7	4	22	6	36		22	1	3		13	1	1		3	1	120
	3	6	1	16	4	9						18		2				58
	4	2		11		3				1		9		3			1	30
	5			9								4	1	1				15
	6	1							1			4						6
	7																	
	8											1	1					2
	9											1						1
	10											1						
Total		21	5	65	14	67		40		5		62	4	9	1	5	4	304
Iloilo	1	17	23	9	2					2		62						114
	2	11	53	14							2	59						120
	3		26	28	2							40		1				87
	4	2	11	8								28	1	1				31
	5	1	1	3								10						12
	6											7						
	7		1															1
	8																	
	9																	
	10																	
Total		32	115	62	4					2	3	144	1	2				365
Dact	1	2		13		13		3		7		18		9				65
	2	4	2	38	2	44		2		10	2	18		19		1	1	144
	3	2	2	18		13				9	1	15		3				53
	4	1	2	18	1	6				4	1	5		2				40
	5	3		15		1												22
	6	1	1	3								1	1	1				10
	7	3		7						1		1						4
	8		4															5
	9	1	1	4														5
	10		1	4														5
Total		17	13	120	3	77		5		31	4	58	1	34		1	1	365
Legaspi	1			11	2	21			1	2		14	3	11				67
	2			42	7	11						21	3	2				87
	3			39	6	1						19	4	2				92
	4		2	28	1							15	2	1				49
	5		2	16								4						22
	6			5														5
	7			2														2
	8		3															3
	9		4	1														5
	10		1	1														2
Total		1	14	165	16	33				2		73	12	16		1		334
Roxaz	1	17	4	1	1	2			1	5		3		1		1	9	46
	2	21	8	9	4	16			2	33	3		1	6		1	16	120
	3	18	6	7	7	21			2	13	2	3		1		2	5	86
	4	12	9	8	9	16			1	8							1	66
	5	4	3	5	7	2				1		1						23
	6	5	4	1	2													13
	7	1	1	1														4
	8	2	1	1														5
	9		1	1														1
	10																	1
Total		81	36	34	30	57			6	61	6	7	2	7		5	33	365
Mactan	1	1	7	29		3				1		34						76
	2	7	29	41						4	1	42		1				129
	3		32	32			1					24						89
	4	1	14	17								8						40
	5	1	2	6								7						16
	6		2	1						1		5						9
	7			1								3						4
	8	1		1								1						2
	9																	
	10																	
Total		11	86	127		4	2	2		3	1	124		1				365
Catarman	1	39	8	22	1	2		6		11	4	33	1	3		8		208
	2	8		29		1		1		3	4	17		3		2		68
	3	3		17							2	4				1		27
	4	2	1	15								6	1					25
	5	2		8								4						14
	6			4														4
	7	4		6														10
	8	2	1	3														6
	9	2														1		3
	10																	
Total		62	10	174	1	3		7		14	10	64	2	6		12		365
Maasin	1	1		14		5		4		2		6		1		3		36
	2	3	1	78		27		19		14		23		6		6		177
	3	1		26		15		12		7		36		1		8		106
	4			5		5		5		1		10						26
	5			2		1		1				3				1		8
	6	1										3						4
	7											5						5
	8											1						1
	9																	1
	10																	
Total		6	1	125		53		41		24		88		8		19		365
Snigao	1	11		13	1	9		6		5	1	10		15		2		57
	2	25								14		12	10	14		2	3	110
	3	14		14		21	5	7		3			15	2		1		83
	4	9		14	2	10	1	1		1		1		3				50
	5	1	2	5		4							3	1				16
	6	1	2	2														6
	7																	
	8			1									6					7
	9												1	1				3
	10												1					2
Total		62	5	50	3	46	8	16		23	1	23	50	36		5	6	334

Source: JICA Study Team

Table N-1-5-1.2 Typical Wind Statistics in Area M
(Daily average wind speed)

V (m/s)	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Total
3	1.8	0.8	8.2	1.2	3.2				0.7		7.5		0.7				24.1
4	1.2	1.2	5.2	1.0	2.0				0.2		2.6		1.0				14.4
5	0.6	0.5	3.4	0.6	0.3						1.3		0.3				7.0
6	0.6	0.5	0.9	0.2							1.2						3.4
7	0.4	0.1	0.9								0.7						2.1
8	0.2	0.8	0.1								0.3						1.4
9	0.1	0.5	0.6								0.2						1.4
10<	0.1	0.2	0.5														0.8
Total	5.0	4.6	19.8	3.0	5.5				0.9		13.8		2.0				54.6

unit in (%)

Source: JICA Study Team (reference PAGASA report of 1986)

Table N-1-5-1.3 Wind and Wave Statistics for Area M

V (m/sec)	H (m)	T (sec)	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Total
- 4.0	- 0.3																		
4.1 - 5.0	0.3 - 0.5	3	0.4	0.3	3.6	0.5	0.9				0.2		2.5		0.4				8.8
5.1 - 6.0	0.5 - 0.6	3	0.4	0.2	2.4	0.4	0.5				0.1		1.7		0.3				6.0
6.1 - 7.0	0.6 - 0.8	3	0.4	0.3	1.8	0.4	0.1				0.1		1.2		0.3				4.6
7.1 - 8.0	0.8 - 1.0	4	0.6	0.6	1.3	0.2	0.1						0.8		0.2				3.8
8.1 - 10.0	1.0 - 1.4	4 - 5	0.4	0.5	1.5	0.2	0.1						0.8		0.1				3.6
10.1 - 14.0	1.4 - 2.3	5 - 6	0.4	0.4	1.0	0.1							0.7						2.6
14.1 -	2.3 -	6 -	0.1	0.5	0.4								0.2						1.2
Total			2.7	2.8	12.0	1.8	1.7				0.4		7.9		1.3				30.6

unit in (%)

Notes: V, H and T indicates Wind Velocity, Wave Height and Wave Period, respectively.

Source: JICA Study Team (reference PAGASA report of 1986)

Table N-1-5-1.4 Monthly Average Wave Height for Area A, B, C, D

AREA	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	YEAR
A	2.2	1.9	1.6	1.1	1.6	1.8	1.9	2.0	1.5	2.3	2.5	2.7	1.9
B	2.4	2.3	2.1	1.7	1.5	1.2	1.4	1.3	1.3	1.8	2.2	2.4	1.8
C	1.1	1.3	1.1	0.9	0.6	0.5	0.8	0.8	0.7	1.0	1.2	1.3	0.9
D	0.9	0.8	0.8	0.7	0.5	0.5	0.7	0.6	0.6	0.6	0.5	0.8	0.7
E	1.9	1.9	1.9	1.5	1.2	1.1	1.4	1.3	1.3	1.3	1.7	1.7	1.5

Notes: Area E covers long. 125 - 130, lat. 6 - 8

Source: JICA Study Team (reference North Pacific Ocean Pilot Chart)

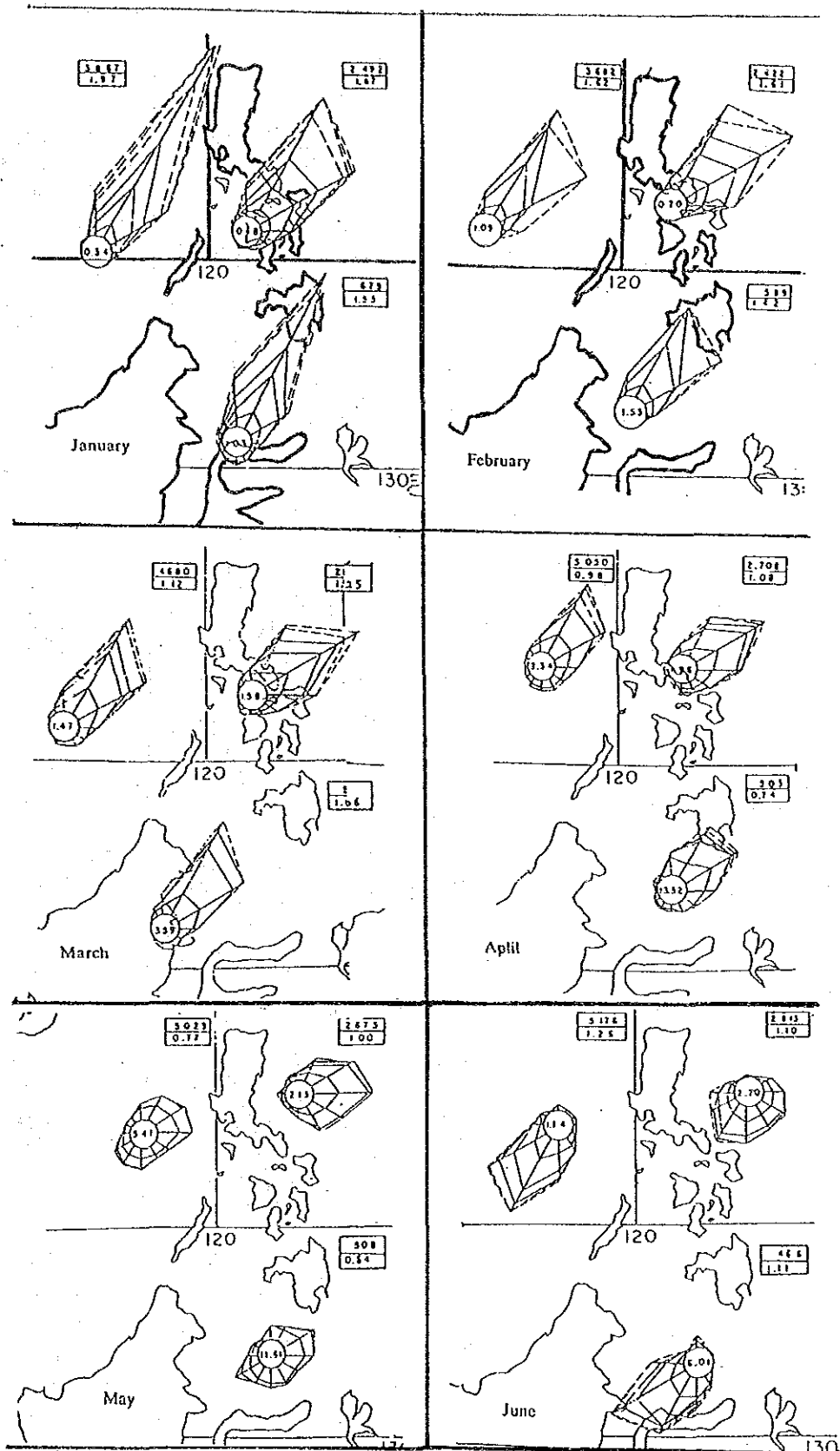
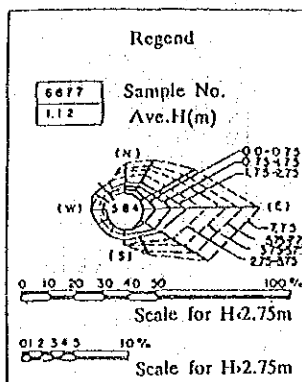
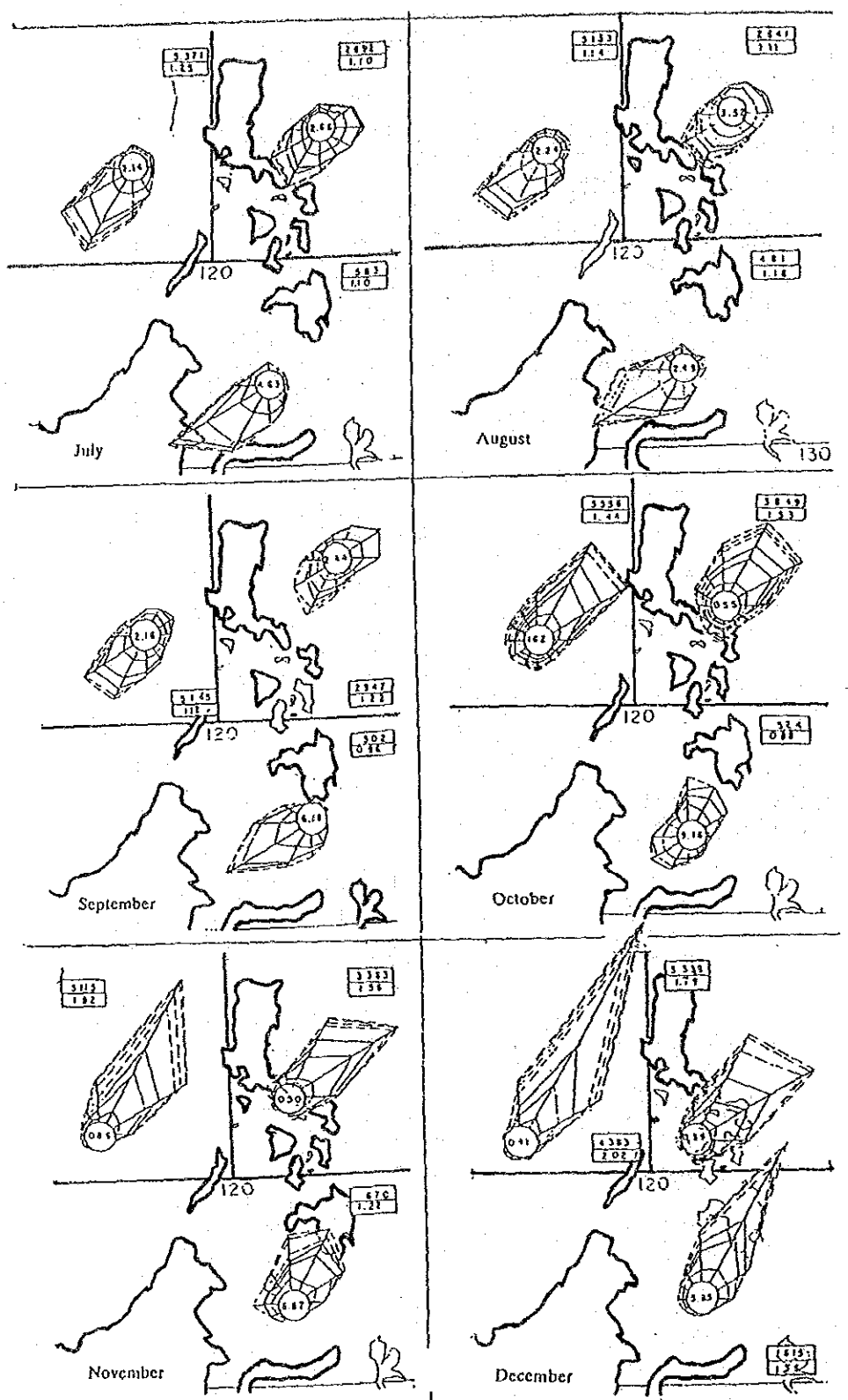


Figure N-1-5-1.1(1) Wave Climate Diagram

Source: North Pacific Ocean

Pilot Chart



Source: North Pacific Ocean
Pilot Chart

7. The data in Table N-1-5-1.4 is based on visual survey and include oceanic swell. This may however be a little bit higher than the actual wave height.

8. The study used the North Pacific Ocean Pilot Chart published by the Japan Weather Bureau in 1963 as reference for the wave classification direction. It is noted that this pilot chart is the only reference on wave direction in open sea areas near the Philippines.

9. Figure N-1-5-1.1 shows the wave climatic diagram based on the above mentioned reference. Table N-1-5-1.5 also shows a summary of wave height and classification for areas A, B, C and D.

10. The result of the study is shown in Figure N-1-5-1.2.

Table N-1-5-1.5 Wave Climate for Areas A, B, C and D

Area	H(m)	N	N30E	N60E	E	S60E	S30E	S	S30W	S60W	W	N60W	N30W	Total
West of Mindoro	< 0.50													68.4
	0.51 - 1.00							1.4	2.3	1.7	0.7	0.3		6.4
	1.01 - 1.50							1.3	2.3	2.1	0.5	0.2		6.4
	1.51 - 2.00							0.9	1.9	1.9	0.4	0.1		5.2
	2.01 - 2.50							0.6	1.8	1.3	0.4	0.1		4.2
	2.51 - 3.00							0.4	1.8	1.1	0.4	0.1		3.8
	3.01 - 4.00							0.4	1.2	1.0	0.6	0.1		3.3
	4.01 <							0.2	1.6	0.4	0.1			2.3
	Total							5.2	12.9	9.5	3.1	0.9		31.6
East of Samar	< 0.50													25.1
	0.51 - 1.00	2.1	3.8	6.6	5.3	2.8	1.6							22.2
	1.01 - 1.50	1.1	3.3	5.4	4.1	1.5	0.9							16.3
	1.51 - 2.00	0.6	2.9	4.4	3.0	0.8	0.6							12.3
	2.01 - 2.50	0.4	2.6	3.6	1.7	0.4	0.4							9.1
	2.51 - 3.00	0.3	2.1	2.5	1.2	0.2	0.1							6.4
	3.01 - 4.00	0.3	2.1	2.5	0.8									5.7
	4.01 <	0.2	1.1	1.4	0.2									2.9
	Total	5.0	17.9	28.4	16.3	5.7	3.6							74.9
Sulu Sea	< 0.50													34.4
	0.51 - 1.00	1.3	5.7	7.9	5.0	1.4	0.9	2.6	4.7	5.1	1.1			35.7
	1.01 - 1.50	0.4	4.2	4.9	2.1		0.3	0.7	1.9	2.3	0.7			17.5
	1.51 - 2.00	0.3	2.3	2.8	0.8			0.1	0.5	0.3	0.1			7.2
	2.01 - 2.50	0.1	1.0	1.3	0.4			0.1	0.2	0.2				3.3
	2.51 - 3.00		0.4	0.5	0.1				0.1					1.1
	3.01 - 4.00		0.3	0.3										0.6
	4.01 <		0.1	0.1										0.2
	Total	2.1	14.0	17.8	8.4	1.4	1.2	3.5	7.4	7.9	1.9			65.6
Mind-anao	< 0.50													50.5
	0.51 - 1.00	2.3	8.3	5.5	0.7	0.2	0.5	1.4	3.7	6.0	2.4	0.6	0.5	32.1
	1.01 - 1.50	1.3	5.0	2.1				0.4		2.7	1.1	0.2	0.3	13.1
	1.51 - 2.00	0.3	1.6	0.4						0.6	0.2			3.1
	2.01 - 2.50	0.2	0.6							0.2				1.0
	2.51 - 3.00		0.2											0.2
	3.01 - 4.00													
	4.01 <													
	Total	4.1	15.7	8.0	0.7	0.2	0.5	1.8	3.7	9.5	3.7	0.8	0.8	49.5

unit in (%)

Source: JICA Study Team

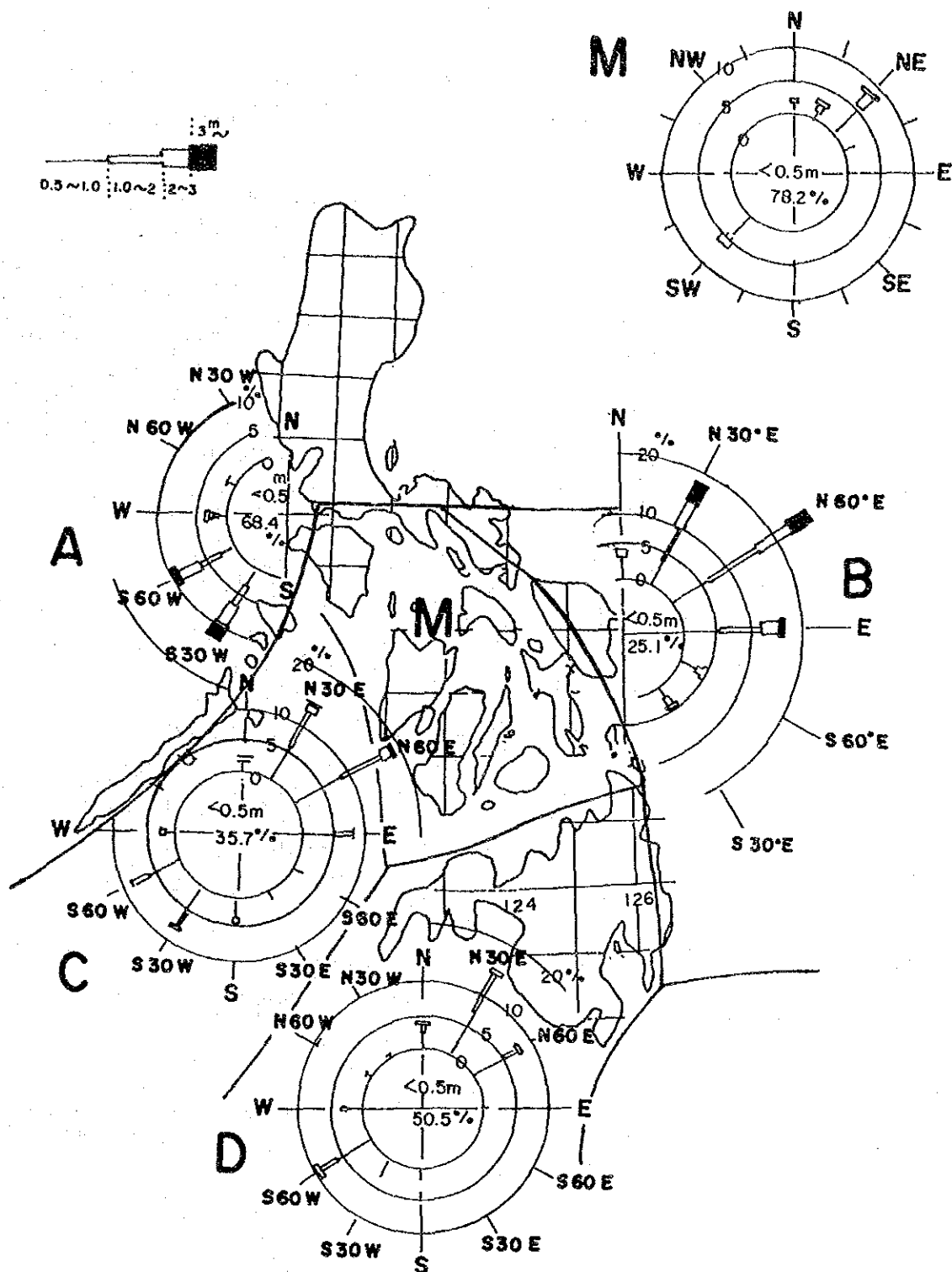


Figure N-1-5-1.2 Wave Climate in the Philippines

Source: JICA Study Team

[Reference]

1. Daily and Monthly Summaries of Meteorological Observation, 1986
PAGASA, Climate Data Section, Climatology Branch, June 1989
2. North Pacific Ocean Pilot Chart, Japan, Weather Bureau, 1963

FORM 1
PASSENGER INTERVIEW SURVEY FORM

DATE : _____ SEQUENTIAL NO. : _____
 WEATHER : _____
 STATION : _____ INTERVIEWER : _____
 VESSEL NAME : _____
 DIRECTION FROM : _____ SUPERVISOR : _____
 TO : _____

1) PERSONAL INFORMATION <input type="checkbox"/> 1st CLASS <input type="checkbox"/> 2nd CLASS <input type="checkbox"/> OTHERS ACCOMPANIED PERSONS <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>SEX</th> <th>AGE</th> <th>OCCUPATION</th> </tr> </thead> <tbody> <tr><td>1.</td><td></td><td></td></tr> <tr><td>2.</td><td></td><td></td></tr> <tr><td>3.</td><td></td><td></td></tr> <tr><td>4.</td><td></td><td></td></tr> <tr><td>5.</td><td></td><td></td></tr> </tbody> </table>	SEX	AGE	OCCUPATION	1.			2.			3.			4.			5.			1. SEX : 1. Male 2. Female <input type="checkbox"/> 2. AGE : <input type="text"/> 3. OCCUPATION : <input type="text"/> (See Occupation List Below) 4. LOCATION OF RESIDENCE : <input type="text"/> 5. CAR OWNERSHIP : <input type="checkbox"/> 1. YES 2. NO 6. AVE. HOUSEHOLD INCOME/Mo. : P <input type="text"/> 7. NO. OF TRANSFERS : <input type="text"/> 8. FREQ. OF USING RORO/FERRY : <input type="text"/> / WEEK																						
SEX	AGE	OCCUPATION																																							
1.																																									
2.																																									
3.																																									
4.																																									
5.																																									
2) TRIP INFORMATION	1. ORIGIN <input type="text"/> 2. DESTINATION <input type="text"/> 3. TRIP PURPOSE : <input type="text"/> (See Trip Purpose List Below) 4. TRAVEL MODE : <input type="text"/> (See Mode List Below) 5. TOTAL TRAVEL TIME : <input type="text"/> hrs. <input type="text"/> min. 6. TOTAL FARE (P) : <input type="text"/> 7. ESTIMATED ARRIVAL TIME : <input type="text"/> 8. DATE : <input type="text"/>																																								
3) ALTERNATIVE TRAVEL MEANS <input type="checkbox"/> 1. NO 2. YES	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>TRANSFER</th> <th>1</th> <th>2</th> <th>3</th> <th>4</th> <th>5</th> </tr> </thead> <tbody> <tr> <td>1. LOCATION</td> <td><input type="text"/></td> <td><input type="text"/></td> <td><input type="text"/></td> <td><input type="text"/></td> <td><input type="text"/></td> </tr> <tr> <td>2. MODE FROM / TO (See Mode List Below)</td> <td><input type="text"/></td> <td><input type="text"/></td> <td><input type="text"/></td> <td><input type="text"/></td> <td><input type="text"/></td> </tr> <tr> <td>3. TRAVEL TIME</td> <td><input type="text"/> hrs. <input type="text"/> min.</td> <td><input type="text"/> hrs. <input type="text"/> min.</td> <td><input type="text"/> hrs. <input type="text"/> min.</td> <td><input type="text"/> hrs. <input type="text"/> min.</td> <td><input type="text"/> hrs. <input type="text"/> min.</td> </tr> <tr> <td>4. FARE (P)</td> <td><input type="text"/></td> <td><input type="text"/></td> <td><input type="text"/></td> <td><input type="text"/></td> <td><input type="text"/></td> </tr> <tr> <td>5. WAITING TIME</td> <td><input type="text"/> hrs. <input type="text"/> min.</td> <td><input type="text"/> hrs. <input type="text"/> min.</td> <td><input type="text"/> hrs. <input type="text"/> min.</td> <td><input type="text"/> hrs. <input type="text"/> min.</td> <td><input type="text"/> hrs. <input type="text"/> min.</td> </tr> </tbody> </table>					TRANSFER	1	2	3	4	5	1. LOCATION	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	2. MODE FROM / TO (See Mode List Below)	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	3. TRAVEL TIME	<input type="text"/> hrs. <input type="text"/> min.	<input type="text"/> hrs. <input type="text"/> min.	<input type="text"/> hrs. <input type="text"/> min.	<input type="text"/> hrs. <input type="text"/> min.	<input type="text"/> hrs. <input type="text"/> min.	4. FARE (P)	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	5. WAITING TIME	<input type="text"/> hrs. <input type="text"/> min.	<input type="text"/> hrs. <input type="text"/> min.	<input type="text"/> hrs. <input type="text"/> min.	<input type="text"/> hrs. <input type="text"/> min.	<input type="text"/> hrs. <input type="text"/> min.
TRANSFER	1	2	3	4	5																																				
1. LOCATION	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>																																				
2. MODE FROM / TO (See Mode List Below)	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>																																				
3. TRAVEL TIME	<input type="text"/> hrs. <input type="text"/> min.	<input type="text"/> hrs. <input type="text"/> min.	<input type="text"/> hrs. <input type="text"/> min.	<input type="text"/> hrs. <input type="text"/> min.	<input type="text"/> hrs. <input type="text"/> min.																																				
4. FARE (P)	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>																																				
5. WAITING TIME	<input type="text"/> hrs. <input type="text"/> min.	<input type="text"/> hrs. <input type="text"/> min.	<input type="text"/> hrs. <input type="text"/> min.	<input type="text"/> hrs. <input type="text"/> min.	<input type="text"/> hrs. <input type="text"/> min.																																				
4) USERS OF PRIVATE VEHICLES	1. ROUTE : <input type="text"/> 2. MODE : <input type="text"/> (See Mode List Below) 3. TRAVEL TIME : <input type="text"/> hrs. <input type="text"/> min. 4. FARE (P) : <input type="text"/> 5. NO. OF TRANSFERS : <input type="text"/> 6. REASON FOR NOT USING : <input type="text"/> 1. EXPENSIVE FARE 2. LONG TRAVEL TIME 3. NOT COMFORTABLE 4. NOT ACCESSIBLE 5. NOT AVAILABLE 6. OTHER (PLS. SPECIFY) : <input type="text"/> 4. REASON FOR USING THE VEHICLE : <input type="text"/> 1. CHEAPER 2. SHORTER TRAVEL TIME 3. COMFORTABLE 4. ACCESSIBLE 5. AVAILABLE 6. OTHERS (PLS. SPECIFY) : <input type="text"/> 5. SHOULD THIS FERRY ROUTE OFFER RO-RO TRANSPORT OPTION, WILL YOU USE THE RO-RO TO GET TO YOUR DESTINATION? YES <input type="checkbox"/> NO <input type="checkbox"/> WHY : <input type="text"/>																																								
5) ASSESSMENT OF EXISTING RORO SERVICE	1. SERVICE ROUTE : <input type="checkbox"/> 2. FACILITIES : <input type="checkbox"/> 3. FREQUENCY : <input type="checkbox"/> 4. COMFORT : <input type="checkbox"/> 5. FARE : <input type="checkbox"/> 6. SPEED : <input type="checkbox"/> 7. PUNCTUALITY : <input type="checkbox"/> 8. OTHERS (PLS. SPECIFY) : <input type="text"/> <div style="text-align: center;"> 1. GOOD 2. REASONABLE 3. BAD 4. VERY BAD </div>																																								

OCCUPATION	
1. PROFESSIONAL	9. AGRI. WORKER
2. ADMN./EXEC. WORKER	10. FISHERMAN
3. CLERICAL WORKER	11. MINER
4. SALES WORKER	12. STUDENT (ELEM.)
5. SERVICE WORKER	13. STUDENT (HS. / UNIV.)
6. FACTORY / CRAFTSMAN	14. HOUSEWIFE
7. TRANSPORT WORKER	15. JOBLESS
8. CONSTRUCTION WORKER	16. OTHERS; SPECIFY

TRIP PURPOSE
1. TO HOME
2. TO WORK
3. TO SCHOOL
4. BUSINESS
5. PRIVATE
6. OTHERS (PLS. SPECIFY)

MODE
1. CAR
2. TAXI
3. JEEP
4. PICK-UP / VAN
5. PUJ
6. MINI BUS
7. PUB
8. TRUCK (2 AXLE)
9. TRUCK (3 AXLE)
10. ARTICULATED TRUCK
11. MOTORCYCLE / BICYCLE
12. TRICYCLE / PEDICAB
13. ANIMAL DRAWN
14. RO / RO
15. OTHERS

FORM 2
DRIVERS INTERVIEW FORM

DATE : _____		SEQUENTIAL NO : _____	
WEATHER : _____		INTERVIEWER : _____	
STATION : _____			
VESSEL NAME : _____		SUPERVISOR : _____	
DIRECTION FROM : _____		TO : _____	

1.) VEHICLE TYPE <input type="checkbox"/>			
1. CAR	5. PUJ	9. TRUCK 3 AXLE	12. TRICYCLE / PEDICAB
2. TAXI	6. MINI-BUS	10. ARTICULATED TRUCK	13. SPECIAL TYPE
3. JEEP	7. PUB	11. MOTORCYCLE / BICYCLE	(ANIMAL-DRAWN, WALKING, ETC.)
4. PICK-UP / VAN	8. TRUCK 2 AXLE		

2.) TRUCK TYPE <input type="checkbox"/>	
1. TRUCK FOR HIRE	2. PRIVATE TRUCK

3.) ORIGIN <input type="checkbox"/>	4.) DESTINATION <input type="checkbox"/>
BARRIO : _____	
CITY/MUN: _____	
PROVINCE: _____	

5.) PURPOSE OF TRIP			
1. TO WORK	2. BUSINESS	3. TO DELIVER / COLLECT GOODS	4. OTHERS :

6.) NUMBER OF PERSONS (INCLUDING DRIVER AND CONDUCTOR)	<input type="checkbox"/>
--	--------------------------

7A) OWNER / CHAUFFEUR DRIVEN PRIVATE PASSENGER CAR : (USE PASSENGER INTERVIEW SURVEY FORM)	
--	--

7B) PUBLIC TRANSPORT PASSENGER VEHICLE DRIVER :	
1. SEAT CAPACITY	<input type="checkbox"/>
2. FRANCHISED ROUTE	_____
3. TOTAL TRAVEL TIME	<input type="checkbox"/> HRS. <input type="checkbox"/> MINS.
4. FREQUENCY OF USING RORO :	<input type="checkbox"/> PER MONTH

7C) TRUCK DRIVERS :	
1. FREQUENCY OF USING RORO :	<input type="checkbox"/> PER MONTH
2. GROSS VEHICLE WEIGHT :	<input type="checkbox"/> TONS
3. NET LOAD CAPACITY :	<input type="checkbox"/> TONS
4. COMMODITY CARRIED (PLS SPECIFY) TYPE	<input type="checkbox"/> 1. _____ <input type="checkbox"/> 2. _____ <input type="checkbox"/> 3. _____ <input type="checkbox"/> 4. _____
WEIGHT : KGS.	<input type="checkbox"/> 1. _____ <input type="checkbox"/> 2. _____ <input type="checkbox"/> 3. _____ <input type="checkbox"/> 4. _____
5. OTHER POPULAR COMMODITIES CARRIED :	

8.) ASSESSMENT OF RORO SERVICE / FACILITIES :			
1. ROUTE : <input type="checkbox"/>	2. FACILITIES : <input type="checkbox"/>	3. FREQUENCY : <input type="checkbox"/>	
4. COMFORT : <input type="checkbox"/>	5. FARE : <input type="checkbox"/>	6. SPEED : <input type="checkbox"/>	
7. PUNCTUALITY: <input type="checkbox"/>	8. OTHER (SPECIFY): _____		

1. GOOD	2. REASONABLE	3. BAD	4. VERY BAD
---------	---------------	--------	-------------

Note A-1-7-1 (continued)

FORM 3
VEHICULAR TRAFFIC COUNT SURVEY

DATE : _____

SEQUENTIAL NO. : _____

WEATHER : _____

SURVEYORS : _____

STATION : _____

SUPERVISOR : _____

SEQ. NO.	TYPE OF VEHICLE	DIRECTION	TIME	PURPOSE	GOODS UNLOADED/LOADED (PLS. SPECIFY TYPE OF GOODS)			NO. OF PASS.
					TYPE 1	TYPE 2	TYPE 3	
		ARRIVED			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
		DEPARTED			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
		ARRIVED			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
		DEPARTED			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
		ARRIVED			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
		DEPARTED			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
		ARRIVED			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
		DEPARTED			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
		ARRIVED			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
		DEPARTED			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
		ARRIVED			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
		DEPARTED			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
		ARRIVED			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
		DEPARTED			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
		ARRIVED			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
		DEPARTED			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
		ARRIVED			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
		DEPARTED			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
		ARRIVED			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
		DEPARTED			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
		ARRIVED			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
		DEPARTED			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
		ARRIVED			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
		DEPARTED			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

TRIP PURPOSE

1. FOR BOARDING RORO
2. DELIVERING GOODS
3. PICKING UP GOODS
4. SENDING PASSENGERS
5. PICKING UP PASSENGERS
6. OTHERS (SPECIFY)

TYPE OF VEHICLE

- | | |
|---|---|
| <ol style="list-style-type: none"> 1. CAR 2. TAXI 3. JEEP 4. PICK-UP / VAN 5. PUJ 6. MINI BUS 7. PUB | <ol style="list-style-type: none"> 8. TRUCK (2 AXLE) 9. TRUCK (3 AXLE) 10. ARTICULATED TRUCK 11. MOTORCYCLE / BICYCLE 12. TRICYCLE / PEDICAB 13. ANIMAL DRAWN 14. OTHERS |
|---|---|

FORM 5

RO-RO OR FERRY OPERATOR QUESTIONNAIRE FORM

1. Company Identification

Name : _____

Address: _____

Tel Nos: _____ Fax No.: _____

Years in Operation: _____ Area/Routes: _____

Contact Person: _____ Position: _____

2. Fleet Information

No. of Vessels: _____

Vessel Description: (Please fill out attached form and include vessel layout plan)

3. Perceived obstacles in the development of Ro-Ro operations. Please rank problem areas from 1 (least) to 10 (most) with no two rankings alike in designated boxes and give a corresponding problem description. Complete this for every port serviced by RoRo only.

ROUTE NAME: _____

<u>Problem Area</u>	<u>Problem Statement</u>
<input type="checkbox"/> port facilities	_____
<input type="checkbox"/> road network	_____
<input type="checkbox"/> acquisition of vessels	_____
<input type="checkbox"/> port handling charges	_____
<input type="checkbox"/> financial returns	_____
<input type="checkbox"/> port clearing procedures	_____
<input type="checkbox"/> fare and freight rates	_____
<input type="checkbox"/> passenger/cargo volume	_____
<input type="checkbox"/> peace and order	_____
<input type="checkbox"/> others	_____

(continued)

ROUTE NAME: _____

Problem Area

Problem Statement

- ☐ port facilities
- ☐ road network
- ☐ acquisition of vessels
- ☐ port handling charges
- ☐ financial returns
- ☐ port clearing procedures
- ☐ fare and freight rates
- ☐ passenger/cargo volume
- ☐ peace and order
- ☐ others

ROUTE NAME: _____

Problem Area

Problem Statement

- ☐ port facilities
- ☐ road network
- ☐ acquisition of vessels
- ☐ port handling charges
- ☐ financial returns
- ☐ port clearing procedures
- ☐ fare and freight rates
- ☐ passenger/cargo volume
- ☐ peace and order
- ☐ others

VESSEL	DESCRIPTION
1	1000
2	1000
3	1000
4	1000
5	1000
6	1000
7	1000
8	1000
9	1000
10	1000
11	1000
12	1000
13	1000
14	1000
15	1000
16	1000
17	1000
18	1000
19	1000
20	1000
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94	1000
95	1000
96	1000
97	1000
98	1000
99	1000
100	1000

[illegible]

EXPL: 37

[illegible]

(continued)

4. Company expansion/development thrust. Please indicate actual improvements to be undertaken as well as planned by the company. Kindly provide particulars of said improvements and developments in additional sheet(s). Please indicate whether the same service will be maintained, increased but using conventional ferry service or improved with the introduction of RoRo.

<u>Areas of Development/Improvement</u>	<u>Action Plan</u>	<u>Time Plan</u>
<input type="checkbox"/> new route (s)	_____	_____
<input type="checkbox"/> present route capacity	_____	_____
<input type="checkbox"/> quality of transport service	_____	_____
<input type="checkbox"/> port and port facilities	_____	_____
<input type="checkbox"/> vessels	_____	_____
<input type="checkbox"/> others	_____	_____

5. Company Operating Costs per Route. Kindly provide audited 1989 financial statements (income and expenditures).

6. What recommendations do you have to expand and develop Ro-Ro or Ferry operations.

Form 6
CONSIGNOR INTERVIEW FORM

Port: _____
Interviewer: _____

Date: _____
Supervisor: _____

Name: _____	Tel. No. _____
Address: _____	
Contact Person: _____	Position : _____

1) COMPANY/BUSINESS PROFILE:

- a. No. of years in business/operation: _____
- b. Volume of production/trading and distribution pattern (Please fill up attached form).
- c. Plan for distribution expansion (Please indicate areas targetted and possible time for implementation).

Product	Target Areas for Distribution (municipality and province)	Schedule
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

- 2) How long have you been using the following modes for your shipments? roro _____ ferry _____ tramping _____

Please state the frequency of usage.

RoRo

Ferry

Tramping

- 3) Reason for using the following transport:

— RoRo
— accessibility
— cheap
— speed

— punctuality
— frequency
— others (specify) _____

(continued)

Ferry
— accessibility
— cheap
— speed

— punctuality
— frequency
— others (specify) _____

Tramping
— accessibility
— cheap
— speed

— punctuality
— frequency
— others (specify) _____

- 4) What problems have your company encountered using the roro or ferry transport?

<u>Problem Area</u>	<u>Problem Statement</u>
port facilities	_____
road network	_____
port handling charges	_____
port clearing procedures	_____
arrastre/stevedoring	_____
freight rates	_____
peace and order	_____
others (specify)	_____

- 5) Should the present ferry route you are using be converted to a RoRo, will you use it?
— yes — no, why? _____

- 6) Is there any route you would like to recommend for:
— conversion to RoRo _____
— introduction of RoRo _____

(continued)

[illegible]

Table A-1-8-1 Nationwide Population

Region	Population			Average Annual Growth Rate	
	1970	1975	1980	1970-1975	1975-1980 1980-1990
Metropolitan Manila Area					
(NCR)					
I Ilocos	3,966,695	4,970,006	5,925,884	7,928,867	3.58%
II Cagayan Valley	2,990,561	3,269,391	3,540,893	4,337,430	1.81%
III Central Luzon	1,692,127	1,933,177	2,215,552	2,699,708	2.76%
IV Southern Tagalog	3,615,496	4,210,136	4,802,793	6,198,957	2.67%
V Bicol	4,456,340	5,213,843	6,118,620	8,265,784	3.25%
VI Western Visayas	2,966,881	3,193,721	3,476,982	3,909,799	3.19%
VII Central Visayas	3,618,326	4,146,390	4,525,615	5,393,333	1.48%
VIII Eastern Visayas	3,032,719	3,387,274	3,787,374	4,593,151	2.76%
IX Western Mindanao	2,381,409	2,599,728	2,799,534	3,055,184	2.24%
X Northern Mindanao	1,869,014	2,047,882	2,528,506	3,159,197	1.77%
XI Southern Mindanao	1,952,735	2,314,205	2,758,985	3,509,821	1.84%
XII Central Mindanao	2,200,726	2,714,558	3,346,803	4,457,076	3.46%
TOTAL	1,941,457	2,070,349	2,270,949	3,171,368	4.29%
TOTAL	36,684,486	42,070,660	48,098,490	60,679,675	1.29%
				2.78%	2.71%
					2.35%

Source : 1) Philippine 1980

Population, Land Area, and Density: 1970, 1975, and 1980

National Census and Statistics Office

2) 1990 Census of Population and Housing

Report No. 2-A: Population by Province, city, Municipality and Barangay

National Statistics Office

Table A-1-8-2 Population Projections: 1995 - 2010
(In thousands)

Year	Assumption		
	Low	Medium	High
1995	66,418	68,424	69,449
2000	71,321	75,225	77,210
2005	75,861	81,593	84,973
2010	80,655	87,206	92,516

Source: Philippine Population Projections
1980-2030. National Economic and
Development Authority

Table A-1-8-3 Population: 1985 - 1990

Region	Year									
	1975	1976	1977	1978	1979	1980	1981	1982		
Philippines	42,070,660	43,276,226	44,481,792	45,687,358	46,892,924	48,098,490	49,356,609	50,614,727		
Metropolitan Manila Area	4,970,006	5,161,182	5,352,357	5,543,533	5,734,708	5,925,884	6,126,182	6,326,481		
I Ilocos	3,269,391	3,323,691	3,377,992	3,432,292	3,486,593	3,540,893	3,620,547	3,700,200		
II Cagayan Valley	1,933,177	1,989,652	2,046,127	2,102,602	2,159,077	2,215,552	2,263,968	2,312,383		
III Central Luzon	4,210,136	4,328,667	4,447,199	4,565,730	4,684,262	4,802,793	4,942,409	5,082,026		
IV Southern Tagalog	5,213,843	5,394,798	5,575,754	5,756,709	5,937,665	6,118,620	6,333,336	6,548,053		
V Bicol	3,193,721	3,250,373	3,307,025	3,363,678	3,420,330	3,476,982	3,520,264	3,563,545		
VI Western Visayas	4,146,390	4,222,235	4,298,080	4,373,925	4,449,770	4,525,615	4,612,387	4,699,159		
VII Central Visayas	3,387,274	3,467,294	3,547,314	3,627,334	3,707,354	3,787,374	3,867,952	3,948,529		
VIII Eastern Visayas	2,599,728	2,639,689	2,679,650	2,719,612	2,759,573	2,799,534	2,825,099	2,850,664		
IX Western Mindanao	2,047,882	2,144,007	2,240,132	2,336,256	2,432,381	2,528,506	2,591,575	2,654,644		
X Northern Mindanao	2,314,205	2,403,161	2,492,117	2,581,073	2,670,029	2,758,985	2,834,069	2,909,152		
XI Southern Mindanao	2,714,558	2,841,007	2,967,456	3,093,905	3,220,354	3,346,803	3,457,830	3,568,858		
XII Central Mindanao	2,070,349	2,110,469	2,150,589	2,190,709	2,230,829	2,270,949	2,360,991	2,451,033		

Source : 1) Philippine 1980

Population, Land Area, and Density: 1970, 1975, and 1980
National Census and Statistics Office

2) 1990 Census of Population and Housing

Report No. 2-A: Population by Province, city, Municipality and Barangay
National Statistics Office

Table A-1-8-3 Population: 1975 - 1990 (continued)

Region	1983	1984	1985	1986	1987	1988	1989	1990
Philippines	51,872,846	53,130,964	54,389,083	55,647,201	56,905,320	58,163,438	59,421,557	60,679,675
Metropolitan Manila Area	6,526,779	6,727,077	6,927,376	7,127,674	7,327,972	7,528,270	7,728,569	7,928,867
I Ilocos	3,779,854	3,859,508	3,939,162	4,018,815	4,098,469	4,178,123	4,257,776	4,337,430
II Cagayan Valley	2,360,799	2,409,214	2,457,630	2,506,046	2,554,461	2,602,877	2,651,292	2,699,708
III Central Luzon	5,221,642	5,361,259	5,500,875	5,640,491	5,780,108	5,919,724	6,059,341	6,198,957
IV Southern Tagalog	6,762,769	6,977,486	7,192,202	7,406,918	7,621,635	7,836,351	8,051,068	8,265,784
V Bicol	3,606,827	3,650,109	3,693,391	3,736,672	3,779,954	3,823,236	3,866,517	3,909,799
VI Western Visayas	4,785,930	4,872,702	4,959,474	5,046,246	5,133,018	5,219,789	5,306,561	5,393,333
VII Central Visayas	4,029,107	4,109,685	4,190,263	4,270,840	4,351,418	4,431,996	4,512,573	4,593,151
VIII Eastern Visayas	2,876,229	2,901,794	2,927,359	2,952,924	2,978,489	3,004,054	3,029,619	3,055,184
IX Western Mindanao	2,717,713	2,780,782	2,843,852	2,906,921	2,969,990	3,033,059	3,096,128	3,159,197
X Northern Mindanao	2,984,236	3,059,319	3,134,403	3,209,487	3,284,570	3,359,654	3,434,737	3,509,821
XI Southern Mindanao	3,679,885	3,790,912	3,901,940	4,012,967	4,123,994	4,235,021	4,346,049	4,457,076
XII Central Mindanao	2,541,075	2,631,117	2,721,159	2,811,200	2,901,242	2,991,284	3,081,326	3,171,368

Source : 1) Philippine 1980

Population, Land Area, and Density: 1970, 1975, and 1980
National Census and Statistics Office

2) 1990 Census of Population and Housing
Report No. 2-A: Population by Province, city, Municipality and Barangay
National Statistics Office

Table A-1-8-4(1) Average Annual Growth Rates of Population

Region III - Central Luzon

(Unit: Percent)

Province	Census 1980-1990	Population Projections 1980 - 1990			Assump- tion	Population Projections			
		Low	Medium	High		1990-1995	1995-2000	2000-2005	2005-2010
Bataan	2.79	3.19	3.32	3.39	Low	2.55	2.03	1.73	1.64
Bulacan	3.22	2.58	2.71	2.77	High	2.53	2.30	2.06	1.80
Nueva Ecija	2.07	2.00	2.12	2.19	Medium	1.94	1.72	1.44	1.15
Pampanga	2.64	2.39	2.52	2.58	High	2.48	2.27	2.02	1.75
Tarlac	2.25	1.71	1.83	1.90	High	1.80	1.66	1.47	1.27
Zambales	2.40	2.42	2.55	2.61	Low	1.88	1.44	1.19	1.14

Source: JICA Study Team based on Philippine Population Projections 1980 - 2030
National Economic and Development Authority

Table A-1-8-4(2) Average Annual Growth Rates of Population

Region IV - Southern Tagalog

(Unit: Percent)

Province	Census 1980-1990	Population Projections 1980 - 1990			Assump- tion	Population Projections				
		Low	Medium	High		1990-1995	1995-2000	2000-2005	2005-2010	
Aurora	2.68	3.38	3.53	3.61	Low	2.96	2.49	2.15	2.02	
Batangas	2.32	2.14	2.28	2.35	High	2.11	1.93	1.74	1.53	
Cavite	4.10	3.60	3.74	3.82	High	3.34	2.95	2.62	2.32	
Laguna	3.48	2.98	3.12	3.20	High	2.83	2.51	2.22	1.95	
Marinduque	0.66	1.87	2.01	2.08	Low	1.45	1.09	0.91	0.93	
Occidental Mindoro	2.42	2.50	2.65	2.73	Low	1.89	1.47	1.28	1.30	
Oriental Mindoro	2.10	2.45	2.62	2.70	Low	2.00	1.60	1.41	1.43	
Palawan	3.58	2.79	2.93	3.00	High	2.87	2.70	2.43	2.12	
Quezon	1.97	2.16	2.31	2.39	Low	1.71	1.33	1.15	1.18	
Rizal	5.84	3.26	3.39	3.46	High	3.14	2.82	2.47	2.10	
Romblon	1.65	1.41	1.54	1.61	High	1.56	1.47	1.29	1.05	

Source: JICA Study Team based on Philippine Population Projections 1980 - 2030

National Economic and Development Authority

Table A-1-8-4(3) Average Annual Growth Rates of Population

Region IV - Bicol

(Unit: Percent)

Province	Census 1980-1990	Population Projections 1980 - 1990			Assump- tion	Population Projections 1990-1995 1995-2000 2000-2005 2005-2010			
		Low	Medium	High		1990-1995	1995-2000	2000-2005	2005-2010
Albay	1.10	2.00	2.15	2.22	Low	1.52	1.14	1.00	1.07
Camarines Norte	2.41	2.42	2.58	2.66	Low	1.93	1.49	1.32	1.42
Camarines Sur	1.74	2.31	2.46	2.53	Low	1.88	1.49	1.32	1.37
Catanduanes	0.65	1.79	1.94	2.01	Low	1.45	1.10	0.96	1.07
Masbate	0.26	2.03	2.19	2.27	Low	1.58	1.20	1.06	1.15
Sorsogon	0.44	2.25	2.40	2.48	Low	1.85	1.47	1.30	1.36

Source: JICA Study Team based on Philippine Population Projections 1980 - 2030

National Economic and Development Authority

Table A-1-8-4(4) Average Annual Growth Rates of Population

Region VI - Western Visayas

(Unit: Percent)

Province	Census 1980-1990	Population Projections 1980 - 1990			Assump- tion	Population Projections			
		Low	Medium	High		1990-1995	1995-2000	2000-2005	2005-2010
Aklan	1.60	2.02	2.18	2.26	Low	1.50	1.08	0.93	1.03
Antique	1.65	2.13	2.29	2.39	Low	1.66	1.27	1.11	1.18
Capiz	1.73	2.26	2.43	2.51	Low	1.75	1.30	1.12	1.19
Iloilo	2.10	1.91	2.06	2.13	High	1.94	1.76	1.59	1.42
Guimaras						1.94	1.76	1.59	1.42
Negros Occidental	1.58	2.21	2.37	2.44	Low	1.65	1.22	1.01	1.02

Note: Average annual growth rates of Guimaras Province are assumed the same value as Iloilo Province

Source: JICA Study Team based on Philippine Population Projections 1980 - 2030

National Economic and Development Authority

Table A-1-8-4(5) Average Annual Growth Rates of Population

Region VII - Central Visayas

(Unit: Percent)

Province	Census 1980-1990	Population Projections 1980 - 1990			Assump- tion	Population Projections 1990-1995 1995-2000 2000-2005 2005-2010			
		Low	Medium	High		1990-1995	1995-2000	2000-2005	2005-2010
Bohol	1.64	1.46	1.59	1.66	High	1.65	1.60	1.49	1.34
Cebu	2.38	1.93	2.06	2.12	High	1.96	1.79	1.61	1.44
Negros Oriental	1.22	2.03	2.17	2.23	Low	1.59	1.21	1.04	1.06
Siquijor	0.48	1.52	1.64	1.70	Low	1.28	1.00	0.88	0.91

Source: JICA Study Team based on Philippine Population Projections 1980 - 2030

National Economic and Development Authority

Table A-1-8-4(6) Average Annual Growth Rates of Population

Region VIII - Eastern Visayas

(Unit: Percent)

Province	Census 1980-1990	Population Projections 1980 - 1990			Assump- tion	Population Projections			
		Low	Medium	High		1990-1995	1995-2000	2000-2005	2005-2010
Eastern Samar	0.27	2.08	2.21	2.28	Low	1.94	1.62	1.42	1.41
Leyte	1.33	1.64	1.77	1.84	Low	1.27	0.97	0.86	0.93
Biliran						1.27	0.97	0.86	0.93
Northern Samar	0.13	2.40	2.54	2.61	Low	2.20	1.86	1.65	1.65
Samar	0.63	0.57	0.70	0.77	Low	0.17	-0.01	-0.03	0.09
Southern Leyte	0.83	2.32	2.45	2.52	Low	2.08	1.75	1.59	1.62

Note: Average annual growth rates of Biliran Province are assumed the same value as Leyte Province

Source: JICA Study Team based on Philippine Population Projections 1980 - 2030

National Economic and Development Authority

Table A-1-8-4(7) Average Annual Growth Rates of Population

Region IX - Western Mindanao

(Unit: Percent)

Province	Census 1980-1990	Population Projections 1980 - 1990			Assump- tion	Population Projections 1990-1995 1995-2000 2000-2005 2005-2010			
		Low	Medium	High		1990-1995	1995-2000	2000-2005	2005-2010
Basilan	1.90	2.36	2.51	2.59	Low	1.74	1.36	1.20	1.21
Sulu	2.68	1.90	2.05	2.12	High	1.94	1.79	1.58	1.38
Tawi-Tawi	1.60	2.14	2.29	2.36	Low	1.93	1.58	1.29	1.21
Zamboanga del Norte	1.37	1.94	2.08	2.15	Low	1.49	1.14	1.00	1.04
Zamboanga del Sur	2.69	2.29	2.43	2.51	High	2.33	2.22	2.06	1.85

Source: JICA Study Team based on Philippine Population Projections 1980 - 2030

National Economic and Development Authority

Table A-1-8-4(8) Average Annual Growth Rates of Population

Region X - Northern Mindanao

(Unit: Percent)

Province	Census 1980-1990	Population Projections 1980 - 1990			Assump- tion	Population Projections			
		Low	Medium	High		1990-1995	1995-2000	2000-2005	2005-2010
Agusan del Norte	2.45	2.51	2.65	2.72	Low	2.05	1.68	1.47	1.43
Agusan del Sur	4.73	2.93	3.07	3.14	High	2.98	2.86	2.62	2.31
Bukidnon	2.94	2.61	2.76	2.83	High	2.68	2.54	2.34	2.09
Camiguin	1.18	0.76	0.88	0.94	High	0.89	0.84	0.80	0.76
Misamis Occidental	0.94	1.93	2.07	2.15	Low	1.42	1.05	0.91	0.98
Misamis Oriental	2.29	2.85	2.98	3.04	Low	2.33	1.90	1.65	1.56
Surigao del Norte	1.60	2.52	2.66	2.73	Low	2.03	1.67	1.48	1.47

Source: JICA Study Team based on Philippine Population Projections 1980 - 2030

National Economic and Development Authority

Table A-1-8-4(9) Average Annual Growth Rates of Population

Region XI - Southern Mindanao

(Unit: Percent)

Province	Census 1980-1990	Population Projections 1980 - 1990			Assump- tion	Population Projections			
		Low	Medium	High		1990-1995	1995-2000	2000-2005	2005-2010
Davao	3.82	2.07	2.21	2.28	High	2.10	1.98	1.84	1.66
Davao del Sur	2.72	2.65	2.79	2.86	Medium	2.40	2.11	1.84	1.55
Davao Oriental	1.50	2.36	2.50	2.58	Low	1.98	1.63	1.44	1.43
South Cotabato	3.36	2.39	2.53	2.60	High	2.47	2.34	2.15	1.91
Surigao del Sur	1.82	2.43	2.57	2.65	Low	1.99	1.62	1.45	1.47

Source: JICA Study Team based on Philippine Population Projections 1980 - 2030

National Economic and Development Authority

Table A-1-8-4(10) Average Annual Growth Rates of Population

Region XII - Central Mindanao

(Unit: Percent)

Province	Census 1980-1990	Population Projections 1980 - 1990			Assump- tion	Population Projections			
		Low	Medium	High		1990-1995	1995-2000	2000-2005	2005-2010
Lanao del Norte	2.91	2.46	2.59	2.66	High	2.51	2.33	2.13	1.91
Lanao del Sur	4.00	2.09	2.23	2.31	High	2.20	2.18	2.05	1.83
Maguindanao	3.51	2.23	2.32	2.43	High	2.26	2.16	1.97	1.72
North Cotabato	3.07	2.58	2.73	2.80	High	2.65	2.48	2.30	2.12
Sultan Kudarat	3.68	3.01	3.16	3.23	High	3.09	2.92	2.69	2.42

Source: JICA Study Team based on Philippine Population Projections 1980 - 2030
National Economic and Development Authority

Table A-1-8-5 Per Capita Gross Domestic product by Region:
1981 to 1989 (At constant 1972 prices)

Region/Year	1981	1982	1983	1984	1985	1986	1987	1988	1989
PHILIPPINES	1,942	1,949	1,920	1,760	1,644	1,628	1,663	1,728	1,783
<i>NCR. Metro Manila</i>	4,968	4,984	4,968	4,339	3,842	3,724	3,865	4,108	4,281
<i>CAR. Cordillera</i>									
I. <i>Ilocos Region</i>	1,044	1,082	1,079	1,020	1,026	1,072	1,059	1,097	1,116
II. <i>Cagayan Valley</i>	1,160	1,140	1,081	979	941	887	869	880	884
III. <i>Central Luzon</i>	1,680	1,698	1,630	1,466	1,405	1,320	1,339	1,392	1,465
IV. <i>Southern Tagalog</i>	2,081	2,073	2,027	1,939	1,822	1,868	1,759	1,791	1,821
V. <i>Bicol Region</i>	882	878	891	827	795	762	767	794	801
VI. <i>Western Visayas</i>	1,684	1,728	1,638	1,519	1,292	1,219	1,241	1,271	1,288
VII. <i>Central Visayas</i>	1,807	1,764	1,745	1,626	1,497	1,514	1,602	1,690	1,785
VIII. <i>Eastern Visayas</i>	800	803	788	730	739	734	929	946	945
IX. <i>Western Mindanao</i>	1,286	1,267	1,245	1,145	1,138	1,150	1,213	1,236	1,271
X. <i>Northern Mindanao</i>	1,629	1,632	1,531	1,503	1,516	1,533	1,572	1,635	1,684
XI. <i>Southern Mindanao</i>	1,731	1,737	1,762	1,685	1,673	1,698	1,766	1,774	1,809
XII. <i>Central Mindanao</i>	1,487	1,471	1,461	1,351	1,351	1,417	1,387	1,417	1,459

Source: 1990 Philippine Statistical Yearbook
National Statistical Coordination Board

Table A-1-8-6 Personal Consumption Expenditure
(In Thousand Pesos at Constant 1972 Prices)

Region	Year							
	1975	1976	1977	1978	1979	1980	1981	1982
Philippines	46,514,999	48,840,000	51,416,000	54,098,001	56,718,001	59,269,989	61,617,001	63,534,999
Metropolitan Manila Area	8,078,502	8,728,992	9,495,278	9,987,800	10,815,313	11,614,310	12,427,198	13,047,711
I Ilocos	3,786,345	3,972,538	4,104,270	4,299,599	4,514,425	4,701,578	4,919,130	4,936,274
II Cagayan Valley	1,611,179	1,698,120	1,791,594	1,915,284	2,033,864	2,105,293	2,181,196	2,235,207
III Central Luzon	5,104,031	5,419,974	5,748,078	6,092,680	6,435,034	6,784,351	7,118,734	7,358,907
IV Southern Tagalog	6,321,478	6,529,828	6,997,910	7,405,455	7,761,789	8,095,991	8,359,676	8,572,104
V Bicol	3,221,328	3,363,152	3,448,207	3,594,204	3,682,842	3,780,643	3,880,812	3,972,891
VI Western Visayas	4,061,501	4,223,400	4,369,561	4,587,165	4,712,608	4,836,983	4,987,459	5,121,591
VII Central Visayas	2,949,559	3,098,807	3,174,317	3,295,084	3,391,986	3,478,446	3,564,669	3,649,159
VIII Eastern Visayas	2,091,439	2,150,678	2,213,774	2,282,463	2,360,351	2,470,712	2,528,534	2,591,062
IX Western Mindanao	2,243,134	2,304,972	2,404,593	2,485,086	2,589,098	2,665,666	2,732,454	2,798,070
X Northern Mindanao	1,800,702	1,899,900	2,043,855	2,207,443	2,294,100	2,383,577	2,482,901	2,542,721
XI Southern Mindanao	3,011,874	3,145,339	3,233,602	3,486,178	3,596,379	3,748,961	3,859,867	3,964,573
XII Central Mindanao	2,243,927	2,304,300	2,390,971	2,459,760	2,530,212	2,603,488	2,674,371	2,744,729

Source: 1) Economic and Social Indicators, National Statistical Coordination Board
2) 1990 Philippine Statistical Yearbook, National Statistical Coordination Board

Table A-1-8-6 Personal Consumption Expenditure (continued)
(In Thousand Pesos at Constant 1972 Prices)

Region	1983	1984	1985	1986	1987	1988	1989
Philippines	65,348,001	66,032,000	65,977,000	66,596,999	70,740,000	75,339,000	79,113,000
Metropolitan Manila Area	13,474,430	13,679,032	13,654,074	13,780,869	14,256,174	no data	no data
I Ilocos	5,053,878	5,086,846	5,080,024	5,191,951	5,672,331	no data	no data
II Cagayan Valley	2,299,604	2,305,160	2,302,707	2,304,669	2,466,144	no data	no data
III Central Luzon	7,586,054	7,683,175	7,681,789	7,778,703	8,265,571	no data	no data
IV Southern Tagalog	8,815,691	8,965,376	8,953,932	9,128,369	9,728,797	no data	no data
V Bicol	4,068,504	4,111,113	4,109,772	4,110,101	4,368,580	no data	no data
VI Western Visayas	5,274,158	5,302,856	5,300,983	5,310,896	5,801,078	no data	no data
VII Central Visayas	3,737,171	3,756,326	3,755,053	3,757,655	4,031,049	no data	no data
VIII Eastern Visayas	2,657,348	2,676,297	2,674,788	2,677,083	2,837,035	no data	no data
IX Western Mindanao	2,867,450	2,891,354	2,889,281	2,897,175	3,051,350	no data	no data
X Northern Mindanao	2,630,677	2,651,136	2,646,834	2,677,018	2,829,061	no data	no data
XI Southern Mindanao	4,070,329	4,095,282	4,092,816	4,125,867	4,391,719	no data	no data
XII Central Mindanao	2,812,707	2,837,847	2,835,047	2,856,643	3,041,111	no data	no data

Source: 1) Economic and Social Indicators, National Statistical Coordination Board
2) 1990 Philippine Statistical Yearbook, National Statistical Coordination Board

Table A-1-8-7 Per Capita Personal Consumption Expenditure
(In Pesos at Constant 1972 Prices)

Region	Year														
	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
Philippines	1,106	1,129	1,156	1,184	1,210	1,232	1,248	1,255	1,260	1,243	1,213	1,197	1,243	1,295	1,331
Metropolitan Manila Area	1,625	1,691	1,774	1,802	1,886	1,960	2,029	2,062	2,064	2,033	1,971	1,933	1,945		
I Ilocos	1,158	1,195	1,215	1,253	1,295	1,328	1,359	1,334	1,337	1,318	1,290	1,292	1,394		
II Cagayan Valley	833	853	876	911	942	950	963	967	974	957	937	920	965		
III Central Luzon	1,212	1,252	1,293	1,334	1,374	1,413	1,440	1,448	1,453	1,433	1,396	1,379	1,430		
IV Southern Tagalog	1,212	1,210	1,255	1,286	1,307	1,323	1,320	1,309	1,304	1,285	1,245	1,232	1,276		
V Bicol	1,009	1,035	1,043	1,069	1,077	1,087	1,102	1,115	1,128	1,126	1,113	1,100	1,156		
VI Western Visayas	980	1,000	1,017	1,049	1,059	1,069	1,081	1,090	1,102	1,088	1,069	1,052	1,130		
VII Central Visayas	871	894	895	908	915	918	922	924	928	914	896	880	926		
VIII Eastern Visayas	804	815	826	839	855	883	895	909	924	922	914	907	953		
IX Western Mindanao	1,095	1,075	1,073	1,064	1,064	1,054	1,054	1,054	1,055	1,040	1,016	997	1,027		
X Northern Mindanao	778	791	820	855	859	864	876	874	882	867	844	834	861		
XI Southern Mindanao	1,110	1,107	1,090	1,127	1,117	1,120	1,116	1,111	1,106	1,080	1,049	1,028	1,065		
XII Central Mindanao	1,084	1,092	1,112	1,123	1,134	1,146	1,133	1,120	1,107	1,079	1,042	1,016	1,048		

Source: JICA Study Team based on Economic and Social Indicators

Table A-1-8-8 Per Capita Personal Consumption Expenditure Growth Rates
(At Constant 1972 Prices)

Region	Period														Unit: Percent
	1975-76	1976-77	1977-78	1978-79	1979-80	1980-81	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	
Philippines	2.08	2.39	2.42	2.20	1.82	1.30	0.56	0.40	-1.35	-2.41	-1.32	3.84	4.18	2.78	
Metropolitan Manila Area	4.06	4.91	1.58	4.66	3.92	3.52	1.63	0.10	-1.50	-3.05	-1.93	0.62			
I Ilocos	3.20	1.67	3.13	3.35	2.55	2.33	-1.84	0.22	-1.42	-2.12	0.16	7.12			
II Cagayan Valley	2.40	2.70	4.00	3.40	0.85	1.37	0.42	0.72	-1.75	-2.09	-1.81	4.89			
III Central Luzon	3.30	3.27	3.17	3.00	2.84	1.91	0.56	0.35	-1.38	-2.58	-1.22	3.70			
IV Southern Tagalog	-0.17	3.72	2.47	1.63	1.22	-0.23	-0.83	-0.38	-1.46	-3.11	-1.04	3.57			
V Bicol	2.58	0.77	2.49	0.75	0.93	1.38	1.18	1.17	-0.18	-1.15	-1.17	5.09			
VI Western Visayas	2.04	1.70	3.15	0.95	0.94	1.12	0.83	1.10	-1.27	-1.75	-1.59	7.41			
VII Central Visayas	2.64	0.11	1.45	0.77	0.33	0.44	0.22	0.43	-1.51	-1.97	-1.79	5.23			
VIII Eastern Visayas	1.37	1.35	1.57	1.91	3.27	1.36	1.56	1.65	-0.22	-0.87	-0.77	5.07			
IX Western Mindanao	-1.83	-0.19	-0.84	0.00	-0.94	0.00	0.00	0.09	-1.42	-2.31	-1.87	3.01			
X Northern Mindanao	1.67	3.67	4.27	0.47	0.58	1.39	-0.23	0.92	-1.70	-2.65	-1.18	3.24			
XI Southern Mindanao	-0.27	-1.54	3.39	-0.89	0.27	-0.36	-0.45	-0.45	-2.35	-2.87	-2.00	3.60			
XII Central Mindanao	0.74	1.83	0.99	0.98	1.06	-1.13	-1.15	-1.16	-2.53	-3.43	-2.50	3.15			

Source: JICA Study Team based on Economic and Social Indicators

Table A-1-8-9 Gross National and Per Capita GNP, 1986 - 92a

	Estimate 1986	1987	1988	Targets 1989	1990	1991	1992	Annual average 1987-92
Gross National Product (in billion pesos, at constant 1972 prices)	89.4	95.3	101.9	108.6	116.2	124.3	132.7	113.2
Growth rate (%)	1.1	6.5	6.9	6.7	7.0	6.9	6.7	6.8
Gross National Product (in billion pesos, at current prices)	619.6	697.3	811.8	927.3	1,075.7	1,253.2	1,438.0	1,033.9
Inflation Rate (%)	2.0	5.2	8.7	7.0	8.3	8.9	7.4	7.6
Per Capita GNP (in pesos, at constant 1972 prices)	1,597	1,661	1,734	1,808	1,891	1,977	2,064	1,856
Growth rate (%)	-1.3	4.0	4.4	4.3	4.6	4.5	4.4	4.4
Per Capita GNP (in pesos, at current prices)	11,063	12,157	13,825	15,430	17,497	19,934	22,378	16,870

Source: Medium-Term Philippine Development Plan 1987-1992
National Economic and Development Authority

Table A-1-8-10 Gross Regional Domestic Product, 1987 - 1992
(In Million Pesos at Constant 1972 Prices)

Region	1987	1992	AVERAGE ANNUAL GROWTH RATES 1987-1992
PHIL	96,935	135,331	6.9
NCR	28,208	37,607	5.9
I	4,265	6,099	7.4
II	2,714	3,916	7.7
III	8,530	12,152	7.3
IV	13,862	19,662	7.2
V	3,296	4,753	7.4
VI	7,755	10,923	7.0
VII	6,785	9,452	6.9
VIII	2,423	3,511	7.7
IX	3,490	5,024	7.4
X	4,944	7,109	7.6
XI	6,689	9,452	7.3
XII	3,974	5,671	7.3

Source: Medium-Term Philippine Development Plan 1987-1992
National Economic and Development Authority

Table A-1-8-11 Per Capita Gross Regional Domestic Product:
1985, 1987, 1992
(In Pesos at Constant 1972 prices)

Region	1985	1987	1992
PHIL	1,655	1,690	2,106
NCR	3,893	3,836	4,488
I	989	1,052	1,370
II	980	1,025	1,314
III	1,465	1,490	1,892
IV	1,820	1,851	2,307
V	782	803	1,038
VI	1,422	1,457	1,850
VII	1,509	1,555	1,975
VIII	717	761	1,009
IX	1,130	1,166	1,509
X	1,368	1,476	1,872
XI	1,605	1,659	2,083
XII	1,394	1,454	1,838

Source: Medium-Term Philippine Development Plan 1987-1992
National Economic and Development Authority

Table A-1-8-12 Aggregate Macroeconomic Targets, 1990 - 1992

	Actual		Plan Targets						Annual Average	
	1988	1989	1990		1991		1992		1990-92	
			Low	High	Low	High	Low	High	Low	High
Gross National Product (In Bn pesos, at constant 1972 prices)	101.1	106.8	110.2	110.6	113.0	114.9	116.6	119.8	113.3	115.1
Growth Rate (%)	6.8	5.7	3.2	3.6	2.5	3.9	3.2	4.3	3.0	3.9
Gross National Product (In Bn pesos, at current prices)	822.9	961.4	1121.4	1131.0	1325.4	1295.3	1481.5	1442.9	1309.4	1289.7
Inflation Rate (%)	8.8	10.6	13.4	14.0	15.7	10.5	8.5	7.0	12.5	10.5
Per Capita GNP (In pesos, at constant 1972 prices)	1722	1778	1781	1787	1783	1813	1797	1847	1787	1816
Growth Rate (%)	1.3	1.3	0.2	0.6	0.1	1.4	0.8	1.9	0.4	1.3
Per Capita GNP (In pesos, at current prices)	14013	15997	18118	18273	20913	20437	22835	22239	20622	20316
Savings and Investment (% to GNP)										
Gross Domestic Investment	17.4	18.7	19.1		20.2		22.3		20.5	
Gross National Savings	16.3	15.4	12.7		14.2		17.9		14.9	
Gross Foreign Savings	1.1	3.3	6.4		6.0		4.4		5.6	

Source: Updates of the Philippine Development Plan 1990-1992
National Economic and Development Authority

Table A-1-8-13 Sectoral Production Targets, 1990 - 1992

	Actual		Plan Targets						Annual Average	
	1988	1989	1990		1991		1992		1990-92	
			Low	High	Low	High	Low	High	Low	High

A. Annual Percentage Change										
Agriculture, Fishery and Forestry †	3.6	4.3	1.8	2.0	3.3	3.5	5.1	5.2	3.4	3.6
Industry	9.0	6.9	3.3	3.8	1.8	4.2	2.4	4.4	2.5	4.1
Mining and Quarrying	4.4	(3.2)	(4.1)	(1.5)	(0.1)	2.2	3.2	5.6	(0.3)	2.1
Manufacturing	9.6	6.4	3.3	3.6	1.7	3.2	1.2	2.5	2.1	3.1
Construction	9.5	13.9	5.2	6.1	1.0	9.8	7.0	13.2	4.4	9.7
Utilities	4.6	7.1	5.0		5.3		6.0		5.4	
Services	6.3	5.4	3.1	3.2	2.6	3.3	2.8	3.8	2.8	3.4
Gross Domestic Product	6.4	5.6	2.8	3.1	2.5	3.7	3.3	4.4	2.9	3.7

B. Percentage Distribution										
Agriculture, Fishery and Forestry	27.4	27.0	26.8		27.0	26.7	27.5	26.9	27.1	26.8
Industry	32.8	33.2	33.3	33.4	33.1	33.6	32.8	33.6	33.1	33.5
Mining and Quarrying	1.6	1.5	1.4		1.3		1.3	1.4	1.3	1.4
Manufacturing	24.9	25.1	25.2		25.0	25.1	24.5	24.7	24.9	25.0
Construction	4.3	4.6	4.7	4.8	4.6	5.0	4.8	5.4	4.7	5.1
Utilities	2.0		2.0		2.1		2.1		2.1	
Services	39.8		39.9	39.8	39.9	39.7	39.7	39.4	39.8	39.6
Gross Domestic Product	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

† For 1990-92, figures for agriculture are projections based on recent developments. These are slightly lower than figures presented in chapter four which are the targets of the Department of Agriculture.

Source: Updates of the Philippine Development Plan 1990-1992
National Economic and Development Authority

Table A-1-8-14 Gross Regional Domestic Product Targets, 1990 - 1992
(In Million Pesos at Constant 1972 Prices)

REGION	1989 ACTUAL	1990 LEVEL	1989-90 GROWTH RATE	1991 LEVEL	1990-91 GROWTH RATE	1992 LEVEL	1991-92 GROWTH RATE
NCR	33256	34448 - 34529	3.58 - 3.83	35568 - 36060	3.25 - 4.43	37288 - 38188	4.83 - 5.90
I /1	4702	4528 - 4538	-3.71 - -3.48	4623 - 4687	2.10 - 3.27	4726 - 4840	2.23 - 3.27
II /1	2455	2457 - 2463	0.08 - 0.31	2470 - 2504	0.53 - 1.68	2496 - 2557	1.07 - 2.10
III	8792	9080 - 9101	3.28 - 3.52	9342 - 9471	2.88 - 4.06	9696 - 9930	3.79 - 4.85
IV	14384	14763 - 14798	2.64 - 2.88	15011 - 15219	1.68 - 2.84	15307 - 15677	1.97 - 3.01
V	3437	3511 - 3519	2.14 - 2.38	3559 - 3608	1.38 - 2.54	3621 - 3709	1.74 - 2.78
VI	7154	7360 - 7377	2.87 - 3.12	7502 - 7605	1.93 - 3.10	7712 - 7899	2.81 - 3.86
VII	8086	8401 - 8421	3.90 - 4.15	8724 - 8844	3.84 - 5.03	9140 - 9361	4.77 - 5.84
VIII	3121	3206 - 3214	2.73 - 2.97	3228 - 3273	0.67 - 1.83	3262 - 3340	1.05 - 2.08
IX /2	3977	4108 - 4118	3.30 - 3.55	4212 - 4270	2.51 - 3.68	4338 - 4443	3.00 - 4.05
X	5937	6175 - 6190	4.01 - 4.26	6354 - 6442	2.90 - 4.08	6546 - 6704	3.01 - 4.06
XI	7655	7828 - 7846	2.26 - 2.50	7924 - 8034	1.24 - 2.40	8039 - 8233	1.44 - 2.47
XII /2	4190	4302 - 4312	2.67 - 2.91	4385 - 4446	1.93 - 3.10	4474 - 4582	2.03 - 3.07
PHIL	107144	110166-110425	2.82 - 3.06	112902-114463	2.48 - 3.66	116646-119461	3.32 - 4.37

1/ Includes CAR

2/ Includes the Autonomous Region in Muslim Mindanao (ARMM)

Source: Updates of the Philippine Development Plan 1990-1992
National Economic and Development Authority

Table A-1-8-15 Transport Development Program, Physical Targets,
1990 - 1992

	Actual 1989 1/	1990	1991	1992	Total 1990-92
REGULAR PROGRAM					
I. ROADS (national/rural, in kms.) 2/					
Rehab to all weather conditions	1610	2750	5264	5217	13239
Improvement	154	826	765	973	2564
Paving	1817	2806	2631	3152	8589
Construction	132	400	213	900	1513
II. WATER TRANSPORT					
Rehabilitation/Improvement (No.)					
Feeder Ports 2/	164	472	299	100	3/
Secondary Ports	n.a.	23	14	14	51
Major Ports	n.a.	8	11	3	22
Lighthouses	60	100	100	140	340
Construction Reg'l. Fishing Ports (No.)	1	2	equipment, materials	3	ERR
Maritime Safety Improvement		(D/E, SAR Vessels, Nav Aids)			

1/ Excludes carryover projects as follows: 139 kms. of major roads, 3,232 kms. of minor roads & 314 feeder ports
2/ Including CARP and IRA

Source: Updates of the Philippine Development Plan 1990-1992
National Economic and Development Authority

Table A-1-8-16 Philippine Development Framework for 1991 - 1998

GNP \ YEAR	1991	1992	1993	1994	1995	1996	1997	1998
(Level in Million Pesos, at Constant Prices)								
Gross National Product	112232	116674	121943	129756	138497	148384	159098	171065
g.r.	1.9	4.0	4.5	6.4	6.7	7.1	7.2	7.5
Personal Consumption	85949	89054	94433	99579	105007	110572	116100	121847
g.r.	2.6	3.6	6.0	5.5	5.5	5.3	5.0	5.0
Government Consumption	10920	10321	10889	11542	12292	13153	14008	14848
g.r.	5.3	-5.5	5.5	6.0	6.5	7.0	6.5	6.0
Memo:								

Real per Capita GNP (Pesos)	1785	1816	1858	1936	2024	2126	2235	2358
Growth rate (%)	-0.4	1.7	2.3	4.2	4.6	5.0	5.2	5.5

Source: Macro Development Framework 1993-1998
National Economic and Development Authority

Table A-1-8-17 Gross Domestic Product By Industrial Origin
(Levels in Million Pesos, Constant Price; Growth Rate in %)

GDP \ YEAR	1991	1992	1993	1994	1995	1996	1997	1998
GDP	111744	116085	121328	129101	137798	147635	158295	170201
g.r.	1.7	3.9	4.5	6.4	6.7	7.1	7.2	7.5
Agri., Fishery and Forestry	30450	31818	33237	34832	36574	38403	40400	42501
g.r.	2.8	4.5	4.5	4.8	5.0	5.0	5.2	5.2
Industry	36328	37945	39590	42763	46312	50758	55834	61975
g.r.	0.3	4.5	4.6	7.7	8.3	9.6	10.0	11.0
of which : Manufacturing	27736	28709	30202	32618	35488	39037	43331	48561
g.r.	1.7	3.5	5.2	8.0	8.8	10.0	11.0	12.3
Services	44966	46322	48409	51506	54912	58475	62062	65725
g.r.	2.1	3.0	4.5	6.4	6.6	6.5	6.1	5.9

Source: Macro Development Framework 1993-1998
National Economic and Development Authority

Table A-1-8-18 Long-Term Projections of GNP and its Components

1993 - 2010

(growth rates, %)

	1992/a	1993	1994	1995	1996	1997	1998	1999	2000	1993-2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2001-2002
										Ave.											Ave.
Gross Domestic Product	6.5	6.7	6.6	6.6	6.6	6.9	6.9	6.9	6.9	6.8	7.0	7.0	7.1	7.4	7.7	7.8	7.9	8.0	8.2	8.4	7.6
Gross national Product	6.6	6.7	6.6	6.8	6.8	6.9	6.9	6.9	7.0	6.8	7.0	7.1	7.1	7.4	7.7	7.8	7.9	8.0	8.2	8.4	7.7
A. By Type of Expenditure																					
Personal Consumption	5.9	5.8	5.7	5.5	5.5	5.5	5.5	5.5	5.5	5.6	5.9	5.8	6.0	6.1	6.3	6.4	6.4	6.4	6.5	6.5	6.2
Government Consumption	3.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Investments	9.5	8.9	8.5	8.5	7.9	7.9	8.0	8.0	8.0	8.3	8.5	8.7	8.6	8.8	8.8	8.9	9.0	9.0	9.0	9.0	8.8
Exports	9.3	9.7	10.0	10.3	11.2	11.1	10.7	10.5	10.3	10.5	11.0	11.1	10.9	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1
Goods	10.2	10.5	10.8	11.0	12.0	12.0	11.5	11.0	10.8	11.2	11.5	11.5	11.3	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5
Nonfactor Services	5.9	6.5	6.8	7.2	7.5	7.0	7.0	8.0	8.0	7.3	8.7	8.7	8.4	8.7	8.7	8.5	8.5	8.5	8.7	8.8	8.6
Imports	7.9	7.9	8.0	7.8	7.9	7.8	7.8	7.7	7.7	7.8	9.8	9.7	9.7	9.6	9.5	9.5	9.5	9.4	9.4	9.3	9.5
B. By Industrial Origin																					
Agriculture, Fishery and Forestry	3.8	3.8	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.5	4.7	4.9	5.2	5.2	5.1	5.3	5.3	5.4	5.0
Industry	9.2	9.2	9.1	8.8	8.9	8.9	8.9	8.9	8.7	8.9	8.9	8.9	9.2	9.5	10.0	10.2	10.5	10.5	10.9	11.0	10.0
Services	6.0	6.3	6.0	6.1	6.5	6.8	6.7	7.0	6.7	6.5	6.3	6.2	5.9	6.2	6.0	6.0	5.7	5.8	5.5	5.8	5.9
MEMO ITEMS:																					
Population	2.3	2.3	2.3	2.3	2.2	2.2	2.1	2.1	2.1	2.2	2.1	2.1	2.1	2.1	1.9	1.9	1.9	1.9	1.9	1.7	2.0
Phil. Inflation Rate	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
World Inflation Rate	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
Exchange Rate (P/\$)	24.2	25.3	26.5	27.8	29.1	30.5	31.9	33.4	35.0	29.9	22.4	24.2	26.1	28.2	30.5	32.9	35.5	38.4	41.4	44.5	32.4
Per Capita GNP (\$)	301.1	314.0	327.5	342.3	357.5	374.4	391.7	410.6	430.0	368.5	451.0	472.6	495.8	521.9	554.7	587.0	621.1	659.0	699.5	750.8	581.4
at 1972 prices																					
Per Capita GNP (\$)	724.5	755.8	788.2	823.9	860.4	901.1	942.6	988.1	1034.9	886.9	1085.3	1127.3	1193.3	1256.1	1335.0	1412.8	1494.0	1586.0	1683.6	1806.8	1399.1
at 1987 prices																					

a/ Based on MDA 171 - High Scenario.

Source: Long-Term Projections. National Economic and Development Authority

Table A-1-8-19 Average Annual Growth Rates

(unit: Percent)

Period	Cargo	Passenger
1983-90	5.28	5.84
1986-89	15.87	17.86
1986-90	10.46	15.76

Source: JICA Study Team based on
 Profile on Philippine Ports 1989
 Philippine Ports Authority

Table A-1-8-20 Seasonal Variation of Cargo Traffic

No.	Month	Port				(Average)
		Lipata	Iloilo	Tubigon	Balanacan	
1	January	87	111	77	63	85
2	February	113	166	97	86	116
3	March	93	168	80	71	103
4	April	133	93	57	87	93
5	May	128	61	102	85	94
6	June	110	62	91	117	95
7	July	99	73	118	78	92
8	August	120	64	109	109	101
9	September	100	64	148	41	88
10	October	99	104	122	126	113
11	November	56	89	92	151	97
12	December	61	146	107	184	125

Remark: Average value of each port is 100

Source: JICA Study Team based on PPA Monthly Report

Philippine Ports Authority

Table A-1-8-21 Seasonal Variation of Passenger Traffic

No.	Month	Port					(Average)
		Lipata	Iloilo	Tubigon	Balanacan	Talibon	
1	January	105	105	96	91	98	99
2	February	87	87	94	96	116	98
3	March	74	94	78	87	95	86
4	April	132	118	113	158	132	131
5	May	167	117	137	149	145	143
6	June	127	123	124	128	130	126
7	July	83	92	94	76	78	85
8	August	96	86	87	80	90	88
9	September	104	83	99	45	93	85
10	October	92	100	84	80	93	90
11	November	55	104	90	96	67	82
12	December	79	93	105	112	64	91

Remark: Average value of each port is 100

Source: JICA Study Team based on PPA Monthly Report

Philippine Ports Authority

Table A-1-8-22 Actual Cargo Traffic of Base Year

unit: Metric Ton

No.	Link A	B	Direction	
			A to B	B to A
1	Matnog	- Allen	36,338	32,926
2	Matnog	- San Isidro	22,619	21,461
3	Batangas City	- Calapan	165,947	240,744
4	Liloan	- Lipata	15,423	15,710
5	Argao	- Loon	8,325	8,830
6	Escalante	- Tuburan	12,572	12,532
7	Carmen	- Isabel	-	-
8	Tandayag	- Bato	5,785	5,958
9	Tubod	- Tangub	-	-
10	Iloilo City	- Bacolod	118,171	76,672
11	Iloilo City	- Pulupandan	24,870	8,328
12	Iloilo City	- Jordan	-	-
13	Toledo	- San Carlos	43,003	27,549
14	Cebu City	- Tubigon	28,869	18,638
15	Dumaguete	- Santander	-	-
16	Dumaguete	- Dapitan	6,144	7,924
17	Jagna	- Cagayan de Oro	1,512	5,812
18	Zamboanga City	- Basilan	18,092	13,569
19	Zamboanga City	- Jolo	10,683	25,310
20	San Jose	- Puerto Princesa	423	2,580
21	Cavite City	- Mariveles	-	-
22	Batangas City	- Abra de Ilog	-	-
23	Lucena	- Balanacan	33,944	19,259
24	Tabaco	- Virac	14,808	3,018
25	Bulan	- Masbate	6,320	1,716
26	Milagros	- Estancia	-	-
27	San Jose	- New Washington	-	-
28	Cebu City	- Ormoc	19,080	4,955
29	Ubay	- Maasin	-	-
30	Davao City	- Babak	-	-
31	Roxas	- Odiongan	-	-
32	Roxas	- New Washington	-	-
33	Matnog	- Masbate	-	-
34	Cebu City	- Talibon	14,060	9,543
35	Jagna	- Mambajao	-	-
36	Benoni	- Balingoan	-	-
37	San Jose	- El Nido	-	-
38	Cebu City	- Tagbilaran	51,330	24,207
39	Lucena	- Sta. Cruz	15,261	9,835
40	Dumaguete	- Larena	2,185	2,217
41	Guihulngan	- Dumanjug	225	192
42	Ajuy	- Manapla	-	-

Source: JICA Study Team based on

1) PPA Monthly Report

Philippine Ports Authority

2) Cargo and Tonnage, Value and Freight Charges

of Items, Ports of Origin and Destination, 1989

National Statistics Office

Table A-1-8-23 Actual passenger Traffic of Base Year

No.	Link		Direction	
	A	B	A to B	B to A
1	Matnog	- Allen	164,862	177,600
2	Matnog	- San Isidro	-	-
3	Batangas City	- Calapan	527,444	353,142
4	Liloan	- Lipata	70,587	76,212
5	Argao	- Loon	11,074	5,387
6	Escalante	- Tuburan	74,166	72,959
7	Carmen	- Isabel	-	-
8	Tandayag	- Bato	107,922	91,751
9	Tubod	- Tangub	-	-
10	Iloilo City	- Bacolod	783,843	771,964
11	Iloilo City	- Pulupandan	-	-
12	Iloilo City	- Jordan	-	-
13	Toledo	- San Carlos	213,064	214,954
14	Cebu City	- Tubigon	194,878	184,454
15	Dumaguete	- Santander	-	-
16	Dumaguete	- Dapitan	75,521	35,957
17	Jagna	- Cagayan de Oro	54,045	47,383
18	Zamboanga City	- Basilan	412,836	251,692
19	Zamboanga City	- Jolo	23,500	40,818
20	San Jose	- Puerto Princesa	-	-
21	Cavite City	- Mariveles	-	-
22	Batangas City	- Abra de Ilog	-	-
23	Lucena	- Balanacan	130,442	114,875
24	Tabaco	- Virac	46,532	55,085
25	Bulan	- Masbate	19,579	19,615
26	Milagros	- Estancia	-	-
27	San Jose	- New Washington	-	-
28	Cebu City	- Ormoc	184,323	172,747
29	Ubay	- Maasin	-	-
30	Davao City	- Babak	-	-
31	Roxas	- Odiongan	-	-
32	Roxas	- New Washington	-	-
33	Matnog	- Masbate	-	-
34	Cebu City	- Talibon	53,445	52,988
35	Jagna	- Mambajao	-	-
36	Benoni	- Balingoan	-	-
37	San Jose	- El Nido	-	-
38	Cebu City	- Tagbilaran	129,388	154,459
39	Lucena	- Sta. Cruz	65,824	66,417
40	Dumaguete	- Larena	20,925	18,647
41	Guihulngan	- Dumanjug	22,599	24,985
42	Ajuy	- Manapla	-	-

Source: JICA Study Team based on PPA Monthly Report

Philippine Ports Authority

Table A-1-8-24 Examination Case of Correlation of
Cargo Traffic and Passenger Traffic
for Inter Island Link

Case	Actual Traffic Data	Total Population
Case 1	PPA	Each Municipality
Case 2	PPA	Each Municipality

Source: JICA Study Team

Table A-1-8-25(1) Examination Case of Correlation:
Cargo Traffic for Solitary Island Link

Case	Actual Traffic Data	Total Population
Case 1	PPA	Municipality & Island
Case 2	NSO	Municipality & Island

Source: JICA Study Team

Table A-1-8-25(2) Examination Case of Correlation:
Passenger Traffic for Solitary Island Link

Case	Actual Traffic Data	Total Population
Case 1	PPA	Each Municipality
Case 2	PPA	Municipality & Island
Case 3	Head Count	Each Municipality
Case 4	Head Count	Municipality & Island

Source: JICA Study Team

Table A-1-8-26(2) Gravity Model Analysis: Inter Island Link, Passenger

No.	Link	A		B		Population		Municipality	Distance (Nautical Mile)	PPA 1990	Estimation 1990
		Province	Municipality	Province	Municipality	A	B				
3	Batangas City	1,476,783	184,970	550,049	85,898	22.0	146,201				
5	Argao	2,645,735	52,157	948,315	34,400	12.0	53,880				
6	Escalante	2,256,908	72,685	2,645,735	43,078	18.0	53,690				
7	Carmen		29,265		33,389	65.0	6,010				
8	Tandayag(Tampi)-Bato	925,311	12,821	2,645,735	15,005	4.5	28,110				
9	Tubod		36,083		42,926	3.0	201,557				
10	Iloilo City	1,765,476	309,505	2,256,908	364,180	24.0	574,327				
11	Iloilo City		309,505		22,983	25.0	70,475				
13	Toledo	2,645,735	119,970	2,256,908	105,713	12.0	230,893				
14	Cebu City	2,645,735	610,417	948,315	34,302	22.0	194,878				
15	Dumaguete		80,262		11,831	4.5	92,215				
16	Dumaguete	925,311	80,262	673,774	79,887	43.0	37,303				
17	Jagna	948,315	26,163	865,051	339,598	72.0	27,954				
20	San Jose	282,593	87,520	528,287	92,147	233.0	7,754				
21	Cavite City		91,641		60,761	26.0	56,408				
22	Batangas City	1,476,783	184,970	282,593	21,781	80.0	13,922				
	Batangas City		184,970		13,609	25.0	32,534				
25	Bulan	522,960	66,450	599,915	58,714	43.0	25,776				
26	Millagros		33,305		27,229	53.0	7,016				
27	San Jose		87,520		30,147	90.0	8,999				
28	Cebu City	2,645,735	610,417	1,486,522	129,456	59.0	174,501				
29	Ubay		48,814		64,694	27.0	35,577				
32	Roxas		33,178		30,147	68.0	5,837				
33	Matnog		25,957		58,714	35.0	15,833				
34	Cebu City	2,645,735	610,417	948,315	41,873	30.0	151,275				
37	San Jose		87,520		18,832	135.0	4,175				
38	Cebu City	2,645,735	610,417	948,315	56,363	41.0	136,769				
41	Guihulngan	925,311	74,493	2,645,735	31,932	9.0	89,396				
42	Ajuy		38,120		40,095	13.0	44,034				

Remark: Traffic volumes represent one way traffic only

Source: JICA Study Team based on

1) 1990 Census of Population and Housing Report

National Statistics Office

2) PPA Monthly Report, Philippine Ports Authority

Table A-1-8-27(1) Base Data of Gravity Model:
Solitary Island Link, Cargo

No.	Link		Population			Distance Nautical Mile	Data Source	
	A	B	Municipality A	Municipality B	Island B		PPA 1990 (Metric Ton)	NSO 1991
18	Zamboanga City	- Basilan	442,345	59,482	243,091	16.0	18,092	50,046
19	Zamboanga City	- Jolo	442,345	53,055	340,338	83.0	25,310	30,454
23	Lucena City	- Balanacan	150,624	25,337	185,524	28.0	33,944	
24	Tabaco	- Virac	85,697	45,523	187,000	34.0	14,808	9,771
39	Lucena City	- Sta. Cruz	150,624	52,926	185,524	36.0	15,261	6,179

Source: 1) 1990 Census of Population and Housing Report
National Statistics Office
2) PPA Monthly Report
Philippine Ports Authority
3) Cargo Tonnage, Value and Freight Charges of PSCC Items
Ports of Origin and Destination, 1989
National Statistics Office

Table A-1-8-27(2) Base Data of Gravity Model:
Solitary Island Link, Passenger

No.	Link		Population		Distance Nautical Mile	Passenger PPA 1990	Head Count 1991
	A	B	Municipality A	Island B			
12	Iloilo City	- Jordan	309,505	117,990	4.5		487,807
18	Zamboanga City	- Basilan	442,345	243,091	16.0	412,836	674,143
19	Zamboanga City	- Jolo	442,345	340,338	83.0	40,818	302,914
23	Lucena City	- Balanacan	150,624	185,524	28.0	130,442	61,671
24	Tabaco	- Virac	85,697	187,000	34.0	55,085	113,150
30	Davao City	- Babak	844,947	68,573	6.0		28,900
31	Roxas	- Odiongan	33,178	123,651	27.0		11,957
36	Benoni	- Balingoan	6,689	64,247	8.0		157,214
39	Lucena City	- Sta. Cruz	150,624	185,524	36.0	66,417	39,529

Source: 1) 1990 Census of Population and Housing Report
National Statistics Office
2) PPA Monthly Report, Philippine Ports Authority
3) JICA O/D Survey

Table A-1-8-28 Comparison of Cargo Traffic by Data Source

(unit: Metric Ton)

No.	Link	PPA 1990	NSO 1989	Gravity Model 1990	On-Site Survey 1991	Other Estimation
1	Matnog - Allen	36,338				
2	Matnog - San Isidro	22,619				
3	Batangas City - Calapan	240,744	313,510			
4	Liloan - Lipata	15,710				
5	Argao - Loon	8,830	3,490			
6	Escalante - Tuburan	12,572	82,707			
7	Carmen - Isabel			1,869		
8	Tandayag - Bato	5,958	25			
9	Tubod - Tangub			39,083	40,784	
10	Iloilo City - Bacolod	118,171	141,369			
11	Iloilo City - Pulupandan		24,870			
12	Iloilo City - Jordan		1,782			20,000
13	Toledo - San Carlos	43,003	15,344			
14	Cebu City - Tubigon	28,869	13,849			
15	Dumaguete - Santander			19,939		
16	Dumaguete - Dapitan	7,924	443			
17	Jagna - Cagayan de Oro	5,812	6,004			
18	Zamboanga City - Basilan	18,092	50,046			
19	Zamboanga City - Jolo	25,310	32,736			
20	San Jose - Puerto Princesa	2,580	386			
21	Cavite City - Mariveles			12,796		
22	Batangas City - Abra de Ilog			8,004		
23	Lucena - Balanacan	33,944	190			
24	Tabaco - Virac	14,808	10,980			
25	Bulan - Masbate	6,320	2,532			
26	Milagros - Estancia			2,138		
27	San Jose - New Washington			2,626		
28	Cebu City - Ormoc	19,080	17,357			
29	Ubay - Maasin			8,630		
30	Davao City - Babak					10,000
31	Roxas - Odiongan			2,118		
32	Roxas - New Washington			1,822		
33	Matnog - Masbate			4,308		
34	Cebu City - Talibon	14,060	8,957			
35	Jagna - Mambajao			1,317		
36	Benoni - Balingoan					3,394
37	San Jose - El Nido			1,356		
38	Cebu City - Tagbilaran	51,330	35,681			
39	Lucena - Sta. Cruz	15,261	6,853			
40	Dumaguete - Larena	2,217				
41	Guihulngan - Dumanjug	225	265	19,234		
42	Ajuy - Manapla			10,456		

Remark: Traffic volumes represent one way traffic only

Source: JICA Study Team based on

- 1) PPA Monthly Report, Philippine Ports Authority
- 2) Cargo and Tonnage, Value and Freight Charges of PSCC Items, Ports of Origin and Destination, 1989, National Statistics Office

Table A-1-8-29 Comparison of Passenger Traffic by Data Source

No.	Link	PPA 1990	Head Count 1991	NSO 1989	Gravity Model 1990	Bernard Ship. Shipping 1990
1	Matnog - Allen	177,600	131,643			
2	Matnog - San Isidro	139,670	232,500			207,268
3	Batangas City - Calapan	527,444	763,486	519,355		
4	Liloan - Lipata	76,212	76,171			
5	Argao - Loon	11,074		6,935		
6	Escalante - Tuburan	74,166	112,264	69,698		
7	Carmen - Isabel				6,010	
8	Tandayag - Bato	107,922	59,121			
9	Tubod - Tangub		27,679			
10	Iloilo City - Bacolod	783,843	763,929	71,487		
11	Iloilo City - Pulupandan				70,475	
12	Iloilo City - Jordan		487,807			
13	Toledo - San Carlos	214,954	81,821	196,409		
14	Cebu City - Tubigon	194,878	121,236	174,677		
15	Dumaguete - Santander				92,215	
16	Dumaguete - Dapitan	75,521	31,779	4,192		
17	Jagna - Cagayan de Oro	54,045	191,979	48,414		
18	Zamboanga City - Basilan	412,836	674,143	313,050		
19	Zamboanga City - Jolo	40,818	302,914	67,106		
20	San Jose - Puerto Princesa				7,754	
21	Cavite City - Mariveles				56,408	
22	Batangas City - Abra de Ilog				32,534	
23	Lucena - Balanacan	130,442	61,671			
24	Tabaco - Virac	55,085	113,150	40,656		
25	Bulan - Masbate	19,615	20,043	29,277		
26	Milagros - Estancia		5,536		7,016	
27	San Jose - New Washington				8,999	
28	Cebu City - Ormoc	184,323	148,471	200,365		
29	Ubay - Maasin		8,719		35,577	
30	Davao City - Babak		28,900			
31	Roxas - Odiongan		11,957		48,912	
32	Roxas - New Washington				5,837	
33	Matnog - Masbate				15,833	
34	Cebu City - Talibon	53,445	35,321	41,376		
35	Jagna - Mambajao				28,511	
36	Benoni - Balingoan		157,214		120,673	
37	San Jose - El Nido				4,175	
38	Cebu City - Tagbilaran	154,459	122,671	80,047		
39	Lucena - Sta. Cruz	66,417	39,529	47,437		
40	Dumaguete - Larena	20,925	15,429			
41	Guihulngan - Dumanjug	24,985	26,129	20,079		
42	Ajuy - Manapla		1,107		44,034	

Remark: Traffic volumes represent one way traffic only

Source: JICA Study Team Based on

- 1) PPA Monthly Report, Philippine Port Authority
- 2) Ship, Cargo, and Passenger Traffic Classified by Ports of Origin and Destination and Type of Service, 1989, National Statistics Office

Table A-1-8-30 Average Annual Growth rates of
Per Capita Personal Consumption
Expenditure and Classification
(In Pesos at Constant 1972 Prices)

Region	Period 1975-1987	Rank
Phil.	0.98	
III	1.39	A
IV	0.43	B
V	1.14	A
VI	1.19	A
VII	0.51	B
VIII	1.43	A
IX	-0.53	C
X	0.85	B
XI	-0.34	C
XII	-0.28	C

Source: JICA Study Team based on
Economic and Social Indicators
National Statistical Coordination Board

Table A-1-8-31 Average Annual Growth Rates of Population and Per Capita Personal Consumption Expenditure by Port

No.	Name	Region	Province	Population Projections		Per Capita Personal Consumption Expend.				
				Average Annual Growth Rate of Province 1990-1995	Average Annual Growth Rate of Province 2001-2005	Average Annual Growth Rate of Province 1990-1995	Average Annual Growth Rate of Province 2001-2005			
(unit: Percent)										
1	Mariveles	III	Bataan	2.55	2.03	1.73	1.64	4.5	5.0	5.5
2	Cavite City	IV	Cavite	3.34	2.95	2.62	2.32	3.5	4.0	4.5
3	Lucena	IV	Laguna	2.83	2.51	2.22	1.95	3.5	4.0	4.5
4	Batangas City	IV	Batangas	2.11	1.93	1.74	1.53	3.5	4.0	4.5
5	Calapan	IV	Oriental Mindoro	2.00	1.60	1.41	1.43	3.5	4.0	4.5
6	Roxas	IV	Oriental Mindoro	2.00	1.60	1.41	1.43	3.5	4.0	4.5
7	Abra de Ilog	IV	Occidental Mindoro	1.89	1.47	1.28	1.30	3.5	4.0	4.5
8	San Jose	IV	Occidental Mindoro	1.89	1.47	1.28	1.30	3.5	4.0	4.5
9	Balanacan	IV	Marinduque	1.45	1.09	0.91	0.93	3.5	4.0	4.5
10	Sta. Cruz	IV	Marinduque	1.45	1.09	0.91	0.93	3.5	4.0	4.5
11	Odiongan	IV	Romblon	1.56	1.47	1.29	1.05	3.5	4.0	4.5
12	El Nido	IV	Palawan	2.87	2.70	2.43	2.12	3.5	4.0	4.5
13	Puerto Princesa	IV	Palawan	2.87	2.70	2.43	2.12	3.5	4.0	4.5
14	Tabaco	V	Albay	1.52	1.14	1.00	1.07	4.5	5.0	5.5
15	Matnog	V	Sorsogon	1.85	1.47	1.30	1.36	4.5	5.0	5.5
16	Bulan	V	Sorsogon	1.85	1.47	1.30	1.36	4.5	5.0	5.5
17	Virac	V	Catanduanes	1.45	1.10	0.96	1.07	4.5	5.0	5.5
18	Masbate	V	Masbate	1.58	1.20	1.06	1.15	4.5	5.0	5.5
19	Milagros	V	Masbate	1.58	1.20	1.06	1.15	4.5	5.0	5.5
20	Iloilo City	VI	Iloilo	1.94	1.76	1.59	1.42	4.5	5.0	5.5
21	Estancia	VI	Iloilo	1.94	1.76	1.59	1.42	4.5	5.0	5.5
22	Ajuy	VI	Iloilo	1.94	1.76	1.59	1.42	4.5	5.0	5.5
23	New Washington	VI	Aklan	1.50	1.08	0.93	1.03	4.5	5.0	5.5
24	Jordan	VI	Guimaras (Iloilo)	1.94	1.76	1.59	1.42	4.5	5.0	5.5
25	Bacolod	VI	Negros Occidental	1.65	1.22	1.01	1.02	4.5	5.0	5.5
26	Pulupandan	VI	Negros Occidental	1.65	1.22	1.01	1.02	4.5	5.0	5.5
27	San Carlos	VI	Negros Occidental	1.65	1.22	1.01	1.02	4.5	5.0	5.5
28	Escalante	VI	Negros Occidental	1.65	1.22	1.01	1.02	4.5	5.0	5.5
29	Manapla	VI	Negros Occidental	1.65	1.22	1.01	1.02	4.5	5.0	5.5
30	Dumaguete	VII	Negros Oriental	1.59	1.21	1.04	1.06	3.5	4.0	4.5
31	Tandayag	VII	Negros Oriental	1.59	1.21	1.04	1.06	3.5	4.0	4.5
32	Guithulagan	VII	Negros Oriental	1.59	1.21	1.04	1.06	3.5	4.0	4.5
33	Cebu City	VII	Cebu	1.96	1.79	1.61	1.44	3.5	4.0	4.5
34	Carmen	VII	Cebu	1.96	1.79	1.61	1.44	3.5	4.0	4.5
35	Tuburan	VII	Cebu	1.96	1.79	1.61	1.44	3.5	4.0	4.5

Source: JICA Study Team based on
 1) Philippine Population Projections 1980-2030
 2) Long-Term Projections

Table A-1-8-31 Average Annual Growth Rates of Population and Per Capita Personal Consumption Expenditure by Port (continued)

No.	Name	Region	Province	Population Projections		Per Capita Personal Consumption Expend.				
				Average Annual Growth Rate		Average Annual Growth Rate				
				1990-1995	1996-2000	2001-2005	2006-2010	1990-1995	1996-2000	2001-2005
(unit: Percent)										
36	Toledo	VII	Cebu	1.96	1.79	1.61	1.44	3.5	4.0	4.5
37	Dumanjug	VII	Cebu	1.96	1.79	1.61	1.44	3.5	4.0	4.5
38	Bato	VII	Cebu	1.96	1.79	1.61	1.44	3.5	4.0	4.5
39	Santander	VII	Cebu	1.96	1.79	1.61	1.44	3.5	4.0	4.5
40	Argao	VII	Cebu	1.96	1.79	1.61	1.44	3.5	4.0	4.5
41	Talibon	VII	Bohol	1.65	1.60	1.49	1.34	3.5	4.0	4.5
42	Tubigon	VII	Bohol	1.65	1.60	1.49	1.34	3.5	4.0	4.5
43	Loon	VII	Bohol	1.65	1.60	1.49	1.34	3.5	4.0	4.5
44	Tagbilaran	VII	Bohol	1.65	1.60	1.49	1.34	3.5	4.0	4.5
45	Jagna	VII	Bohol	1.65	1.60	1.49	1.34	3.5	4.0	4.5
46	Ubay	VII	Bohol	1.65	1.60	1.49	1.34	3.5	4.0	4.5
47	Larena	VII	Siquijor	1.28	1.00	0.88	0.91	3.5	4.0	4.5
48	Allen	VIII	Northern Samar	2.20	1.86	1.65	1.65	4.5	5.0	5.5
49	San Isidro	VIII	Northern Samar	2.20	1.86	1.65	1.65	4.5	5.0	5.5
50	Ormoc	VIII	Leyte	1.27	0.97	0.86	0.93	4.5	5.0	5.5
51	Isabel	VIII	Leyte	1.27	0.97	0.86	0.93	4.5	5.0	5.5
52	Maasin	VIII	Southern Leyte	2.08	1.75	1.59	1.62	4.5	5.0	5.5
53	Liloan	VIII	Southern Leyte	2.08	1.75	1.59	1.62	4.5	5.0	5.5
54	Dapitan	IX	Zamboanga del Norte	1.49	1.14	1.00	1.04	2.5	3.0	3.5
55	Zamboanga	IX	Zamboanga del Sur	2.33	2.22	2.06	1.85	2.5	3.0	3.5
56	Basilan	IX	Basilan	1.74	1.36	1.20	1.21	2.5	3.0	3.5
57	Jolo	IX	Sulu	1.94	1.79	1.58	1.38	2.5	3.0	3.5
58	Cagayan de Oro	X	Misamis Oriental	2.33	1.90	1.65	1.56	3.5	4.0	4.5
59	Balingoan	X	Misamis Oriental	2.33	1.90	1.65	1.56	3.5	4.0	4.5
60	Tangub	X	Misamis Occidental	1.42	1.05	0.91	0.98	3.5	4.0	4.5
61	Lipata	X	Surigao del Norte	2.03	1.67	1.48	1.47	3.5	4.0	4.5
62	Mambajao	X	Camiguin	0.89	0.84	0.80	0.76	3.5	4.0	4.5
63	Benoni	X	Camiguin	0.89	0.84	0.80	0.76	3.5	4.0	4.5
64	Tubod	XII	Lanao del Norte	2.51	2.33	2.13	1.91	2.5	3.0	3.5
65	Davao City	XI	Davao del Sur	2.40	2.11	1.84	1.55	2.5	3.0	3.5
66	Babak	XI	Davao del Sur	2.40	2.11	1.84	1.55	2.5	3.0	3.5

Source: JICA Study Team based on
 1) Philippine Population Projections 1980-2030
 2) Long-Term Projections

Table A-1-8-32 Average Annual Growth Rates of User Number and Per Capita Personal Consumption Expenditure by Link

(unit: Percent)

No.	Link	User Number Average Annual Growth Rate				Per Capita Personal Consumption Expend. Average Annual Growth Rate			
		1990-1995	1996-2000	2001-2005	2006-2010	1990-1995	1996-2000	2001-2005	2006-2010
1	Matnog - Allen	2.00	1.84	1.45	1.49	4.5	4.5	5.0	5.5
2	Matnog - San Isidro	2.00	1.84	1.45	1.49	4.5	4.5	5.0	5.5
3	Batangas City - Calapan	2.08	1.84	1.85	1.50	3.5	3.5	4.0	4.0
4	Liloan - Lipata	2.05	1.70	1.53	1.54	4.0	4.0	4.5	5.0
5	Argao - Loon	1.88	1.74	1.58	1.41	3.5	3.5	4.0	4.5
6	Escalante - Tuburan	1.82	1.53	1.34	1.26	4.0	4.0	4.5	5.0
7	Carmen - Isabel	1.71	1.50	1.38	1.27	4.0	4.0	4.5	5.0
8	Tandayag - Bato	1.88	1.84	1.47	1.35	3.5	3.5	4.0	4.5
9	Tubod - Tangub	2.07	1.83	1.87	1.57	3.0	3.0	3.5	4.0
10	Iloilo City - Bacolod	1.78	1.48	1.27	1.20	4.5	4.5	5.0	5.5
11	Iloilo City - Pulupandan	1.78	1.48	1.27	1.20	4.5	4.5	5.0	5.5
12	Iloilo City - Jordan	1.94	1.76	1.59	1.42	4.5	4.5	5.0	5.5
13	Toledo - San Carlos	1.82	1.53	1.34	1.28	4.0	4.0	4.5	5.0
14	Cebu City - Tubigon	1.88	1.74	1.58	1.41	3.5	3.5	4.0	4.5
15	Dunaguete - Santander	1.88	1.64	1.47	1.35	3.5	3.5	4.0	4.5
16	Dunaguete - Dapitan	1.55	1.18	1.02	1.05	3.0	3.0	3.5	4.0
17	Jagna - Cagayan de Oro	1.98	1.75	1.57	1.45	3.5	3.5	4.0	4.5
18	Zamboanga City - Basilan	1.71	1.36	1.20	1.21	2.5	2.5	3.0	3.5
19	Zamboanga City - Jolo	1.94	1.79	1.58	1.38	2.5	2.5	3.0	3.5
20	San Jose - Puerto Princesa	2.87	2.70	2.43	2.12	3.5	3.5	4.0	4.5
21	Cavite City - Mariveles	3.13	2.71	2.40	2.15	4.0	4.0	4.5	5.0
22	Batangas City - Abra de Ilog	2.07	1.86	1.67	1.49	3.5	3.5	4.0	4.5
23	Lucena - Balanacan	1.45	1.09	0.91	0.93	3.5	3.5	4.0	4.5
24	Tabaco - Virac	1.45	1.10	0.96	1.07	4.5	4.5	5.0	5.5
25	Bulan - Masbate	1.71	1.33	1.17	1.25	4.5	4.5	5.0	5.5
26	Milagros - Estancia	1.85	1.62	1.46	1.36	4.5	4.5	5.0	5.5
27	San Jose - Kalibo	1.67	1.25	1.08	1.15	4.0	4.0	4.5	5.0
28	Cebu City - Ormoc	1.71	1.50	1.36	1.27	4.0	4.0	4.5	5.0
29	Ubay - Maasin	1.78	1.64	1.52	1.41	4.0	4.0	4.5	5.0
30	Davao City - Babak	2.40	2.11	1.84	1.55	2.5	2.5	3.0	3.5
31	Roxas - Odiongan	1.56	1.47	1.29	1.05	3.5	3.5	4.0	4.5
32	Roxas - Kalibo	1.80	1.39	1.22	1.27	4.0	4.0	4.5	5.0
33	Matnog - Masbate	1.71	1.33	1.17	1.25	4.5	4.5	5.0	5.5
34	Cebu City - Talibon	1.88	1.74	1.58	1.41	3.5	3.5	4.0	4.5
35	Jagna - Mambajao	0.89	0.84	0.80	0.76	3.5	3.5	4.0	4.5
36	Benoni - Balingoan	0.89	0.84	0.80	0.76	3.5	3.5	4.0	4.5
37	San Jose - El Nido	2.87	2.70	2.43	2.12	3.5	3.5	4.0	4.5
38	Cebu City - Tagbilaran	1.88	1.74	1.58	1.41	3.5	3.5	4.0	4.5
39	Lucena - Sta. Cruz	1.45	1.09	0.91	0.93	3.5	3.5	4.0	4.5
40	Dunaguete - Larena	1.28	1.00	0.88	0.91	3.5	3.5	4.0	4.5
41	Guihulngan - Dumanjug	1.86	1.64	1.47	1.35	3.5	3.5	4.0	4.5
42	Ajuy - Manapla	1.78	1.46	1.27	1.20	4.5	4.5	5.0	5.5

Source: JICA Study Team based on

- 1) Philippine Population Projections 1980-2030
National Economic and Development Authority
- 2) Long-Term Projections
National Economic and Development Authority

Table A-1-8-33 Forecast of Cargo Traffic

No.	Link	Cargo (Metric Ton)		Growth Rate of Cargo Traffic (Percent)					Cargo (Metric Ton)		
		1990	1995	1998-2000	2001-2005	2006-2010	2010	2015	2020	2025	2030
1	Matnog	36,338	7.51	7.13	7.54	8.19	52,192	73,648	105,928	157,017	
2	Matnog	22,619	7.51	7.13	7.54	8.19	32,488	45,844	65,938	97,740	
3	Batangas City	240,744	6.37	6.12	6.53	6.37	327,832	441,202	605,337	824,315	
4	Liloan	15,710	8.95	6.58	7.01	7.63	21,983	30,232	42,422	61,271	
5	Argao	8,830	6.16	6.01	6.46	6.89	11,908	16,940	21,798	30,418	
6	Escalante	12,572	6.71	6.40	6.81	7.34	17,395	23,721	32,976	46,990	
7	Carmen	1,889	6.59	6.37	6.83	7.35	2,572	3,502	4,873	6,947	
8	Tandavag	5,958	6.14	5.91	6.34	6.82	8,026	10,695	14,543	20,226	
9	Tubod	40,784	5.74	5.50	5.94	6.45	53,912	70,461	94,026	128,522	
10	Iloilo City	118,171	7.28	6.94	7.35	7.88	167,921	234,858	334,823	489,238	
11	Iloilo City	24,870	7.28	6.94	7.35	7.88	35,340	49,427	70,465	102,962	
12	Iloilo City	20,000	7.44	7.26	7.69	8.11	28,633	40,650	58,876	86,950	
13	Toledo	43,003	6.71	6.40	6.81	7.34	59,501	81,140	112,786	160,732	
14	Cebu City	28,869	6.16	6.01	6.46	6.89	38,926	52,116	71,269	99,446	
15	Dumaguete	19,939	6.14	5.91	6.34	6.82	28,880	35,792	48,671	67,891	
16	Dumaguete	7,824	5.21	4.82	5.26	5.90	10,215	12,926	16,702	22,246	
17	Jagna	5,812	6.28	6.02	6.45	6.93	7,874	10,547	14,416	20,153	
18	Zamboanga City	18,092	4.79	4.40	4.84	5.46	22,861	28,353	35,912	46,847	
19	Zamboanga City	25,310	5.00	4.84	5.24	5.84	32,303	40,915	52,819	69,492	
20	San Jose	2,580	6.84	6.59	6.96	7.37	3,592	4,942	6,918	9,872	
21	Cavite City	12,796	8.08	7.64	7.93	8.23	18,671	27,269	39,937	59,445	
22	Batangas City	8,004	6.36	6.14	6.55	6.97	10,894	14,675	20,153	28,226	
23	Lucena	33,944	5.71	5.34	5.75	6.38	44,807	58,118	76,862	104,718	
24	Tabaco	14,808	6.93	6.56	7.02	7.74	20,701	28,442	39,929	57,968	
25	Bulan	6,320	7.20	6.80	7.24	7.93	8,947	12,432	17,633	25,825	
26	Malagos	2,138	7.35	7.11	7.55	8.05	3,048	4,257	6,183	9,108	
27	San Jose	2,626	6.55	6.11	6.54	7.22	3,606	4,851	6,559	9,436	
28	Cebu City	19,080	6.59	6.37	6.83	7.35	26,252	35,749	49,743	70,918	
29	Ubay	8,660	6.64	6.52	7.00	7.49	11,922	16,322	22,892	32,849	
30	Davao City	10,000	5.47	5.17	5.51	5.82	13,051	16,792	21,857	29,135	
31	Roxas	2,118	5.83	5.73	6.15	6.51	2,812	3,715	5,007	6,853	
32	Roxas	1,822	6.69	6.26	6.69	7.35	2,519	3,413	4,718	6,726	
33	Matnog	4,308	7.20	6.80	7.24	7.93	6,098	8,475	12,021	17,606	
34	Cebu City	14,060	6.16	6.01	6.46	6.89	18,958	25,382	34,710	48,433	
35	Jagna	1,317	5.13	5.08	5.64	6.20	1,691	2,166	2,850	3,850	
36	Benoni	3,394	5.13	5.08	5.64	6.20	4,359	5,585	7,348	9,926	
37	San Jose	1,356	6.84	6.59	6.96	7.37	1,888	2,598	3,637	5,190	
38	Cebu City	51,330	6.16	6.01	6.46	6.89	69,211	92,684	126,719	176,818	
39	Lucena	15,281	5.71	5.34	5.75	6.38	20,145	26,130	34,557	47,080	
40	Dumaguete	2,217	5.53	5.24	5.72	6.36	2,902	3,746	4,947	6,733	
41	Guinhuligan	19,234	6.14	5.81	6.34	6.82	25,910	34,528	46,949	65,296	
42	Ajay	10,456	7.28	6.94	7.35	7.88	14,858	20,781	29,626	43,289	

Remark: Traffic volume represent one way traffic only

Source: JICA Study Team based on

- 1) PPA Monthly Report, Philippine Ports Authority
- 2) Ship, Cargo, and Passenger Traffic Classified by ports of Origin and Destination and Type of Service, 1988, National Statistics Office

Table A-1-8-34 Forecast of Passenger Traffic

No.	Link	Growth Rate of Passenger Traffic (Percent)									
		Passenger		Passenger		Passenger		Passenger		Passenger	
		1990	1990-1995	1995	2000	2005	2010	1990	1990-1995	1995	2010
1	Matnog	177,600	8.89	8.50	9.06	9.88	271,884	408,820	830,753	1,008,386	
2	Matnog	207,268	8.89	8.50	9.06	9.86	317,302	477,113	736,120	1,178,004	
3	Batangas City	527,444	7.44	7.19	7.75	7.59	755,103	1,068,507	1,551,900	2,237,295	
4	Liloan	76,212	8.17	7.80	8.38	9.16	112,865	184,308	245,897	380,818	
5	Argao	11,074	7.23	7.38	7.67	8.26	15,700	22,103	31,983	47,562	
6	Escalante	74,186	7.93	7.62	8.18	8.85	108,621	156,812	232,335	355,023	
7	Carmen	6,010	7.81	7.59	8.20	8.87	8,753	12,619	18,714	28,623	
8	Tandayag	107,922	7.21	6.98	7.56	8.19	152,857	214,190	308,357	457,077	
9	Tubod	27,879	8.66	8.41	7.01	7.66	38,208	52,127	73,145	105,793	
10	Iloilo City	783,843	8.65	8.31	8.87	9.55	1,186,801	1,768,971	2,705,589	4,268,976	
11	Iloilo City	70,475	8.65	8.31	8.87	9.55	106,705	159,048	243,259	383,823	
12	Iloilo City	487,807	8.82	8.63	9.21	9.79	744,375	1,126,006	1,749,252	2,790,401	
13	Toledo	214,954	7.93	7.62	8.18	8.85	314,816	454,487	673,374	1,028,960	
14	Cebu City	194,878	7.23	7.08	7.67	8.26	276,277	388,944	562,808	836,952	
15	Dumaguete	92,215	7.21	6.98	7.56	8.19	130,610	183,016	263,477	390,552	
16	Dumaguete	75,521	6.12	5.73	6.32	7.11	101,637	134,290	182,439	257,198	
17	Dumaguete	54,045	7.33	7.09	7.66	8.30	76,977	108,419	156,811	233,625	
18	Zamboanga City	412,836	5.52	5.16	5.75	6.52	540,072	894,552	1,259,888	1,958,888	
19	Zamboanga City	40,818	5.76	5.61	6.15	6.70	54,008	70,955	95,628	132,253	
20	San Jose	7,754	7.91	7.66	8.18	8.75	11,346	16,410	24,313	36,882	
21	Cavite City	56,408	9.32	8.87	9.31	9.81	88,072	134,704	210,723	335,652	
22	Batangas City	32,534	7.43	7.21	7.77	8.34	48,555	65,939	95,859	143,079	
23	Lucena	130,442	6.78	6.40	6.96	7.74	181,079	246,931	345,887	501,843	
24	Tabaco	55,085	8.30	7.82	8.53	9.41	82,068	120,139	180,898	283,608	
25	Bulan	19,615	8.58	8.17	8.76	9.60	29,803	43,840	66,714	105,504	
26	Hilagros	7,016	8.72	8.48	9.07	9.72	10,657	16,010	24,713	38,297	
27	San Jose	6,999	7.77	7.33	7.90	8.74	13,082	18,633	27,251	41,431	
28	Cebu City	184,373	7.81	7.59	8.20	8.87	268,457	387,021	573,946	877,833	
29	Ubay	35,577	7.87	7.74	8.37	9.02	51,980	75,432	112,746	173,633	
30	Davao City	28,900	6.24	5.94	6.42	6.88	39,115	52,187	71,246	99,367	
31	Roxas	11,957	6.89	6.80	7.37	7.87	16,684	23,182	33,080	48,314	
32	Roxas	5,837	7.91	7.47	8.05	8.87	8,541	12,245	18,034	27,562	
33	Matnog	15,833	8.58	8.17	8.76	9.60	23,895	35,387	53,851	85,162	
34	Cebu City	53,445	7.23	7.08	7.67	8.26	75,768	106,668	154,347	228,529	
35	Jagna	28,511	6.19	6.13	6.85	7.56	38,487	51,834	72,182	103,931	
36	Benoni	157,214	6.19	6.13	6.85	7.56	212,280	285,825	398,082	573,095	
37	San Jose	4,175	7.91	7.66	8.18	8.75	6,109	8,836	13,092	19,914	
38	Cebu City	154,459	7.23	7.08	7.67	8.26	218,975	308,274	446,078	663,363	
39	Lucena	66,417	6.78	6.40	6.96	7.74	92,200	125,730	178,013	255,523	
40	Dumaguete	20,925	6.60	6.30	6.93	7.72	28,804	39,095	54,654	79,269	
41	Guihulungan	24,985	7.21	6.98	7.56	8.19	35,388	49,587	71,387	106,817	
42	Ajuy	44,034	8.65	8.31	8.87	9.55	66,671	99,376	151,983	239,820	

Remark: Traffic volumes represent one way traffic only

Source: JTCA Study Team based on

1) PPA Monthly Report, Philippine Ports Authority

Table A-1-8-35(1) Cargo Volume: by Items and by Month
Iloilo City to Bacolod
by Ferry Vessel in 1990

unit: Metric ton

No.	Commodity Classification	January	February	March	April	May	June	sub-total	July	August	September	October	November	December	sub-total	Total
1	Rice	263	630	974	384	162	299	2,712	110	46	15	62	204	1,232	1,669	4,381
2	Corn	0	0	13	201	87	8	309	0	0	0	0	0	0	0	309
3	Sugar	89	18	1	3	0	29	140	5	41	0	11	3	1	61	201
4	Copra	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	Logs	0	4	0	0	22	0	26	2	11	6	0	0	0	19	45
6	Beer and Soft Drinks	0	0	4	9	2	3	18	0	0	0	0	8	0	8	26
7	Pulp and Paper	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	Iron and Steel	1	2	15	4	2	2	26	9	3	5	5	8	36	66	92
9	Fertilizer	17	0	1	0	0	30	48	0	2	0	0	0	0	2	50
10	Cement	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11	Fruits and Vegetables	265	1,450	1,160	430	190	182	3,677	294	189	103	413	199	679	1,877	5,554
12	Mineral Oil	32	26	10	23	80	109	280	49	179	51	60	49	20	408	688
13	Rest Group	2,922	3,209	3,240	1,950	1,411	1,327	14,059	1,897	1,589	1,871	2,785	2,383	2,740	13,265	27,324
	Total	3,589	5,339	5,418	3,004	1,956	1,989	21,295	2,366	2,060	2,051	3,336	2,854	4,708	17,375	38,670
	Ratio							55							45	100

Source: JICA Study Team based on
PPA Monthly Report, Philippine Ports Authority

Table A-1-8-35(2) Cargo Volume: by Items and by Month
Bacolod to Iloilo City
by Ferry Vessel in 1990

unit: Metric ton

No.	Commodity Classification	January	February	March	April	May	June	sub-total	July	August	September	October	November	December	sub-total	Total	
1	Rice	5	0	0	20	22	18	7	72	1	8	5	6	0	0	20	92
2	Corn	0	0	0	0	0	10	0	10	0	0	0	0	0	0	0	10
3	Sugar	70	15	0	0	0	0	0	85	0	35	0	1	0	0	36	121
4	Copra	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	Logs	0	4	0	0	0	0	0	4	0	11	6	0	0	0	17	21
6	Beer and Soft Drinks	0	0	0	0	0	0	3	3	0	0	0	0	1	0	1	4
7	Pulp and Paper	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	Iron and Steel	0	2	15	4	4	2	2	25	8	0	4	5	7	33	57	82
9	Fertilizer	15	0	0	0	0	0	30	45	0	2	0	0	0	0	2	47
10	Cement	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11	Fruits and Vegetables	12	69	43	15	15	25	53	217	90	52	8	126	84	23	383	600
12	Mineral Oil	23	23	8	19	19	78	100	251	43	131	40	57	44	11	325	577
13	Rest Group	1,856	1,895	1,801	999	999	784	708	8,043	1,166	867	1,148	1,763	1,363	1,320	7,827	15,870
	Total	1,981	2,008	1,887	1,059	917	903	8,755	1,308	1,106	1,211	1,968	1,499	1,387	8,469	17,224	
	Ratio							51							49	100	

Source: JICA Study Team based on
PPA Monthly Report, Philippine Ports Authority